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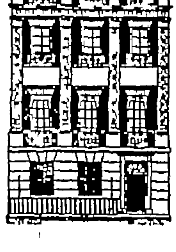

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THE MICRO-ENVIRONMENT OF INFLAMMATION
or
METCHNIKOFF REVISITED *

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In a lecture entitled "Forces curatives de l'organisme" delivered before a group of physicians and naturalists in Odessa in 1883, Metchnikoff compared the leucocytes to "an army hurling itself at the enemy." He had created the word "phagocyte" to express his belief that the leucocytes could digest the micro-organisms that they engulfed—a power that he regarded as essential to their ability to protect against infection.

Metchnikoff developed further his personal interpretation of the inflammatory process and presented it as a general biological theory in his *Lectures on Comparative Pathology of Inflammation* published in French in 1892 and in English in 1893. The first lecture contains the startling statement that "the most characteristic features" of the organisation of living things are "their organs of attack and defence." "The parasite makes its onslaught by secreting toxic or solvent substances, and defends itself by paralysing the digestive and expulsive activity of its host, while the latter exercises a deleterious influence on the aggressor by digesting it and turning it out of the body, and defends itself by the secretions with which it surrounds itself." As Metchnikoff believed that "there is but a short step from active aggression to infection," it was natural for him to regard the activities of inflammatory cells as purposefully designed to protect the body against microbial parasites.

Metchnikoff was not a pathologist, nor even a physician. He knew little if anything of pathological processes in higher animals and man when he first formulated the phagocytic theory, and immediately became an easy target for criticism. There is no doubt that most of the objections that were levelled against him were justified, but nevertheless his theory became and remains today one of the most creative forces in the field of pathology. It is not without interest therefore to review the way in which the phagocytic theory has evolved into a sophisticated concept of host-parasite relationship.

The critics pointed out that to regard the inflammatory response as a sort of mobilisation, and the phagocytes as a police force, implied a teleological view of living processes philosophically untenable. Although valid in principle, this objection has lost much of its punch today, since it is generally accepted that both the cellular and humoral components of inflammation constitute adaptive responses having survival value for the species. In fact Metchnikoff himself had clearly stated that his theory was "based on the law of evolution according to which the properties that are useful to the organism survive, while those which are harmful are eliminated by natural selection." Indeed, there exists today a large body of experimental and clinical observations demonstrating that procedures and events which interfere with the inflammatory response usually decrease thereby resistance to infection. It is certain that, in general, the final result of the inflammatory process is to antagonise the irritant and facilitate healing.

More constructive was the opposition to Metchnikoff voiced by those who held that the real determinants of resistance to infection are not the phagocytes, but rather humoral factors such as antibodies, complement, and the various antimicrobial substances of tissues and body fluids. Here again, time and increased knowledge have softened the harshness of this controversy. It is clear on the one hand that acquired immunity often depends upon the simultaneous participation of both cellular and humoral factors. And we shall see furthermore that many of the soluble antimicrobial substances of body fluids are in reality secreted by the cells or released from them as a result of necrosis, and are concentrated at the site of the lesion by the inflammatory process.

The third order of objection is by far the most important. Pathologists had observed the uptake of bacteria by white blood-cells long before Metchnikoff redescribed the phenomenon under the name phagocytosis. But, far from regarding phagocytosis as a defence mechanism, the early observers thought that the phagocytic cells acted as vehicles for the bacteria that they ingested, facilitating their dispersal through the tissues and thus contributing to the spread of infection. As stated by Ziegler in 1892, "In certain cases phagocytosis may help to destroy the foreign bodies. In other cases however it may contribute to the generalisation of infectious disease—e.g., when the bacteria can multiply within the cells, as in leprosy, or when they are carried about by the cells."[**] Many facts are now available to support this point of view. All viruses and bacteria, as well as many (perhaps most) pathogenic bacteria and protozoa find in the intracellular environment conditions that protect them against many noxious influences and favour their multiplication. Thus, Metchnikoff's conceptual scheme is certainly an oversimplification, which bears little resemblance to the majority of infectious processes in higher animals and man.

While it is true that phagocytosis cannot be equated with resistance to infection in the terms of Metchnikoff's oversimplified formula, there is much evidence nevertheless that inflammatory cells play a dominant rôle in this respect, but through very indirect mechanisms. A. A. Miles has suggested, for example, that phagocytes transfer the micro-organisms that they ingest to other cells of the reticulo-endothelial system possessing greater bactericidal power. On the other hand, it appears likely, as we shall presently see, that inflammation creates in and around the infected focus a micro-environment unfavourable to the multiplication and even to the survival of most microbial agents.

Needless to say, many factors other than cells contribute to creating this micro-environment—for example, the nervous and chemical influences which control the behaviour of the vascular bed and thereby determine the composition of the fluid and gaseous atmosphere of the lesion. Without losing sight of the complexity of the physiological, chemical, and physical characteristics of the inflammatory area, I shall focus my discussion on two special mechanisms through which cellular elements probably affect the course of infection—namely, the release in the lesion of substances possessing antimicrobial activity, and the creation of a metabolic environment different from that of the physiological *milieu intérieur*.

It must be emphasised here that the same factors and events which antagonise the activity of microbial agents not infrequently cause damage to the host cells. In other words, the protective effect exerted by the inflammatory response is often achieved at the cost of toxic reactions or tissue destruction. Metchnikoff visualised the defensive battle against infection as being fought by white blood-cells "hurling themselves" at the microbial invaders. In many cases, however, it appears that the body can arrest the spread of microbial disease only by practising a "scorched earth" policy.

Cellular Components Possessing Antimicrobial Activity

Although there is incontrovertible evidence that the cells of certain microbial species are rapidly destroyed in the intracellular environment of phagocytes, the mechanism of this killing effect is still unknown and indeed has been little studied. Any theory of the process must account for the fact that the bactericidal power of leucocytes is highly selective, certain bacteria surviving for long periods of time, and others multiplying extensively, in the very type of cells capable of killing closely related organisms. Suffice it to mention as illustration of the selectivity that coagulase-positive staphylococci multiply within polymorphonuclear leucocytes in vitro, whereas the coagulase-negative strains die immediately. Even more puzzling is the contrast in susceptibility between the Friedländer bacillus, a "sturdy" organism which is rapidly killed in these cells, and certain delicate gram-negative bacilli like brucella which give rise to intracellular infections. Let it be stated outright that no explanation can yet be offered for these differences in behaviour. The most that can be done at the present time is to review some of the properties of phagocytic cells which may have a bearing on their bactericidal power.

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* University of London lecture delivered at the London School of Hygiene and Tropical Medicine on April 28, 1955.

Early in the development of his theory, Metchnikoff had pointed out that the act of phagocytosis often results in an acidic reaction within the phagocytic vacuole in certain types of cells (but not in all). He also suggested that the leucocytic enzymes acted as "cytases," capable of attacking and digesting the microbial cells. We shall postpone the discussion of the possible bearing of the acid reaction within the vacuole on the fate of engulfed micro-organisms, and turn now to the bactericidal effect of leucocytic enzymes.

Leucocytic Enzymes and Products

It has been repeatedly shown that leucocytes contain a number of proteolytic enzymes which readily attack the protein structures of dead microbial agents, but, as far as is known, ordinary proteases are unable to affect the viability of living bacteria or the infectivity of filterable viruses. The fact however that certain cathepsins can kill parasitic worms as well as tissue cells suggests that there is need for renewed investigation of the bactericidal and virucidal power of proteolytic enzymes. Among known enzymes only one—lysozyme—can be considered to belong to the group of cytases postulated by Metchnikoff. As is well known, lysozyme is an acetylamino polysaccharidase which causes the lysis of certain living bacteria probably by attacking a structural component of their cell wall. Few are the bacterial species the living cells of which are lysed by this enzyme, but many are those susceptible to its bacteriostatic activity. For example lysozyme inhibits the growth of many mycobacteria although it does not cause their lysis. Of particular interest is the fact that granulocytes are very rich in lysozyme. Recent experiments reveal that polymorphonuclear extracts contain an enormous amount of lysozyme, approximately 1 mg per ml of packed cells.[illegible] Moreover the enzyme is readily released from granulocytes in an active form and for this reason accumulates in certain inflammatory areas. It might be of interest, therefore, to investigate again the range of antimicrobial activity of lysozyme at the concentration and under the conditions prevailing in these areas.

There are many reports describing the existence in leucocytic extracts of fractions other than lysozyme possessing a direct bacteriostatic or bactericidal activity. In general the active materials have not been identified chemically, nor their rôle in vivo demonstrated. I shall select for discussion one group of substances rarely thought of in relation to leucocytes—namely the hæm compounds. Though it has long been known that hæms have antibacterial activity in the free state, they appear to be inactive from this point of view when in combination with proteins. On the other hand, circumstances which cause a dissociation of hæms from their protein complex and thus release their potential antibacterial activity certainly occur in the body. Hæmoglobin, for example, becomes bactericidal when exposed to reactions acidic enough to permit dissociation of hæm from the protein complex.[5] As we shall see later, acidity of this order may exist in the vacuole immediately after phagocytosis. Hæms can also be released free as a result of proteolytic destruction of the proteins with which they are combined. It is of interest in this respect that the pigment of green pus is due to the presence in leucocytes of very high concentrations of verdoperoxidase.[1] As it is likely that this conjugated protein is enzymatically attacked in the course of the autolytic processes associated with inflammation and necrosis, its hæm component may contribute to the destruction of bacteria in certain types of abscesses.

Products of Necrosis

Lysozyme and verdohæmoglobin provide two examples of substances which are concentrated in inflammatory areas by migratory cells and released in the free state as a result of necrosis. It is not unlikely that necrosis can also bring about the local concentration of a large variety of other substances possessing antimicrobial activity. There are indications for example that some of the components essential for the antimicrobial activity of complement are released at the site of cellular injury. The possible importance of this fact is brought out by recent studies with *Salmonella typhimurium* and *Escherichia coli*. These organisms exist in several forms apparently identical in antigenic structure but differing markedly in virulence, some (virulent) causing progressive disease and death, others (attenuated) giving rise only to abortive infections. Although the attenuated bacilli are capable of multiplying in the mouse, the infection that they cause is short lived. After a short initial period of proliferation, they rapidly decrease in numbers (whereas virulent bacilli continue to multiply) as if infection called into play some tissue mechanism bactericidal for the attenuated but not for the virulent forms.[17, 18, 25] In this regard, it has been found that the attenuated variants of both *S. typhimurium* and *Esch. coli* are highly susceptible in vitro to the bactericidal action of some humoral factor to which the virulent forms are resistant. This fact has led to the suggestion that the bacteriostatic factor—which appears to be identical or associated with complement—is released when the bacteria have multiplied extensively enough to produce lesions and necrosis. In other words it appears that inflammation changes the local environment in such a manner as to render it incompatible with the continued proliferation of microbial agents susceptible to complement-like substances.

Necrosis can also result in the production of basic peptides possessing antimicrobial activity. Several of these have been separated from animal tissue by different techniques of extraction and purification; they differ in amino acid composition and in their activity against various bacteria and viruses.[5, 6, 28] Unpublished findings from our laboratory suggest that the peptide fraction active against tubercle bacilli does not exist preformed in a free state in the tissue, but appears only as a result of autolytic changes. This observation may add significance to a recent report describing the separation from tuberculous lymph-nodes of a heat-stable substance possessing antimycobacterial activity.[26] As the material could not be recovered from normal lymph-nodes and could hardly be an antibody because of its resistance to heat, there is a likelihood that it was a product of the inflammatory and necrotic reactions associated with the local infectious process.

The fact that the antimicrobial activity of the basic peptides is antagonised by a number of biological substances of common occurrence in vivo might be thought to militate against their ability to exert a protective rôle against infection. It seems likely, however, that necrosis brings about the release of the peptides from more complex organic structures (nucleoproteins for example) precisely in the immediate environment of the micro-organisms responsible for the necrotic effect. Under these conditions antimicrobial activity could manifest itself locally in the lesion with minimum interference from other tissue constituents. Direct evidence that basic peptides can act in vivo is provided by the recent discovery that one of these substances, a synthetic polylysine, is active against certain virus infections in the chick embryo.[12]

It seems proper to conclude this unconvincing review of the activity of antimicrobial substances obtained from tissue cells with Metchnikoff's own words:

> "I have always openly acknowledged that the question as to what substances within the phagocytes harm and destroy the microbes is still quite undecided. They may be ferments, digestive or otherwise, or they may be substances acid or alkaline completely different from ferments. We shall have to find new and more perfect methods before being able to solve this delicate problem."[29]

Physical and Metabolic Characteristics of the Inflammatory Environment

The production and local concentration of substances capable of inhibiting microbial agents is the most obvious mechanism through which the inflammatory response can exert a protective effect against the spread of infection. But it is not necessarily the most important, for, as we shall see presently, inflammation changes the physicochemical environment of the lesion in such a manner as to render it unfavourable to the multiplication and even the survival of the parasites.

Consider for example the influence of the deposition of fibrin and collagen at the site of the lesion. It appears at first sight that the main effect of this tissue response is to wall off the lesion mechanically. However, there is little doubt that membranes of fibrin or collagen have selective-permeability properties and thereby influence locally the composition of the fluid and gaseous environment.[4] [15] Furthermore, it has been recently shown that fibrous structures greatly facilitate the engulfment of micro-organisms by providing conditions favourable for surface phagocytosis—whereas engulfment of many pathogenic agents proceeds only slowly if at all in a fluid environment.[29] Compatible with this view is the fact that destruction of fibrin by streptokinase prevents ingestion of encapsulated pneumococci in the absence of specific antibody.[2]

Acidity

Perhaps more important than the physical characteristics of the lesion are those which determine its metabolic peculiarities. Some of these could be anticipated from Metchnikoff's discovery that litmus granules change from blue to red in the phagocytic vacuole of certain types of cells. Other investigators have confirmed that a burst of intracellular acidity often follows phagocytosis, and evidence has even been adduced that it can bring the reaction of the vacuole contents to a very low pH.[14] The source of energy used in phagocytosis is probably glycogen which yields lactic acid through glycolytic fermentation.[8]

It seems probable that the high acidity of the phagocytic vacuole plays some part in the destruction of ingested micro-organisms. Metchnikoff suggested that acidity did activate an endocellular pepsin-like enzyme (cytase) which he thought might be responsible for the bactericidal effect; but, as already mentioned, no enzyme (other than lysozyme) capable of attacking living bacteria has yet been identified. On the other hand, recent in vitro experiments have revealed that many types of microbial agents are killed within a few minutes after exposure to acid media containing lactic acid.[8] The pH range and the concentration of lactic acid at which the killing effect occurs in vitro are not unlike those that can be expected to prevail in the intracellular environment after phagocytosis.

The glycolytic activity of inflammatory cells also manifests itself in the biochemical characteristics of the extracellular environment. There is a long line of observations, consisting especially of measurements of titrable acidity, which indicate that the inflammatory area is markedly acidic—whether the initial irritant be a chemical substance, an allergic reaction, a microbial toxin, or the proliferation of a micro-organism. The early measurements indicating a titrable acidity corresponding to 100-200 mg. lactic acid per 100 ml. have been supplemented during recent years by the actual identification of this product of glycolysis through the use of specific manometric methods. The metabolic disturbances associated with inflammation have been studied also by inserting glass electrodes at different sites in the body and determining the local changes in pH that follow injection of various irritants.[11] *In brief, it has been found that* the irritation caused by certain chemical substances or micro-organisms brings about local increase in acidity. The local reactions may go down to pH 5.3 and remain below pH 6.0 for hours. It is obvious that much could be learnt concerning the course of biochemical events at the site of the lesion from a more extensive use of this simple technique. A few facts already established appear worth recording here because of their possible bearing on the infectious process.

Many factors affect the intensity and time course of the acid reaction. For example, treatment of laboratory animals with nitrogen mustard reduces markedly the production of lactic acid, apparently through its leucopenic effect.[17] *In the normal animal, on the other hand,* the inflammatory pH is lowered further by injection of glucose—a fact which may reflect an increase in the production of glycogen, since inflammatory cells use this polysaccharide as source of energy.[8] Whether or not the injection of bacteria causes a fall in local pH depends upon the amount of culture injected and the toxicity of the bacterial constituents. The acid reaction may fail to develop either because the bacterial product exerts a negative chemotactic effect and thus prevents the local accumulation of migratory cells, or because its toxicity interferes with glycolytic activity. *It is of interest in this* regard that toxigenic diphtheria bacilli inhibit the acid reaction, and that this inhibitory effect can be counteracted by a proper amount of diphtheria antitoxin.[11]

The acidity associated with the inflammatory process in the normal individual naturally has many secondary repercussions—for example, on the local CO_2 tension, on transmission of nerve impulses, on vascular permeability, and on the activity of antimicrobial drugs. I shall limit myself to a brief discussion of some of its direct effects on the microbial agents present in the inflammatory area.

It is well known of course that pathogenic bacteria and animal parasites are highly sensitive to acidity. Many viruses are also rapidly inactivated in media more acidic than pH 6.0. Indeed, recent experiments have revealed that the susceptibility of embryonated eggs to infection with influenza virus can be consistently increased by correcting with $MgCO_3$ or other alkalis the acidity of the allantoic fluid.[8] It must be kept in mind, however, that the effect of acidity on living agents is less dependent on the pH per se than on the type of anions present in the environment. For example, experiments with animal cells and with bacteria make clear that lactic acid is much more toxic than either keto or polycarboxylic compounds, at any given acidic pH likely to be encountered in biological systems. There is evidence furthermore that the toxic effect of lactic acid on many bacteria increases with the CO_2 tension and under anaerobic conditions.[8]

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Many factors affect the intensity and time-course of the acid reaction. For example, treatment of laboratory animals with nitrogen mustard reduces markedly the production of lactic acid, apparently through its leucopenic effect.[27] In the normal animal, on the other hand, the inflammatory pH is lowered further by injection of glucose—a fact which may reflect an increase in the production of glycogen, since inflammatory cells use this polysaccharide as source of energy.[8] Whether or not the injection of bacteria causes a fall in local pH depends upon the amount of culture injected and the toxicity of the bacterial constituents. The acid reaction may fail to develop either because the bacterial product exerts a negative chemotactic effect and thus prevents the local accumulation of migratory cells, or because its toxicity interferes with glycolytic activity. It is of interest in this regard that toxigenic diphtheria bacilli inhibit the acid reaction, and that this inhibitory effect can be counteracted by a proper amount of diphtheria antitoxin.[11]

The acidity associated with the inflammatory process in the normal individual naturally has many secondary repercussions—for example, on the local CO_2 tension, on transmission of nerve impulses, on vascular permeability, and on the activity of antimicrobial drugs. I shall limit myself to a brief discussion of some of its direct effects on the microbial agents present in the inflammatory area.

It is well known of course that pathogenic bacteria and animal parasites are highly sensitive to acidity. Many viruses are also rapidly inactivated in media more acidic than pH 6.0. Indeed, recent experiments have revealed that the susceptibility of embryonated eggs to infection with influenza virus can be consistently increased by correcting with $MgCO_3$ or other alkalis the acidity of the allantoic fluid.[9] It must be kept in mind, however, that the effect of acidity on living agents is less dependent on the pH per se than on the type of anions present in the environment. For example, experiments with animal cells and with bacteria make clear that lactic acid is much more toxic than either keto or polycarboxylic compounds, at any given acidic pH likely to be encountered in biological systems. There is evidence, furthermore, that the toxic effect of lactic acid on many bacteria increases with the CO_2 tension and under anaerobic conditions.[8]

Two recent publications provide indirect support for the view that the local biochemical environment may influence the course of the infectious process. In tissue cultures, tubercle bacilli multiply more rapidly and more abundantly within macrophages when these phagocytic cells are sparse in the culture than when they are crowded.[6] This might be due to the fact that crowding decreases the availability of oxygen and the rate of exchange of metabolic products, thereby disturbing the metabolism of the macrophages and rendering their intracellular environment unfavourable to the bacilli. Another illustration of the influence of metabolic factors in the inflammatory area is provided by the fact that the growth of tubercle bacilli is inhibited within *collodion* bags placed in the peritoneal cavity of immune rabbits or guineapigs, even though tissue cells do not penetrate the collodion membrane.[16] I have presented elsewhere the hypothesis that under these conditions bacillary growth is inhibited by the acidic metabolites resulting from the inflammatory reaction rapidly called forth around the bags by the diffusible products of the bacilli that they contain.[6]

Cellular Immunity?

Needless to say, prior exposure to an infectious agent or immunisation against it calls into play mechanisms which enhance the protective effectiveness of the inflammatory reaction. But there is no evidence that acquired immunity utilises, for killing infectious agents or inhibiting their growth, any mechanism different in kind from those responsible for natural resistance. It has never been convincingly shown that antibodies by themselves possess bactericidal or bacteriostatic power; they merely sensitise the *bacteria for phagocytosis or for* attack by complement-like substances. True enough, there have been many claims supported by experimental evidence that "cellular immunity" endows the phagocytic cells with antimicrobial activities different from those of normal cells. However, I believe—for reasons that cannot be discussed here—that all experiments in vivo and in vitro, *which are quoted to substantiate* this concept are still sub judice, not necessarily as to the validity of the findings, but as to their *interpretation*. In contrast to these negative findings is the well-documented fact that the speed and the intensity of the inflammatory response to the presence of any infectious agent is much increased by specific acquired immunity. As a result, the liberation or concentration of substances endowed with antimicrobial properties, the creation of a physicochemical or metabolic environment unfavourable to microbial growth—all these anti-infectious mechanisms that we have considered in the preceding paragraphs, and many others not discussed here—are mustered very rapidly in the immune individual at the very site of infection, and make it difficult for the microbial agent to gain a foothold.

While prior exposure or immunisation thus accelerates and intensifies the operation of protective mechanisms in the inflammatory areas, there are many physiological disturbances which interfere with the normal processes of inflammation. I shall now turn to the effect of these disturbances on the course of the infectious process.

Effect of the General Physiological State on the Local Micro-environment of Inflammation

Physiological and metabolic disturbances in the infected individual must in many cases reflect themselves locally in some peculiarities of the inflammatory response and hence on *resistance to infection*. It is well known, for instance, that the enhancement of infection by overdoses of cortisone is an expression of the anti-inflammatory ect of this hormone; there is furthermore some lence that cortisone causes alterations in the meta- sm of tissue cells. Certain antihistamines, when d in large doses in guineapigs have also been found to interfere with the inflammatory response and ther to allow local infections to become generalised.[13] Anot example is provided by the discovery that the number clostridia needed to establish fatal infection is very m smaller when these organisms are injected intraderm or intracutaneously along with small amounts of adre line than when physiological saline is used as dilue Apparently, the very transient inhibitory effect exert by the hormone on leucocytic and exudate infiltration sufficient to facilitate infection and determine a fa outcome.[8]

Many toxic substances (of *microbial or other ori* can either destroy or immobilise inflammatory cells, alter their chemical activities, and thereby contribute loss of resistance to infection. In this respect, it is wor mentioning that injection of gram-negative toxins brin about a dramatic depletion in the glycogen reserves the body, and that diphtheria toxin paralyses the cy chrome system, and lowers host reserves of energy r phosphorous *compounds*, presumably by inhibiti oxidative phosphorylation.

Among other physiological factors contributing to t loss of resistance should be mentioned the decrease concentration of properdin in the serum. This ser protein practically disappears within a few days a result of excessive irradiation, or in certain other pat logical states, with a consequent loss of the bacteric and viricidal power of complement.[22-25]

The Metabolic Background

The biochemical character of the lesion is necessa dependent upon the over-all metabolism of the individ Thus many factors, such as nutritional state, hormo balance, and toxæmia, affect the synthesis and mobil tion of glycogen and thereby the glycolytic activity inflammatory cells. On the other hand, fasting, unco trolled diabetes, and other metabolic abnormalities, ev of psychic origin, result in transient or lasting accum lation of acetone bodies which must in many cases fi their way to, or be produced in, inflammatory are Although it can be surmised that biochemical distur ances influence the fate of the infectious agents throu their effect on the pH of the lesion and its contents various metabolites, only very indirect evidence can quoted in favour of this assumption. The leucocytes rabbits rendered alloxan-diabetic are still capable engulfing pneumococci, but their bactericidal power f these bacteria is decreased.[23] Similarly *in dogs put in* state of shock by extensive bleeding, the reticulo-end thelial system appears to retain for a time its ability clear injected bacteria, but these eventually multip as if the phagocytic cells were not capable of destroyi the prey that they have engulfed.[10] In mice, we hav found that several types of bacteria injected intr venously are rapidly killed in the liver, spleen, and lun of normal animals, but persist and eventually multip in the organs of animals fasted for 36–48 hours befo infection; a similar interference with the bactericid power of the organs can be achieved by treatment wit dinitrophenol or *thyroxine*.[5,7] It is possible that the failures of the normal defence mechanism result fro some biochemical injury to the phagocytic cells in th reticulo-endothelial system, and it does not seem to far-fetched to assume that phenomena of the same ord occur in the inflammatory areas.

The same general concepts would seem to apply to th events that occur in established lesions when stresses various sorts cause aggravation or reactivation of dormant infectious process. There is evidence, fo example, that the proteolytic activity of plasma ca change rapidly and to an enormous extent in response t various physical, chemical, or even psychic stimuli. I is probable on the other hand that the activity of tissu proteases reduces in certain circumstances the depositio or persistence of fibrin, and perhaps even of collagen around the lesion As already mentioned, this in turn may enhance the infectious process by decreasing the chances for surface phagocytosis and by facilitating the passage of particles and solutes to and from the lesion

Metabolites and Bacteriostasis

The biochemical and toxigenic activities of the infectious agents are naturally affected by the nature and concentration of the metabolites that gain access to the lesion Indeed, changes in the metabolic environment may even cause the reactivation of micro-organisms which have apparently lost their viability since bacteria inactivated with antiseptics or other injurious procedures have been made to multiply again by placing them in culture media containing intermediates of the Krebs cycle[14] Two related observations are of special interest in this regard because of their bearing on events that may occur in vivo Under the proper conditions, the bacteriostatic effect of lactic acid can be reversed by adding to the system certain polycarboxylic acids or keto compounds[6] Even the bactericidal power of lysozyme and of other unidentified substances of serum is markedly antagonised by citric acid[21] These few examples suggest that there can occur in vivo biochemical situations capable of bringing about reversal of bacteriostatic effects. In view of the fact that keto compounds and polycarboxylic acids accumulate in biochemical disorders associated with increased activity of infectious processes, it is perhaps of special interest that many cases of reversibility of bacteriostasis have been shown to be brought about by this group of metabolites Granted that the examples here quoted were derived from information obtained in vitro they suggest nevertheless that inhibition of infectious processes in vivo may often depend upon reactions which are potentially reversible It seems possible that metabolic disturbances can cause reactivation of dormant infectious processes by upsetting these reversible mechanisms

Conclusion

Through a number of different mechanisms arrived at by evolutionary adaptation man has achieved some sort of ecological equilibrium with the micro-organisms that are ubiquitous in his environment Indeed these micro-organisms may be harboured in the body without causing disease and establish relationships with the tissues—covering the whole gamut from the commensalism and symbiosis represented by the flora of the gut to the various types of arrested or latent infections The factors which determine whether the microbial agents are thus held in check or undergo unrestrained multiplication are of course highly complex Metchnikoff had identified resistance to infection with the ability of the leucocytes to engulf and destroy infectious agents It seems now that this mechanism even though supplemented by various humoral factors, operates in but a very few types of infections I have presented the view that natural and acquired resistance depends more often upon the ability of the inflammatory response to create in and around the lesion a micro-environment inimical to the infectious agent

It is likely that disturbances in the general state of health often bring about qualitative and quantitative changes in the biochemical characteristics of the inflammatory area These in turn may interfere with the processes which control the activities of micro-organisms within the lesion As a result the response of the body to infection and consequently the micro-environment in which the infectious process follows its course are under the control of factors which may be metabolic or psychic in origin This concept accounts in part for the fact that susceptibility to infection can change independently of the immunological state of the infected individual Since changes in susceptibility can occur rapidly, and be extremely transient, the intensity of exposure to an infectious agent may be less decisive than the physiological state of the exposed individual in determining whether infection fails to take hold becomes established runs an abortive course, or evolves into overt disease

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POLIOMYELITIS AND TONSILLECTOMY

A REPORT OF THE MEDICAL RESEARCH COUNCIL COMMITTEE ON INOCULATION PROCEDURES AND NEUROLOGICAL LESIONS *

I RECENT TONSILLECTOMY

SINCE early in 1951 all medical officers of health in England and Wales have submitted to the Medical Research Council a routine report on each person notified in their areas to be suffering from poliomyelitis The reports stated whether the patient had undergone tonsillectomy within 12 months before the onset of symptoms and gave dates where relevant Patients reported to have had their tonsils removed within 3 months before the onset of poliomyelitis were selected for special investigation, and one of three investigators—the secretaries and Dr D Thomson of the Ministry of Health—visited the medical officer of health who notified the case the physician who was in charge of the patient in hospital and in many instances, the patient's general practitioner and made a detailed record This is a report of the information obtained about all patients in England and Wales up to the end of 1953 said to have had their tonsils removed within the 3 months before the onset of poliomyelitis.

Number of Cases

A total of 114 cases were reported in the three years The oldest patient was aged 18 years In 1 patient, whose

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* The members of the committee are: Dr G S WILSON (chairman) Dr W H BRADLEY Dr E A CARMICHAEL, Dr E T CONYBEARE, Prof F GRUNDY Prof A BRADFORD HILL, Dr F O MACCALLUM Dr W RITCHIE RUSSELL, Mr H J SEDDON, Dr I N SUTHERLAND Dr I TAYLOR, Dr J F WARIN and Dr W C COCKBURN and Dr J KNOWELDEN (joint secretaries) The plans of the studies were prepared by the joint secretaries who analysed the information and prepared the report

Two recent publications provide indirect support for the view that the local biochemical environment may influence the course of the infectious process In tissue cultures, tubercle bacilli multiply more rapidly and more abundantly within macrophages when these phagocytic cells are sparse in the culture than when they are crowded This might be due to the fact that crowding decreases the availability of oxygen and the rate of exchange of metabolic products, thereby disturbing the metabolism of the macrophages and rendering their intracellular environment unfavourable to the bacilli Another illustration of the influence of metabolic factors in the inflammatory area is provided by the fact that the growth of tubercle bacilli is inhibited within collodion bags placed in the peritoneal cavity of immune rabbits or guineapigs, even though tissue cells do not penetrate the collodion membrane[16] I have presented elsewhere the hypothesis that, under these conditions bacillary growth is inhibited by the acidic metabolites resulting from the inflammatory reaction rapidly called forth around the bags by the diffusible products of the bacilli that they contain[6]

Cellular Immunity?

Needless to say, prior exposure to an infectious agent or immunisation against it calls into play mechanisms which enhance the protective effectiveness of the inflammatory reaction But there is no evidence that acquired immunity utilises, for killing infectious agents or inhibiting their growth, any mechanism different in kind from those responsible for natural resistance It has never been convincingly shown that antibodies by themselves possess bactericidal or bacteriostatic power, they merely sensitise the bacteria for phagocytosis or for attack by complement like substances True enough, there have been many claims supported by experimental evidence that "cellular immunity" endows the phagocytic cells with antimicrobial activities, different from those of normal cells However, I believe—for reasons that cannot be discussed here—that all experiments, in vivo and in vitro, which are quoted to substantiate this concept are still sub judice, not necessarily as to the validity of the findings, but as to their interpretation In contrast to these negative findings is the well documented fact that the speed and the intensity of the inflammatory response to the presence of any infectious agent is much increased by specific acquired immunity As a result, the liberation or concentration of substances endowed with antimicrobial properties, the creation of a physicochemical or metabolic environment unfavourable to microbial growth—all these anti infectious mechanisms that we have considered in the preceding paragraphs, and many others not discussed here—are mustered very rapidly in the immune individual at the very site of infection, and make it difficult for the microbial agent to gain a foothold.

While prior exposure or immunisation thus accelerates and intensifies the operation of protective mechanisms in the inflammatory areas, there are many physiological disturbances which interfere with the normal processes of inflammation I shall now turn to the effect of these disturbances on the course of the infectious process

Effect of the General Physiological State on the Local Micro-environment of Inflammation

Physiological and metabolic disturbances in the infected individual must in many cases reflect themselves locally in some peculiarities of the inflammatory response and hence on resistance to infection It is well known, for instance, that the enhancement of infection by overdoses of cortisone is an expression of the anti-inflammatory effect of this hormone there is furthermore some evidence that cortisone causes alterations in the metabolism of tissue cells Certain anti histamines, when used in large doses in guineapigs, have also been found to interfere with the inflammatory response and t to allow local infections to become generalised[13] A example is provided by the discovery that the n clostridia needed to establish fatal infection is very smaller when these organisms are injected intra or intracutaneously along with small amounts of lime than when physiological saline is used as Apparently, the very transient inhibitory effect by the hormone on leucocytic and exudate sufficient to facilitate infection and determine a outcome[8]

Many toxic substances (of microbial or other can either destroy or immobilise inflammatory cells, alter their chemical activities, and thereby contribut loss of resistance to infection In this respect, it is mentioning that injection of gram negative toxins br about a dramatic depletion in the glycogen reserve the body, and that diphtheria toxin paralyses the cy chrome system, and lowers host reserves of energy r phosphorous compounds, presumably by inhibit oxidative phosphorylation

Among other physiological factors contributing to loss of resistance should be mentioned the decrease concentration of properdin in the serum This se protein practically disappears within a few days a result of excessive irradiation, or in certain other pa logical states, with a consequent loss of the bacteric and viricidal power of complement[22 25]

The Metabolic Background

The biochemical character of the lesion is necess dependent upon the over all metabolism of the individ Thus many factors, such as nutritional state, horm balance, and toxaemia, affect the synthesis and mobi tion of glycogen and thereby the glycolytic activit inflammatory cells On the other hand, fasting, unc trolled diabetes, and other metabolic abnormalities, c of psychic origin, result in transient or lasting accu lation of acetone bodies which must in many cases their way to, or be produced in, inflammatory a Although it can be surmised that biochemical dist ances influence the fate of the infectious agents thro their effect on the pH of the lesion and its content various metabolites, only very indirect evidence ca quoted in favour of this assumption The leucocyte rabbits rendered alloxan diabetic are still capabl engulfing pneumococci, but their bactericidal power these bacteria is decreased[23] Similarly in dogs put state of shock by extensive bleeding, the reticulo e thelial system appears to retain for a time its abilit clear injected bacteria, but these eventually mult as if the phagocytic cells were not capable of destro the prey that they have engulfed[10] In mice, we found that several types of bacteria injected in venously are rapidly killed in the liver, spleen, and l of normal animals, but persist and eventually mult in the organs of animals fasted for 36–48 hours be infection, a similar interference with the bacteri power of the organs can be achieved by treatment dinitrophenol or thyroxine[5 7] It is possible that t failures of the normal defence mechanism result some biochemical injury to the phagocytic cells in reticulo endothelial, system, and it does not seem far fetched to assume that phenomena of the same c occur in the inflammatory areas

The same general concepts would seem to apply to events that occur in established lesions when stress various sorts cause aggravation or reactivation dormant infectious process There is evidence, example, that the proteolytic activity of plasma change rapidly and to an enormous extent in respon various physical, chemical, or even psychic stimuli is probable on the other hand that the activity of t proteases reduces in certain circumstances the depos or persistence of fibrin, and perhaps even of coll

TABLE I—POLIOMYELITIS AND RECENT TONSILLECTOMY AGE AND SEX DISTRIBUTION OF CASES INVESTIGATED, 1951–53

Age (yr)	Males	Females	Both sexes
2	2	1	3
3	11	2	13
4	8	8	16
5	19	11	30
6	13	10	23
7	6	1	7
8	3	2	5
9		1	1
10 and over	2	3	5
All ages	64	39	103

illness occurred in 1952, the exact interval between tonsillectomy and onset could not be established although it was probably less than 3 months This case has been excluded from the analysis, as have 9 cases where the diagnosis was changed or was doubtful, and 1 where the information was inadequate The age and sex distribution of the remaining 103 confirmed cases for which full information was available is given in table I They were classified according to the type of illness into 34 with spinal paralysis, 29 with mixed spinal and bulbar involvement 27 with bulbar paralysis only, and 13 with non paralytic illnesses

Results

Table II shows the distribution of the cases according to the time interval between the operation and the onset of the earliest symptoms There was a concentration of cases where operation was performed within the period of 1–21 days before onset, 61 (59%) out of the 103 having this short interval The concentration was particularly pronounced in the group with bulbar involvement In it were 23 (85%) of the 27 patients with bulbar paralysis only, and 21 (72%) of the 29 with mixed bulbar and spinal paralysis The corresponding proportions were 13 (38%) of 34 with spinal paralysis only, and 4 (31%) of 13 in the non paralytic group The difference between the bulbar and bulbo spinal groups in the proportions having had an operation within 3 weeks of onset was not significant (χ^2 = 1 355, d f 1, p > 2) Amalgamated they form one group of 56 patients with bulbar paralysis, with or without further involvement In this combined group 44 (79%) had tonsillectomy within three weeks before onset This was just over twice the corresponding proportion in the patients with spinal paralysis only (38%), and the difference was significant (χ^2 = 14 822, d f 1, p < 001) The non-paralytic group was small, but the proportion of patients with tonsillectomy within 3 weeks of onset was again very much smaller than in those with bulbar paralysis, and the difference was statistically significant (χ^2 = 11 387, d f 1 p < 001) No real difference could be onstrated between the proportion operated on within 21 days before onset in the non paralytic group and the spinal paralysis group (χ^2 = 0 227, d f 1, p > 5)

II—POLIOMYELITIS AND RECENT TONSILLECTOMY TRIBUTION OF CONFIRMED CASES IN ENGLAND AND WALES, 51–53, BY TYPE OF ILLNESS AND INTERVAL FROM OPERATION TO ONSET

Interval from operation to onset (days)	Spinal	Bulbo spinal	Bulbar	Non-paralytic	All forms
1–7	3	5	3	1	12
8–14	4 } 13	11 } 21	16 } 23	2 } 4	33 } 61
15–21	6	5	4	1	16
22–28	3	2	1	3	9
29–35					
36–42	2	1		1	4
43–49	1			1	2
50–56	1	2	1		4
57–63	5	2			7
64–70	3				3
71–77	3			1	4
78–84	2			1	3
85–91	1	1	2	2	6
All intervals	34	29	27	13	103

An alternative way of expressing the results would be to say that of the 61 patients who developed poliomyelitis within 3 weeks after tonsillectomy 38% had bulbar paralysis only and 34% had bulbar and spinal paralysis, against 21% with spinal paralysis only and 7% with no paralysis On the other hand, in the 42 patients whose tonsillectomy preceded the onset of their illness by more than 3 weeks the corresponding proportions were 10% bulbar, 19% bulbo spinal, 50% spinal, and 21% non paralytic There was, therefore, a concentration of patients exhibiting bulbar manifestations when the interval from operation to onset was short

If there were no seasonal fluctuation in the frequency with which tonsillectomy was performed throughout the country and if the operation and the subsequent illness were only coincidentally related, then it might be expected that as many cases would be found with an interval between the events of 1–7 days, as 8–14 days, 15–22 days, or any subsequent week within the arbitrarily chosen 3 months However, for some years it has been the practice of many ear, nose, and throat surgeons to limit the number of tonsillectomies they perform in the late summer months or when poliomyelitis is epidemic in their own districts This, together with the seasonal pattern of the disease, would distort the distribution of intervals between operation and onset even if there were no association between the events, and the form of the distribution would depend on the relationships between the time trend of tonsillectomy and of the epidemic Since the frequency of tonsillectomy week by week is unknown it is impossible to base any sound arguments about the possible association between operation and illness on the distribution of time intervals between the two events in any one group of patients The apparent concentration of short intervals in the spinal group, therefore, may be purely coincidental.

TABLE III—POLIOMYELITIS AND RECENT TONSILLECTOMY DISTRIBUTION OF INTERVALS FROM TONSILLECTOMY TO ONSET BY TYPE OF ILLNESS AND SEX

Interval from operation to onset (days)	Males			Females		
	Non paralytic	Spinal	Bulbar and bulbo spinal	Non paralytic	Spinal	Bulbar and bulbo-spinal
1–21	1	9	31	3	4	13
22–91	6	9	8	3	12	4
Total	7	18	39	6	16	17

In the absence of any association each category of patients should, however, behave similarly in their intervals from operation to onset, but it has already been shown that in this respect the bulbar and bulbo spinal groups were significantly different from the spinal and non paralytic groups These differences might be merely reflections of the distinction, such as in age or sex, between the type of patient who is liable to have bulbar involvement and the type who escapes with spinal paralysis or no paralysis However, the age-distributions of the four categories were very similar, with median ages of 5 4 years for spinal, 6 3 years for non paralytic, 5 2 years for bulbo-spinal, and 5 6 years for bulbar cases

In the whole series boys predominated, with 64 out of the total 103 In the bulbar and bulbo spinal groups they formed 70% of the total, and in the spinal and non paralytic groups 53% This difference was not significant (χ^2 = 2 94, 10 > p > 05) Table III shows that within each sex separately the proportion of patients with short intervals of 21 days or less from operation was significantly greater in those with bulbar involvement

TABLE IV—POLIOMYELITIS AND RECENT TONSILLECTOMY: DISTRIBUTION OF INTERVALS FROM TONSILLECTOMY TO ONSET BY TYPE OF ILLNESS AND SEASON

Interval from operation to onset (days)	January–June			July–September			October–December		
	Non paralytic	Spinal	Bulbar and bulbo-spinal	Non paralytic	Spinal	Bulbar and bulbo-spinal	Non paralytic	Spinal	Bulbar and bulbo-spinal
1–21	1	[illegible]	8	[illegible]	7	26	1	1	10
22–91	3	1	3	[illegible]	1	7	1	[illegible]	2
Total	4	6	11	7	10	33	[illegible]	9	1[illegible]

than in those of the spinal and non paralytic groups together (males $\chi^2 = 10.32$, $.01 > p > .001$; females $\chi^2 = 7.65$, $.01 > p > .001$). Sex differences, therefore, do not account for the distinction between cases with or without bulbar involvement.

A further possibility is that bulbar paralysis is commoner at some stage of an epidemic and that the differences observed are the result of seasonal changes. Table IV shows the intervals from operation of the cases investigated according to the time of onset: January to June, July to September, or October to December. Most of the cases occurred in the principal epidemic period July to September, but in each of the three periods the same pattern emerged—the cases with bulbar signs showed about twice the proportion of tonsillectomies within the 3 weeks preceding onset as the spinal and non paralytic groups.

Thus the difference between the bulbar and bulbo spinal cases on the one hand and spinal and non paralytic cases on the other cannot be explained in terms of differences in their age, sex, or seasonal distribution, and is probably associated with the operation. There are two possible explanations of this difference. Either the non paralytic and spinal cases occurred coincidentally and some of those with bulbar manifestations were causally related to the recent operation, or the operation had some causal relationship with the non paralytic and spinal groups but this association was weaker than with the bulbar and bulbo spinal groups. The data presented in this paper cannot distinguish between these two possibilities.

In the whole series of 103 cases there were 7 deaths: 4 in children with bulbo spinal paralysis and 3 in children showing bulbar paralysis only. 5 of these deaths were in patients who developed illness within the 3 weeks following tonsillectomy.

Discussion

No extensive study of the association between poliomyelitis and tonsillectomy has previously been made in England and Wales. The subject has received more attention in the United States of America, where it has caused controversy which still continues. A growing number of observers—for example, Toomey and Krill (1942), J. A. Anderson (1945), Pedersen (1947), Miller (1952), and G. W. Anderson et al. (1950)—agree that more patients with a history of tonsillectomy within a month before the onset of poliomyelitis develop the bulbar form of the disease than can be explained by chance, but they have some doubt about the association between spinal forms of the disease and recent tonsillectomy. Our observations support these conclusions.

To determine accurately the risk of poliomyelitis of the bulbar or bulbo-spinal types being causally related to tonsillectomy we should require to know for different districts and age groups how many tonsillectomies were performed week by week and the proportion of bulbar and bulbo spinal cases during the period the investigation was being made. We do not have this information. Over the period of the study, however, 2000 paralytic cases were notified in the 3–9 year age group. In the same time we observed 42 bulbar and bulbo spinal cases within 3 weeks after tonsillectomy in this age group. If all the cases were causally related to the operation (which is unlikely) they would represent less than 2% of the total paralytic cases in the period.

Tonsillectomy as practised at present adds only a few to the total number of cases. As a community problem, *therefore, it is small*. As a problem for the individual whose tonsils are removed it is important. The practice of stopping tonsillectomy in the late summer and early autumn or when poliomyelitis is epidemic may diminish the number of postoperative cases; but even if tonsils were removed only in the first six months of the year the risk of developing bulbar poliomyelitis soon after the *operation would still be present. In addition there might* be increased risks of other complications of tonsillectomy, such as intercurrent infection.

Summary

Between March 1951 and December 1953 complete reports were received of 103 children up to 18 years of age who developed poliomyelitis within 91 days after tonsillectomy.

61 (59%) had symptoms 1–21 days after tonsillectomy. The concentration was most evident in the bulbar and bulbo spinal groups, where 44 (79%) occurred 1–21 days after operation, compared with 38% of the spinal cases and 31% of the non *paralytic cases*.

Most cases occurred in the principal epidemic period, but the same pattern was seen in epidemic and non epidemic seasons.

Tonsillectomy as practised at present added relatively *few to the total number of cases of poliomyelitis reported* during the study, but tonsillectomy should continue to be restricted in any area where the disease is unusually prevalent.

2 REMOTE TONSILLECTOMY

In the summer of 1951 an investigation was made to determine the importance of the ætiology of poliomyelitis of activating agents such as physical activity, illness, injury, injections, and surgical operations including tonsillectomy and dental operations. For all agents except tonsillectomy the inquiry was restricted to 3 months before the onset of poliomyelitis, but for tonsillectomy a record was made of operations carried out at any time before the onset of symptoms. The investigations were made in *Cardiff*, the *administrative* county of Devon, East Anglia, Exeter, Leeds, parts of the administrative county of London, Manchester, and Oxford;† and as only a few cases were obtained in 1951 the inquiry was continued until the end of 1952.

Plan of the Inquiry

The physician of the hospital to which the case was admitted obtained from the patient or *his relatives* a detailed account of the agents mentioned above and

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† The investigations were made by Dr I A Boiz, Dr G Emrys Harries and Dr J Greenwood Wilson, Cardiff; Dr R P Boyd, Dr I Meredith Davies, Dr M Yelland and others, Devon; Dr R A Leader, Dr H Roger, Dr R Mayon White and Dr J I Wormald, East Anglia; Dr D B Bradshaw, Dr M I Parsonage *and Dr H Woodcock, Leeds*; Dr M L Adams, Dr J A Armstrong, Dr H S Banks, Dr H W Barnes, Dr J Kerr Brown, Dr F M Day, Dr W H Kelleher, Dr J C McDonald, Dr F H R Smithard, Dr T Standring, Dr A C C Thompson and Dr J H Weir, London; Dr B J Griffiths and Dr L A Liversedge, Manchester; Dr A M M Payne and Dr W R Russell, Oxford.

TABLE V—"ACTIVATING AGENTS" INQUIRY 1951–52 HISTORY OF TONSILLECTOMY IN PATIENTS AND IN THEIR PAIRED CONTROLS

—	Age group			
	0–4 yr		5–15 yr	
	Patients	Controls	Patients	Controls
Tonsillectomy				
1–21 days before	1			
3 wks–1 yr before	1		1	2
1–4 yr before			10	5
5 yr or more before			10	4
	2	—	21	11
No tonsillectomy	48	51	28	39
History of tonsillectomy unknown	1		1	
Total in group	51	51	50	50

related them carefully to the time of onset of symptoms. At about the same time an epidemiologist obtained similar information from a control child and related the history of the control child to the time of onset of symptoms in the patient. During the course of the illness the physician made careful clinical notes, and when the patient was discharged prepared a comprehensive summary of his findings. If the patient was below school age the control child was selected from the births register of the area. A child of the same sex and of the same age within a limit of two weeks younger or two weeks older who lived nearest the patient was chosen. If the patient was a school child, a classmate of the same sex and of the same age within the limits mentioned was selected.

Altogether 29 completed records were obtained in 1951 and 111 in 1952—a total of 140. Of these 22 referred to patients in whom the original diagnosis of poliomyelitis was not confirmed, and 17 to patients with non-paralytic illnesses. It was decided that only the records of paralytic cases should be used in the analysis, and the records of these 101 patients and their matched controls constitute the material on which this report is based. Only the information on tonsillectomy, which in most cases included also adenoidectomy, is considered here.

Table V shows the frequency of tonsillectomy in patients and controls by intervals from the operation to the onset of poliomyelitis in the patient. Only 2 of the 51 patients under 5 years of age, and none of the corresponding controls had had their tonsils removed. However, of the 50 patients 5–15 years of age, 21 (42%) had had their tonsils removed, compared with only 11 (22%) of the onding controls. The difference between these ns was statistically significant ($\chi^2=4{\cdot}60$, ·02). None of the operations in patients or con he 5–15 year age group was within three weeks the development of poliomyelitis and most of the tions had taken place more than one year before onset.

TABLE VI—SPECIAL INQUIRY, 1953 HISTORY OF TONSILLECTOMY IN PATIENTS 5–15 YEARS AND IN THEIR PAIRED CONTROLS

—	Patients	Controls
Tonsillectomy		
1–21 days before	1	1
3 wks–1 yr before	8	5
1–4 yr before	31	19
5 yr or more before	11	8
	51	33
No tonsillectomy	101	119
History of tonsillectomy unknown	1	1
Total in group	153	153

Special Inquiry

Though the numbers were small the findings were interesting, and towards the end of 1953 it was decided to carry the investigation further, but to confine it to children of school age (5–15 years). Medical officers of health and the physicians in charge of infectious disease hospitals in the previously mentioned areas and in areas where the incidence had been high during the year‡ were asked to coöperate in obtaining information about school children admitted to hospital with paralytic poliomyelitis between Jan. 1 and the end of November, 1953. The medical officers of health obtained the history of tonsillectomy from the patients or their relatives. They also selected paired controls of the same age and sex from the classmates of the patients and recorded their tonsillectomy histories. The physicians completed on a separate form a summary of the illness in the patients, giving the sites and the severity and times of appearance of paralysis. Completed records for 153 patients and controls were received from 26 different areas.

The inquiry was planned so that the information obtained would be similar to that from the earlier "activating agents" investigation for children of the same age, except that it applied to a different group of hospitals and to a different year. In table VI is given the results of the 1953 investigation. Of the 153 patients 51 (33%) had had their tonsils removed, compared with 33 (22%) of the matched controls. As in the earlier inquiry the difference was significant ($\chi^2=5{\cdot}32$, $\cdot05>p>\cdot02$). Most of the excess in patients was in operations performed at least a year before the onset of poliomyelitis.

TABLE VII—BOTH INQUIRIES HISTORY OF TONSILLECTOMY IN PATIENTS 5–15 YEARS WITH (1) SPINAL, (2) BULBO SPINAL, AND (3) BULBAR PARALYSIS, AND IN THEIR PAIRED CONTROLS

—	Spinal		Bulbo spinal		Bulbar		All paralytic	
	Patients	Controls	Patients	Controls	Patients	Controls	Patients	Controls
Tonsillectomy								
1–21 days before				1	1		1	1
3 wks–1 yr ,,	6	5	1	1	2	1	9	7
1–4 yr ,,	22	18	6	3	13	3	41	24
5 yr or more ,,	9	7	7	2	5	3	21	12
	37	30	14	7	21	7	72	44
No tonsillectomy	96	103	17	24	16	31	129	158
History of tonsillectomy unknown	1	1			1		2	1
Total in group	134	134	31	31	38	38	203	203

Both Inquiries

Since both investigations were based on the same plan and the results for children of school age were similar, the two sets of data were combined to form one group relating to 203 patients 5–15 years of age and their corresponding paired controls. In this combined group 72 patients (35%) had had previous tonsillectomy compared with 44 (22%) of the controls. The group was then divided according to the type of paralysis in the patients, into a spinal-paralytic group of 134 patients and controls, a bulbo spinal group of 31 patients and controls, and a bulbar group of 38 patients and controls. The history of tonsillectomy in each group was then compared (table VII).

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‡ Beverley, Bournemouth, Bradford, Bristol, City of Cambridge, County of Cambridge, Carlisle, Coventry, Hull, Islington, Nottingham, Poole, Preston, Sheffield, Southampton, Southend on Sea, Southport, Wandsworth, and Weymouth.

TABLE VIII—BOTH INQUIRIES: INTERVAL FROM TONSILLECTOMY TO ONSET IN CHILDREN WITH BULBAR AND BULBO-SPINAL PARALYSIS AND IN THE CONTROLS TO THESE GROUPS WHO HAD UNDERGONE THE OPERATION AT ANY TIME PREVIOUSLY

Interval from tonsillectomy	5–9 yr		10–15 yr		5–15 yr	
	Patients	Controls	Patients	Controls	Patients	Controls
1–21 days	1	1			1	1
3 wks–1 yr	3	2			3	2
1 yr	5	3	1		6	3
2 yr	3	2	1		4	
3 yr	3		2		5	
4 yr	1			1	4	1
5 yr		1	1		1	1
6 yr	1		[illegible]	1	3	1
7 yr			1		1	2
8 yr		1	2			1
9 yr			1		1	
10 yr			1		1	
All intervals	20	10	15	4	35	14

The spinal paralytic group show a slightly greater incidence of tonsillectomy in patients than in their controls, 37 patients (28%) against 30 controls (22%) having a history of previous operation. This difference was not significant ($\chi^2 = 0.975$, $\cdot5 > p > \cdot3$). The bulbo-spinal group showed a much greater difference, having 14 patients (45%) with a history of tonsillectomy compared with 7 controls (23%); and the bulbar group had 21 patients (55%) with previous tonsillectomy compared with 7 controls (18%). The difference between patients and controls was just below the significance level for the bulbo-spinal group ($\chi^2 = 3.53$, $\cdot10 > p > \cdot05$) and was significant for the bulbar group ($\chi^2 = 11.08$, $p < \cdot001$).

From table VII it can be seen that in both bulbar and bulbo-spinal groups the difference between patients and controls lay in operations performed at least a year before the onset of symptoms in the cases. In table VIII the 14 bulbo-spinal and 21 bulbar patients with a history of previous tonsillectomy and the 7 controls from each group who had also had the operation are shown. The intervals from operations to onset are given for patients and controls aged 5–9 years and for those aged 10–15 years. In the younger group most of the operations took place 1–4 years before the onset of symptoms, while in the older group most of the operations had taken place at least 5 years before the development of poliomyelitis.

Discussion

In this study the bulbo-spinal group of cases occupied an intermediate position between the spinal paralytic group of cases and the bulbar group but is nearer to the bulbar group; and it is not possible to reveal significant differences between these two so far as the history of tonsillectomy is concerned. It is possible that in a larger series the intermediate position of the bulbo-spinal group would be shown to be a true one.

Within the limited age range of this study therefore it appears that the removal of tonsils even 5 or more years before the onset of symptoms made patients with poliomyelitis more liable to develop the bulbar or bulbo-spinal form than the spinal paralytic form.

Fischer et al. (1941), Top and Vaughan (1941), and Lucchesi and La Boccetta (1944) made a similar suggestion; and since this investigation was begun in 1951 four relevant papers have been published. Top (1952) reviewed the case-histories of 1047 patients with poliomyelitis admitted to the Herman Kiefer Hospital between 1940 and 1949 and found that 52% had a history of tonsillectomy. When the cases were divided into clinical types he found that 85% of the bulbar cases and 60% of the bulbo-spinal cases had had their tonsils removed, compared with 43% of the spinal paralytic cases and 46% of the non-paralytic cases. Southcott (1953) made an inquiry in South Australia and found that 35 of 39 bulbar cases had a history of tonsillectomy compared with 21 of 61 spinal paralytic cases. Weinstein et al. (1954) studied the records of 800 cases most of which had been in patients in the care of one of the authors and obtained somewhat similar results, though information on the interval from tonsillectomy to the onset of poliomyelitis was not given. Anderson and Rondeau (1954) analysed the tonsillectomy history as obtained from the near relatives of over 2000 cases in the 1946 outbreak in Minnesota: 71% of the bulbar cases had undergone tonsillectomy compared with 28–35% of the spinal paralytic and the non-paralytic cases. The authors noted that the differences were similar at all ages and that they were not associated with the sex or economic status of the patients. They gave evidence suggesting that the differences were associated with the removal of the tonsils and not with susceptibility to tonsillitis.

The findings reported here are in substantial agreement with those of the North American and Australian observers and indicate that persons whose tonsils have been removed are more likely than persons whose tonsils have not been removed to develop the bulbar or bulbo-spinal form of the disease, even if the interval from operation to the onset of the disease is long. Further, since there was no corresponding deficiency in spinal cases with a history of tonsillectomy compared with their controls, it must be concluded that there has not merely been a transfer from one type of paralysis to another. It is possible that the apparent association between remote tonsillectomy and bulbar poliomyelitis is indirect—that the type of child who is liable to have his tonsils removed is also the type most likely to develop bulbar paralysis. For example, tonsillectomy is commoner in the children of well-to-do parents, and if bulbar involvement also showed the same social trend this might explain the apparent association. Alternatively, if bulbar paralysis was commoner in older children who have had greater opportunity for operation, the association might also be explained. But such hypotheses fail because patients and controls were matched for age and sex, and the method of pairing through classmates ought to have ensured that there were no large or consistent social-class differences.

An indirect explanation for the association between tonsillectomy and the subsequent development after a long interval of bulbar or bulbo-spinal poliomyelitis might have been thought more likely to lie in some local condition of the pharynx which on the one hand is an indication for tonsillectomy and on the other hand makes the child more liable to bulbar poliomyelitis even after the operation; but Anderson and Rondeau's inquiry into tonsillitis discussed earlier renders this explanation less acceptable. On present information therefore it must be concluded that the removal of tonsils was responsible for some children developing bulbar or bulbo-spinal poliomyelitis who would not otherwise have had it.

Summary

Between mid-1951 and November, 1953, records were obtained in selected areas of England and Wales of the history of tonsillectomy at any time before the onset of paralytic poliomyelitis in 51 patients under 5 years of age and 203 patients 5–15 years of age. Histories were similarly obtained for the same number of matched controls. Only 2 of the patients and none of the controls under 5 years of age had had their tonsils removed.

In the 5–15 year age-group, 72 (35%) of the patients had undergone tonsillectomy compared with 44 (22%) of the controls. The differences between patients and controls were greatest in the group with bulbar paralysis, intermediate in the group with bulbo-spinal paralysis, and least in the group with spinal paralysis.

In the bulbar and bulbo spinal groups, most patients had had their tonsils removed at least 1 year and often 5 or more years before the onset of poliomyelitis

The results indicated that persons whose tonsils had been *removed were more likely* to develop the bulbar form of poliomyelitis than those who had not had the operation, even if years had elapsed between the removal of the tonsils and the onset of poliomyelitis

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CONGENITAL DERMAL SINUSES IN CHILDREN

THEIR RELATION TO PILONIDAL SINUSES

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A CONGENITAL dermal sinus is a developmental anomaly consisting of a sinus lined by epithelium, and it may lead from the skin over the skull or the spine to the deeper tissues It can be attached to some part of the central nervous system or its coverings and sometimes ends in a dermoid cyst or rarely, a teratoma within the skull or the spinal canal A few hairs may protrude from the sinus, and occasionally it may be surrounded by a hæmangioma

Frequently the nature of the lesion is overlooked until the patient develops signs of complications, which are of two types

(1) Infection, which may be local or may spread from the skin along the track of the sinus to involve the central nervous system causing meningitis or an extradural or subdural abscess Sometimes a patient may have several attacks of meningitis before the cause is recognised

(2) A dermoid cyst at the end of the track may enlarge and cause pressure effects in the skull or on the spinal cord or the cauda equina

Clark (1918) was probably the first to describe a congenital dermal sinus connected with the central nervous system and Cardell and Laurance (1951) [illegible] 34 previously published cases and added 1 of [illegible] Since then other cases have been published by [illegible] and Ingraham (1951) Logue and Till (1952), [illegible]rtz (1952), and Perloff (1954)

We have recently seen 3 children in whom a congenital dermal sinus over the spine communicated with the central nervous system We have also seen 15 other children with sinuses overlying the coccyx, and, although most of these were shown not to communicate with the spinal cord or the meninges, 2 became infected, 1 killing the child

Case-reports

Case 1—A male baby otherwise healthy developed a purulent discharge from a small sinus over the sacrum at the age of 11 months The father had had an operation for pilonidal sinus five years previously At the age of 1 year the baby developed signs of meningitis and was admitted to an isolation hospital Lumbar puncture produced purulent cerebrospinal fluid (C S F) and proteus was grown on culture A swab from the sacral sinus grew micrococci and non hæmolytic streptococci The baby was treated with penicillin, and later *streptomycin* and chloramphenicol were substituted because the organism was sensitive to both these antibiotics. He made a complete recovery and was discharged home after about a month A few days later the sinus was again discharging and he was admitted to the Sheffield Children's Hospital

On examination he was well nourished but hypotonic, with no abnormality in the central nervous system He could sit unaided and stand with support momentarily A small sinus was present over the sacrum and just to the left of the midline, and creamy material could be expressed from it The surrounding skin was red and hard, and just below the sinus was a raised granulomatous area Radiography of the spine showed no abnormality A swab from the sinus grew proteus

Operation—The sinus was found to lead down to the sacral hiatus as a well defined tube 2 mm in diameter, this was excised Laminectomy done from there up to the 4th lumbar vertebra showed that the track led into the dura and finished as a continuation of the filum terminale The cauda equina was adherent to the sinus, and with difficulty some of the nerves were dissected free The track was tied off and the lesion removed

Postoperatively the baby's condition was good and the wound healed soundly There was thought to be some weakness of the legs when he was discharged home ten days after operation, but six months later there was no sign of any weakness and he had control over his bowel and bladder sphincters

Pathology—An elliptical area of skin 2 5 × 1 5 cm with a sinus track 7 cm long, whose distal end had been detached from the cauda equina The lumen was patent to within 0 2 cm of the distal end of the sinus The proximal 1 5 cm of the sinus was narrow but then broadened out into a track 0 7 cm in circumference and contained hair and sebaceous material

Summary—A congenital dermal sinus over the sacrum and continuous with the filum terminale An ascending infection caused meningitis

Case 2 (Lorber 1955)—A baby boy developed meningitis due to *Escherichia coli* at the age of 3 months He was treated in another hospital with penicillin and sulphonamides and recovered A few days later he relapsed, was again treated, and made a slow recovery He then remained well until the age of 13 months, when he had a third attack of meningitis due to *Esch coli* He was treated in the same hospital with various combinations of antibiotics, but response was poor and he was transferred to the Sheffield Children's Hospital

On examination he had signs of meningitis and a cauda equina compression syndrome with flaccid paralysis of the legs loss of sensation, and retention of urine with overflow Over the 4th lumbar spine in the midline was a small sinus from which a tuft of hair protruded and which was surrounded by a capillary hæmangioma It was considered that the recurrent attacks of meningitis were caused by infection spreading upwards from a congenital dermal sinus, and that the cauda equina was compressed by an intraspinal dermoid associated with the sinus The meningitis was eventually controlled with streptomycin polymyxin, and sulphadiazine

Operation—Mr J Hardman excised the sinus and dermoid The sinus led into the subarachnoid space and ended in an infected currant sized dermoid compressing the dorsal aspect of the lumbar cord

Postoperatively the operation wound healed slowly, and a few days later the baby again developed meningitis, caused this time by *Staphylococcus aureus* The infection responded to aureomycin

Follow up—The child is now generally well at the age of $3^1/_2$ years, but the signs of the cauda equina lesion persist with weakness and anæsthesia of the legs and incontinence of urine and fæces He has fits which are not controlled with anticonvulsants

Summary—Recurrent *Esch coli* meningitis caused by ascending infection from a congenital dermal sinus This sinus ended in a dermoid within the spinal canal and compressed the lumbar cord After excision of the sinus a cauda equina lesion persisted

Case 3 —A male baby was first seen in the out patient clinic at the age of 4 months Over the lower lumbar spine was a reddish zone of skin about 4 cm in diameter slightly raised above the adjacent skin and softer than surrounding tissues (fig 1) The spinous processes were impalpable at this site but there was a lateral bony ridge In the centre was a sinus, whose base could not be exposed There was no neurological defect and the baby was otherwise quite well.

Operation —He was admitted at the age of 11 months and the track was excised It was found to lead down through a spina bifida and upwards deep to the upper lumbar spine where it entered the dura and was attached to the lower end of the spinal cord at which point it was excised (fig 2)

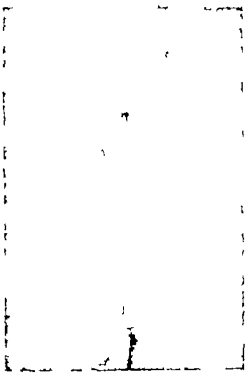
Fig 1—Case 3 : raised area with sinus over lower lumbar spine.

His elder brother had a meningomyelocele removed on the same day at the age of 2 years 1 month

Summary —A congenital dermal sinus overlying the lower lumbar spine and leading through a spina bifida to be attached to the cord. No complications

Case 4 —A boy aged 1 year 9 months, was admitted to hospital with impetigo and during routine examination was found to have a congenital dermal sinus situated in the midline over the coccyx There was no sign of inflammation and the sinus had never discharged The mother stated that she had a similar sinus and so had one of her brothers. Neither of them had suffered any disability from it

Operation —The child was admitted to hospital a month later and at operation the sinus was followed downwards and found to be attached to the coccyx which was excised with the sinus track The wound healed and the child made an uninterrupted recovery

Summary —An uncomplicated congenital dermal sinus overlying and attached to the coccyx

Case 5 —A baby girl aged 7 months attended the casualty department on account of an injury to the left arm and at the same time the mother reported a hole in the back which had first been noticed at the age of 6 weeks and from which pus discharged at times.

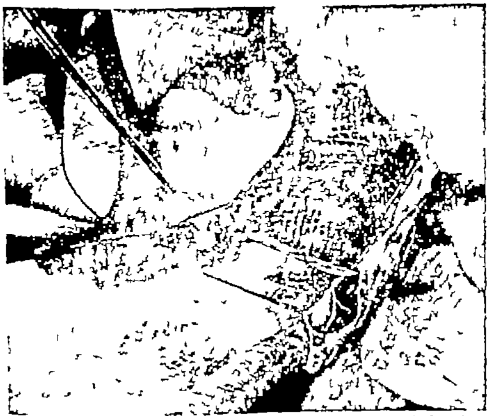
Fig 2—Case 3 : field of operation showing probe passed through sinus from orifice to spinal cord via spina bifida.

On examination there was a deep sinus at the upper end of the natal cleft but there was no discharge from it then

Operation —In view of the recurrent infection a wide wedge of tissue down to the sacrum was excised. No communication with the spinal cord or meninges was found Infection persisted and a further wide excision had to be done Final healing did not take place until three months later

Summary —A congenital dermal sinus similar to that of case 4 became secondarily infected and gave rise to a 'pilonidal sinus'

Case 6 —A male baby had been quite healthy until the age of 7 weeks and the parents had noted no abnormality apart from slight mucoid rhinorrhœa He then suddenly became ill with pallor increasing feebleness and rapid breathing He was admitted to Sheffield Children's Hospital on the third day of his illness.

On examination he was moribund pale and had a poor cry and an almost imperceptible pulse His limbs were hypotonic and he had no meningism Three sinuses were seen over the lower part of the back (fig 3) One was in the midline over the tip of the coccyx about 1 cm. above the anus and was discharging thin pus The other two were over the left buttock the upper sinus appeared 'blind' the lower one was patent but not discharging and there were no signs of surrounding inflammation Congenital dermal sinuses with probable secondary meningitis were diagnosed Lumbar puncture produced no C.S.F. but 2 ml. of thick pus was aspirated and penicillin 10 000 units was injected through the lumbar puncture needle Shortly afterwards the baby died before further treatment could be instituted A throat swab and culture of the fluid obtained at lumbar puncture later grew coagulase-positive *Staph aureus*

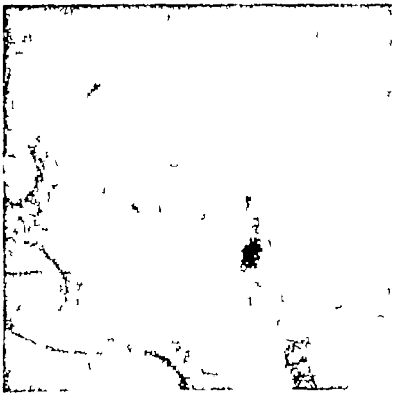
Fig 3—Case 6 : three sinuses over lower part of back.

Necropsy Findings —The midline sinus opening above the anus pursued a straight course to the coccyx but a probe could not be passed into the spinal theca The lower sinus in the left buttock extended upwards medially for 2 cm and was attached by a fibrous cord to the vertebral column adjacent to the lumbosacral articulation There was a purulent exudate lying extradurally in the posterior part of the spinal canal and extending upwards to the attachment of the dura at the foramen magnum The dura was œdematous and congested throughout and the spinal cord was compressed anteroposteriorly The exudate within the lower part of the spinal canal had apparently been aspirated during life and there was a space between the laminæ and the dura which was displaced forwards There was no exudate within the subarachnoid space and the brain was normal apart from congestion. Sections taken from the midline sinus showed numerous hair follicles and sebaceous glands (fig 4)

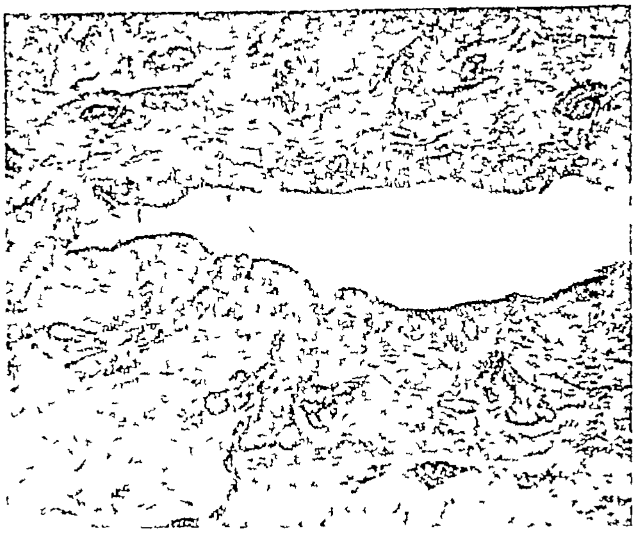

Fig 4—Case 6 transverse section of sinus, showing hair follicles and sebaceous glands (×35)

Summary—A congenital dermal sinus overlying the coccyx and similar to that of case 4 Although the sinus did not communicate with the meninges, infection starting in the wall of the sinus tracked upwards into the extradural tissues and caused a fatal extradural abscess (fig 5)

5 children (cases 7–11 in table) were seen with uncomplicated sinuses similar to that of case 4 Case 7 had a V fold of skin overlying the coccyx, with pits at the upper ends of the V One of these pits was "blind," but the other appeared to be a sinus Case 9 had an associated meningomyelocele (fig 6) Case 11 had two sinuses on either side of the midline over the sacrum This child's mother said that she had a similar condition and so had the mother's sister and the sister's child None of these sinuses had ever become infected

In an attempt to determine the frequency of congenital dermal sinuses we examined 500 children attending this hospital as either inpatients or outpatients in three months Of these 500 children 7 (1 4%) had a sinus overlying the coccyx (cases 12–18 in table), and 14 others (2 8%) had deep dimples in the same region Six of the sinuses of cases 7–18 were dissected out either at operation or at necropsy In each case the condition was the same—a tube of epithelium of varying depth connected to the tip of the coccyx by a fibrous band

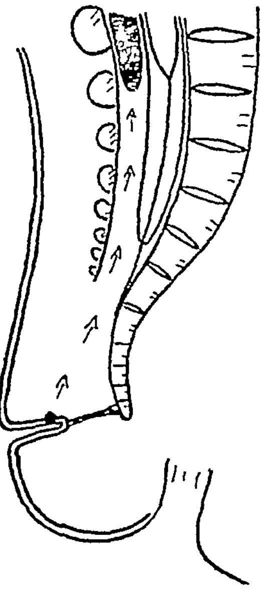

Fig 5—How infection in wall of congenital dermal sinus tracked up in tissues to form extradural abscess compressing spinal cord in case 6

Discussion

We have found congenital dermal sinuses overlying the coccyx in 1 4% of the 500 children we examined, and deep dimples were present in the same region in a further 2 8% Many others had a shallower depression which was merely an exaggeration of the normal slight depression found in the skin of this part of the body This probably accounts for Lannelonge's (cited by Mallory 1892) and Sharpe's (1937) statements that a cicatricial depression could be found over the coccyx in 1 out of 4 or 5 children

There has been much discussion about the relationship of these sacrococcygeal dimples or sinuses to pilonidal sinuses, which are such a troublesome complaint in young adults

The earliest descriptions of pilonidal sinus were those of Anderson (1847) and Warren (1854), but the name "pilonidal sinus" (meaning a nest of hair) was first given to the condition by Hodges (1880) He thought that the basis of the condition was a congenital coccygeal dimple in which detached body hair and other debris lodged Owing to trauma and lack of hygiene the hair penetrated into the subcutaneous tissues and there provoked inflammation and suppuration, the original dimple in the skin eventually becoming the fistulous opening of a large abscess The coccygeal dimple was he thought, caused by imperfect fusion of the two halves of the body

Mallory (1892) described the examination of the sacrococcygeal region of fœtuses and came to the conclusion that sinuses, dimples, and cysts in this region were the result of an incomplete obliteration of the medullary canal during the formation of the neural tube

Bland Sutton (1917) considered that sinuses over the lower spine were sequestration dermoids, and Gabriel (1949) attributes pilonidal sinuses to the same cause

Stone (1931) proposed the novel theory that pilonidal sinuses were downgrowths of the skin, analogous to the preen glands of birds

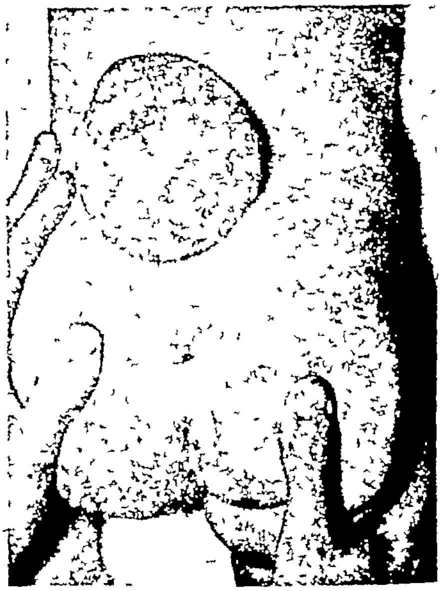

Fig 6—Case 9 : sinus and meningomyelocele.

Walker and Bucy (1934), who reviewed 4 previously published cases of congenital dermal sinus and added 3 of their own, stated that they were identical with pilonidal sinuses They pointed out that Mallory's theory would not explain the presence of these anomalies in regions of the body other than the sacrococcygeal, and suggested that they were caused by failure of separation of the cutaneous epithelial ectoderm from the neuro epithelial ectoderm during embryological development, with the result that a narrow invagination of skin was carried down by the neural tube

Fox (1935) considered that pilonidal sinuses were due to persistence of ectoderm invaginations normally present in the sacrococcygeal region of embryos

Gage (1935) thought that pilonidal sinuses were a developmental defect in the caudal end of the neural tube (Mallory's theory) but considered that sacral dimples had a different ætiology and were due to anomalous development of the caudal ligament attaching the skin to the coccyx, as originally suggested by Oehlecker (1926)

Patey and Scarff (1946, 1948) cast doubt on the developmental origin of pilonidal sinuses They compared the well known condition in the sacrococcygeal region to similar lesions in the webs of barbers' fingers, and thought that both were the reaction of the tissues to the penetration of the skin by hairs from outside, and that, if a congenital dimple or sinus played any part, it merely acted as a site of entry for the hair Since then accounts have appeared of pilonidal sinuses in other situations Aird (1952) treated one in the axilla, and Smith (1948) described 4 cases of sinus in the perineum Hueston (1953) supports the theory that they are acquired, and so does the *British Medical Journal* (1954)

SUMMARY OF 11 CASES WITH COCCYGEAL SINUS

Case no	Sex	Age	Radiograph of spine	Operation or necropsy	Other conditions
7	M	1 yr		Necr	Cardiac fibro-elastosis
8	M	11 mos		Op	
9	F	3 wk.			Lumbar meningo myelocele
10	F	[illegible] yr	Normal		Congenital absence of tongue
11	F	7 yr	Spina bifida occulta S1		
12	M	4½ yr	Normal		
13	F	6 yr		Necr	Lipomelanic reticulosis
14	M	1½ yr	Normal		Congenital heart-disease
15	F	5½ yr		Op	
16	F	3 yr	Spina bifida occulta L5	Op	
17	M	6 mos.		Op	
18	F	3½ yr	Normal		Double ureter

The main arguments of these workers for regarding sacrococcygeal pilonidal sinuses as acquired are the age and sex distribution and the fact that most of the patients are young adult hirsute males this they correlate with the finding of short coarse stiff hairs within the lesion, suggesting that detached body hairs have pierced the skin or have been sucked in from outside (Patey and Scarff 1948) They also state that hair follicles and sebaceous glands are seldom found in the lesions and that congenital anomalies in the sacrococcygeal region are rare

Some of these statements are not in accordance with the facts

(1) We have already stated that coccygeal sinuses and dimples are not uncommon

(2) The male preponderance of pilonidal sinus is by no means so great in some series for instance in Gabriel s (1949) series of 107 cases 38 were in women, many aged less than 25 when hair on the buttocks is very unusual and in Whyte s (1938) smaller series of 45 cases 32 were in women

(3) About 50% of pilonidal sinuses contain no hair at all (Turell and Gladstone 1951) and sometimes at operation a long coiled lock of hair is removed which could not possibly have entered from without (Gabriel 1949)

Thus the theory that the condition is acquired does not explain pilonidal sinuses in people who are not hirsute, why in half the cases no hair is found in the sinus and why the lesion is so constantly located in the midline of the sacrococcygeal region

We believe that pilonidal sinuses are merely infected congenital dermal sinuses and we consider the sequence of events in the formation of pilonidal sinuses to be as follows. A congenital dermal sinus is present at birth and because it causes no symptoms it is not noticed If it overlies the coccyx it will probably not communicate with the meninges or the spinal cord From the age of puberty the lesion is always a potential menace the hair of the epithelium lined track grows as does the other body hair the sebaceous glands secrete the buttocks enlarge hygiene is perhaps not so good as it should be and from a combination of these factors the orifice of the sinus becomes obstructed and infection takes place and spreads into the subcutaneous tissues forming abscesses and secondary sinuses Trauma may also be a contributory factor—e g jeep seat of soldiers in the 1939–45 war

The original structure of the sinus is destroyed by abscess and granulation tissue and when the lesion is excised at operation, sebaceous glands and hair follicles are seldom found Case 5 had an early pilonidal sinus' which was *clearly an infected dermal sinus and* bears out the above explanation If pilonidal sinus is commoner in males this could be explained by the fact that hairs which are more profuse in the male are thus more likely to grow and obstruct the lumen of the sinus and personal hygiene in males is often less good than in women Weale (1955) who cut serial sections of pilonidal sinuses in adults, showed that the contained hair originated in their depth and he concluded that the sinuses were therefore developmental defects Hodges (1880) recognised the importance of the congenital coccygeal sinuses and dimples although he thought that the hair penetrated into the sinus from without rather than grew in situ

We consider that pilonidal sinuses in barbers hands in the axillæ and in other sites are entirely different conditions since they are obviously acquired lesions ' Congenital dermal sinus' is a better term than pilonidal sinus' for the lesion in the sacrococcygeal region whereas ' foreign body or hair granuloma' could be used for the lesions which are obviously acquired

Congenital dermal sinuses are sometimes familial and hereditary The mother and uncle of case 4 also had a congenital dermal sinus the mother aunt and cousin *of case 11 had a similar condition and the father of* case 1 had been treated for a pilonidal sinus 3 cases have been published of pilonidal sinuses in identical twins (Mechling 1934 Goldberg and Bloomenthal 1939 Fox 1944)

Case 6 had two unusual aspects

(1) Although the sinus overlying the coccyx was similar to those of cases 4 5 and 7–18 and could not be shown to communicate directly with the meninges, nevertheless it illustrated that a coccygeal sinus may give rise to more than a local infection Infection starting in the wall of the sinus had presumably spread upwards in the tissues to the extradural space as indicated in fig 5 Stammers (1938) published a very similar case

(2) There were two other sinuses in the left buttock the lower of which was found to be attached to the vertebral column adjacent to the lumbosacral articulation by a fibrous cord

We disagree with Gage (1935) that pilonidal sinuses and sacrococcygeal dimples have different causes A deep dimple is almost impossible to differentiate from a sinus by inspection alone and dimples and sinuses must surely be merely degrees of the same condition We have no new theory to offer for the causation of congenital dermal sinuses but we agree with Walker and Bucy (1934) that a narrow invagination of skin is carried down by the neural tube as it separates from the cutaneous ectoderm Since spina bifida is also caused by faulty closure and descent of the neural tube it is not surprising that the two conditions are sometimes found together It is noteworthy in this respect that cases 3 11 and 16 were associated with a spina bifida, and case 9 also had a meningomyelocele

Treatment

If a sinus is found in any position over the spine and its base cannot be exposed by pressure on the adjacent skin it should be removed with its track for two reasons

(1) Excision will prevent the formation of an infected pilonidal sinus, which may be so troublesome to the patient in later life.

(2) It will prevent complications in the central nervous system. On external examination it is impossible to distinguish those sinuses that communicate with the central nervous system from those that do not ; consequently either infection or pressure effects due to an expanding dermoid cyst may occur The sinuses over the coccyx are unlikely to communicate

in this way, but infection may still track to the extradural space

It is probably unwise to probe or inject the sinus with radio opaque material, because of the danger of introducing infection, and often the sinus track is too small to admit a probe or needle

Summary

18 cases are reported of children who had congenital dermal sinuses overlying the spine

In 3 cases the sinus communicated with the central nervous system, 2 of these children developed meningitis due to infection spreading along the sinus track

15 children had sinuses in the coccygeal area and, although these sinuses did not communicate with the central nervous system, 1 became locally infected, and in 1 other case infection spread to the extradural space

Congenital dermal sinuses overlying the coccyx were found in 7 (1 4%) of 500 children examined

'Pilonidal sinus" in the sacrococcygeal area is due to local infection in a congenital dermal sinus in adult life, when the orifice of the sinus is likely to become obstructed

Hairs in "pilonidal sinuses" have grown in situ

Pilonidal sinuses" in other situations are obviously acquired and quite different conditions

Congenital dermal sinuses which are not just superficial dimples should be excised to prevent infection, either local or spreading into the central nervous system

We thank Dr T Colver Dr Doris Fletcher, Prof R S Illingworth and Mr A Young for permission to examine and report cases under their care, and Dr J L Emery and Dr N M Gibbs for the pathological details

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" In the National Health Service approximately six prescriptions are dispensed for each man, woman, and child in this country each year An examination of these prescriptions discloses that two out of every six are for sedatives to 'calm the nerves' Few will disagree with the contention that the family doctor would discharge his duties in this direction much more effectively if his training as a doctor were not still confined almost exclusively to the understanding and treatment of physical abnormalities and if he had time to listen to his patients or made time to do so"—Dr COLMAN KENTON, regional psychiatrist to the North West Metropolitan Regional Hospital Board, at the annual conference of the Association of Hospital Management Committees at Hastings *Scotsman*, June 18, p 6

THE ANTIBIOTIC RESIDUES IN AMŒBIASIS

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AMŒBIASIS RESEARCH UNIT [*]

FOR about eight years this unit has been actively engaged in a long series of therapeutic trials for the treatment of amœbiasis

We have been unusually fortunate in being able to select a relatively standard grade of ulcerative amœbiasis from the numerous cases presenting This has enabled us to compare statistically the results of treatment with many single substances, and we have now tested and reported on a large number of chemotherapeutic agents at present in common use We (Elsdon-Dew et al 1952) have been particularly interested in the rôles played by the antibiotics and have reported on the very beneficial effects of oxytetracycline, chlortetracycline (aureomycin), and a combination of penicillin and succinylsulphathiazole as well as on the less useful results achieved with chloramphenicol, neomycin, and bacitracin We found that, in doses of 1 g for 15 days, chlortetracycline used alone apparently immediately cured 47 of 50 patients None the less at least 14% of all patients treated with chlortetracycline relapsed soon after treatment was completed Our long and varied experience with the chemotherapy of amœbiasis had shown us that the tetracycline compounds were the most powerful single therapeutic agents at our disposal We believed on theoretical grounds that, though chlortetracycline had been shown to have an amœbicidal action in vitro, its main action (and that of the many other partially effective antibiotics) was by a modification of the bacterial flora in the bowel with a resultant change of the environment of the amœba We were therefore greatly interested to read that Barnard (1951) had been treating with temporary success some cases of acute leukæmia with the fermentation residues of the antibiotics and claimed that his results were due to a modification of the bacterial flora in the bowel Since we were looking for an inexpensive substitute for chlortetracycline for treating the almost epidemic form of amœbiasis found in Durban, it seemed well worth while to set up a therapeutic trial of the fermentation residues of some of the antibiotics The cost of these could be measured in pence instead of pounds The results of these trials and the development from them of a simple and inexpensive ambulant treatment for amœbiasis forms the subject of this paper

Material and Method

All our patients were adult male Africans with the acute dysenteric form of amœbiasis All the patients accepted for a series conformed to the following strict standards all had visible ulcers in the colon, and in all of them motile trophozoites were found in stools or scrapings The symptomless or mildly symptomatic cyst passer was not accepted Seriously ill patients with sloughing ulcers, abdominal distension, or chloride depletion were not accepted for the experimental series Apart from this no selection was used and the results reported here are quite comparable with those we have previously published

Sigmoidoscopy was done before treatment and on each successive day thereafter until the ulcers were healed, and in any case on the 10th, 15th, 20th, and 27th days after the start of treatment Stools were examined every day when possible

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[*] The Amœbiasis Research Unit is under the sponsorship of the South African Council for Scientific and Industrial Research, the Natal Provincial Administration and the University of Natal

At sigmoidoscopy we assessed the status of the patient on the following criteria

(1) *Success* symptom free no amœbæ in stool or scraping all ulcers healed
(2) *Probable failure* ulcers still present ; no amœbæ
(3) *Absolute failure* ulcers and amœbæ present
(4) *Symptomless cyst passer* cysts in stools no ulcers
(5) *Removed from treatment* previous absolute failures who were given other treatment known to be effective in the interest of safety

Patients removed from the series for other treatment were assessed on all subsequent days as "absolute failures" and are included as such in the figures for each date The figures for total parasitic failure' are therefore the sum of the absolute failures the symptomless cyst passers, and those absolute failures previously removed from treatment

It will be noticed that the figures from treatment with emetine are given only for the 20th day This drug and some others were used early in our trials when we made our final assessment on the 20th day of treatment For this reason and to conform with the standards in previous papers our final comparison of the efficacy of any drug used was made on the 20th day figures Those for emetine are included here as a comparative reference

The 20th day figures may be taken as giving a reasonable indication of immediate apparent cure ' but tell us nothing of the relapse rate. The figures for 27 days give a slight indication of relapse rate for if successes decrease and failures increase materially above the 20th day figures, it is likely that relapse will be more frequent It is for this reason that we include the figures for 15 and 27 days so that this trend can be appreciated Though we paid our patients a small sum to return for a monthly follow up for 6 months for stool testing and sigmoidoscopy, very few did so and we have only the scantiest information on relapse Though we sometimes had evidence of a high relapse rate in the number of patients who soon fell sick again and returned to us we were never able to obtain any valid statistical evidence of those who remained well and had no reason to return

For this reason our figures can only provide information on immediate apparent cure and give little information about relapses

Results

Chlortetracycline Residue

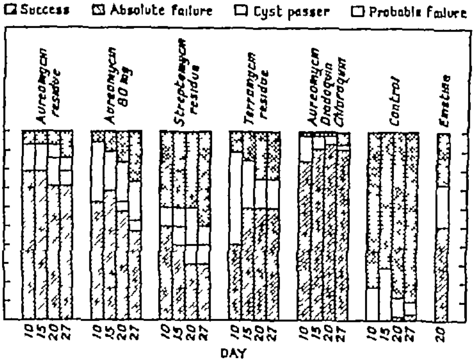
Fourteen patients were given the residue from the manufacture of aureomycin 4 g daily for 10 days Apart from unknown constituents this was known to contain 80 mg of chlortetracycline and 24·4 µg of cyanocobalamin It contained no actidione It was dispensed in capsules and produced no side-effects of any kind

As will be seen from the accompanying figure there were a high success rate (70·5%) and a low absolute failure rate (7·1%) at 10 and 15 days At 20 days successes were still 71·4% but 7% of patients were passing cysts At 27 days absolute failures increased to 14% and the total parasitic failure was 21% Follow up a month later produced three successes and two absolute failures

It will be seen from a comparison of the histograms in the figure that this small dose of aureomycin fermentation factor was considerably more effective at 20 days than emetine gr 15 The slight increase in failures after the 10th day however implies the likelihood of late relapse in some cases The figures show that considerable success had been achieved

Chlortetracycline in Small Doses

Since the aureomycin fermentation factor was known to contain 80 mg of chlortetracycline we decided to test the effect of this small dose of the pure drug in a separate series Accordingly 20 mg of chlortetracycline was given 6 hourly for 10 days to nineteen patients Again a remarkable effect was achieved at 10 days 63% being successes and only 5·2% absolute failures Over the test period however there was a progressive increase in absolute failures and cyst passers until the 27th day when the total parasitic failure rate was 47% *It is to be specially noted that 20% of the total series were converted from active trophozoite passers with ulceration though apparently successful at the 10th day to symptomless cyst passers at the 27th day*



Comparison of results of different treatments.

Streptomycin Residue

The streptomycin residue was given in doses of 4 g daily and produced a definite though transitory effect At 10 days 50% were successes and 40% absolute failures but by the 27th day 50% were absolute failures and 10% cyst passers.

Oxytetracycline Residue

The oxytetracycline fermentation residue was given in doses of 4 g daily for 10 days to ten patients This was known to contain only 44 mg of oxytetracycline which was proportionately a much lower concentration of the supposedly active principle than in the aureomycin fermentation factor Here again the effect was very definite with only 10% of failures at 10 days This increased to 30% on the 27th day, with 60% successes Follow up a month later gave three (30%) successes and two (20%) relapsed absolute failures The results given by this dosage of the terramycin residue do not differ significantly from those given by emetine and by aureomycin residue

We have concluded from these trials that the efficacy of the fermentation residues probably rests in their content of the active antibiotic and we decided to try the effect of combining the small dose of aureomycin used previously with a systemic and an intraluminal amœbicide Our object was to provide an inexpensive and effective treatment suitable for use in ambulant patients Accordingly we gave the following course to forty-eight patients (1) chlortetracycline 100 mg for 10 days (2) chloroquin diphosphate 500 mg for 15 days and (3) diiodohydroxyquinoline 1800 mg for 20 days

The results were extremely satisfactory The figure shows that the high success rate (85%) and low failure rate (2%) on the 10th day were well maintained. On the 27th day the success rate was 91% and the total failure rate only 6% A somewhat better than usual follow up was obtained in this series owing to a special request made for the first time to the patient's employers After a month twenty successes (40%) and one failure (2%)

reported After two months eight successes (10%) and after three months four successes (8%) and one symptomless cyst passer reported to the clinic We therefore know that at least 8% of the patients treated by this method remained free from ulcers and parasites three months after the completion of treatment

Control Series

For comparison with the series mentioned above we published (Armstrong et al 1950) the figures of a "control" series of fifty cases observed in identical circumstances for the same length of time Some years ago we were asked to assess the effects of two quack medicines, '260 D' and 'Chlorobexol,' which were widely advertised for the current "amœbophobia" by a commercial concern not connected with either the medical or the pharmaceutical profession These preparations were alleged to contain uranium in a concentration of two parts per million the remaining constituents being secret and undisclosed

Forty patients were treated with one or other of these drugs and ten were treated with nothing but an injection of calcium gluconate as a placebo All were given normal hospital diet

Since the two series were so similar, the figures have been combined into a single "control" series

These patients all had open ulcers and trophozoites in their stools, but milder cases were chosen than in the other series because of the expected inefficacy of the treatment

The histograms (see figure) show the natural history of untreated amœbiasis under hospital conditions a few patients (2% at 20 days, and 6% at 27 days) underwent spontaneous remission both of symptoms and physical signs Ulcers healed and amœbæ disappeared from the stools These findings are in accordance with those of Coxon (1948), who reported a 10% spontaneous remission-rate in nine cases treated only with placebos These figures show that the results in all our treated cases were significantly better than in the untreated disease in identical circumstances

Discussion

It will readily be seen from the histograms that fermentation residues of the antibiotics chlortetracycline, oxytetracycline, and streptomycin have a profound effect in modifying the relationship between the amœba and the host A similar effect is found with very small doses of the pure parent antibiotic Most of the patients were quickly relieved of their symptoms and ulceration, although with the passage of time symptomless cyst-passers appeared, showing that the infection has not been eradicated This phenomenon was often seen during treatment with full doses of streptomycin or of chloramphenicol, when 40–50% became symptomless cyst-passers This conversion of the invasive stage of amœbiasis to a phase of infestation without symptoms is very striking, and may well be of fundamental importance in our understanding of the ecology of amœbiasis

It is tempting to suggest that perhaps the amœba which has previously been living as an invasive parasite inside the tissues has been induced by the antibiotic to revert to its rather more usual rôle of saprophyte in the intraluminal fæces (Hoare 1950) We know that many persons infected with amœbæ pass cysts in their stools for many years and yet remain free from symptoms If we could explain why such patients are liable to a sudden attack of amœbic dysentery we would be a long way towards a full understanding of the varying relationship between host and amœba We can now reproduce the reverse of this process in a high proportion of cases either by using an inadequate antibiotic, such as streptomycin and chloramphenicol in full doses, or by using an adequate antibiotic such as chlortetracycline and oxytetracycline, in insufficient dosage

Treatment with diiodohydroxyquinoline and very small doses of chlortetracycline has proved extremely effective Statistically it is as good as any single or combined treatment which we have used in the past We must admit, however, that, though very satisfactory, the clinical progress of individual cases and the appearances at sigmoidoscopy are not so rapid and dramatic as when the tetracycline compounds are used in full doses of 1 g daily

Though we are satisfied that the combined course is perfectly adequate for the usual cases of amœbiasis, whether they be symptomatic or asymptomatic cyst passers or trophozoite passers with or without acute dysentery, in truly fulminating cases and in those with chloride depletion or with impending perforation we would use larger doses of a tetracycline compound The combined course would lose nothing by substituting, for example, 4 g of the chlortetracycline fermentation factor for the 100 mg of pure chlortetracycline This would further reduce the price A further suggestion would be the compounding of a capsule or tablet containing all three drugs to be administered three times daily We feel *that this combination can be used for the mass treatment* of large numbers of African cases It has the great advantage that it can be used for ambulant outpatients and requires neither rest in bed nor stay in hospital

Summary

The fermentation residues of chlortetracycline and oxytetracycline are potent amœbicides

This effect is probably due to their content of chlortetracycline and oxytetracycline, which in doses of 100 mg daily are as immediately effective as emetine

Small doses of these two antibiotics, or large doses of chloromycetin or of streptomycin, often convert severe dysenteric amœbiasis into symptomless cyst-passing The implications of this are discussed

A combination of chloroquine and diiodohydroxyquinoline and either chlortetracycline 100 g or chlortetracycline residue 4 g is a highly effective and inexpensive *ambulant treatment for amœbic dysentery*, excepting severe cases and those with complications

Our thanks are due to the Council for Scientific and Industrial Research, the Natal Provincial Administration, and the University of Natal for their support Lederle Laboratories Division, the Pfizer Corporation, and Glaxo Laboratories kindly supplied the residues

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A SHORT LABORATORY SCREENING TEST FOR PHÆOCHROMOCYTOMA

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THE recognition that a phæochromocytoma can produce a curable form of hypertension has led to increased clinical interest, but the increase in the number of cases reported is chiefly due to improved methods of diagnosis, The clinical pharmacological tests—e g, the phentolamine ('Rogitine'), piperoxan ('Benzodioxane'), and histamine tests—have all proved useful, but false positive and false negative results have been reported with each of them (Goldenberg et al 1954, Symington and Goodall 1953)

Engel and von Euler (1950) found increased urinary excretion of adrenaline and noradrenaline in patients with a phæochromocytoma and suggested that this might be the most reliable aid to diagnosis.

The normal daily output of pressor amines is less than 63 µg. per 24 hours (von Euler et al. 1954). Most patients with a phæochromocytoma excrete more than 250 µg. of pressor amines per 24 hours, and many as much as 1–3 mg. per 24 hours and a few have excreted less than 200 µg. per 24 hours (Burn 1953). In essential hypertension von Euler (1952) found that the daily urinary excretion of pressor amines was usually less than 100 µg. per 24 hours but occasionally as much as 200 µg. per 24 hours. He has also reported increased amounts in anxiety states (von Euler 1954). A rapid method for the estimation of adrenaline and noradrenaline is therefore needed as a screening test for phæochromocytoma.

The method used by Engel and von Euler (1950) consisted essentially in a preliminary adsorption on to aluminium hydroxide followed by testing its effect on the cat's blood-pressure and the hen's cæcum to differentiate between adrenaline and noradrenaline (von Euler and Hellner 1951). Burn (1953) used a similar method in three cases of phæochromocytoma. Fluorimetric methods have also been used to estimate adrenaline and noradrenaline (Lund 1950, Goldenberg et al. 1954, Weil-Malherbe and Bone 1953).

von Euler (1951, 1953) suggested that the effect of untreated urine on a cat's blood-pressure might be used as a screening test. We have developed this technique and, with pharmacological modifications, have used it successfully in 250 cases of hypertension from this and other hospitals. We have found or confirmed 7 cases of phæochromocytoma and believe that this is a reliable screening test for use in a large hypertension clinic.

Collection of Urine

Either random samples or aliquots of 24-hour specimens may be used. Urine should be passed directly into a sterile jar containing 50 mg. of ascorbic acid as antoxidant. Samples are stored at 0°C until the test can be made. Contamination by bacteria which may produce histamine should be prevented.

Preparation of Cat

Assays are done on a cat's blood-pressure preparation. The cat is anæsthetised with intraperitoneal pentobarbitone ('Nembutal') 35 mg. per kg. of body-weight. A cannula is placed in the trachea because artificial respiration helps to maintain a steady base-line. Injections are made through a cannula placed in a femoral vein. A recording cannula is inserted in a carotid artery. This cannula is siliconed with Midland Silicone (D.C. 200), and about 0·25 ml. of a 1% heparin solution is placed in the tip to prevent clotting. The cannula is next connected to a mercury manometer with a float recorder, which traces the blood-pressure on a smoked drum.

Assay

Samples are neutralised and then assayed against standard adrenaline and noradrenaline in normal urine. The injection volumes of both the unknown and standard are kept constant at either 0·5 ml. or 1·0 ml. and washed in with a constant volume of saline solution containing 0 g. of sodium chloride per litre.

All the samples are assayed at least twice during a period when the cat is sufficiently sensitive. Cats vary considerably in their sensitivity both from one to another and from time to time during the assay.

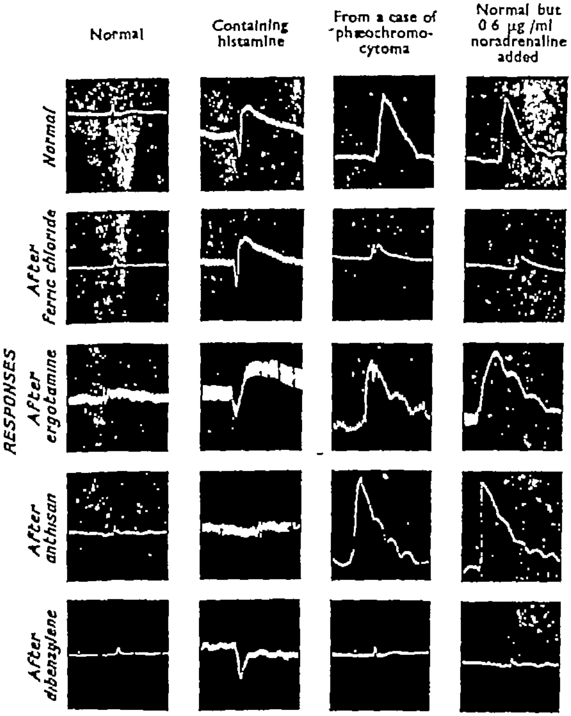
The great majority of the samples have little or no effect on the blood-pressure and so do not need further investigation. If a response is equal to or greater than 0·1 µg. per ml. of adrenaline or noradrenaline, further tests (see figure) are made as follows.

(1) *Destruction of Adrenaline and Noradrenaline.*—An aliquot of the urine is adjusted with N sodium hydroxide to pH 10 and, after the addition of a drop of 1% ferric chloride, is boiled in a water-bath for 15 minutes. The solution is then cooled, neutralised with N hydrochloric acid, and assayed again. If the unknown pressor substance is adrenaline or noradrenaline it will be oxidised by this procedure and its pressor activity greatly diminished.

(2) *Modification of Response by Drugs*

(*a*) Intramuscular *ergotamine tartrate* in a dose of 0·25 mg. is reported to potentiate the response to adrenaline (Duner 1953). We have found this rather inconstant, but at least the shape, if not the height, of the response curve is altered. If the alteration in response of the unknown parallels that of the standards it is considered as further evidence of its identity.

(*b*) Intravenous *mepyramine maleate* 5 mg. occasionally potentiates the response to adrenaline and noradrenaline but always antagonises any response to histamine. Histamine is



Modifications of cat's blood-pressure response to intravenous injection of urine (0·5 ml.) as described in the text. The response to urines containing histamine is variable.

URINARY EXCRETION OF PRESSOR AMINES IN 7 PROVED CASES OF PHÆOCHROMOCYTOMA

Case no	Sex	Pressor amine excreted in 24 hr
1	M	2 0 mg expressed as noradrenaline
2	F	2 0 mg ,,
3	F	3 0 mg ,,
4	F	1 0 mg ,,
5	M	2 0 mg ,,
6	M	0 8–1 0 mg ,,
7	F	0 3 mg of adrenaline

the contaminant causing the greatest difficulty because pure depressor, pure pressor, or mixed responses can be produced Sometimes the response closely mimics that of adrenaline and noradrenaline

(c) Phenoxybenzamine hydrochloride ('Dibenzyline') is a potent antagonist of adrenaline and noradrenaline, and, since its effect is maintained for at least an hour it is only given (5 mg intravenously) towards the end of the assay

The purpose of giving these three drugs is to show that the response of the unknown pressor substance in the urine is modified in the same way and to the same extent as that of the standards Typical responses taken from actual tests are shown in the accompanying figure

Results

We have investigated the urinary excretion of adrenaline and noradrenaline by 250 patients with hypertension from this and other hospitals During this study we either found or confirmed 7 cases of phæochromocytoma, all having raised urinary levels of pressor amine (see table) The diagnosis was in each case subsequently proved at operation

Of the 250 samples examined 200 came from University College Hospital and 50 from other hospitals Most of these samples were from patients who had severe hypertension or were strongly suspected on clinical grounds of having a phæochromocytoma

In the hypertension clinic at University College Hospital urine is now sent for routine assay from all cases of malignant hypertension and from any other cases in which there is clinical suspicion of phæochromocytoma

In 6 of the 7 cases detected the excretion of pressor amine was well within the range considered to be pathognomonic of phæochromocytoma In case 7 assay repeatedly showed levels strongly suggesting a tumour but possibly not beyond the range of an anxiety state with essential hypertension We identified the abnormal pressor substance in this case as adrenaline because the cat gave a depressor response to adrenaline while maintaining a pressor response to noradrenaline This is unusual in our preparations

Several patients with essential hypertension excreted 100–150 µg of pressor amine in the urine in 24 hours Borderline cases like these are checked by repeat assays, and, if the hypertension is paroxysmal, specimens passed after an attack are tested So far none of these borderline cases has been shown to have a phæochromocytoma and we have had no proved false positive or false negative

In the presence of ascorbic acid adrenaline and noradrenaline do not deteriorate in urine kept at 0°C for 14 days At room temperature there is no loss for 2 days, and we have successfully diagnosed phæochromocytoma from specimens sent by post Hydrochloric acid (about 0 5 ml of concentrated hydrochloric acid per 100 ml of urine) can also be used as a preservative

The most satisfactory animals for this preparation were non pregnant cats weighing about 2 kg

The average preparation is sensitive down to 0 1 µg of adrenaline or of noradrenaline per ml and, although less specific than the longer methods, has been adequate as a screening test

The longer methods include acid hydrolysis to estimate conjugated adrenaline and noradrenaline Our method could be adapted to include hydrolysis, but only with the disadvantage of considerably lengthening the method

von Euler et al (1953) tested the effect of untreated urine from a patient with phæochromocytoma on a cat's blood pressure and found the results in very good agreement with those obtained by Lund's fluorimetric method

It is possible to assay at least 20 specimens on one cat, negative results being especially quickly obtained and confirmed

This rapid method should be of use in departments with limited time and staff It is obviously only suitable for use in a large hypertension clinic or in a centre receiving many samples

Summary

A rapid screening test for phæochromocytoma by bio assay of untreated urine on the cat's blood pressure preparation is described

Samples from 250 cases of hypertension were investigated, and 7 cases of phæochromocytoma were found or confirmed

No false negative or false positive result has so far occurred

We wish to thank Dr D R Laurence, Prof M L Rosenheim, and Prof W D M Paton for their help and encouragement

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MITRAL INCOMPETENCE IN EXPERIMENTAL AURICULAR FIBRILLATION

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SINCE mitral valvotomy has been developed there has been a great deal of clinical and experimental investigation into the differential diagnosis of mitral stenosis and incompetence These investigations have led to clearer understanding of most patients on clinical grounds alone, but there remain some patients in whom the recording of left auricular pressure by cardiac catheterisation or by direct auricular puncture through a bronchoscope is an important investigation The interpretation of these curves of left auricular pressure is often difficult, especially when auricular fibrillation is present We suggest that one of these difficulties is that mitral incompetence commonly accompanies auricular fibrillation in patients in whom there is no organic incompetence of the mitral valve

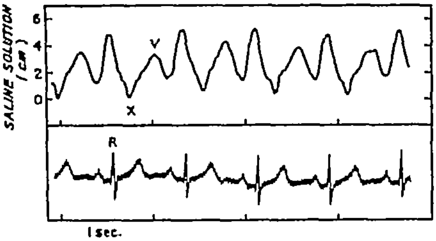

Fig 1—Upper tracing is of normal left auricular pulse Lower tracing is a lead-II electrocardiogram. Peak of left auricular pressure just precedes R wave of electrocardiogram and is followed by sharp decrease in pressure (X wave) and climbing V wave.

There is considerable similarity between the curves of left auricular pressure pulse in patients with mitral incompetence with normal sinus rhythm and those in patients with auricular fibrillation with or without evidence of mitral incompetence The normal left auricular pulse is shown in fig 1 During auricular fibrillation there is no sharp descent from the crest of the C wave and a climbing dome shaped wave unites the C and V waves (fig 2) This has never been explained satisfactorily Fig 3 is a record obtained by left auricular puncture with the chest open in a patient in whom acute mitral incompetence was accidentally produced during mitral valvotomy Again there is a climbing C wave without early descent—the X wave is absent

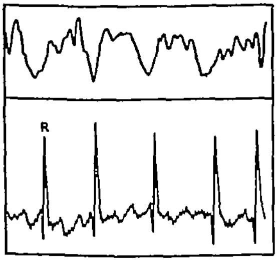

Fig. 2—Upper tracing is of left auricular pulse during auricular fibrillation shown in electrocardiogram below The X descent is superseded by climbing wave immediately after R wave of electrocardiogram.

From these observations we felt that there might be a relationship between auricular fibrillation and mitral incompetence and this we investigated in dogs

Method

In 27 dogs under pontobarbitone sodium anæsthesia with open chest and pericardium removed the left atrium was needled and the pressure recorded Auricular fibrillation was then induced by applying the electrodes of a standard physiological induction coil to the vicinity of the sino auricular node Pressures were again recorded while simultaneous electrocardiograms were taken When normal rhythm had returned a small copper wire cage was placed in the orifice of the mitral valve in 5 dogs thus holding the valve cusps apart and producing acute mitral incompetence and the left auricular pressure was recorded The left ventricle and auricle were simultaneously needled During normal rhythm 1% Evans blue was injected into the left ventricle while blood was withdrawn from the left auricle After time had been allowed for recirculation of the dye a control sample of blood was obtained from the left auricle Dye was then injected into the left ventricle and blood was withdrawn from the left auricle during auricular fibrillation The experiment was repeated with the wire cage in place in the mitral valve In 3 dogs the whole procedure was done with the pericardium intact apart from a small aperture 1 cm in length over the right auricle to allow application of electrodes The blood samples containing dye were heparinised and centrifuged, and the supernatant serum was estimated colorimetrically in 10 dogs

Results

Pressure Records

The normal left auricular pressure pulse in the dog is qualitatively similar to that in man Likewise during auricular fibrillation and in normal rhythm with induced mitral incompetence the basic pattern was similar

Injections of Dye

In normal rhythm when Evans blue was injected into the left ventricle it was not recovered from the left auricle, demonstrating the expected competence of normal mitral valves both when the pericardium was removed and when it was intact Before dye was injected into the left ventricle the position of the needle in the ventricular cavity was confirmed by the withdrawal of oxygenated blood Subsequent 'control' samples of blood after recirculation showed that the dye was injected into the circulation

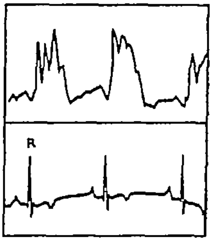

Fig 3—Upper tracing is of left auricular pulse. Lower tracing is electrocardiogram Record was obtained by left auricular puncture in a patient in whom mitral incompetence was accidentally produced at operation Again there is no X descent but a climbing wave following R wave of electrocardiogram

In auricular fibrillation when Evans blue was injected into the left ventricle during auricular fibrillation it was recovered from the left auricle demonstrating incompetence of the mitral valve (fig 4) This incompetence was present both with the pericardium removed and when it was intact There was such regurgitation of dye from the left ventricle into the left auricle, when the wire cage was in the mitral valve, that colorimetric estimation of the quantity of dye in the auricular blood was unnecessary

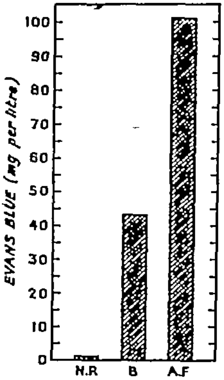

Fig 4—Amount of Evans-blue recovered from auricle after injection into left ventricle: A.F., quantity of dye found in left auricular blood immediately after injection into left ventricle during auricular fibrillation B quantity of Evans-blue in left auricular blood after time was allowed for recirculation. N.R., incalculable quantity immediately recovered during normal rhythm. Similar results were obtained in all dogs

Discussion

From these observations in dogs it appears that auricular fibrillation is accompanied by *mitral incompetence* and that this is independent of the presence or absence of the pericardium The degree of incompetence is very variable but nevertheless it is always present

In the conduct of these experiments particular care was needed to avoid false results by malposition of the ventricular needle If the needle is placed too high in the left ventricle the posterolateral cusp of the mitral valve may be transfixed and the injection made directly into the mitral funnel Alternatively, if the needle is placed too high in the outflow tract, the dye will be discharged directly into the aorta To guard against these possibilities the needle was placed from below into the lower half of the ventricular cavity The injections were made into the same area both during normal rhythm and during auricular fibrillation The auricular needle was placed through the auricular appendage into the main body of the auricle and again remained in the same position whether the rhythm was normal or auricular fibrillation was present

Similar experiments were made on the right side of the heart, but owing to the crescentic shape of the right ventricular cavity, it was technically difficult to place the ventricular needle correctly The tricuspid valve appeared to behave as the mitral during auricular fibrillation

There have been a few prior observations suggesting the occurrence of valvular insufficiency with auricular fibrillation Prinzmetal et al (1952) observed dilatation of the left auricle in experimental auricular fibrillation This increased auricular volume could have been due to (1) left ventricular failure (not seen in our studies), (2) altered atriovenous volume elasticity characteristics, or most probably, (3) acute valvular insufficiency Muller and Shillingford (1954) suggested that tricuspid insufficiency developed in a patient with auricular fibrillation and disappeared with reversion to normal rhythm

Why mitral insufficiency develops here is unknown Little (1951) showed that the closing of the auriculo-ventricular valve depended on auricular systole The slight ' jog in auricular and ventricular pressure with either momentary reversal of auriculo ventricular gradient or creation of eddy currents leads to rapid apposition of valve cusps In the absence of auricular systole the leaflets close slowly and regurgitation probably occurs *early* in systole obliterating the negative systolic dip

Possibly the decreased stroke output and the frequent failure of output to increase on effort, as often happens in auricular fibrillation, may be as much related to regurgitation, especially if there is the associated hydraulic restriction of stenosis as to loss of ventricular filling from auricular systole

Interpretation of significant (organic) valvular insufficiency is thus rendered difficult in the presence of auricular fibrillation

Conclusions

Dogs were studied in normal sinus rhythm and during induced auricular fibrillation Auricular and ventricular pressures were recorded, and Evans blue was injected into the left ventricle and collected from the left auricle

Auricular fibrillation led to loss of the mid-systolic dip of the auricular pressure pulse and acute incompetence of the auriculo ventricular valve

The acute incompetence was presumably related to absence of auricular systole, with sluggish valve apposition at the onset of ventricular contraction

Auricular fibrillation may lead to mitral incompetence in man and not only be a further disadvantage to patients with mitral stenosis but also explain why some patients with "idiopathic fibrillation" may occasionally develop cardiac failure

Our thanks are due to the Endowment Fund of St Thomas's Hospital Miss M Lavers and Mr F Schofield for technical assistance, and Mr R J Hirst for the colorimetric estimations

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ETHYL BISCOUMACETATE AS AN INHIBITOR OF SICKLING

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THE inheritance of homozygous sickle genes carries with it the promise of early death for most sufferers Any possible means of brightening this prognosis is worthy of full investigation

For this reason, and this alone, the observations discussed in this paper are recorded—in the hope that those who are able to get greater supplies of cells capable of sickling may confirm or deny these findings

Case-record

The patient, a Jamaican negress, had suffered from what appeared to be a typical sickle cell crisis at the birth of her first child Investigation of her hæmoglobin showed the sickle trait pattern, S–A The electrophoretic pattern was determined in three different hospitals, and on each occasion was found to be the same

The birth of a second child, though free from hæmolytic complications, was followed by a femoral thrombosis Ethyl biscoumacetate ('Tromexan') therapy was instituted, and on the last day of treatment with this drug the prothrombin level was 40% of normal

Three days after the last dose, blood was taken for experiments on the sickling properties of various concentrations of thioglycollate (Griffiths and Grimshaw 1955) Heparinised blood was put up in vaseline sealed smears without thioglycollate as a normal control Repeated observations on previous occasions, using the blood of the same patient, had shown that sickling could be completed in twenty four hours at 37°C, forty eight hours at room temperature, both without added anticoagulant, and up to seventy two hours with added oxalate or heparin

On this occasion, the blood, which normally showed 80–90% sickling after these time intervals, showed no sickling at all for the first twenty days The cells were observed at least twice a day each day From the twenty first to the twenty fifth days a few cells sickled, but in no field observed were the sickled cells more than 4% of the total red cells in a given field

The patient was seen again five weeks after discharge from hospital No drug had been given during this time Vaseline-sealed smears were made of the patient's blood from heparinised tubes (10 i u of heparin per ml of blood), with and without ethyl biscoumacetate (10 mg per 100 ml in sterile isotonic saline solution)

On this occasion the normal control showed sickling of 90% of the red cells to be complete in seventy-two hours At the end of twenty six days the cells with ethyl biscoumacetate showed less than 1% sickling After this time the cells began to disintegrate

Discussion

Murphy and Shapiro (1945) have described the use of both dicoumarol and heparin at the time of crisis in a patient known to have sickle anæmia With heparin, the crisis appeared to have been intensified, and with dicoumarol although no effect was recorded, in two out of three crises the clinical behaviour was described as "atypical." No observations on the sickling process whilst under treatment with dicoumarol and/or heparin or aspirin are mentioned

Although crises in sickle anæmia may be "atypical" ab initio, it is interesting that two of three treated crises should be so described As the crises begin abruptly and the capillary blockage is simultaneous, it seems that a rapidly acting anticoagulant would be effective The illustration of the muscle biopsy in Murphy's article suggests that a fibrin network is the basis of coagulation as opposed to simple agglutination The time factor may be important in this respect, however, and simple agglutination may have preceded fibrin formation, in which case a rapidly acting anticoagulant might important in preventing fibrin formation Small static erythrocyte formations in capillaries may release free thrombin and thromboplastin into the circulating plasma (and the hyperfibrinogenæmia disclosed by electrophoresis supports this view)

Henderson (1951) using dicoumarol in one patient in a sickle crisis, noted that transitory pain was not diminished, and that neither diet nor methylene blue had any effect on the course of the disease

As Murphy and Shapiro (1945) point out "All erythrocytes of a subject with the asymptomatic sickle trait are capable of assuming the abnormal form and differ from those of persons who exhibit the crises only in that they (the former) possess a higher threshold of sickling" A sickle crisis is probably a vicious circle of sickling/small thrombosis/thrombin and thromboplastin release/larger thrombosis until the old erythrocytes are lysed and replaced by younger and more robust ones

Henderson (1951) has pointed out that the symptom sign complex in sickle anæmia is protean, and variations in sickling may be encountered

In our case, two forms of treatment modified the sickling process One was blood transfusion, which was probably a matter of simple dilution by non sickling blood Although the time of sickling was not affected the proportion of cells that sickled was reduced to approximately 50-60% With ethyl biscoumacetate not only was the proportion of sickled cells materially reduced from 80-90% to less than 1%, but the time of sickling of the small number of cells was increased from three days to twenty-six days

Ethyl biscoumacetate and phenindione ("Dindevan") have now replaced dicoumarol in the treatment of intravascular thrombosis largely because of their greater margin of safety and the decreased incidence of hæmorrhagic sequelæ The mode of action of ethyl biscoumacetate has been shown by Hunter and Tudhope (1953) to be to lessen the concentrations of factor VII and prothrombin in the blood but other effects for instance anti vitamin K activity are as yet incompletely understood Although there is general agreement that withdrawal of ethyl biscoumacetate shows a significant reduction in prothrombin time after forty eight hours, I can find no help from a survey of the literature, on the side-effects, and their persistence, occurring after administration of this drug There has been disagreement as to the effect of dicoumarol as an antagonist of vitamin K (Cromer and Barker 1944 Quick 1942)

Phenindione is a synthetic anticoagulant the efficiency of which has been investigated by Blaustein (1950) Preston et al (1952) and by Toohey (1953) The drug is indicated where prolonged hypocoagulability of the blood is required Owren (1954) prefers it because of its smoother control particularly in long term treatment

Although sickle anæmia is basically a defect of hæmoglobin the clinical effects are those of thrombo-embolism It would appear therefore that anticoagulants should have some part to play in the treatment of these effects. As *The Lancet* (1954) has pointed out long term anticoagulant therapy has been practised only by a few enthusiasts, and then within only a very narrow spectrum of thrombo embolic disorders confined to vascular diseases.

A trial of the newer anticoagulants seems to be justified in

(1) Cases showing frequent sickle crises, to determine whether frequency is diminished or modified by long acting drugs.

(2) Sickle crises when they occur to evaluate the action of short-acting drugs in minimising the thrombo-embolic effects of such attacks

The observations recorded here although very limited in scope do seem to indicate the need for a fuller investigation of the actions of the coumarin derivatives and, in particular their actions on the metabolism of abnormal forms of hæmoglobin

My thanks are due to Dr William Whitelaw director of pathology in the Dudley Road group of hospitals for his constant advice and encouragement and to Mr William Grimshaw for considerable technical assistance

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Preliminary Communication

ELECTIVE CARDIAC ARREST

The goal of cardiac surgeons must be the unhurried correction of cardiac abnormalities under direct vision Toward this end are being developed many techniques for working within the bloodless heart and for excluding the possibility of air embolism after such interventions Among these measures against air embolism is the induction of ventricular fibrillation in order to prevent the ejection by the heart of any air that may be within its cavities[1] and the alternative of closing the cardiac wound under saline.[2] A most valuable contribution to this problem and indeed to the whole problem of intracardiac surgery would be made if the heart could be arrested and re-started at will, suffering no damage during periods of arrest and cessation of coronary blood flow

Ringer[3] drew attention in 1883 to the effect of the different cations on the heart beat, and Hooker[4] in 1929 suggested that potassium inhibition induced by an excess of potassium chloride could be used to stop the heart when its beat was disorganised by ventricular fibrillation He recommended a solution of calcium chloride as an antidote to potassium when re starting the heart This work has been revived by Montgomery et al[5] in order to reverse ventricular fibrillation in hypothermic patients. We have not been able fully to substantiate these findings but have by modifying this basic technique succeeded in evolving a reliable method of stopping and re-starting the heart at both normal and reduced body temperatures

METHODS AND RESULTS

Initial Experiments

Thirty three adult dogs, anæsthetised with thiopentone and ether were used to determine whether the induction of cardiac arrest by chemical means was a practical measure. While the vital centres were protected by perfusion with a heart lung machine[6] or by reduction of the general body temperature cardiac arrest was induced by an injection of potassium citrate into the coronary circulation Blood was excluded from the heart by ligating the venous inflow tracts and also the pulmonary artery and aorta The injection of potassium citrate in concentrations varying from 25 to 100 mg

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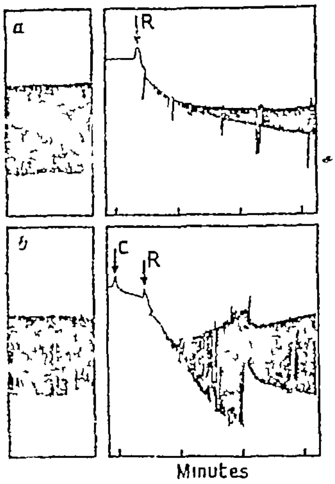
per ml., was made into the root of the aorta. Arrest in diastole followed within five seconds. When this was accomplished a token operation was performed within the left atrium or ventricle. The heart was quite flaccid and could be freely handled, making the elimination of air an easy task when resuturing the cardiac wound. In no instance did air embolism occur. While the heart was stopped without coronary blood-flow for at least fifteen minutes, the heart remained pink and serial oxygen determinations on blood obtained from the coronary sinus showed that a negligible amount of oxygen was being utilised. When the period of arrest had exceeded fifteen minutes blood was allowed to re-enter the heart, and efforts were made to restore a normal beat. Cardiac massage, combined with the injection of calcium chloride and in some cases of adrenaline and neostigmine, always restored muscle tone, and this was followed in almost every case by ventricular fibrillation. Electrical defibrillation was successful in only 70% of experiments and the restoration of normal activity was not reliable.



Perfused rabbit heart 37°C ventricular recording (systole downwards)

(*a*) Left, normal beat. Right, resumption of beat by re-starting perfusion; cardiac arrest 6 min. previously by stopping perfusion.

(*b*) Left, normal beat. Right, resumption of beat by re-starting perfusion; cardiac arrest previously by potassium citrate; perfusion stopped for 15 min.

R = restoration of perfusion with Locke's solution. C–R = change over from citrated to normal solution.

These results were unsatisfactory and it was felt that the questions of duration and reversability of action of potassium citrate, and the need for stimulants, might profitably be studied further on isolated-heart preparations.

Isolated Perfused Hearts

Coronary perfusions of hearts from five rabbits, a guineapig, a kitten, and a puppy were made with oxygenated Locke's solution by the Martin-Langendorff method of aortic cannulation. The apparatus maintained the chosen cardiac temperature, usually 37°C, even in the absence of any coronary flow.[7] A few experiments were made between 23° and 37°C. Heart beats were recorded by a spring-loaded lever attached by thread to the ventricles.

The injection of 10–40 mg. of potassium citrate in 0·2–0·4 ml. close to hearts with coronary flows of 10–20 ml. per minute stopped the beat. By perfusion with Locke's solution with previously added potassium citrate, 1 mg. per ml. was found to be the least which could stop the heart; but in some a just discernible auricular movement persisted. However 5 mg. per ml. always caused complete arrest, and concentrations of up to 20 mg. per ml. were used to determine the dosage safety margin. Diastolic cardiac arrest always occurred within ten to twenty seconds of injection of the solutions, and could be maintained as long as the heart contained them. During this period coronary flow was stopped for fifteen minutes without cardiac damage appearing subsequently. Spontaneous beating started again usually within ninety seconds of perfusion with pure Locke's solution, but with the highest concentrations of potassium citrate this interval doubled. The heart rate was normal in under a minute, and force was almost fully recovered in a further two to three minutes. This series of events was perfectly repeatable, and the time of arrest could be prolonged; one fair recovery followed even fifty-five minutes of induced arrest without perfusion. By contrast, hearts in which the beat was stopped by asphyxia induced by stopping the coronary flow without the addition of potassium citrate, recovered very slowly and then only partially after only five minutes of arrest (see figure). No hearts fibrillated as a result of the potassium citrate combined with coronary arrest—not even the puppy heart which had originally to be defibrillated as soon as it was set up—and on no occasion did a heart so treated fail to resume normal beating after perfusion with pure Locke's solution.

Final Experiments

Encouraged by the results of isolated heart perfusions we modified the initial experiments in the intact animal and established the following technique.

In dogs weighing about 30 lb., 2 ml. of a 25% solution of potassium citrate, diluted to 20 ml. by aspiration of blood into the syringe, was injected through a catheter into the ascending aorta, which was occluded distal to the tip of the catheter. After cardiac arrest for fifteen minutes oxygenated blood was driven through the coronary arteries from the heart-lung machine by release of the aortic clamp. This effectively restored a normal environment to the heart, which responded by a resumption of strong and regular contractions. In an animal protected by a reduction of the body-temperature to 25°C, coronary perfusion was achieved by connecting the catheter in the aorta to a bottle containing fresh oxygenated blood under pressure, without release of the aortic clamp. In this instance a single electric shock was required to restore normal rhythm.

CONCLUSIONS

Cardiac arrest in diastole inevitably results from an injection of potassium citrate into the root of the aorta so that the bulk of it enters the coronary arteries.

The dose of potassium citrate is critical in that a minimum coronary blood-level of 1 mg. per ml. is required to stop the heart, but as yet no upper limit for safety has been determined.

Arrest is maintained as long as an adequate level of potassium citrate remains in the coronary arteries.

Normal beat is restored when simple perfusion of the coronary circulation reduces the level of potassium citrate.

The method is effective both at normal body-temperature and at temperatures down to 26°C, while the perfused isolated heart is responsive at temperatures down to at least 23°C.

The addition of stimulants, such as calcium chloride or adrenaline, is unnecessary and may be dangerous.

The oxygen consumption of the quiescent heart is very low, and at normal body temperature cessation of the coronary circulation for over fifteen minutes does not endanger such a heart.

Although a great deal of further work remains to be done, this method may offer an opportunity for useful surgery on the motionless heart, without the danger of air embolism.

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New Inventions

A SIMPLE PROJECTION APPARATUS

It is often an advantage to illustrate ward rounds and tutorials with histological sections, but the practice becomes tedious if each member has to wait his turn to use the microscope The same criticism applies to using microscopes with double demonstration eyepieces and *multiple-eyepiece instruments have the disadvantage of* being cumbersome

The projection apparatus described here has been devised to meet these objections It can be used in two ways

(1) *Without the viewing box* —The room is darkened and the members of the group sit round the horizontal screen. A strip-light above the book rest enables the operator to identify slides or consult case-records. Used in this way the apparatus has proved valuable during discussions with surgical colleagues on pathological sections from their cases.

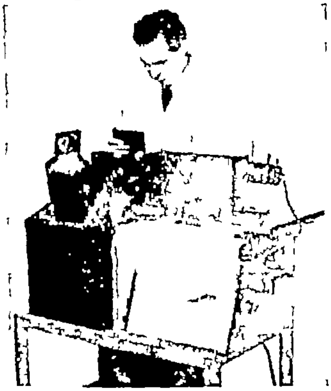

Fig 1—Viewing-box and metal hood in position

(2) *With the viewing-box* (fig 1) for teaching surgical histology at the bedside The projected image can be studied by three to six persons without darkening the ward and even with a light immediately overhead No *projectionist* is required A pointer is incorporated in the viewing box for use by the teacher

No new principles are involved in this apparatus which consists essentially of a microscope set horizontally, and fitted with a prismatic attachment which throws the image on to a horizontal screen (fig 2)

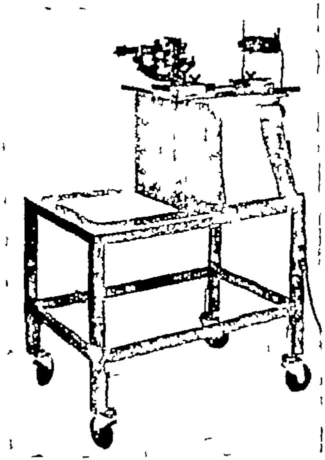

Fig 2—Apparatus with viewing box and metal hood removed.

Any microscope may be employed but one advantage of using the microscope and illuminant of Cooke Troughton & Sims is that the makers supply a bar to link the two together at the most suitable optical distance The rest of the optical equipment was arrived at by trial and error our aim being to produce an evenly focused image in a brightly illuminated field of constant diameter with all three objectives without having to adjust the condenser or the illuminant. This has two advantages

(1) Once the illumination is satisfactory and properly centred the apparatus can be easily manipulated by persons not conversant with the niceties of substage condensing

(2) The interval between the microscope stage and the illuminant *can be enclosed by a metal hood so avoiding glare* when the instrument is used in the dark.

The apparatus is unsuitable for oil immersion work but with the combination given below magnifications of × 100, × 200 and × 400 are possible The optical equipment is as follows:

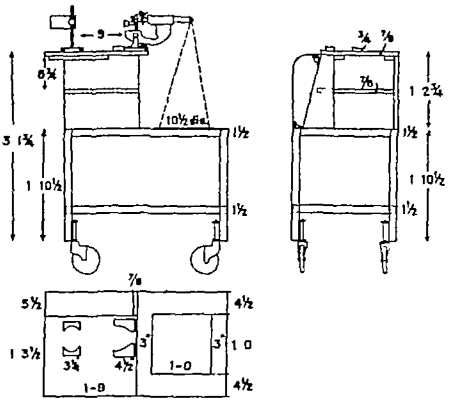

Fig 3—Elevations (side and end) and plan of apparatus.

Microscope series 1000 M1506 high power filament lamp with transformer 3 objective—8 mm 16 mm., and 25 mm. Prismatic attachment	*Supplied by Cooke Troughton & Sims Ltd*
Ocular × 10 projection *Condenser* (aplanatic wide-angle with top lens removed)	Supplied by R & J Beck Ltd.

The screen itself is of plywood or 'Perspex' painted white The metal viewing box (fig 4) was made by courtesy of Dr C H Wilson of the department of physics Westminster Medical School The trolley (fig 3), including the electrical work was made to specification by *Collimator Cases* Ltd and the trolley wheels by *G H* Hughes Ltd Birmingham *A shelf is* incorporated accessible from behind, to hold the transformer, unused flex slide trays &c. The cost of the complete optical equipment was approximately £[illegible]; the trolley cost £35

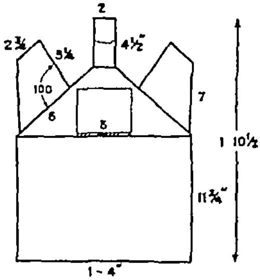

Fig. 4—Side elevation of viewing-box

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Reviews of Books

A Manual of Paper Chromatography and Paper Electrophoresis

RICHARD J BLOCK, department of biochemistry, New York Medical College, EMMETT L DURRUM chief, department of pharmacology, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D C , GUNTER ZWEIG, research biochemist, Charles F Kettering Foundation Yellow Springs, Ohio New York and London Academic Press 1955 Pp 484 $8 00

THIS excellent book seems to cover all the important publications up to 1954 and it shows clearly the astonishing range of paper chromatography at the present time

It begins with an adequate theoretical treatment, and the experimental technique is covered in sufficient detail. The treatment of the quantitative methods is more thorough than in any other book though some of the methods are still claiming accuracies which it is very difficult to realise without long practice The largest single section is devoted to amino acids and peptides

carbohydrates steroids, and bile acids are very fully treated , and an enormous number of miscellaneous substances are also dealt with The reader has no trouble in obtaining information about solvents and methods of revealing the compounds on the paper

The second section of the book, on paper electrophoresis, is also well done, but perhaps it would have been more helpful if the author had expressed his own preferences for apparatus a little more definitely, because a number of variants of almost the same nature are given Considerable attention is devoted to quantitative separations of serum proteins, but the impression is left that this is still rather an empirical procedure and that although results may be reproducible, exact interpretation is a little uncertain. There is no doubt, however, that it gives a very fair impression of the value of the method at the present time

Operative Cholangiographie

Technik, Diagnostik Praxis Dr WALTER HESS, Oberarzt der chirurgischen Universitäts klinik, Basel Stuttgart Thieme 1955 Pp 201 DM 42

IN this monograph Dr Walter Hess ably reviews the research which has led to current methods of cholangiography His book is well produced and liberally illustrated with clear diagrams and many excellent radiographs The methods and apparatus of Mallet-Guy and of Caroli are described, and Dr Hess also gives an account of his own method which ingeniously combines both of these techniques Drawings show the various radiological pictures obtained at differing perfusion pressures of the contrast solution A section dealing with anæsthesia and the action of the more common drugs used in anæsthesia makes it clear that almost all of these alter the biliary pressure, and that ether anæsthesia without premedication is required Unlike some workers he allows induction with thiopentone Also he notes that ether in very deep anæsthesia will affect the pressure

Most of the book deals with the diagnosis of biliary-tract disorders by means of manometric and cholangiographic findings at operation, and after operation by means of an indwelling T-tube. The cystic-duct syndrome, whether caused by congenital-valve formation, inflammatory thickening of the cystic duct, or spasm of the duct, is well described Hypertonia of the biliary tract may be primary ("essential" hypertonia), or secondary to an obstruction Both conditions lead to dilatation of the ducts and gall-bladder, and in many cases only manometry will distinguish between them Hypotonia may be found in an anatomically normal duct in the presence of stones, which can give rise to false pressure readings if they become impacted Dr Hess mentions only in passing the association of cholangitis with hypotonia which is important, however, in relation to postcholecystectomy jaundice without stones in the common duct

The most important part of the book is the large and well-written section on the surgery of the biliary tract under [illegible] ographic control Dr Hess remarks on the great frequency with which stones are left behind after operations on the biliary tract, and explains how misfortune can be almost completely abolished Failure of cholecystectomy is so common that it deserves more space than he has given it probably at least 30% of cholecystectomies are unsuccessful, and in nearly half of these the results are so bad that the patient welcomes the suggestion of another operation If manometric and cholangiographic control are used, such failures should be very few

The work is an admirable piece of research and exposition written in easily readable German

Collected Papers of Otto Fenichel

Collected and edited by HANNA FENICHEL, DAVID RAPAPORT London Routledge & Kegan Paul 1954 Pp 408 35s

Fenichel was the author of two textbooks of psycho-analysis in which his expository gifts were manifest So highly were these works esteemed that, as the introduction reminds us, the larger of them was compared by a prominent psycho-analyst to the Code of Justinian In keeping with a book-making trend that is steadily evident, not only among psycho-analysts, Fenichel's shorter writings are now being republished, and the present volume contains those that appeared between 1922 and 1936 They are unselected, and range from notes, two or three paragraphs long, to detailed studies of such questions as the pre-Œdipal phase in girls and the pregenital antecedents of the Œdipus complex The outstanding features of these papers is their close dependence upon observations made on individual patients in the course of psycho-analytical treatment They are well translated and represent the main stream of orthodox Freudian thought

Management of Acute Poliomyelitis

C P STOTT, S R N , diploma of poliomyelitis nursing, M. FISCHER WILLIAMS, M.R C P E , senior neurological registrar, Birmingham United Hospitals Edinburgh and London E & S Livingstone 1955 Pp 99 12s 6d

THE principal author is a nurse and the book is therefore one for nurses, although the title hardly makes this clear Nurses who have some practical experience of nursing poliomyelitis patients will find the book very helpful, especially in the management of respirator cases. The authors consider that the isolation of patients in the acute stage is still a debatable subject, and the chapter on isolation technique is not very convincing The illustrations showing how patients should be handled and exercised are really helpful The equipment required for a poliomyelitis unit is set out in an appendix

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Manson's Tropical Diseases (14th ed London Cassell 1954 Pp 1144 60s) —The new edition of this distinguished "manual of diseases of warm climates" is the eighth revision for which Sir Philip Manson Bahr has been responsible, and it takes account of five years' progress As Sir Philip says, most important among the advances is 'the widespread application of the many so called antibiotics to the treatment of tropical diseases, with gratifying results " More space has been given to the insecticides, which have done so much in recent years to combat tropical disease That controversial condition, kwashiorkor, now has a chapter to itself, and so has epidemic hæmorrhagic fever, which Korean experiences brought to wider notice To make room for these things, the chapters on diet and nutrition, the preliminary statement on virus diseases, and the historical sections in each chapter have had to be omitted

General Aspects of Ageing —Volume I in the Ciba Foundation Colloquia on Ageing reports the proceedings of the conference on this subject held last year at the foundation Earlier in 1954 the trustees had decided to support basic research into the process of ageing, and it is hoped that this will be the first of a series of conferences The editors of the volume are Dr G E W Wolstenholme and Miss Margaret Cameron (London J & A Churchill 1955 Pp 255 30s

Neuropharmacology —The Josiah Macy, jun , Foundation, New York, has published the transactions of the conference on this subject held in May, 1954 The editor is Dr Harold A. Abramson (1955 Pp 210 $4 25)

THE LANCET

LONDON SATURDAY JULY 2, 1955

The Physician and Industrial Health

Dr **Donald Hunter** has written a remarkable book which he has called *The Diseases of Occupations*[1] But it is much more than that Was it **Talleyrand** who said that "a good doctor should know a little about everything—even medicine" Dr **Hunter** who has a Baconian approach to facts and ideas knows a great deal about everything including occupational as well as general medicine He deals not only with the clinical and curative aspects of occupational diseases but also with social history and politics legislation industrial processes engineering metallurgy geology and climate chemistry, toxicology and accidents and their prevention He takes a wide sweep of the occupations of the world, ranging from the occupations determined by climate, including those of the freebooters of the Asiatic Steppes the nomads and the people who live in the settled grasslands to the Brandon flint knappers the red pepper industry of Eastern Europe the activities about abattoirs and sheep stations, and the handlers of parrots and fulmar petrels The earnest critic could probably find occupations such as those of barrow boys and newspaper sellers, which have not been caught in Dr **Hunter's** drag net but they would be very few The well known occupations and their health risks have been treated with impressive care and completeness Inevitably in a book with only one author, however knowledgeable there are gaps but the book is almost as comprehensive as it is fascinating

This achievement is all the greater because Dr **Hunter** is a general physician who at first had no official connection with industry In most countries the influence of occupation on health has been largely ignored by the general physician—an ostrich like attitude which he suggests may be traced to the ancient Greeks' prejudice against manual labour and to the fact that the medical profession, in this scientific age, is still influenced by the classical tradition **Socrates** held that

> 'what are called the mechanical arts carry a social stigma and are rightly dishonoured in our cities. For these arts damage the bodies of those who work at them or who have charge of them by compelling the workers to a sedentary life and to an indoor life by compelling them indeed in some cases to spend the whole day by the fire This physical degeneration results in deterioration of the soul Furthermore the workers at these trades simply have not got the time to perform the offices of friendship or of citizenship Consequently they are looked upon as bad friends and bad patriots And in some cities especially the war like ones, it is not legal to ply a mechanical trade.

In an oration to the Royal Institution in 1941 Prof **Benjamin Farrington** discussed the implication of this attitude for the mechanical trades and the effect it had on ancient medical science and practice In general, the working man was neglected in medical practice and the occupational diseases ignored in medical science Dr **Hunter** points out that

> 'historians have been very properly impressed with the comprehensive outlook of the ancient medical manual (Hippocrates, *Airs, Waters Places*) But, if we look at it carefully we can see that it is deficient professing to be a treatise on environment and yet omitting what may be described as the most important element in the environment from the point of view of health and disease the regular occupation of the man'

Since those days we have travelled far, but not so far as might be imagined for, though the Industrial Revolution made England wealthy, it had some devastating consequences for the workers which are not yet by any means at an end It is good to read in Dr **Hunter's** early chapters, of the large part played in factory reform by those members of our profession who were exceptional in regarding the conditions of work as very much the concern of medicine Notable among these was **Charles Turner Thackrah**, a physician in Leeds who died at 37 but not before he had produced, in 1831 the definitive edition of his (the first) English textbook on the diseases of occupation[2] Sir **Thomas Legge**, himself a pioneer and the author of a notable textbook[3] wrote

> I believe Thackrah's early death retarded the progress of industrial medicine and surgery and the amelioration of conditions of employment for half a century Had he lived his clinical knowledge and experience would have given prominence in legislation to the need for medical supervision in the factories and workshops by practitioners having the necessary knowledge of home conditions of the workers and the maladies attributable to industrial life in its widest sense

After **Thackrah's** the next English textbook[4] published in 1892, was by J T **Arlidge**, F R C P, physician to the North Staffordshire Infirmary and this too showed the value of first hand experience In the intervening years the two most distinguished contributors to industrial medicine were T B **Peacock** of St Thomas's Hospital, and E H **Greenhow** of the Middlesex Hospital In the *Transactions* of the Pathological Society of London (1860–66) may be found excellent clinical and pathological descriptions by both these physicians of the disease which was to be called silicosis by **Visconti** in 1870 Another general physician who devoted much time and thought to the occupational diseases was Sir **Thomas Oliver** of Newcastle upon Tyne whose *Diseases of Occupation*[5] first published in 1908 illustrates his lively mind and his interest in preventive medicine And now Dr **Hunter**, of the London Hospital, will be numbered among this select band of general physicians who have gone into workplaces to see for themselves how men, women, and children work and who have tried to prevent the diseases of occupation The nation owes them and others more than it knows in terms of health and happiness of its members, but their work is not always dramatic and they have had an uphill fight Even now the diseases of occupation are rarely taught to undergraduates—the London Hospital is one of the exceptions in this respect—and postgraduate instruction on the subject is scanty and uncoördinated

Dr **Hunter's** book is a powerful answer to tho who maintain that industrial or occupational medicine is a "narrow specialty," and also to the recently reported remark of the Chief Inspector of Factories[6] that "industrial health is not essentially a medical problem" Actually the impetus for improved conditions at work has come largely from doctors and will probably continue to do so, which makes it all the more regrettable that, administratively, industrial medicine in this country is divorced from the hospitals in the National Health Service We agree with the editor of the *Transactions* of the Association of Industrial Medical Officers when he said that "industrial medicine has been bedevilled by ministerial jealousies Let the patient take his rightful place in the forefront of all discussions and let him remain what he is, one whole and undivided person' Dr HUNTER in his fine book has put a signpost on the right road

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[1] The Diseases of Occupations By **Donald Hunter** M D F.R.C.P physician to the London Hospital London English Universities Press 1955 Pp 1046 £5 5s

[2] Thackrah C T The Effects of Arts Trades and Professions, Leeds, 1832

[3] Legge T Industrial Maladies Oxford 1934

[4] Arlidge J T The Diseases of Occupations London 189

[5] Oliver T Diseases of Occupation London 1908

Synthetic Analgesics

MORPHINE has well-known disadvantages—its use may lead to addiction, and it sometimes has undesirable side effects—but it is still the standard analgesic against which all others are set The euphoria produced by morphine, though it may result in addiction, probably contributes notably to its power to control pain, BEECHER[7] suggests that its value as an analgesic stems largely from modification of the response to pain Other potent analgesics also cause euphoria, and none has yet been found that does not have this effect, and which therefore is free of the risk of addiction With one exception drugs with powerful analgesic action—whether transformation products of morphine or synthetic compounds—have several structural features in common The exception is the dithienyl butanes, but these are also addictive[8] Broadly speaking, analgesic potency seems to match the risk of addiction, though there is some evidence that methyl-dihydromorphinone (metopon) hydrochloride has slightly less strong habit-forming properties than morphine itself[9]

The main side effects of morphine are nausea, vomiting, constipation, sweating, and respiratory depression, and the intellectual dulling associated with protracted administration may also be included among the disadvantages The common synthetic analgesics, such as pethidine amidone, and methorphinan, are said to have side-effects less commonly and in slighter degree Controlled trials suggest that, given in equivalent analgesic doses, they are all about equally liable to produce side effects[10] a few patients tolerate none of them, but in others the response varies widely so that the drug of choice differs from one patient to another With either morphine or a synthetic analgesic both effectiveness and side-effects may depend on the method of administration. Morphine is relatively ineffective when given by mouth, the analgesia from gr $^1/_6$ orally is less than that from gr 10 of aspirin[11] All the synthetic analgesics can be administered either orally or parenterally, but oral administration of pethidine and, particularly, of amidone is likely to cause nausea and vomiting, so the resulting analgesia is variable Methorphinan, on the other hand, is well tolerated and effective when given by mouth, and since its action is long-lasting it is useful in the treatment of chronic pain—though for this purpose parenteral amidone may be preferable, since it has a slighter central effect

A new synthetic analgesic has now been developed from pethidine This is 1,3-dimethyl-4-phenyl-4-propionoxy-piperidine ('Nisentil') Clinical trial of this drug in the control of postoperative pain suggests that it is an effective analgesic of short duration, with little hypnotic or other side-effect[12] Nevertheless this, too, is apparently a drug of addiction,[13] and absence of central sedation in the postoperative period may not be an advantage Much attention is also being given to increasing the usefulness of morphine and its derivatives by preventing side-effects Chlorpromazine, it has been found, substantially reduces nausea and vomiting Replacement of the N-methyl by an N-allyl group in the morphine molecule has yielded allylnormorphine ('Nalorphine') which effectively prevents respiratory depression due to morphine or related analogues The compound resulting from a similar substitution in methorphinan has much the same action[14] These antidotes have not proved wholly satisfactory, since they themselves may have undesirable actions Perhaps diamino-phenylthiazole may prove free from this drawback This agent has a distinct and long lasting antagonism to respiratory depression due to morphine, but in therapeutic dosage does not affect analgesia[15]

Artificial Pneumothorax

ARTIFICAL pneumothorax (A.P) is not fashionable It has been used considerably less in the past few years, but we do not know how much less Some physicians do not use it at all, others deplore its downfall, but induce few A.P s No doubt some continue to treat many patients with it, and would stoutly defend their methods against the arguments of those who prefer lengthy treatment with antibacterial drugs and pulmonary ablation Possibly the majority prefer to wait and see, for at present there are hardly enough facts on which to form a judgment This question will be settled, not by a definitive controlled trial, but by the slow evolution of medical opinion, influenced more by personal observation than by published statistics

It is surprising to find so much still being written about pneumothorax treatment The number of papers on the subject published throughout the world fell from 250 in 1938 to 100 in 1947, but the number remains the same in the Current List for 1954 Certainly not all of them were condemnatory The published long-term results have not been discouraging, and they were obtained with little help from the antibacterial drugs The valuable survey from Frimley Sanatorium,[16] for instance, showed clearly that the more modern methods of treatment would have to be very good indeed to beat the pneumothorax if only survival and working capacity were onsidered. ROBERTS and LYONS[17] have recently eported similar results in nearly 400 patients treated etween 1942 and 1948. 91% of 304 who left hospital ith an A.P. on one side survived for five years, nd 77% of 88 lived for ten years. Of 43 with disease onfined to one lung zone only 2 died during the first ive years, and four-fifths of those with four and nore zones involved survived for the same period. t would be unwise to assess the value of the treatment nly from such measurable factors. Possibly for ertain types of disease the survival rates and working apacity after pneumothorax are identical with those fter other treatments. A rational conclusion might hen be reached by considering such matters as length f stay in hospital, the effects of the treatment on he patient's mind, and the functional result. But he judgment may not in the end be rational. Treatment by artificial pneumothorax is declining so rapidly hat it may soon become difficult to gain adequate echnical experience of it, and chest physicians without such experience are unlikely to induce a pneumothorax that they cannot confidently maintain. The treatment may then die out, not because there is a better way, but because there are easier ways of treating pulmonary tuberculosis.

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[6] *Times*, May 17 1955
[7] Beecher, H K *Anesthesiology* 1951, 12 633
[8] May, E L *Amer J Med* 1955 14 540
[9] Lee L E *J Pharmacol* 1942 75 161
[10] Nathan P W *Brit. med J* 1952 ii 903
[11] Beecher H K Keats, A S, Mosteller, F, Lasagna, L *J Pharmacol* 1953 109, 393

[12] Bachrach E H., Godholm, A N, Betcher, A M. *Surgery*, 1955, 37, 440
[13] Isbell H *J Pharmacol* 1949, 97, 182
[14] Cullen S C, Santos C C *Arch Surg Chicago*, 1954, 69, 410
[15] Shaw, F H Shulman, A *Brit med J* 1955, 1, 1307
[16] Foster Carter A. F, Myers M., Goddard, D L H, Young, F H., Benjamin, B *Brompton Hosp Rep* 1952 21, 1 See *Lancet* 1953, i 486

It would be a pity to let such a well-tried treatment die through technical neglect, while there is still doubt whether it should die at all.

Annotations

THE I. R. U.

WHEN a patient has been discharged from hospital as "fit" or told by his doctor that he can now return to work, his gravest medical difficulties may be only just beginning, and he is liable to be left to cope with them alone—with the unfortunate results so well portrayed in the study of Glasgow ex-patients by Ferguson and McPhail.[18] An official effort to prevent the social disasters caused by residual handicaps began in 1943 when a residential industrial rehabilitation unit was set up at Egham, on the recommendation of the Tomlinson report.[19] The scheme was expanded after the reorganisation of the Ministry of Labour and National Service in 1948, using experience gained in the reablement of ex-Servicemen and returned civilian prisoners-of-war. Today there are 14 industrial rehabilitation units in Britain, together with a research and development unit at Waddon. Each centre has its doctor, social worker, disablement rehabilitation officer, and industrial psychologist or vocational officer, and can take 50–100 persons staying for an average of eight weeks. Originally the aim was solely physical reconditioning—with fresh air, good food, physical training, and recreation—but it was soon realised that mental toning-up was equally important, to restore lost confidence and combat deterioration caused by enforced idleness. Selection of applicants follows a medical examination whose object is to determine whether the applicant will be fit at the end of the course for placement in industry or for entry to a vocational training centre. A 'straight' medical or orthopædic case recommended by a hospital or surgeon is usually accepted more readily than a patient with epilepsy or a neurosis or psychosis, for whom success is less probable.

Since their inauguration these units have dealt with 60,000 men and women, and a sample of 7000 has now been specially studied.[20] The results are encouraging, for five-sixths completed the reablement course successfully and were either placed in employment or admitted to a training course. A follow-up six months later showed that four-fifths of those placed in employment had been successfully settled. The sample investigated showed particularly satisfactory results in the large *group of tuberculous patients, of whom a proportion more than twice the average were admitted to training.* Amputations did not bear out the expectation of having a better than average reablement prospect; in fact they were not so easily placed in employment as the average patient. The results for injuries also proved rather surprising, the success of immediate placing being better with injuries of the upper limb compared with the lower, though the success at follow-up showed less difference. In about two-thirds of those abandoning the course failure to complete it was due to medical reasons; premature termination was twice the average in psychosis (33%), the next highest rates being for mental deficiency (23%) and diseases of the skin (22%). About a fifth of those completing the course were passed on to vocational training centres. The least successful results in placement were obtained with epileptics and patients with nervous and psychological disorders, though the criteria for their admission to the course had been more severe. Epileptics had good initial placement results, but after six months they were at the bottom of the list with less than 60% of those placed in employment still at work. It is therefore suggested that more searching tests may have to be imposed for epileptics and patients with nervous disorders before they are admitted to expensive training courses. Though it is known that the average age in the sample was 37 years, and that 17% were over 50 years of age, the results are not analysed in the published summary according to age and length of prior employment. Judging by the follow-up results, elderly long-unemployed workers were (as would be expected) less suitable for training, and the group with diseases associated with later years—respiratory and cardiovascular disorders and arthritis—had equally low proportions suitable for training. But their final success in retaining a job was up to the average.

Resentment is sometimes felt, especially by the young,[1] because training is not automatically offered when disability is obvious. But a cardinal principle of industria training laid down in the Tomlinson report[19] was tha training shall be provided only if it is necessary in orde to obtain employment, and only if it is likely to overcom the handicap. Disability by itself is no claim to a cours of training.

TRACE ELEMENTS

THE *requirement by man and animals of so-calle trace elements is a fine example of the integration o* metabolism with available resources. Primitive societie even if they had been equipped to do so, need not hav worried that they were not getting enough of thes elements. The low fluorine content of the water and th consequently high dental-caries rate in some area might seem to show Nature *failing* to live up to it promise; but though increasing the fluorine conten will reduce the incidence of caries, there is reason t believe that this would never have been high but fo our artificial way of life.

At a recent symposium in the Vatican City, human, animal, and plant physiologists met to share thei knowledge of these elements. All the mammalia requir copper, cobalt, and zinc; and they probably combin these into several similar compounds and utilise them on the same enzymic systems—for example, carboni anhydrase[1] or butyryl coenzyme A dehydrogenase.[2] Likewise, it is fairly certain that molybdenum will turn out to be an important part of the xanthine oxidase system in man, as it has proved to be of that in rats.[3 4]

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[17] Roberts, B., Lyons, J. P. *Tubercle*, 1955, 36, 187.
[18] Ferguson, T., McPhail, A. N. Hospital and Community. London, 1954.
[19] Report of Interdepartmental Committee on the Rehabilitation and Resettlement of Disabled Persons. Cmd 6415, 1943.
[20] *Minist. Lab. Gaz.* 1955, 63, 121.
[1] Ferguson, T., McPhail, A. N., McVean, M. I. Employment Problems of Disabled Youth in Glasgow. Medical Research Council Memorandum no. 28, 1952.

At the Vatican City meeting, Prof. R. A. McCance, F.R.S., considered several elements of medical interest. Discussing the association of Kinnier Wilson's disease with disordered copper metabolism,[5] he said that this disease, as we see it today, may be described as follows:

> There is a deficiency of cœruloplasmin (a specific protein to which over 90% of the copper in the serum is normally bound firmly), which may be the hereditary lesion; and owing to it, or for some reason connected with it,[6] excessive amounts of copper are absorbed. This has been checked by the use of radioactive copper.[7] The metal does not remain in the plasma. Much of it is excreted in the urine, and the rest seems to pass into the cerebrospinal fluid and tissues where it is deposited in progressive and ultimately destructive amounts. The brain and liver are the first to suffer, whereas the heart, lungs, erythrocytes, and skeletal muscle remain relatively clear. The separation of the metal in the eye tissue is the cause of the Kayser-Fleischer rings. The deposition of copper in the kidney may interfere with the reabsorptive mechanism for amino acids, or possibly the amino acids pass through the glomerulus combined with copper in a chelated form, and these compounds are not susceptible to reabsorption. Copper is also excreted in combination with peptides.[8]

The administration of amino acids by mouth increases the excretion of copper in patients with Kinnier Wilson's disease but not it seems in normal people—or at least not to any great extent.[9] There are many puzzling features about the metabolism and excretion of amino acids by these patients. Their pattern and concentration in the plasma seem to be normal, whereas the excretion is high and very variable. Histidine, serine, tyrosine, and threonine may predominate, but proline and citrulline have been emphasised by other investigators. The amounts excreted seem to depend on the dietary proteins and the state of the disease rather than on the liver lesion.[10] It is difficult, as Professor McCance remarked, to understand the observation by Cooper et al.[11] that unlimited protein food and even the infusion of amino acids did not increase the loss.

Turning to mercury, Professor McCance remarked that pink disease (acrodynia) has been ascribed to poisoning with this element,[12] but that in treatment dimercaprol has not fulfilled its earlier promise.[13] It now seems that some of the symptoms and signs may be due to mercury, but that they are essentially manifestations of gross overactivity of the sympathetic system, and yield satisfactorily to administration of tolazoline.[14 15]

> "Where then does the mercury come in? If, for example, the symptoms and signs are due to sympathetic overactivity and relieved by drugs which are lytic for this system and stimulate the parasympathetic side, why do the patients stop sweating after the administration of the drug? If mercury is implicated, why was the disease not more common when mercury was much more of a therapeutic standby than it is today? Have the patients who get pink disease absorbed more mercury than others who have been treated in a similar way, or deposited it in some abnormal site? Are they suffering from something analogous to Wilson's disease? It has been suggested that these patients have been 'sensitised' by the mercury or were peculiarly 'sensitive' to mercury,[16] but these phrases have no exact meaning, and patch tests with calomel or mercury have not proved a help.[17]"

CONTROL OF POLIOMYELITIS VACCINE

IN the detailed report on the Salk poliomyelitis vaccine which we recently summarised,[18] the Surgeon General of the United States Public Health Service described some of the procedures which are to be adopted for the biological control of the vaccine. The manufacture of the vaccine on a large scale has shown that the process of inactivating virus by formaldehyde does not always follow the original concept laid down by Dr. Salk.[19] The original safety tests were designed "primarily to demonstrate mass contamination resulting from accidents in manufacture, and not small amounts of residual live virus which the process was believed to reduce to an immeasurably low and harmless level." We may infer from this that the curve describing the inactivation of poliomyelitis virus by formaldehyde is not strictly linear, but follows a less readily predictable course. In consequence, it has been found necessary to increase the minimum requirements for vaccine testing to provide a substantially greater margin of safety.[20] These changes provide for an increase in the number and sensitivity of the tests, and the application of the tests at more critical points in the manufacturing process. In addition, a final tissue culture test of the finished product has been added to exclude virus contamination during the bottling process. The revised requirements will be incorporated in official regulations to establish their status as mandatory standards. There is also to be a considerable expansion in the organisation for controlling the requirements for vaccine production, including the creation of a technical committee on poliomyelitis vaccine, a new Division of Biological Standards, and increased "on-plant" surveillance and consultation by Public Health Service staff and by consultants drawn largely from university research centres.

These, and other similar measures, are sensible second thoughts which will increase the safety of the vaccine considerably. But there is a danger that in navigating the narrow channel of formaldehyde treatment, manufacturers, anxious to keep clear of the Scylla of incompletely inactivated virus, may founder on the Charybdis of insufficiently potent vaccine. There are fears too that the decision to stop controlled trials of the vaccine will have obscured the navigational markings in this particular danger spot; it will be no easy matter in present circumstances to get a clear idea of the efficacy of different batches of vaccine in preventing paralytic poliomyelitis. The report on the 1954 vaccine trial[21] made it clear that batches of vaccine prepared by different manufacturers from the same formula showed considerable variations in their immunising potency, and this finding should not be overlooked in the natural anxiety to ensure that the vaccine is as safe as is humanly possible. This consideration becomes all the more important as changes are introduced here and there into the technique of vaccine production.

In Washington last week a panel of 15 experts discussed the situation:[22] 8 were in favour of continuing the vaccination programme, 5 were opposed to it, and 2 abstained from voting. It seems, therefore, that vaccination on a large scale may begin again presently; but no vaccine will be released until it has passed the new safety tests. It has not yet been announced who will get the vaccine and when.

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MENTAL DISORDERS DUE TO CORTICOTROPHIN AND CORTISONE

MENTAL disturbances are not uncommonly associated with disorders of suprarenal function. The apathy of patients with Addison's disease is well known; mental disturbance is found in many patients with Cushing's syndrome [1,2] and patients with adrenal virilism may show schizoid reactions or have depressive episodes.[3-6] Thus it is not surprising that mental disturbances arise in patients treated with corticotrophin or cortisone,[7-11] but the cause of these aberrations remains in doubt. Lewis and Fleminger [12] find no evidence that patients who have been mentally ill are especially liable to such aberrations. Quarton et al.[13] consider whether corticotrophin and cortisone in some way directly damage nerve-cells. Cerebral lesions have been described in Cushing's syndrome [13] and in animals which have received large doses of corticotrophin or cortisone,[14] but in this experimental work the dosage was much higher than that used therapeutically. Other workers have reported cerebral vascular lesions after deoxycortone therapy,[15,16] and Selye [15] believes that these can result from administering corticotrophin or cortisone. It has also been suggested that multiple small cerebral thromboses may be responsible for mental abnormalities during treatment with these substances, since there is some evidence that the blood of such patients shows increased coagulability.[17]

There is at present no evidence that pituitary and adrenocortical hormones can pass the blood-brain barrier and directly affect the metabolism of the brain—though in disease the barrier might possibly become abnormally permeable to them. There is a certain amount of evidence that the hormones affect the permeability of the barrier to other substances,[18] and patients with Cushing's syndrome occasionally have elevated protein levels in the cerebrospinal fluid,[2] suggesting altered permeability. Electro-encephalographic studies in animals have yielded abnormal tracings which have been interpreted as indicating an antagonistic action between cortisone and deoxycortone on brain excitability, but the evidence is conflicting. Similarly it is impossible to draw any conclusions from the large mass of experimental work on the effect of cortisone and corticotrophin on the enzyme systems in the brain. Nor is there any evidence to support the idea that psychotic symptoms may arise from an unbalanced secretion of adrenocortical hormones in response to corticotrophin, or from the balance being disturbed by exogenous cortisone.

A more promising line has been followed by Mirsky [19] in work on conditioned behaviour in monkeys. He found that monkeys treated with corticotrophin were more exploratory in their behaviour and reacted more aggressively to unpleasant conditioning. Furthermore the treated animals forgot how to avoid an unpleasant situation more rapidly than an untreated control group. These aberrations of behaviour are not unlike the 'denial' in manic patients. It may be significant that hypomanic symptoms have often been described in patients treated with corticotrophin or cortisone. Another possibility is that patients treated with corticotrophin or cortisone may develop a distorted relationship to themselves, and, especially when treatment has been pressed to the point of obvious physical change, the alteration of their body image may precipitate mental upset. This conception has been developed in connection with schizophrenia by Macalpine and Hunter,[20] and could undoubtedly explain the mental aberrations in patients with adrenal virilism.[3-6]

THE BLOOD-BRAIN BARRIER

MANY years ago German workers drew attention to the difference in permeability between cerebral and other blood vessels. In the normal animal the large-molecule dyes accepted by the histiocytes of liver and spleen and lymph-nodes did not appear in the histiocytes of the brain except where the brain was injured or inflamed. This observation gave rise to the conception of the blood-brain barrier. Friedemann and Elkeles [21] studied the passage of toxins into the brain through this barrier and showed that factors other than molecular size were concerned—notably the charge and the lipoid solubility. King [22] suggested that a factor beyond the vessel wall—namely, tissue affinity—was involved.

The site of the barrier remained obscure. It might be the walls of the capillaries, though there was no visible structural difference between those of the brain and elsewhere; or it might be the accepting histiocytes, though in view of their activity in phagocytosis once inflammation had occurred this seemed improbable; or it could lie in the intervening ground substance. Hess [23] points out the correlation in time and place between the barrier and the presence of a polysaccharide or glycoprotein in the interstitial tissue. In the mouse embryo this substance, assessed histochemically by the periodic-acid Schiff reaction, *is absent and there is no barrier*; in the guineapig embryo the material is present and so is the barrier. Further, after injury to the rat brain the area in which the barrier is absent is temporarily free of glycoprotein, and as healing occurs and the structure of the brain reverts to normal the glycoprotein and the barrier return pari passu. It seems probable that a gel *with a carbohydrate background is formed in the ground* substance, but Hess has not yet completed the histochemical identification of the material. His work will be of great interest to neuropathologists and others concerned with the transport of viruses and large molecules to the brain and their dissemination in the cerebral tissue.

Elkeles [24] has lately shown the importance of electrical charge and lipoid solubility in the intravital staining of the adrenal cortex and medulla. Both the brain and the adrenal cortex, rich in lipoid, concentrated neutral red chloride (a basic dye) from blood-levels which did not colour the rest of the body, whereas acid dyes were taken up by the rest of the body (including the adrenal medulla) but not by the brain or adrenal cortex.

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Special Articles

IF I WERE A MINISTER OF HEALTH IN ASIA

S M Keeny

DIRECTOR, ASIA REGIONAL OFFICE UNITED NATIONS CHILDREN'S FUND

In the last ten years a wholly new public health situation has arisen in Asia It is a situation brought about by modern medical techniques, which can tackle widespread disease at comparatively small cost, and by the availability of money from abroad to help put these techniques into action

This combination of new money and new techniques is making it feasible for even poor countries to bring under control in a few years public health enemies which have handicapped people for centuries With supplies contributed since 1950 by the United Nations Children's Fund (Unicef), for example, Indonesia has treated some 1,000 000 people for yaws and it expects to bring this age old threat under control within a comparatively few years

GETTING ACQUAINTED

The new situation, however, has also made for impatience on the part of many Western administrators sent to the East and on the part of the officials of national health departments From the point of view of the former, one needs to remember that they must report to political boards and committees of laymen These, in turn, must show results to their constituencies, who expect every dollar abroad to do the work of ten or a hundred at home—especially where " miracle drugs " are concerned

The problem of the public health officer in Asia stems from the fact that aid is coming from many sources—perhaps the U S Foreign Operations Administration, the British Colombo Plan, or United Nations agencies such as the World Health Organisation, the Food and Agriculture Organisation, or Unicef—and each has its own " mysterious " set of conditions One could understand the attitude of such an official if he occasionally felt that the cure is sometimes worse than the disease

The representatives of the foreign agencies and of the governments in Asia are just beginning to get acquainted In the process, a lot of misunderstandings are gradually being cleared away From my own contacts with about a dozen health ministries and conversations with representatives of Unicef and other agencies, I have found that the following impressions—usually first impressions and wrong ones—need to be ironed out

Foreign representatives sometimes feel that official public health departments are casual in meeting deadlines, are slow in starting urgent programmes even after the requested supplies have arrived, and are sometimes reluctant to adopt new and cheaper methods that are sharply different from traditional practice—that, in countries where most of the people live in villages, health officials have too often thought first about their cities, particularly their capitals

THE EYES OF ASIA

On the other hand, health officials in Asia have occasionally confided something about how we foreigners look to them In their darker moments they seem to think of us as greedy for quick results, wanting long-term commitments from the Asian government against short-term commitments from ourselves, and inconsistent, with proposals varying from year to year according not only to the availability of funds but to changes of political temper in our own countries

We rely too much, they sometimes feel, on our own imported personnel, who have been slow in arriving, who know next to nothing about the country to which they are coming or even of life in the tropics, and who too often go away just about the time they have begun to learn

Foreign officials, too, they say, may tend to assume that local officials understand without explanation what is required from them by the contributing agency We may be insensitive to the language difficulty often faced by the local official who speaks English imperfectly, if at all, although we seldom understand or seriously undertake to learn the local language Finally, we may be unrealistic in asking for the immediate assignment of non existent trained personnel and unaware of the difficulties of getting skilled staff to live in the rural villages

CONSOLIDATING THE GAINS

Happily, by 1955, mutual understanding has advanced a long way from the melancholy picture I have just sketched The practical question now is how a national health department can, in spite of difficulties which do exist, make use of the new opportunity to speed up the fight against disease and how to consolidate these gains into improved public-health programmes—particularly those that will better the health of the rural population

If I were a minister of health, I should tackle the situation somewhat as follows

1 I should start with the assumption, with which most people will agree, that the public-health budgets of most Asian governments are too small, even in comparison with the limited incomes of the governments, and that the best way to increase them is to show the sceptics in the finance department that the combination of foreign aid and new techniques, plus a relatively small amount of local money, make it good business to get rid of some of the diseases, such as malaria and yaws, that can now be prevented or cured so cheaply The familiar phrase " Poor countries cannot afford the luxury of malaria " applies now to other diseases as well

In a section of the Himalayan foothills in India, tens of thousands of acres of fertile land were reclaimed from the jungle when malaria was brought under control Food production rose 50% after spraying was carried out with D D T provided by the Children's Fund, and new farms were staked out by settlers moving in from crowded areas Throughout Asia today, productivity is rising as men are being freed from the burden of sickness and disease

2 I should ask the foreign agencies to state their policies clearly and to tell me about how much money I might reasonably expect for the next three years

3 I should get some of the money I need by postponing expensive building campaigns Good services depend less on buildings than on trained personnel and the right tools for them to work with

4 With the assistance of the best specialists I could get from my own government, from the World Health Organisation, or the bilateral agencies, I should make up a ten year plan as to what seems feasible I should summarise it in a pamphlet that I would put into the hands of everybody who is likely to have anything to do with getting the money for the plan or making it operate. Within this broad plan, I should indicate more precisely what seems practical for the next five years, and I should try to persuade my government to make the plan firm for not less than three

5 Within the larger plan, I should establish priorities determined both by the urgent needs of my country and by the size of the available help that is needed to get the job done—whether that help be in new drugs or in personnel I should give priority in time to programmes for which aid is readily available This is as good a priority as any, except for the musts such as plague or smallpox When in doubt, I should begin with programmes that promised to save the most lives or cure the most people for the least money

This coincides with the aim of most foreign agencies Limited in the funds at their disposal, they wish to spend them in such a way as to help combat the most urgent problems of the greatest number of people Unicef, for example, whose function is to contribute certain imported supplies to help better the health of children, has devoted most of its resources to fighting tuberculosis malaria, and yaws by providing vaccines insecticides and penicillin, malnutrition by supplying medical supplies and teaching materials to equip and staff rural health centres These activities under way today in 88 countries from Asia and Africa to Latin America are all designed to stretch limited funds as far as possible and to initiate self help programmes which are supported largely out of local resources

6 I should develop an active campaign to serve the villages, making it an honour for the staff to be assigned to rural areas especially if they are difficult I should adjust their wages and allowances to make life tolerable for them

7 I should not start too many programmes at the same time particularly those that will cost my government a lot about the same time if they are successful

8 I should put the best man I could find on liaison work with the foreign agencies and have him learn all about their funny ideas and how to deal with them

9 I should humour the foreigner by keeping his deadlines promptly and use my performance to get the same kind of action from him

10 I should pay special attention to the bottlenecks —the points where prompt action on small things will have large results I should make sure that I had enough trouble shooters to see for example that imported supplies move quickly through Customs and are delivered assembled and put to work promptly Also as soon as they were working I would tell the agencies

11 I should insist that no official in my department leaves his desk without giving his deputy authority to act in his absence

12 Where doctors are scarce—which is nearly everywhere in Asia—I should study carefully the possibility of using technicians instead I would assign doctors only to top supervisory and planning jobs and even there only if the job really requires a medical background

I should try to encourage the training of home visitors, sanitarians and other paramedical personnel I should encourage basic training for unskilled practising village midwives training now under way in a number of Asian countries with Children's Fund aid As Indonesia is doing in the UNICEF aided yaws campaign I should give short training in case finding to young men from the villages, to cut the numbers of doctors or other skilled personnel needed to carry out country wide disease control campaigns.

13 I should take care to strengthen my supervisory staff to keep pace with the expansion of new programmes

14 I should look ahead as to the number of trained personnel that I must have, including technicians as well as doctors and get them trained in time I should make sure that the men who get special training are kept and used for the purpose for which they were trained

15 I should arrange with my colleagues in education to speed up health education in schools, adult classes, and through press and radio to prepare the way for new programmes

16 Where a new programme requires new skills, I should arrange refresher courses for all field workers who are going to be asked to use new methods

17 I should make sure that the supplies I get from abroad are well used and that machines are not put into a back room when a part breaks.

18 I should develop indices of progress both for my own guidance and to help foreign agencies explain to the taxpayers of their countries that they are really getting value for their money

19 I should *refuse* aid for schemes that are too expensive for my country even though it is readily available and is attractive to some of my specialists In particular, I should look with suspicion on elaborate X ray equipment for mass work, on expensive mobile field units if my country does not have roads on which they can move readily, and on transport for which I could not provide the petrol and spares to keep them running efficiently

20 I should not press for aid to local plants to manufacture highly complicated drugs or chemicals until I was sure I had both competent technical staff available a certain source of the necessary *components* and the prospect of reasonable production costs I should go warily even then in fields where new discoveries are being made every year, necessitating rapid technical changes

A QUOTA OF MISTAKES

To one acquainted with the world of shirt sleeve diplomacy some of the proposals I have made may seem far too risky To this I would say that we are talking about big problems and that people who *tackle them must* take big risks and should be allowed a quota of fairly big mistakes Moreover, people are ready to forgive a few mistakes by a man who really accomplishes something Fiorello La Guardia was a great mayor of New York primarily because he fought for efficiency *against* corruption and always for the little man who is in the majority everywhere But he was beloved of the people perhaps as much as for anything else for his classic candid admission, "When I make a mistake it's a beauty"

It may well be that if I were a minister of health in Asia and took my own advice, I should not be minister for long But I doubt that I should be fired for doing the things I have suggested There is no defence like results.

BOARDS OF GOVERNORS OF TEACHING *HOSPITALS AND REGIONAL HOSPITAL BOARDS*

THE following doctors have been appointed to boards. They will hold office till March 31 1958 New appointments are indicated with an asterisk

MEMBERS OF BOARDS OF GOVERNORS

United Newcastle upon Tyne Hospitals—S W Davidson John Gilmour A. G R Lowdon

United Leeds Hospitals—R E Tunbridge *H G Garland *A. B Pain.

United Sheffield Hospitals.—J G McCrie G L Roberts C H Stuart Harris, *R B Zachary

United Cambridge Hospitals—L B Cole H. R Dean Robert Ellis Sir Lionel Whitby

United Oxford Hospitals—L J Witts, *G S Dawes, *J B Pennybacker

United Bristol Hospitals—R H Parry C B Perry *D H. Davies, *R G Paul.

United Cardiff Hospitals—R G Maliphant, R M F Picken *A. S Duncan

United Birmingham Hospitals—Arthur Beauchamp C F V Smout A. B Taylor A P Thomson

United Manchester Hospitals—W Chadwick R L. Nowell Robert Platt *R W Luxton *Robert Newton.

United Liverpool Hospitals—T A Jenny J M Leggate, *E Noble Chamberlain

MEMBERS OF REGIONAL HOSPITAL BOARDS

Newcastle.—D C Dickson, *R V Bradlaw

Leeds—P J Moir D C Muir

Sheffield—E C Cordeaux J G McCrie, G C Wells Cole

East Anglia—A. J Johnson J V Morris.

North West Metropolitan—Sir Harold Boldero Sir Allen Daley Horace Joules, J B S Lewis, Clifford Morson.

North East Metropolitan—Somerville Hastings.

South East Metropolitan.—Sir Arnold Stott J R H Turton

South West Metropolitan—R F B Bennett Frank Cook

Oxford—F A. Bevan, *William Ogden

South Western—C S C Prance *R G Michelmore *G Stewart Smith

Wales.—Ivor Lewis David E Perry Pritchard *David Kyle

Birmingham—N Duggan J G Heather H F Humphreys, T McKeown, J J O'Reilly

Manchester—W I C Morris.

Liverpool—David Brown D R. Owen H. H Stones.

Medical Conferences

TUBERCULOSIS

THE fourth Commonwealth Health and Tuberculosis Conference, organised by the National Association for the Prevention of Tuberculosis, was held in London on June 21–24 It was attended by 1500 delegates from over sixty different countries and territories The largest contingent of delegates from any one overseas country comprised 17 doctors and social workers from the U S A , 14 came from the Republic of Ireland , 9 from Australia , 9 from India , 8 from Canada 7 from Germany 6 from the Netherlands , and 5 each from France, Malaya, Sweden, and the Union of South Africa Turkey, Spain, Switzerland, Poland Norway, Indonesia, Iceland, Egypt, Ethiopia Belgium, Austria, and Finland were also represented, in addition to all the British Commonwealth countries and dependencies The high standard and the variety of the papers and of the discussions, together with the opportunities for meeting fellow-workers—physicians, surgeons, radiologists almoners, nurses, laymen, administrators, and others from many parts of the world—put all who participated handsomely in debt to the N A P T

During the course of the proceedings, the Duchess of Kent the president of the N A P T , made the first award of the association's Philip medal for outstanding service in the anti-tuberculosis field to Dr P V Benjamin technical adviser on tuberculosis to the Government of India

Geographical Features

Dr JOHANNES HOLM chief of the tuberculosis section, World Health Organisation insisted that there is no evidence of any specific racial influence on tuberculosis, and ascribed variations between different communities to the differences in their social, economic, and technical development Dr Holm pointed out that the decline in mortality started with improvement in the general standard of living conditions and long before the recent therapeutic innovations Morbidity figures, he averred, are not reliably comparable between different countries as there is no general agreement on what constitutes a notifiable case The most reliable index of morbidity, in his view, is the age specific proportion of tuberculin reactors By this token London is doing well since the percentage of positive tuberculin reactors at age 1 year has fallen from 6% in 1929 to 2% in 1954, and at age 5 years from 20% in 1929 to 7% in 1953, while at age 13 years the 50% positive reactors in 1929 has been reduced to 18% in 1954 Dr Holm suggested that the increasing evidence of the protective value of B C G vaccine justifies its more extensive use and recommended its use for the children of tuberculous households and for all adolescents and adults reacting to 5 tuberculin units He reported that up to the present the World Health Organisation has B C G teams in twenty-four countries where in campaigns assisted by W H O and UNICEF, 125 million persons have been tuberculin tested and 48 million vaccinated, almost all this work being done by trained non medical technicians

Dr Holm thought that, with increasing industrialisation, tuberculosis is increasing in Africa, where only easily applicable, simple control methods can have hope of success

Great Britain

Mr IAIN MACLEOD, the Minister of Health, in a review of conditions in this country, referred to the steady decrease in the annual number of deaths In England and Wales in 1954 this number was down to 7899 for all forms of tuberculosis—a decrease of almost 70% since 1939 Nursing difficulties have eased and hospital beds allocated for tuberculosis treatment have increased by about 7000 since 1948 to a total of 35,069 at the end of 1954 The waiting list at the end of 1954 was 3000, compared with twice that number two years earlier In some areas there is no waiting for admission. The 71 mass-radiography units in the country examine over 3 million people annually and find active tuberculous conditions in 3 3 per 1000 There were 42,348 fresh notifications of all forms of tuberculosis in 1954—a decrease of over 4000 from the previous year "We must look to the preventive service," said the Minister, "for our next advance", and referring to the dichotomy in the National Health Service between responsibility for prevention and that for treatment, he observed that "on the whole it ought not to work but it does"

India

Dr BENJAMIN estimated the number of tuberculous persons in India at approximately $2^{1}/_{2}$ million, and the deaths from this disease at $^{1}/_{2}$ million a year The determined national policy in India is to spend most of the available resources on preventive measures, particularly B C G vaccination, which has been employed extensively since 1951 The present plan is to complete vaccination of the non reactors among India's estimated 170 million susceptibles by 1960 Up to now over 57 million persons have been tuberculin-tested and 18 million vaccinated with B C G at a rate of $2^{1}/_{2}$–3 million a month In India there are at present 180 chest clinics, and it is planned to establish 250 additional clinics during the next five years A scheme is under way to conduct a sample mass-radiography survey of the urban and rural populations of India with the seven available mobile radiography units so as to ascertain reliable morbidity-rates for the different parts of the country

Australia

Dr F R KERR reported that here the federal government of Australia, in its determination to control tuberculosis, pays a tuberculous person living at home with a dependent wife a weekly allowance of up to £9 Everybody in the State of Victoria over 14 years of age can be compelled to undergo radiographic examination of the chest Any notified sufferer or contact can be made to undergo a specified medical, radiographic, or bacteriological examination There are powers to restrain any tuberculous patient who is a chronic alcoholic or a menace to the community All newcomers from abroad who intend to stay in Australia must undergo radiographic examination of the chest within a month of arrival Radiographic examination is also insisted on for all intending immigrants before they leave their country of departure More than 90% of the parents of "school leavers" in the State of Victoria accept B C G vaccination

Canada

Recognition of the relatively wide prevalence of active tuberculosis in older men has led to special efforts in British Columbia to ascertain and isolate such cases. At present 40% of all the sanatorium population in British Columbia is over 50 years of age, and 53% of the male sanatorium population is over 50 years Travelling chest clinics are provided for outlying rural areas Improved case finding facilities have halved (to 12%) the proportion of advanced cases among those admitted to hospital compared with that prevailing 5 years ago Provision has been made for all cases admitted to any hospital to have free radiographic examination of the chest

South Africa

Dr M J BRODERICK, national secretary, South African National Tuberculosis Association, estimated that in 1952 there were 100,000 cases of tuberculosis in the non-European population. There was now a scheme to provide single-storey hospital units built in brick and iron with accommodation for 8000 The total cost of building and furnishing was estimated at £143 per bed and the cost of maintenance of a patient at 7*s* 6*d* daily These units were so designed that if need be they could be readily converted for housing native Africans

Cyprus

Dr M C **CONSTANTINIDES** estimated the prevalence rate of tuberculosis at 3 cases per 1000 population on this island of half a million inhabitants 211 new cases were notified in 1954 The tuberculosis problem in Cyprus is not serious" he said and judging by the progress made with control measures the disease will be reduced to one of the lesser problems of public health in the island"

Kenya

Dr T F **ANDERSON**, director of medical services describing the difficulties of tuberculosis control in this country of 6 million inhabitants estimated that there were some 30 000 cases—a prevalence rate of 10 per 1000 inhabitants—with a preponderance in urban areas The African he said goes downhill rapidly if not treated but responds well to specific drug therapy Much is being done to improve housing conditions and nutritional standards. Domiciliary oral drug therapy has proved the most practical form of treatment B C G is not yet widely used

Hong Kong

Sister **MARY AQUINAS** medical officer at Ruttonjee Sanatorium described the crowded conditions of life among the rapidly increasing $2^{1/4}$ million population most of whom are Chinese refugees There are over 3500 deaths a year from tuberculosis Shortage of hospital beds (there are 071 at present for tuberculosis) makes outpatient drug treatment necessary for most patients Rehabilitation is difficult 75% of school children are tuberculin positive so B C G vaccination has very limited value except for infants

Differential Diagnosis

Dr H J **TRENCHARD** in a paper describing the activities of his clinic in Middlesex referred to the radiography facilities made available to and plentifully used by local general practitioners among whose referred cases over 2% are found to have active pulmonary tuberculosis The other common radiographic diagnosis is bronchial carcinoma Dr Trenchard pointed out that among men over 65 years of age referred to his clinic 8% are suffering from this disease He stressed the importance of routine bacteriological examination of sputum and the value of examining every patient radiographically in two positions—postero anterior and lordotic—to avoid missing lesions which might otherwise be hidden behind bone shadows Dr Trenchard has found that 10% of his patients with carcinoma of the lung also have coexistent pulmonary tuberculosis

Dr **SVEN LÖFGREN** of Stockholm said that while the coexistence of tuberculosis and sarcoidosis in the same patient is rare it is not uncommon for cases of sarcoidosis to terminate in tuberculosis Erythema nodosum he has found as a prelude or early manifestation in both these conditions; but whereas it is commonest as a primary sarcoid lesion in persons 20–30 years of age as a manifestation of primary tuberculosis it is rare after adolescence

Dr J G **SCADDING** pointed out that the increasing incidence of bronchial carcinoma is almost a peculiarity of the British Isles, and since this condition is commonest in men at an age when pulmonary tuberculosis is also widely prevalent it is not surprising that both diseases not infrequently coexist He stressed the importance of a complete physical examination of every patient On sarcoidosis he expressed the view that this was not an independent disease entity but a histological reaction pattern of varied ætiology—sometimes tuberculous although the patient's tuberculin reaction was usually negative It was logical therefore to speak of tuberculous sarcoidosis, and most of the cases in his own series had shown evidence of tuberculous origin He had seen the cellular reaction pattern swing from characteristic tuberculosis to undoubted sarcoid and vice versa

Dr J H **HUNT** had met 28 cases of pulmonary tuberculosis in his London general practice among 3000 patients. He referred to cases of mistaken diagnoses which finally turned out to be variously due to a tortuous pulmonary artery an erroneous sputum test report and the misinterpreted radiographic appearance of a girl s pigtails.

Mr **DONALD BARLOW** (London) spoke of the association of pulmonary tuberculosis with duodenal ulcer and indicated the desirability of thorough bronchoscopy in the diagnosis of every lung lesion (except active tuberculosis, when it could be damaging) with aspiration of secretion for examination for bacteria and fungi The presence of aspergillosis in cavities made surgical intervention particularly hazardous. 80% accuracy could be achieved in positive cases of carcinoma of lung by cytological examination of sputa for malignant cells Only 2% of false positive diagnoses had been encountered with this technique in his series. Mr Barlow mentioned the value of biopsy examination of glands removed from under the scalenus anticus for carcinoma or sarcoid He took exception to the term 'minimal lesion" in tuberculosis, insisting that such areas of lung disease often merited excision to ensure complete eradication

Treatment

Prof **WALSH MCDERMOTT** (Cornell University) discussing the choice of drugs in the medical treatment of tuberculosis, pressed for one to two years chemotherapy for all cases. He held the view that antibacterial drugs suppress the infective process without sterilising the lesion they do not eradicate all the invading organisms Streptomycin he thought loses its efficacy after ninety days of administration In pulmonary tuberculosis, isoniazid alone is as good as, and probably slightly superior to combined streptomycin and *p* amino salicylic acid (P A.S) With isoniazid effective drug therapy can be applied to patients in areas where good treatment could not previously be given

Current trends in chemotherapy were illustrated by Prof **ETIENNE BERNARD** (Paris) whose crisp aphorisms included three drugs given together are seldom an improvement on any two of them I cannot conceive nowadays of a case of pulmonary tuberculosis not treated with isoniazid more important than the choice of individual drugs is the length and continuity of their use The sentiment that brought him the loudest applause from an audience of physicians was ' surgery in tuberculosis is a treatment of the recent past and not of the future'

This stricture was incisively loosened by Mr O S **TUBBS** (London) who asserted that the mortality after resection of lung lesions was now less than 2%—comparable he said to that of appendicitis He regarded resection as a practical and safe procedure which saved many months of alternative treatment for the patient to whom time is important

Dr M L **CONALTY** (Medical Research Council of Ireland) declared that strains of tubercle bacillus resistant to isoniazid are sensitive to thiosemicarbazones, but the toxicity of these drugs precludes their wide use However a new drug Hinconstarch a synthetic polymer of isoniazid thiosemicarbazone and starch having an integrated molecule has been prepared Its toxicity for man is low and it is effective against isoniazid resistant bacilli.

Dr **Brendan O'Brien** has used lincostarch, in 9 sputum positive cases, aged 13 to 40 years with varied types of disease, at Meath Hospital, Dublin, with distinct improvement in all after six months' treatment, starting with 500 mg daily, increasing gradually to 2000 mg daily The drug is acceptable and comfortably swallowed, and in the cases treated showed no troublesome toxic effects The sputum of 7 of the treated patients became negative within six months after treatment was started In patients with recent cavities there was evidence of closure Dr O'Brien claimed only that the new drug was "worthy of extended trial"

Public-health Aspects

Prof **Andrew Semple** spoke of conditions in Liverpool where, in a population of 800,000 there were 1382 new cases with 258 deaths from pulmonary tuberculosis in a year The city had in its midst 3842 known persons exhaling tubercle bacilli He emphasised the hazards of such patients by his assertion that 1 in every 12 new cases is a contact of a known case of tuberculosis He called for the establishment of hostels, jointly managed by local health authority and regional hospital board, to house the uncured homeless carrier The joint management is to ensure admission to hospital when this becomes necessary But experience in London and Middlesex during recent years has shown that regional hospital boards can cooperate without the doubtful need to share management Professor **Semple** praised the activities of shipping companies which have improved living standards in ships

On the subject of tuberculosis in industry Dr **Jeaffreson Lloyd** (department of social medicine, University of Birmingham) recalled that 75% of factories in England employ 25 or fewer people His opinion on the desirability of allowing known active cases to work in open industry was unequivocal "There is no place," he said, 'for the open case in open industry except in very rare cases"

This view was supported by Dr C H C **Toussaint** (Willesden), who described the difficulty and danger of allowing known infective cases to work with healthy susceptible adolescents or young adults "The workers in industry can best be protected from tuberculous infection by the exclusion of infective carriers," he said, and doubtless he would extend this protection to workers in commerce and elsewhere He pressed for more sheltered workshops to accommodate the working consumptive excluded from close contact with the healthy, and argued that this country should insist on a clear chest radiograph from all immigrants coming to work here

Mr V **Feather** (assistant secretary, Trades Union Congress) took up the need for employment of disabled persons in sheltered workshops to be dissociated from questions of productivity and treated simply as a social service

Industrial medical officers and employers joined in protesting at the refusal of mass radiography units to acquaint them with the findings of radiographs of workers even when these workers asked and agreed that this should be done

That this attitude is not universal was made clear by Dr H W O **Frew** (supervisory tuberculosis physician, Renfrewshire), who gave an account of how, in a period of three weeks this year, with as little interference as possible he examined radiographically 1775 consenting school teachers and unhesitatingly informed the school medical officer of the findings with details of the 4 who showed active tuberculosis This cooperation was followed by radiographic examination of 277 contact pupils of these 4 cases, and among these children were found 2 with active acute primary tuberculosis of lung and 15 with old primary lesions A neurofib and 2 cases of carcinoma of lung were also among the teachers as a by-product of the investigation

The decreasing yield of repeated mass-radiography in a fixed population led Dr K M **Irvine** (Oxford) to suggest an amalgamation of mass radiography with tuberculin testing and B C G vaccination This would undoubtedly make such desirable procedures as tuberculin surveys and school-teacher radiography much more readily available to those health authorities present baffled how to arrange them

RHEUMATOLOGY

The Third European Rheumatology Congress was held at Scheveningen, Holland, from June 13 to 17

Rheumatism and Social Medicine

The rapporteurs in this section were preoccupied with defining the extent of the social problem of rheumatism Dr R J **Weissenbach** (Paris) emphasised the social cost of the disease, and favoured education of the public and better medical organisation In Belgium, said Dr M **Ruelle** (La Louvière), 5 5 people per 1000 population had rheumatoid arthritis, and he regarded the social organisation of rehabilitation measures as of great importance The fight against rheumatism in Switzerland is organised on a cantonal basis, but Dr K M **Walthard** (Geneva) outlined a federal Bill which would permit the Swiss confederation to subsidise rheumatism research, publicity, and hospital facilities Dr E W **Baader** (Hamm) mentioned the recent discovery of silico arthritis in miners and its social implications, and Dr A **Masturzo** (Rome) gave an account of the distribution of rheumatism in industrial workers, and of measures desirable to minimise disability and rehabilitate affected workers

Connective Tissue

Dr G C **Heringa** (Amsterdam) spoke of the significance of mucopolysaccharides in normal connective tissue Structurally they imparted special qualities to tissue—transparency to the cornea, elasticity to cartilage, and, perhaps, the power of binding calcium to osteoid tissue Some phenomena of allergy and specific immunity had been related to the binding of polysaccharides to protein The metabolic rôle of mucopolysaccharides was little understood, but there appeared to be a three-sided relationship between these compounds, phosphatase and glycogen, while the histological indications w that many other metabolic activities involve mucopolysaccharides

Dr L E **Glynn** described the results of connective-tissue research at Taplow Firstly, a clinical study of the skin reactions to hyaluronidase and to a standard irritant had shown that in acute rheumatic fever the alteration in the connective-tissue reponse to these agents w widespread Secondly, biochemical analysis of rheumatic nodules containing fibrinoid material had shown that in addition to collagen and elastin, the nodule con a tyrosine rich protein and polysaccharide, both present in greater amounts than in normal tissue The dominant sugars obtained on hydrolysis from rheumatic and normal subcutaneous tissue were galactose mannose, and glucosamine Because of the absence of detectable uronic acids from hydrolysis it was unlikely that subcutaneous connective tissues contained hyaluronic acid or chondroitin sulphate

The nature of the alteration to the connective tissue in "collagen" disease was also discussed by Dr **Ziff** (New York) As to the site of the lesion, of fibrinoid material from rheumatoid arthritis nc had been found to lack hydroxyproline, fibrinoid therefore unlikely to be derived from collagen especially since patients in this disease group show no change in their daily excretion of hydroxyproline. He and his colleagues had therefore turned to the mucoproteins of the ground-substance as a likely site of connective tissue change. They had isolated from cartilage a water soluble mucoprotein containing chondroitin sulphate and of high viscosity. Leucocyte extracts caused a prompt fall in viscosity of this compound and so did extracts of synovial tissue from patients with active rheumatoid arthritis. They had concluded that enzymes *are present in inflamed connective tissue which can* degrade tissue mucoprotein and that such a phenomenon may account for the increased spreading and permeability found in inflamed tissue.

Dr G ASBOE HANSEN (Copenhagen) dealt with some aspects of hormonal control of connective tissue, and particularly with the regulation of function of the mast cells by adrenal cortical hormones. He believed that these cells were the *source of ground substance* as well as of heparin and histamine and were one medium through which cortisone and corticotrophin regulated the production or release of these substances. He contrasted the action of thyroid hormone which depletes the connective tissue of mucopolysaccharides and inhibits normal healing with that of thyrotrophic hormone which has the reverse effect. In many clinical endocrine disorders characteristic changes in structure and function of connective tissue occurred and recent endocrinological advances held great promise for the treatment of connective-tissue disease.

Disc Degeneration and Osteo arthritis of Spine

Dr H JUNGHANNS (Oldenburg) gave a comprehensive account of the structure, function and pathology of the intervertebral-disc tissue. He considered the effects of vertebral fractures, and also the effect of disc lesions on the small intervertebral joints. The physiology and histology of disc tissue in rheumatic disease would repay thorough study.

Discussing the problem of low back pain Dr S FRIBERG (Stockholm) thought that lumbar disc degeneration was the main local cause of chronic lumbago. This opinion was based on a wide survey of hospital and industrial communities. He also described methods of diagnostic discography and recent studies of the response of normal and degenerate cartilage to prolonged and transitory weight bearing.

Dr S DE SÈZE (Paris) distinguished two groups of spondylitis patients one with disc changes and osteophytic proliferation the other without osteophytes but with definite disc changes. He adduced experimental evidence that mucopolysaccharide from the nuclear pulp can stimulate osteogenesis.

Dr PEDRO BARCELÓ (Barcelona) gave a systematic account of the embryology anatomy, and anomalies of the interzygapophyseal joints and described their pathology and the possible mechanisms producing arthrosis. He interpreted the manifestations of spondylitis in terms of the anatomical relations between the spinal roots, joints and vessels and the sympathetic nervous system and discussed the pathology of the costo-transverse and costovertebral joints.

Rheumatic Fever

The use of antibiotics in prophylaxis was discussed by Dr G H STOLLERMAN (New York). Prompt treatment of group A streptococcal infections prevented initial attacks of rheumatic fever if the organism was permanently eradicated. Penicillin was the drug of choice and must be given in such a way as to maintain adequate tissue concentrations for at least ten days. This treatment should be applied also to patients with acute rheumatic attacks, who should thereafter be maintained on a prophylactic regimen indefinitely. The effectiveness of prophylaxis could be assessed by monthly antistreptococcal antibody determinations.

A study of the frequency of rheumatic heart disease in Rotterdam school children was presented by Dr P VAN DER MEER (Rotterdam). In a large sample 2 4% had definite or probable rheumatic heart disease, and 13% of these had some signs of activity only 37% had a history of a previous rheumatic attack.

The treatment of rheumatic fever was discussed by Dr F COSTE (Paris) who favoured hormone therapy he claimed that this was superior to aspirin in reducing cardiac involvement. He thought that phenylbutazone too was better than aspirin but less effective than hormones.

Dr E G L BYWATERS (Taplow) however reported a large clinical trial of the comparative value of corticotrophin cortisone and aspirin in the treatment of rheumatic fever carried out jointly by the Medical Research Council and the American Heart Association which led to the conclusion that none of the three agents resulted in uniform termination of the disease, while fresh manifestations developed in some patients during treatment with any of the three.

A NEW STUDY CENTRE

During the congress a ceremonial meeting was held at the Trippenhuis Amsterdam with Prof P FORMIJNE in the chair to set up an International Study Centre for Rheumatic Diseases. This celebrates fifty years of work in this field by Dr Jan van Breemen until recently director of the Consulting Bureau for Rheumatic Diseases, who will now be devoting himself to the new project.

Dr VAN BREEMEN said that though the efficient weapons against rheumatism were still few as Claude Bernard had said *L homme peut plus qu il ne sait*. The wise statement of Disraeli that the chief task of any statesman must be the care of the public health appeared still to be unheeded in many countries where the budget allowed so poor a sum for that service compared with what came in so abundantly for others. Prof. J GOSLINGS (Leyden) said that in the proposed study centre special conferences on special subjects would be organised bringing forward the findings of ten to twelve research workers on one given topic. Funds would have to be raised by rheumatologists in their own countries, and he asked for help in this plan in finance and in personnel. Prof LOUIS DE PAP (Portugal) recalled how in his own efforts to found a rheumatism research centre at Budapest he had been fortified by van Breemen from afar. All had been ready for realisation of the idea when outside events had checkmated it and he rejoiced that it was now to the fore again. As one of those who with van Breemen Alison Glover and Fortescue Fox founded the International League Dr J FORESTIER (Aix) spoke of van Breemen s luminous intelligence and energy. Never resting never satisfied he had spurred them on to form the international group before even the national groups were formed. Prof N V JARLOV (Copenhagen) said that the world of rheumatism was not national but international, and all the fragments of research and practice must be welded together into one whole. By the efforts of van Breemen something of this great aim had already been achieved. Dr F J BACH (London) was glad to see van Breemen s dream coming true for this dream did not replace reality but would provide a most important new home and centre to which rheumatologists could come—as he had done—for guidance discussion, and inspiration. Prof J MICHEZ (Brussels) said that the formation of the Belgian League against Rheumatism was mainly due to van Breemen, and Prof E REICHER (Warsaw) speaking of the effect his work had had in Poland presented him with honorary membership of the Polish Society for Rheumatism and a map showing all the Polish centres for diagnosis and treatment. Prof N CH SVARTZ (Stockholm) conveyed the admiration of her Swedish colleagues. Prof P BARCELO (Barcelona) in the name of Spanish rheumatologists expressed their hope for the success of the research centre; and Prof H TICHY (Dresden) offered his thanks for the foundation of the German society in 1927 which was due to van Breemen and the

International Committee Prof A Nesterov (Moscow) said that there were two branches in the problem of combating rheumatism (1) demand for a campaign, in which struggle van Breemen was foremost, and (2) prevention, in which, so far, little had been done That was why they promised to help build this building, brick by brick, a task which he believed doctors from all countries would wish to join in Prof K M Walthard (Geneva) proposed that the new centre should be called the Jan van Breemen International Study Centre for Rheumatic Diseases Prof A Robecchi (Turin) declared that van Breemen had created a fraternal unity among rheumatologists, he had created rheumatology , Prof F Lenoch (Prague) speaking in Latin, brought best wishes from the ministry of health and the Charles University at Prague , and Dr O E Schulhof (Budapest) said that if every country which felt gratitude for van Breemen's pioneer work spoke on this occasion there would be no end

Winding up for the Netherlands, Dr G van Dam (the new director of the Consulting Bureau for Rheumatic Diseases) said that these accounts of what the International League against Rheumatism had meant to their colleagues in other countries confirmed the Dutch faith in the new centre

Medicine and the Law

Care of a Patient on a Trolley

Just before midnight on March 17, 1953, an old lady of 80 was admitted to a hospital with abdominal pains She was put on a four wheeled trolley about 2 ft wide and 2 ft 6 in high and which had no edge or rail, and was wheeled into a cubicle A doctor and nurse went in to her and after examining her the doctor left The nurse left the patient and she fell off the trolley, breaking her thigh She sued the hospital for damages alleging negligence in that (1) they left her in her then state of health on the top of a narrow trolley from which they knew or ought to have known that she might fall , and (2) they left her on the trolley without anyone in attendance and without there being a guard-rail or other means of preventing her from falling off The plaintiff's son gave evidence that the doctor and nurse went out of the ward and that the patient had been left alone for five minutes The evidence for the hospital was that the doctor had been in the next door cubicle, that neither he nor the nurse had left the ward, and that the nurse had gone to answer the telephone and had only left the patient for thirty seconds before she fell The doctor said that had he thought special precautions necessary he would have given instructions, but he did not think that necessary The nurse said that the condition of the patient was such that it never entered her head that she could not be left Lord Uvedale gave evidence that in his hospital there was one attendant per trolley, night and day, and, on the basis of the son's evidence and the medical reports his opinion was that it was unwise and a mistake, but not improper, to leave the patient alone

Mr Justice Gorman, summing up, said that the duty of the hospital was to take reasonable care in all the circumstances Those who went to hospital were entitled to expect that doctors and nurses would exercise such a degree of skill and care as normally skilful members of the medical and nursing professions might be expected to exercise and as accorded with the general approved practice The jury could not guess how the accident happened and the plaintiff had to prove that there had been negligence They had to make up their minds, on the evidence, on the questions what was reasonable care here what the negligence was , and, if there was negligence, what were the damages

The jury returned a verdict for the plaintiff awarding damages of £100 , they added a rider to the effect that they felt that someone should be in attendance at all times on a patient on a trolley, or else the trolley should be supplied with guard rails

Counsel for the hospital submitted that there was evidence on which the jury could have come to t verdict and that the decision showed that they h misunderstood the plaintiff's case He asked the Co to hold as a matter of law that to say that hospital s must always at all times be in attendance on a patient on trolley was much too high and that there was no such duty

Mr Justice Gorman said that the cornerstone of t submission was the rider added by the jury He did think that he was justified in determining the case pu because of the jury's rider or in saying that that was t only reason why the jury had come to their decision I was open to the jury to accept the evidence of th plaintiff's son that she had been left for five minutes, that of Lord Uvedale who had said that it was unwise t leave her alone Judgment for the plaintiff for £100

Smith v Lewisham Group Hospital Management Committee —*Queen's Bench Division* Gorman J and a Jury June 20, 1955 Counsel and solicitors W G Wingate (Pattinson & Brewer) Michael Lee (Levett, Son & Piffe Phelps Bromley)

J F Lamb
Barrister at Law

Recognition of Industrial Hazards

A 22 year-old woman worked from July to September, 1947, at the research laboratories of the defendants, a branch of Philips Electrical Ltd , on an experimental process for producing fluorescent lighting tubes, which entailed her working with beryllium oxide and z beryllium silicate She left in October, in perfect health, but in July, 1948, she became unwell, and was diagnosed as suffering from chronic beryllium poisoning In an action for negligence she claimed that the employers knew, or ought to have known, that beryllium highly toxic to human beings Mr Justice G dismissed her claim, saying that he was not satisfied that the employers ought to have known that the process was dangerous The plaintiff appealed Th Court of Appeal, Lord Justice Denning dissenting, dismissed the appeal

Lord Justice Denning said that as a result of two months' work with a substance which was a deadly poison, this young woman's life had been ruined , b the employers refused to compensate her because they said that at the time they did not know that the substance was dangerous They had been buying fluorescent powd for several years from other large concerns which h never hinted that they were dangerous , their ow workmen had used the powders and had had no trouble and neither their American associates nor their research chemist had given warning of any danger The employe had, however, frankly admitted that if they had suspect beryllium was toxic, they would have made a literatu search which would have put them on their guard If, firstly, they had made a search, they would hav found in their own library an entry showing that the compounds were dangerous Other articles were availab in England at the time, in the Patent Office library an probably in the British Medical Association libra As long ago as Oct 9, 1943, the *British Medical Journ* had published an article on the "toxic hazard beryllium" If, secondly, they had asked their medic officer to study the situation, he would have reporte that the substance was dangerous, as their own medic officer had admitted in evidence But they did no discover its dangerous nature until December, 194 after the plaintiff had left their employment By 194 its dangers were known to be so great that its use given up

His Lordship thought that in exempting the emplo from any liability to pay compensation to the plaint Mr Justice Gorman had failed to recognise the high du of care which the law placed on everyone who dea with things dangerous in themselves, as was this compound The law required such persons to take th greatest possible precautions, not only to avoid the danger when it was known but also to find out whether there was danger or not The employers ought to have suspected it until it was proved harmless They were starting what they had called an "experimental process" It behoved them not only to call in their research chemists to tell them how to make it, but also their medical officers to advise them whether it was safe for their workers to handle It did not seem right that a great concern should exploit a new process at the risk of their workers without a word to them of the dangers it entailed He would allow the appeal

Lord Justice Birkett said that the only question before the Court was whether the defendants ought to have known For the plaintiff it was said that a literature search should have been made The question was: When? Before they began to use powders purchased from other concerns? Or in 1943 when they began using beryllium oxide for radio valves? Or when they first began making the powder themselves in 1945 or 1946? The growth of knowledge as to the nature of beryllium compounds was not rapid Even the paper published in the United States in July, 1947 which first really enlightened the industry contained the significant words that "the case against beryllium is not clear cut" His Lordship could not think that the employers were under a duty of care so stringent as to amount practically to a guarantee of safety when they had no knowledge of the danger *and all their experience was to the contrary* He would dismiss the appeal

Lord Justice Parker agreeing with Lord Justice Birkett said that little was yet known of the disease contracted by the plaintiff save that it was of a delayed action type The intensity of the disease bore no direct relation to the concentration of the exposure While most people were *unaffected* there were those in whom the inhalation of but one speck of the powder would set up the disease On the question of duty if there were any reason to suspect that a substance was likely to be toxic, a reasonable and prudent employer should make a search such as had been suggested particularly if the substance had not been used or manufactured before on a commercial scale But if there were no reason to suppose it was toxic, and it had been used and manufactured for some time by others without ill effects, there was no reason why an employer should do more than act *in accordance* with the *general principles* of hygiene observed where a dusty process was involved His Lordship could not believe that if any of the companies which had supplied the powders to the defendants had been aware of the danger their knowledge would not have been available in the trade generally He agreed with the Judge that the plaintiff had not proved any breach of duty in the failure to make an exhaustive search for any literature concerned with these substances

Leave was given to appeal to the House of Lords

Harman *v.* Mitcham Works Ltd—*Court of Appeal* Denning Birkett and Parker *L.JJ* June 21, 1955 Counsel and Solicitors: Tristram Beresford Q.C. and Peter H Ripman (Lewis Holman and Lawrence for Ross and Son Horley) E. Ryder Richardson Q.C., and Ronald Hopkins (Carpenters)

M M Hill
Barrister at law

Electroconvulsant Treatment

"I hope I will not have to consider any case in the future in which *there is therapy* involving loss of consciousness and a cessation of breathing however short, on the part of the patient where only one doctor is present to administer the therapy and look after the patient in an unconscious state"

These remarks were made by the North Bedfordshire coroner at the inquest[1] on a man who had died during electroconvulsant treatment The patient had recently undergone an operation on one lung and afterwards suffered from acute melancholia. He was admitted to the Three Counties Hospital Arlesey, where it was decided to *administer a modified form of electroconvulsant* therapy evolved at the hospital a year ago and now adopted by a dozen other hospitals in the country The treatment was administered by a registrar with the assistance of four of the nursing staff

Evidence was also given by an assistant psychiatrist at the hospital who had originated the treatment and the machine by which it was given He agreed that everything ought to be done to protect a patient, but between 4000 and 5000 such treatments were given every year at the hospital and it would be impossible to have a trained anæsthetist present on every occasion in addition to the doctor giving the therapy

The coroner suggested that in a case such as this, where the patient had recently had an operation for lung trouble a second doctor might well have been present to provide controlled respiration He recorded a verdict that the patient had died from spontaneous pneumothorax *and chronic pulmonary tuberculosis and* that he died by misadventure after electroconvulsant therapy

Explosion during Electrical Cauterisation

A girl aged 11 was undergoing an operation for the removal of her adenoids by electrical cauterisation when an explosion occurred in her mouth Artificial respiration was applied after which the patient's heart beat became normal but she died some days later Death was stated to be due to toxæmia and bronchopneumonia caused by burning of the lung mouth and tongue

From the evidence given at the inquest[1] it appears that the anæsthetist administered ether to the girl The surgeon had informed the anæsthetist that it was his intention to use the electrical cautery when he asked if there were any precautions to be taken he understood the anæsthetist to say "No" He did not ask what anæsthetic had been given He was nearing the end of the operation when the explosion occurred there being a flash and a flame in the girl's throat

The coroner said that he was satisfied on the evidence that there was no criminal negligence A verdict of death by misadventure was recorded

Parliament

Medical and Health Services in the Colonies

Speaking in a debate in the House of Commons on June 21 Mr Henry Hopkinson Minister of State for Colonial Affairs said that, though we still had a long way to go in providing medical services in the Colonies the recent *Report on the Colonial Territories* showed that the medical and health services had been not only maintained but considerably expanded There was growing evidence of mastery over some of the preventable diseases and of the increasing consciousness among the public in the Colonies as to the causes of these diseases and their willingness to take measures to deal with them In particular more and more attention was being paid to tuberculosis, as was shown by the appointment of Prof F R. G Heaf as consultant on tuberculosis The Government had realised that it was better to have doctors from overseas whether they were expatriate or local whether from the Far East or Africa or from other dependencies, and to have them *trained in the treatment of tuberculosis* in this country There was a steady stream of medical officers coming over to study for the diploma in tuberculosis diseases at Cardiff Many of these doctors went back *to their territories and carried out work of a high order*

In many overseas territories tuberculosis hospitals were now being built, and small tuberculosis annexes were being set up in rural areas to meet local needs Surveys had been made and people found to be tuberculin-negative had been given protective vaccination In Jamaica 636,697 people were tested and 99 6% of those found negative were vaccinated This was probably one of the most successful campaigns carried out anywhere in the world Similar things were happening throughout the territories—in the Falkland Islands dependencies, in Singapore, and also in Malaya where the disease was very prevalent, and where about 20% of hospital beds were devoted to tuberculosis work In Hong-Kong, where, in conditions of extreme overcrowding, tuberculosis was a matter of deep concern, a strong department had been working with considerable success In East and Central Africa, West Africa and the South Seas anti-tuberculosis work was going on At the moment attention was being concentrated on this problem as never before, and he thought it might fairly be said that the work undertaken in the so-called underdeveloped countries under British tutelage would stand comparison with that done anywhere else in the world

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[1] *Bedford Times* June 10 1955

[1] *Manchester Daily Dispatch* June 18 1955

QUESTION TIME

Scottish Tuberculosis Waiting-lists

Replying to a question, Mr NIXON BROWNE said that, at April 30, 334 men and 199 women in Scotland suffering from respiratory tuberculosis were waiting for hospital beds For Glasgow the figures were 111 men and 59 women. The figure last year for Scotland was 1872 The waiting time for urgent cases was now not more than seven days The waiting time in Glasgow for non urgent cases was three months

Diesel-engine Exhausts

Replying to a question, Mr J R BEVINS, parliamentary secretary to the Ministry of Works, said that, under the auspices of the Medical Research Council the exhaust products of diesel-engines under different running conditions were being examined for cancer producing substances Information was also being collected to discover if there was an unusual relationship between the presence of various atmospheric pollutants and the incidence of lung cancer

Sir FRANK MEDLICOTT Is the Minister aware that the increase in the number of cases of cancer of the lung has coincided in a quite remarkable way with the increase in the use of oil as engine fuel, and that it was stated at a recent meeting of the British Medical Association that, although it may appear to be only a coincidence, it is too sinister to be disregarded — Mr BEVINS At the moment, it is simply a coincidence It is known, however, that diesel exhaust fumes contain a great deal of soot, which in turn contains certain hydrocarbons which induce cancer of the skin It is not yet established that they can produce cancer of the lung

Mr ARTHUR WOODBURN Is the Minister aware that in America experiments showed that the increase in cancer of the lung is going on as rapidly in the country areas as in the towns ? No further reply was given

Toxic Chemicals in Agriculture

Replying to a question, Mr D H AMORY, Minister of Agriculture, said that he had received the report of the Working Party, under the chairmanship of Prof S Zuckerman, on the risks to wild life arising from the use of toxic chemicals in agriculture This report completed the survey of the precautionary measures needed in using these chemicals in agriculture The view was expressed that in a normal season in Britain the number of casualties to wild birds and animals caused by spraying was not particularly high compared with other causes of death The Working Party did not consider that further legislation was needed at present They recommended that further research was urgently needed, and that the risks to wild life arising from the use of toxic chemicals in agriculture should be kept under review by the Interdepartmental Advisory Committee and that the committee should include representatives of nature conservation interests The importance of certain precautionary measures should be made clearly known to spraying contractors farmers, growers, and bee keepers

Fitness of R A F National Service Men

Replying to a question, Mr G R WARD, under secretary of State for Air, said that the number of National Service men discharged from the R A.F on medical grounds in 1952–53 was 1323 (3 7% of those entering), in 1953–54 1115 (3 0%), and in 1954–55 886 (2 4%)

In England Now

A Running Commentary by Peripatetic Correspo

I DO not like the sea, but by some inexplica Mendelian freak have a family that does Each s I have to spend two weeks as a house-husband (if t is the correct masculine of house-wife) For to me, as t Lewis Carroll,

> There are certain things, as a spider, a ghost,
> The income tax, gout, an umbrella for three—
> That I hate, but the thing that I hate the most
> Is a thing they call the Sea

Thus around this time of year my family depart I am left to fend for myself My wife leaves me wit detailed menus, written instructions about the bread, and laundry, a well-stocked refrigerator, and short résumé of the more important recent advances the science and art of housekeeping, for as I reg her with the latest news about antibiotics and blood chemistry so she reciprocates with practical hints from her more colourful magazines Looking back over the past ten years the changes have been extraordinar, equal indeed to the rapid advances made in medicine during that time No longer is one tied to the tin Frozen food is the order of the day A chop or a portion of pork or chicken can be prepared in 20 minutes complete with appetising gravy, and no complicated cooking involved indeed the meat can be cooked by merely placing it on the top of the boiling potatoes Tinned fruit still makes a good sweet, but with the family away one can buy assortment of ripe cheeses (in 2-oz portions) without attracting critical remarks that "the cheese is bad Catering for yourself for a week or two can now be a pleasure and a delight Mere man cannot be expected to keep within his housekeeping allowance, and he can subsidise himself without any awkward questions asked And as for the rest of the housework, is that a bind ? Not really Take a mild sedative at n (double whisky or half a barbiturate), sleep soundly, the bed won't need making Eat in the same room as t wireless, television, and gramophone so that you use onl one room, and, with the children away, a weekly dust w suffice As regards washing-up use as little crockery a as much detergent as possible Eat well, relax, contemplate, and remember to be incompetent and f of the difficulties of your struggle for survival when family returns, for then, if you've played your right, you may go off on your holiday

* * *

In the course of his work a man may acquire reflex which are of value to him in performing his job efficientl That this may have corresponding disadvantages wa shown by a recent clinical memorandum in the *Dai Express* (June 20) Paul Macias, the world bantam weight champion, was being anæsthetised, the ana thetist started to intone one, two, three All was we until "nine" was reached, when the champion " desperate efforts to get to his feet, he wasn't going be down for a count of ten There may be a lesson her for anæsthetists, always use a technique suitable for th individual patient

* * *

Starting a diabetic clinic in the tropics had its obvio snags How many grams of carbohydrate in breadfr yampee, and so on How much fat in the ackees—to s nothing of the mystery of the composition of the lo ice-cream But it was the unexpected difficulties th nearly beat us Where were we to put that donk now that the old lady who rode to us from the I really had to stay in hospital because of her gang and severe ketosis ? How could we instruct the m Chinese patients ? Then we remembered Dr H course, he spoke Chinese I thought our last probl was solved

And so it was till one hot afternoon when the cro outside the clinic was bigger than ever and the customa percentage of notes had not yet come from records an our composure was sorely tried Then my patient came in wearing his usual delighted grin Wh was his special diet-sheet that we'd spent so much ti over? He'd lost it, or left it behind again Well, then what about his four specimens of urine? Nurse said he hadn't brought those either From his many gesticulations pidgin English, and chuckles I understood he had But the nurse was adamant and I was by then exasperated ' Go and see the Doctor who talks Chinese I said sending him off while I started on the next patient But I couldn't give her my full attention I got so intrigued by the Hong Kung Pong, Whung noises going on at Dr H's table round the other side of the screen And then when I heard the Chinese patient add in English and he run like hell I could *contain my curiosity no longer It transpired that* he had remembered his specimens, but while he was walking to the hospital through the market clutching them, wrapped up in a brown paper bag in his hand a thief had grabbed the bag

* * *

After a series of misfortunes due to the various transport strikes, this peripat found himself on a French ship endeavouring (in vain) to arrive at the Toronto conference on time. His morale was rather shattered on discovering that his status on board was that of a distressed British subject It was however partially restored at the emergency boat drill attended by the passengers arrayed in life jackets Mesdames et Messieurs" began a French voice over the loudspeakers, your discipline today is of an importance the most significant' and continued for at least ten minutes in an impassioned pep talk. The invisible orator finished by saying that his so distinguished English colleague would now translate his speech so that all could profit There was a click and an impeccable Oxford voice said Good show chaps, over '

* * *

The kindness of our overseas colleagues can be embarrassing at times After a dinner of a Canadian specialist association in Toronto I was horrified to hear the president refer to me as follows:

I will now ask Dr —— a most distinguished visitor to rise so that we can all see him properly Dr —— was born in London, England and is happily married with two fine boys and a sweet lil girl We will show our appreciation of this historic visit in suitable fashion (Terrific applause)

The hyperæmia of my auricular appendages still persists.

* * *

At my last hospital *The Lancet* was supplied direct from the publishers to the laboratory Now I am attached to a large hospital in South West Scotland renowned for its teaching and its administration where I find things *are done more efficiently or at any rate more is done*

The hospital places an order with a local bookseller who directs that *The Lancet* be sent to him On its arrival a record is made and a messenger despatched with it to the Hospital Stores Department who in turn record its receipt and send it up to the Superintendent's office The Superintendent's secretary also makes a note of its arrival and then sends a messenger to my secretary who has to sign for it, and finally it is handed to me At my old hospital I got *The Lancet* regularly on Friday morning it is now Tuesday afternoon before I can find out what has happened In England Now

* * *

My peripatetic colleague who otherwise displays a specialist knowledge of water-closets, has missed two monstrosities

The first is *convenience* a hideous word which I suspect derives from the Victorian era

The second I met when visiting the New York World's Fair in 1939 Searching desperately for a rest room I was at last constrained to ask a policeman, who said witheringly ' Can't you read Bud? ' And sure enough I was standing under a large sign *labelled* ' comfort station.

* * *

The Dwindling Waiting list

Dear Dr

I am not caming in for I am OK and you no what you can do with your bed

Miss M heath

Letters to the Editor

TUBERCULOSIS IN KOREA

SIR,—I have been reading with great interest the letters on sanatoria I have just finished the ones in your issue of March 5, which has only just reached me (two months is the average time for ship mail to get here)

We began a small tuberculosis sanatorium in this area of South Korea in October 1951 and it has grown in *equipment staff and beds just as fast as these items* were secured We now have 120 inpatients on sanatorium treatment plus a fairly high proportion on pneumoperitoneum We do no major surgery

Our chest clinic has been and is following about 1000 cases of active tuberculosis in this area There is a waiting list of approximately 150 most of whom are infectious and living in very crowded homes There seems to be no end to the need for more sanatoria and chest clinics in South Korea to try to handle this number one health problem So far very little is being done in the whole country because of the lack of funds and trained physicians

It is such a contrast to read articles from England and the United States when many discussions centre around what to do with empty beds If we had 1000 beds instead of 120 I am sure they would be filled with active cases in a matter of a few weeks

Is there any means by which some of the experience personnel equipment and funds of tuberculosis associations and groups in Britain and the United States could be channelled this way? I would think that individual doctors or teams sent here for periods of 2 or 3 years could do much good Such groups should however need to have adequate financial backing or access to drugs &c, to carry out the recommendations they would make

We find ourselves trying to do too many things and not doing any thoroughly I have a Korean doctor 12 nurses, and a total hospital staff of 40 What is needed in this area is a good home treatment programme that would be integrated into the sanatorium

Right in this city of 120 000 people, the capital of a province of 3 000 000 with a heavy incidence of tuberculosis and where our hospital is the only one devoted entirely to the disease there is a large Korean medical *school and college hospital However whereas there* should be several hundred tuberculous patients in that hospital there are only 5 at present for the lack of a chest physician to lead such a programme

We foreigners, 6 families of the Presbyterian Mission constitute most of the permanent foreign population There are U S soldiers in our area but only temporarily

If a chest physician were interested in coming here to help in a virtually uncontrolled tuberculosis problem I will find comfortable quarters for him for as long as he could remain We could not do this however without added financial help There is an opening here for any preference that may be mentioned teaching the students and local doctors (in English), developing the chest clinic at the medical-college hospital aiding our own private hospital in either its inpatient work or chest clinic A new building now under construction will raise the number of beds to 160 We have lately established a connection with a general surgical hospital where we send suitable cases

There will be many discouragements and problems, but one who is genuinely interested in the work will I feel sure, derive great satisfaction from doing a much needed service

Presbyterian Tuberculosis Hospital
Yangnimdong, Kwangju
Cholla Namdo Korea.

HERBERT A CODINGTON
Superintendent.

TREATMENT OF CHRONIC AMŒBIC DYSENTERY

SIR,—Dr Andrade would make me believe that the last word on all aspects of amœbiasis has been said and any conception at variance with his own is a misconception. In his letter of June 11 he says excystation does not occur in the lumen of the bowel in the same host, and the cysts therefore are not parasitic and are harmless to the host in whose bowel they have been formed.

Hakansson,[1] however, holds that the cysts in the intestine which survive develop into trophozoites. These subsequently divide and so bring about an increase in the amœbæ which may remain as trophozoites or become encysted. He thinks the so called cyst carrier will pass trophozoites from time to time when the stools become more liquid.

From my own observations I have reason to believe that excystation may occur in the cæcum, although results of single experiments may be negative. Apparently, excystation depends on the activity of the chyme reaching the cæcum. Also, cysts which regurgitate into the ileum may undergo excystation there. Barium enema studies reveal that in dysentery regurgitation into the ileum from the cæcum is commoner and more marked than in normal persons.

Hence, for the reasons I gave in my letter of May 28, cysts should be treated. Till 100% successes are established by the use of oral cum systemic amœbicides acting on trophozoites only Dr Andrade has no justification for pressing his point that cysts should not be treated.

Military Hospital,
Lucknow, India

INDER SINGH

SIR,—In their letter of June 11, Dr Armstrong, Dr Wilmot, and Dr Elsdon Dew have rightly corrected me for stating that the presence of cysts is indicative merely of an infection of the bowel *wall* with amœbæ. Nevertheless, although it may be true that the majority of cysts develop from lumen-dwelling commensal amœbæ (90% of infected persons are symptomless cyst passers), it has not yet been shown for certain that amœbæ which have been extruded into the lumen of the gut along with the contents of an ulcer are incapable of encystation. However the elucidation of this problem is not of any great importance to the clinician who but needs to know that, in an infestation, amœbæ may be situated intramurally, intraluminally, and on the surface of the intestinal mucosa as well as extraintestinally. With this knowledge he is in a position to prescribe, rationally, a combination of amœbicides in an attempt to destroy the amœba in its various locations.

In support of the theory that cysts are derived solely from trophozoites living in the lumen of the gut Dr Armstrong and his colleagues seem to point to the clinical fact that patients with amœbic dysentery pass only trophozoites, whereas in amœbiasis without symptoms or with mild symptoms cysts are passed almost exclusively. The logic of this deduction is too profound for me to follow. To me it seems that the clinical observations I have referred to can be accounted for by the fact that when there is diarrhœa some amœbæ are passed rapidly down the bowel to the exterior, whereas when there is no diarrhœa, the amœbæ are conveyed slowly down the bowel and so have time to secrete around themselves a cyst wall. It is the time taken in passage to the exterior in the fæces—and not the location of the amœbæ in the gut—that determines whether the parasites are voided in the amœboid or in the cystic state.

May I now guide this correspondence back to the main purpose of my letter of March 26, which was to point out that it is irrational to prescribe a drug specifically because of its reputed power to destroy cysts, since this ignores the fact that cysts in the fæces can only be derived from active amœbæ present in the gut?

Calcutta

C. B. ANDRADE

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[1] Cited in Stitt's Tropical Diseases, 8th ed., London, p. 486.

HEROIN

SIR,—Your leading article of June 25 is doubly unfortunate: firstly, in its conclusions, and secondly, in the manner of its timing—while the Home Secretary is considering the representations of the British Medical Association.

You sum up the position admirably in your leading article, and then sentence the jury instead of the prisoners; and when the former protest, you ask them to be good boys and cooperate. In fact, you make the same error as the countries abroad which do suffer from heroin addiction. They tell us of their problem and implore us in sympathy to wear sackcloth and ashes, or at least a black diamond over the left deltoid. Apart from the inconvenience, such things are a little old fashioned nowadays. Did not the U.S.A. start wearing a black patch thirty years ago?

We hear much of the W.H.O. expert committee on addiction drugs. It was interesting to note at the recent annual representative meeting of the B.M.A. that the motion on heroin was presented by Aberdeen, Kincardine and the Orkneys and Shetlands, comprising a band of shrewd, sound, and practical rural general practitioners.

These are the real experts on heroin—men who see it every day, instead of sitting round a table moaning about it. I suggest that the controlled trial you propose be carried out in Aberdeen county, instead of in some stuffy city hospital. The experience would be exhilarating for the investigators and the results certain.

Your main conclusion that a ban here will influence favourably the Far East or certain Mediterranean countries is a very naïve one, and of most doubtful efficacy. It is a poor thing when balanced against the practical considerations brought forward by your correspondents.

Ropley, Hants

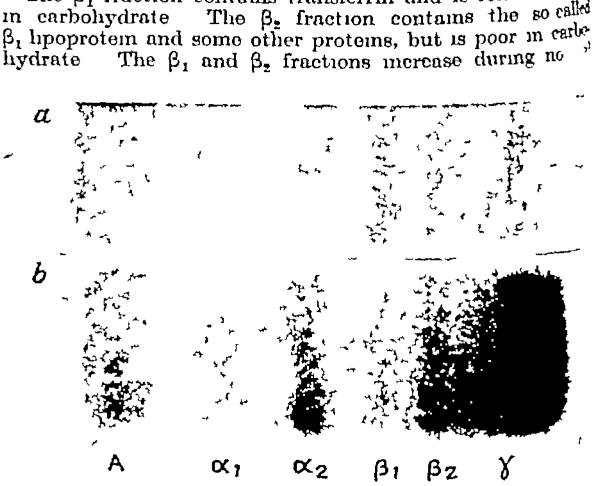
J. S. HAPPEL.

ELECTROPHORESIS OF PLASMA-PROTEINS

SIR,—In view of the somewhat contradictory results presented by Dr Owen (April 23) and Dr Consden (May 14) we feel we should point out that distinct well-separated double β globulin bands are regularly obtained when analysing fresh sera, if a 'Veronal' buffer of ionic strength 0·1–0·05 containing 1·25 millimols Ca^{++} is used.

A good separation between albumin and α_1 is also obtained if the papers are moistened with a buffer with 20–50% higher ionic strength than the buffer in the electrode vessels. The mean value for the normal β_1 fraction is 0·50 g. per 100 ml. and the S.D. 0·055, and the mean value for β_2 is 0·35 and the S.D. 0·045. The accompanying figure shows the clear separation of the β fraction which we obtain by this method.

The β_1 fraction contains transferrin and is relatively rich in carbohydrate. The β_2 fraction contains the so called β_1 lipoprotein and some other proteins, but is poor in carbohydrate. The β_1 and β_2 fractions increase during no



Electrophoresis of (a) normal serum and (b) serum of a patient with empyema.

regnancy The β_2 fraction increases in all diseases with ncreased β lipoprotein concentration as well as in acute and hronic infections and in advanced malignant diseases

The β splitting observed in pure borate buffers by Dr Consden is not of the same nature as that reported y us since in borate the β lipoprotein migrates with the α_1-component On the other hand, the β separation eported by Owen and earlier by Wiederman,[1] may be of he same type as that we obtained when using a calcium ree veronal buffer with an ionic strength of more than 0 1 Similar results can readily be obtained with buffer *at lower ionic strength if the apparatus used permits a* igh rate of evaporation As regards the β lipoprotein his separation is of the same type as that obtained with alcium

Departments of Clinical Chemistry
in Malmö and Lund
University of Lund Sweden

C B LAURELL
S LAURELL

LOW LACTOSE MILK FOR CONGENITAL GALACTOSÆMIA

SIR,—Like Mr Salt and his colleagues (June 4) I have found the Trufood low lactose milk powder perfectly satisfactory in the treatment of one case of galactosæmia This patient was treated with 'Nutramigen' until the age of 1 year and made good progress with this food She then however became reluctant to take it and partly because of this and partly because of the difficulty involved in obtaining supplies of nutramigen she was given the low lactose milk which Messrs Trufood kindly supplied She appears to find this food more to her liking and continues to make good progress.

Leicester

W J MATHESON

DIAMOX IN GLAUCOMA

SIR,—I have read with great interest your report (May 7) on the symposium on this subject held at the 75th congress of the Ophthalmological Society of the United Kingdom

The beneficial effects of acetazoleamide ('Diamox') on intra-ocular pressure no matter what its mechanisms remind me of similar results obtained with mercurial diuretics in primary glaucoma[2] That the ocular fluid content may play a rôle in the regulation of ocular tension is borne out by experimental[3] and clinical observations (fall of ocular tension in states of dehydra*tion e.g., diabetic coma)*

I had come across this question in the course of studies concerned with the relationship between primary glaucoma and pituitary hypothalamic disorders. In 16 of 22 cases examined such a relation was in fact established both on clinical grounds and on the strength of various metabolic phenomena suggestive of pituitary hypothalamic involvement Among the latter a tendency towards water and salt retention was a notable feature in a number of cases

I therefore tentatively gave mercurials with a view to lowering intra-ocular pressure by means of dehydration and was favourably impressed by their effects especially in patients with gross water retention in the Volhard dilution test In the majority of cases, however subjective relief was more evident than a decrease in objective measurements. I wrote[1]

> 'The fact that the origin of a number of cases of primary glaucoma can be traced to tissue hydration points to the therapeutic effect of dehydrating measures. This hint should be checked by oculists, since it may serve as a supporting measure in situations in which acute action on the increased intraocular pressure is required.'

Jerusalem Israel

HERMAN ZONDEK

Schweiz med Wschr 1953 83 1208.
Zondek H Wolfsohn G *Amer J Ophthalmol* 1947 30 596
Friedenwald J S *Arch Path* 1930 16 65

TEACHING DEAF CHILDREN

SIR,—I welcome Mr Owen's remarks (June 25) when he says that the best contribution doctors can make to the future educational progress of deaf children is to use and improve the existing facilities for the early diagnosis of deafness and the degree of deafness, and then to push the appropriate authorities into providing the necessary special educational treatment as soon as possible

I disagree most emphatically with him when he ventures into the educational field and makes the surprising and dogmatic assertion that in suitable conditions the parents of the deaf child 'can give more help by home training under the guidance of a teacher of the deaf than can be given to the child in a nursery school This is so completely at variance with the experience of this and other nursery schools for deaf children that I feel I must deal with it at some length in order to avoid the possibility of yet another misconception being fostered concerning the education of these children

In the past two years we have met over thirty children from a variety of home backgrounds including those where the parents have been able to give almost full time to home training and in several cases where the training had been supplemented by attendance at a normal hearing school (at the suggestion of the E N T clinic concerned) and compared with children of similar degrees of deafness and ability and of the same age who have been in a special nursery school for two terms or more all the home-trained children were educationally backward in speech lip reading and language All their parents have made substantially the same comment I wish my child had got into school earlier It is quite a simple issue Will the deaf child benefit more from full time guidance by a teacher of the deaf as compared with the one hour lesson once a fortnight?

Home training is limited to the few homes where the conditions permit it and is therefore out of the question for the majority It takes no account of the emotional relations between the mother and child such as over-anxiety which can prejudice good home training It relies too heavily on the hope that the child will be at his best when the fortnightly lesson begins although the child often has a lengthy journey to make It relies on the assumption held currently by some E N T clinics that all that is required in these early years is a talking environment This is important, but it can be *provided in a properly run nursery school and it must go on* concurrently with speech training &c which is a skilled job requiring a skilled teacher May I quote Professor Ewing head of the department of deaf education University of Manchester and a world renowned authority on this subject In their book *Speech and the Deaf Child*, published last year he and Mrs. Ewing said It must be emphasised that great as the benefits of attendance at a nursery school are for ordinary children it is far more important that deaf children should be able to go to nursery schools or classes planned and organised to meet their special needs. In cases in which the parents cannot give home training a nursery school is the only effective means of preventing deaf children from living through years of wordlessness and dumbness. For children who enjoy the benefits of training in their homes attendance at a special nursery school is an essential complement to it without which they cannot achieve intelligible speech.

Mr Owen shares the commonly held assumption that for a very young child to go to a nursery school has bad psychological consequences The Nursery School Association of Great Britain has a wealth of published information and actual experience which establishes the opposite And we, who are a residential and day school have had only one child fret away from home and even here there were other and unusual reasons We find that the most well adjusted children are those who go home for weekends not the day children

I do not deny the essential place of home training but it is not a substitute for full time nursery school teaching

Nursery School for Deaf Children
Woodford Green Essex.

B I INGALL
Principal.

RESPIRATORY OBSTRUCTION IN ACUTE LEUKÆMIA

SIR,—The interesting article of Dr Levison in your issue of June 4 prompts us to report a similar case in whom symptoms were relieved by 6 mercaptopurine [1]

A 14 year old boy was admitted to hospital on Feb 7, 1955, with a history of cough and increasing dyspnœa of three weeks' duration His colour was good but numerous enlarged lymph glands were present in the cervical and axillary regions The liver and spleen were palpable and signs of pleural effusion were present on the right side Blood examination gave the following result hæmoglobin 14 7 g per 100 ml, red cells 5,000,000, platelets 210,000, white cells 24,600 per c mm (neutrophils 51%, lymphocytes and lymphoblasts 49%) Sternal bone marrow showed 78 8% lymphoblasts X ray examination of the chest (fig 1) showed massive enlargement of the mediastinal lymph glands and a small effusion at the left base

Treatment with 6 mercaptopurine, 150 mg daily, was begun on Feb 11, and by Feb 24 his symptoms were completely relieved, and the liver, spleen, and lymph glands were considerably reduced in size *Clinical and hæmatological* improvement continued, and by March 4 the chest radiograph (fig 2) showed a clearing of the pleural effusion and a return of the mediastinal picture almost to normal

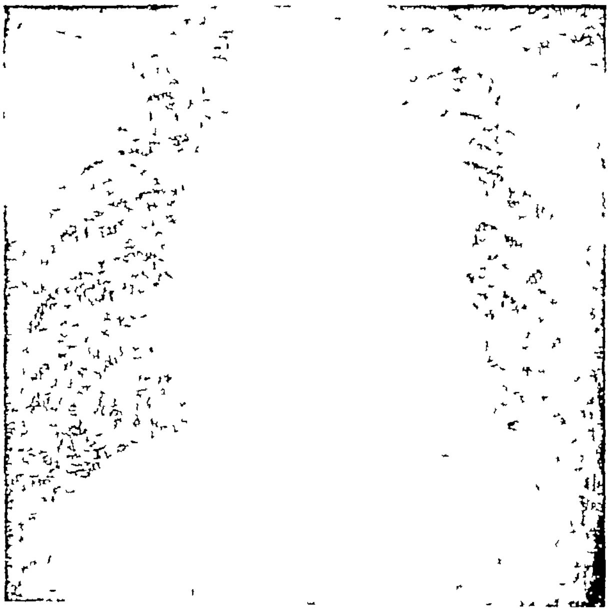


Fig 1—Enlargement of mediastinal glands and small effusion at left base.

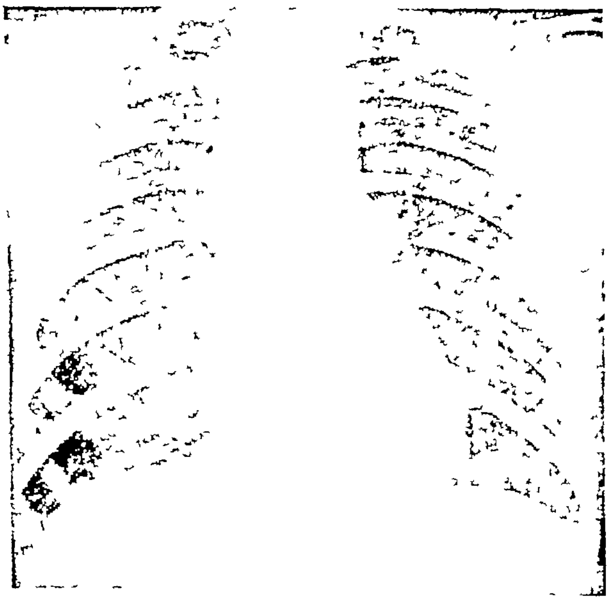


Fig 2—Improvement three weeks after starting 6-mercaptopurine

On a daily dose of 50 mg of 6 mercaptopurine he remained remission for six weeks when he again presented with dyspnœa, and massive enlargement of the mediastinal gl was again observed radiologically Improvement followed treatment with 6 mercaptopurine, 150 mg daily, and co trophin (25 I U six hourly) Relief was, however, only temporary and when relapse followed towards the end of May he was found to be completely unresponsive to further treatment and a rapid downhill course followed

General Infirmary,
Leeds

J R H TOWERS
J R FOUNTAIN

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[1] Fountain, J R *Brit med J* 1955, i, 1119

TREATMENT OF CONSTIPATION

SIR,—Severely constipated children who do not fit into one or other category of megacolon constitute a troublesome therapeutic problem For the past eighteen months we have treated the most intractable cases of this type by internal anal sphincterotomy, with promising results Pending a report on a follow up over a period of years, an interim letter may be of interest to those who have to grapple with the practical aspect of the problem

The specific points Dr Hinden, the pædiatric consultant, and myself set out to collate have not shown any particular environmental factor to be of significance Onset has usually been three to six months after birth and most of the patients have been girls In all cases selected for this treatment the pattern has been much the same—bowels opened every six or seven days usually with an enema Stools have not as a rule been constipated and sometimes have been surprisingly soft

Management has been as follows

The child is admitted to hospital for observation and investigation by barium enema, &c The degree of constipation is assessed and then a laxative diet is given but no aperient This includes black molasses treacle, said to contain acetylcholine, prune paste, all bran, mixed fruit, wholemeal bread, and as much fluid as the child will take If this régime has no effect in two weeks, the inferior band of unstriped anal sphincteric muscle is divided under general anæsthesia The operation is performed in a few minutes and is followed by no discomfort whatsoever The desired effect does not appear to be obtained if the voluntary muscle of the external sphincter is sectioned.

In most cases the result is immediate and even dramatic The sister of the ward is emphatic that mental outlook and physical condition improves noticeably The follow-up shows that although there is a falling off in some cases to a two day or three day rhythm the majority maintain a daily bowel action

It may not be out of place to conclude with a word about constipation in the adult who is, after all, the child writ large Hardly ever do we fail to cure the adult of the purgative habit and restore normal bowel action by a modification in diet along the lines already described For the most severe cases exercises and abdominal massage are of real value and the best for the latter purpose is one of the rubber types of rollers commonly advertised for obesity Thus, in my experience, the great majority of cases of co are amenable to a rational form of re education that very little trouble to anyone If we imagine these simple measures practised on a national scale (and this would not be construed as threatening the freedom to be constipated) the £70 million quoted recently as the annual expenditure on aperients might well be diverted into a more useful channel than the lavatory pan even though the philosophically minded might add arguments to show that there would not necessarily be any greater usefulness in the likely alternative diversions of this vast sum of money, and that the rsuits of those who like to cleanse their colons with mpound or clyster are harmless enough it must still remembered that there are the truly constipated hese people do in fact suffer miseries and are most ateful for advice which frees them from the necessity taking ever increasing doses of the latest proprietary testinal irritant

Whipps Cross Hospital
London E.11

D Lang Stevenson

BY ANY OTHER NAME

SIR —Since Fletcher and Oldham's studies,[1] it is now enerally accepted in the radiology of pneumoconiosis hat two, three, or more readings of each chest film are ecessary, and we agree with the conclusion in your ader of June 18 that ' whatever the purpose of the xamination and whatever the size of the film the adiograph should preferably be read by two observers.

You point out also with regard to the detection of neumoconiosis that the suitability of small films can be roved only by an experiment involving large numbers n an experiment which we have already reported lsewhere,[2] large (15 × 12 in), 4 × 5 in and 70 mm hest radiographs were taken of each of 130 coalminers hree viewers independently classified each film three imes as category 0 (normal) 1, 2, 3 or P M F (progressive assive fibrosis) 70 mm film classifications were on the verage 0 6 categories lower, and 4 × 5 in film classifications a whole category lower, than the large film lassifications All viewers gave the same average category hen reading large films They did not all agree on the verage category however when using either of the maller sizes of film A measure of consistency of interpretation also showed the large film to be better We onclude that the two miniature sizes *do not compare* avourably with the standard large film for the lassification of miners pneumoconiosis

Nuffield Department of Industrial
Health University of Durham
Newcastle upon Tyne

R I McCallum
D J Newell.

IDIOPATHIC GRANULAR PROCTITIS

SIR —I was much intrigued and not a little surprised y Dr C F J Cropper's article with this title in your sue of June 18 I was intrigued because he gave a ery exact description of the essential lesion of intestinal pirochætosis—to wit the ' strawberry lesion ' as I ave termed it—and its locations in the large bowel

The *Journal of Clinical Pathology* (1953 6 327) contains an dmirable summary of a paper on this subject amply ustrated with lantern slides and coloured plates, which read to some 200 pathologists in London on Oct 1 1953 I ave been unwilling to publish full details, for I have yet find an Editor who will accept my request for one or more loured plates, without which the essential lesion cannot appreciated But I hope to read a more lengthy paper a wider audience including some clinicians, next year

The syndrome which Dr Cropper describes accords entically with my findings in some 50 cases collected uring nine years. In children it is sometimes severe mulating dysentery and a film from the stools stained Fontana's silver impregnation method, will show both irochætes and fusiform bacilli in enormous numbers ver 100 per field) In adults the syndrome is chronic th exacerbations of explosive diarrhœa, often with læna.

I well recollect a young soldier invalided from Germany th unexplained melæna, who had been thoroughly investi ted by X rays with negative results and who proved to have s infection both in the throat and in the bowel (when swab d and sigmoidoscoped) The condition cleared up completely er two ten-day courses of oral acetarsol which is a specific cure together with vitamin C in which these patients are usually deficient

There are two types—' primary ' and " secondary " The former are pure Vincent fusiform infections and the latter follow some previous dysentery (usually amœbic) or even a neoplasm of the bowel Dr Cropper's cases were mostly " secondary '

He states that published reports on idiopathic (I call it specific ') granular proctitis are surprisingly few but I can assure him that this infection can be traced back as far as 1884 when Escherich found spirochætes secondary to cholera in the dejecta. David Smith in America, gave an excellent description in his book on spirochætosis in the human body, with an account of feeding experiments in guineapigs which produced Vincent ulcers in the cæcum

The reason why this condition has so long been lying under our noses unrecognised is simply that pathologists do not look for spirochætes in the stools They can be seen by an expert in simple gram stained films, but they hit you in the eye in a silver preparation But it must be very thin A swab from the bowel lesion, Dr Cropper will find, is rewarding if stained correctly

Eastbourne.

A G Shera

THE TREATMENT OF ECLAMPSIA

SIR —The interesting article by Dr Bryce Smith and Mr Williams (June 18) prompts me to record two further cases of eclampsia treated by spinal epidural block especially as an oxytocin drip suggested in the article, was used in one case Unfortunately it did not have the expected satisfactory outcome.

CASE 1 —A primigravida, aged 32, had twelve days inpatient treatment for pre-eclampsia at thirty five weeks and was readmitted one week before the expected date of delivery with blood pressure 150/105 mm. Hg After three days rest a surgical induction was performed but in spite of this regular contractions were not established for forty eight hours. After becoming four fingers dilated, the cervix did not dilate further and the blood pressure rose steadily over the next fifteen hours reaching 200/130 when two fits occurred She was given morphine (gr $^1/_4$) and 100 ml of 50% dextrose solution intravenously after the first fit and the pressure fell to 170/110 Two hours later a lumbar epidural block was performed with 25 ml of 1% lignocaine Anæsthesia developed up to T10 and the pressure dropped to 100/60 when methedrine (10 mg intramuscularly) was given to prevent any further fall. The uterine contractions had now almost ceased but the patient was greatly improved and quite coöperative After one hour the blood pressure was 115/80 and an oxytocin drip was commenced with immediate re starting of uterine contractions An unexpected result was that the blood pressure rose and fell with alterations of the rate of drip suggesting that there was some contamination with the posterior pituitary vasopressor The blood pressure finally settled at 150/110 In spite of good contractions the cervix still remained at four fingers. The anæsthesia wore off after two hours, but as the blood pressure did not rise no further lignocaine was given. Four and a half hours after the start of the oxytocin drip the fœtal heart ceased, and as the labour had not progressed the drip was stopped. A further eight hours passed before forceps delivery could be attempted. Under general anæsthesia a contraction ring was found to be present and the dead fœtus was extracted with difficulty Six hours later the blood pressure was still 150/110. Recovery was uneventful

CASE 2 —A primigravida, aged 25 was being delivered at home Two and a half hours after rupture of the membranes a fit occurred and the blood pressure was found to be 160/110 Two hours later there was a further fit just following admission to hospital. 200 ml of 2 5% bromethol was given per rectum, but the pressure remained high at 180/40 A lumbar epidural block was performed with 30 ml of 1 25% lignocaine, and the pressure fell steadily to 150/115 From being almost comatose the patient became reactive and answered questions. As the cervix was fully dilated forceps delivery was performed forthwith, no further anæsthesia being required The baby cried immediately it was delivered, and was in good condition

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[1] Fletcher, C. M., Oldham, P D *Brit J industr Med* 1949 6, 168; *ibid*, 1951, 8, 138

[2] Newell, D J McCallum, R. I. *J Fac Radiol.* 1954 6 67

Within one hour the mother's blood pressure was 130/90, where it remained.

A method of continuous epidural block was not needed in either of these cases It should be remembered that by controlling the blood pressure the dangers of cerebral œdema are avoided but the toxæmia still persists with its deleterious effects on the fœtus and will not disappear until the uterus is emptied Speaking as an anæsthetist *it seems to me that the correct course* is to establish epidural block and, taking advantage of the greatly improved condition of the mother, to proceed, without delay, to cæsarean section (or forceps delivery if the cervix is fully dilated) No further anæsthesia would be required, and a high fœtal salvage rate should be achieved The danger of postpartum fits could be prevented by continuing the block for some hours after operation The difficulties in maintaining a block for several days are well illustrated in the article by Dr Bryce Smith and Mr Williams, and could be obviated by early cæsarean section The opinion of those better qualified to speak obstetrically would be of great interest

Both these cases were under the care of Dr W Frame Flint, to whom I am grateful for permission to publish

Kirkcaldy General Hospital
Fife
D B SCOTT

DIAPHRAGMATIC RUPTURE

SIR,—I found the articles by Mr Sinha and Dr Hamdi and Dr Sturdy and your annotation (May 14) most interesting In the ætiology of this condition there is a point which needs to be explained Although sudden increase of intra abdominal pressure may cause diaphragmatic rupture, the rupture is due to reflex contraction of the diaphragm and abdominal muscles, and the *primary cause is sudden diaphragmatic contraction and* not continuation of violence This is one reason why diaphragmatic rupture due to non penetrating injury is so easily overlooked

Istanbul Turkey
IMRAN HATIBOĞLU

STERILISATION OF BLANKETS

SIR,—In his letter of June 25 Dr Marsh suggests that the use of 'Fixanol C' for the sterilisation of blankets does not have the disadvantages to which we drew attention in our article He claims that fixanol does not have an *unpleasant odour and that it does not stain the blankets* The first point is, of course, a matter of opinion, but in any case we would prefer a substance used for this purpose to be odourless On the second point, Dr H F Barnard,[1] who described the use of fixanol C in 1952, has since told one of us that after its prolonged use there is definite hardening and brown discoloration of the blankets As far as solubility is concerned we did not, as Dr Marsh suggests, say in our paper that fixanol C is insoluble in water We said, and he confirms, that it dissolves with difficulty Thus to make a convenient concentrated stock solution, vigorous boiling is necessary, involving more trouble than would be readily accepted by the laundry staff We did try adding solid fixanol C directly to the water in the washing machine but found that it formed a brown glutinous mass which remained in the bottom of the container or adhered to the blankets with which it happened to come in contact

'Cirrasol OD' is without these disadvantages, and since as a disinfectant it is just as efficient as fixanol we think that it is to be preferred Incidentally, the article by Dr Marsh and Dr Rodway refers throughout to fixanol B, whilst in his letter Dr Marsh refers to fixanol C We are not sure, therefore, with which substance his experiments were performed

We have again read the article by Dr Marsh and Dr Rodway and cannot find the reference, which Dr Marsh mentions in his letter, to the action of soap antagonising the bactericidal effects of qua ammonium compounds This, of course, is an impor and well known phenomenon to which attention sh be drawn It was, as far as we know, first mentioned Vaughn and his colleagues[2] in 1948

General Hospital,
Middlesbrough
ROBERT BLOWER
K R WALLACE.

MENTAL RETARDATION

SIR,—No one could disagree with Dr Alford's e nently sensible and balanced article (June 18) on mentally retarded child, but as the mother of such a ch read it with increasing sadness The stern reality w faces the parent of a mentally defective child is, I reg to say, very much removed from the desirable picture what ought to be, painted by Dr Alford

The legacy of the past has engendered in the mind most people, including very often the medical profe and the education authorities, an attitude of hopelessn towards these children, with the consequence that vision for their training and welfare is quite inadequa One is lucky indeed if one succeeds in placing a chi in a special school or occupation centre, because the are neither the places to send them nor the staff to tea them when they do get there One estimate puts t number of children awaiting entry into such schools 25,000 Meanwhile they deteriorate at home and parents are left literally alone to tackle the problem

I am inclined to think that Dr Alford is rather ov emphasising the parents' sense of guilt A heavy sense responsibility one naturally feels, but I would say t predominant emotion is undoubtedly anxiety T *instinctive reaction of any normal mother to the* kno ledge that her child is handicapped is protective It when it is borne upon her that our society is sim not geared to cope with the problem of these ch and that because of this they are bound to suffer, that herself becomes acutely anxious and unhappy I w remember the words of the psychiatrist who talked to about my small son and who said "unfortunately he normal enough to know he is not normal" When I despairingly that I thought the child would be bet dead he agreed with me!

May I underline Dr Alford's *comments* on the imp ance of the way in which parents are told of their chil disability by relating without comment how I my was told I first became worried about the child when the age of $2^1/_2$ he still did not talk I was referred to children's department of a London teaching hospi where I saw a consultant physician who, in the space not more than a few minutes, and in the presence o group of students, informed me quite bluntly that child was mentally defective He added that it pointless for me to be burdened with him and that would arrange for his removal to an institution, altho this would take some time because of the long wai lists I picked up the child in my arms, and quite una to utter a word I left the hospital To this day I not remember how I got home, the shock was so gr that I have a complete amnesia of just about three h

Cambridge
ANNE BENNETT

SIR,—May I support Dr Cargill's contention (June that little useful purpose is served by classification children into ineducable on the one hand and edu tionally subnormal on the other, the former involv exclusion from the educational framework, notifica to the mental health authority, and categorisation "defective"

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[1] *Brit med J* 1952, i, 21

[2] Vaughn, T H Sotier A L, Hill L F, Simpson, J E, W M *Industr Engng Chem* 1948, 40, 2054

It is of interest in this connection that in Glasgow, here I practised some years ago the term ‘ special ’ as been removed from ‘ special school ’’ as applied to lucational establishments for children whose rate of aturation is slower than the average Further, where child's mental growth rendered him unsuitable for hool he could go to an occupation centre on the mpletion alone of a statutory schedule, ’ classification s a defective being required only on admission to an stitution

For my part, I should like to see occupation centres receiving o designation of schools If the function of education is to rture activate or stimulate the maturation and differentia on of the individual child, then in so far as the stimulation ovided in occupation centres is articulated and keeps pace ith the individual child's inner drives and tensions and the anifold lines of differentiation along which his mental growth developing the occupation centre is educative in the true nse of that word.

In this connection mechanistic psychology still blinds us to e realisation that the learning of the child is not a function of cognitive faculty ’ but is essentially integrated with his cial and emotional behaviour and derives its drives from cial and emotional experiences That is why too premature assification of a child under any form of handicap is a rious error especially where it recommends removal from ose intimate emotional and social experiences upon which s learning depends in the earliest years (and which has thing to do with the 3 Rs)

There is more than a grain of truth in the insight of the rents of children with intelligence quotients of 40 or 50 that eir mental condition cannot be adequately summarised a simple formula. Terms like mental defect and intelligence quotient are themselves mechanistic and talistic and not in accord with the dynamic psychology today

Maturation and differentiation of brain patterns is the unterpart in the individual of phylogenetic evolution nd is replete with surprises. It does not allow of rediction of behaviour in one context to that in another, of prediction from day to day except within the widest mits and only in exceptional cases—e g of gross brain amage. As Wheeler the exponent of the *Gestalt* sychology in America has pointed out the so-called nstancy of the intelligence quotient depends largely on the fact that the environmental context for most ildren remains relatively constant and invariable roughout their school life

D JACKSON
County Psychiatrist
Cornwall County Council

Perranporth, Cornwall

METABOLISM OF CANCER CELLS

SIR,—There are certain features of cancer behaviour hich seem to me to have a possible common explanation ased on the work of Warburg[1] This work showed that e cancer cell is inclined to depend for its energy on the ocess of glycolysis without oxygen utilisation even hen oxygen is available As a result lactic acid is oduced as a chemical end product. If this is accepted e question comes to mind whether the cancer cell sensitive to the local accumulation or dissipation this metabolic end product. There are some aspects cancer behaviour which suggest that such a sensitivity ay exist

(1) *Distribution of Cancer Metastases*.—It is a well known d unexplained fact that cancerous emboli take root and urish in some tissues, whereas in other tissues they die om the point of view of the cancer cell the liver is the most tile of all soils to land in. Skeletal muscle on the other nd, to the cancer cell is a vast desert. Now the liver and eletal muscle are the chief sites within the body for respec- ely the disposal and production of lactic acid. In the liver erefore the cancer cell finds itself in an environment where important end product of its energy metabolism is rapidly sipated. In skeletal muscle however the cancer cell finds itself in surroundings already polluted by one of its own metabolic end products—i.e , lactic acid From this point of view it is also interesting to contrast the capacity of cardiac muscle to nourish the cancer cell with that of skeletal muscle The heart not infrequently harbours cancerous metastases and the heart also favours lactic acid as a fuel

(2) *Effect of Vitamin B_1 Deficiency on Cancer Growth*.—In laboratory animals it has been shown that induced vitamin B_1 deficiency has a specific inhibitory effect on the growth of cancers One of the effects of such a deficiency is to cause an accumulation of pyruvic and lactic acids in the body Again the cancer cell finds itself in a polluted environment

I do not know of any writings in which cancer behaviour has been regarded from this aspect or of any work which has been done based on a similar hypothesis I realise that this hypothesis is probably explodable from the armchair without the necessity for further investigation However the ideas are of interest to me and having no facilities for carrying out the famous Hunterian dictum I submit them for consideration

Sydney J W GRAHAM

COWPOX IN MAN

SIR,—Since the publication of my article on this subject (April 9) my statement concerning the nursery rhyme ‘ Where are you going to my pretty maid ? ’’ has been challenged In the article I suggested that the rhyme derived from the fact that dairymaids were protected from smallpox by previous infection with cow pox I have therefore consulted the *Oxford Dictionary of Nursery Rhymes* (Opie 1951) and find that my hypothesis was incorrect this rhyme is a 19th-century version of an old folk song which is recorded as having been sung as early as 1698 and has since been considerably expurgated for recital in the nursery

Derby BERNARD LAURANCE

QUARANTINE MEASURES IN POLIOMYELITIS

SIR,—We should like to congratulate Dr Agerholm (June 25) on her intuitive approach to the epidemiology of poliomyelitis and can only look forward to the day when her ingenious hypothesis will have a chance of being put to experiment

Her hypothesis that the spread of paralytic polio myelitis in civilised countries is mediated principally by pharyngeal carriers, while intestinal transmission is negligible rests on evidence of the following kind The incubation period of poliomyelitis is usually taken as 4–30 days studies of presumed chains of infection suggest a possible incubation period of 10–14 days poliomyelitis virus can be isolated from the blood from about 3 days before onset of symptoms to about 2 days after onset from the pharynx over roughly the same period and from the fæces from the same time (or earlier) for up to 3–4 months *therefore* pharyngeal spread is the important method of transmitting paralytic poliomyelitis. The argument seems to us to require a few more facts and a little logic to sustain it.

In the absence of direct evidence which could prove or disprove Dr Agerholm's hypothesis, we must fall back on the well-established facts in the epidemiology of poliomyelitis. The high rate of infection in countries of poor sanitation where paralytic cases after infancy are virtually unknown amongst native populations the high risk of paralytic disease to those from civilised countries when they visit such underdeveloped countries (e.g., severe epidemics of paralytic poliomyelitis among British and American troops in the Middle East) and the high summer incidence of the disease throughout the world all point to the importance of fæcal transmission in the spread of paralytic poliomyelitis Moreover viruses isolated from the pharynx and fæces have never been shown to differ in virulence.

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[1] Warburg O The Metabolism of Tumours London 1930

In the light of available evidence, we must side with the W H O expert committee on poliomyelitis and the Ministry of Health in this country in declining to take the responsibility of recommending quarantining the pharynx and leaving the fæces to take care of itself

Virus Reference Laboratory,
Central Public Health Laboratory,
London, N W 9

A P GOFFE
EDITH M PARFITT

PRECIPITATION OF SODIUM URATE IN VITRO

SIR,—The addition of uric acid to a solution containing 2 ml of a 20% aqueous solution of sodium *p* amino salicylic acid (P A S) and 2 ml of an aqueous solution of 0 1 g of D(+)glucosamine hydrochloride results in the dissolution of the added uric acid on standing, with consequent precipitation of sodium urate The amount of uric acid so dissolved was up to 0 25 g

It has been observed repeatedly that the administration of sodium P A S to gouty patients precipitated an acute gouty crisis with marked exacerbation of articular symptoms

It is probable that the reaction described above, and discovered recently, may illustrate in vitro the biological precipitation of sodium urate in the tissues

Woodville South
South Australia

MICHEL BROUS

Public Health

Toxic Chemicals in Agriculture

THE third report[1] of a working party, under the chairmanship of Prof S Zuckerman, F R S , on precautionary measures against toxic chemicals used in agriculture has just been published. It deals with the dangers to the natural flora and fauna of the countryside that may arise from the use of toxic chemicals in agriculture, and the precautions to be taken in their use The dangers to farm stock and bees are also considered The working party find that in a normal season in Britain the number of casualties to wild birds and animals due to spraying is not particularly high compared with other causes of death, despite the increasing use of some of the newer chemicals—e g , organic phosphorus compounds In late 1952 when there were a number of casualties to wild birds and animals in fields sprayed with these insecticides, the combination of circumstances which resulted in these casualties was exceptional and they are not likely to recur frequently The working party do not consider that further legislation is needed at present But they note serious gaps in the knowledge of the subject, and recommend that the terms of reference of the interdepartmental advisory committee, set up in conformity with the recommendations of the second report of the working party should keep under review the risks to wild life arising from the use of toxic chemicals in agriculture

Because of a dearth of well-documented evidence, the working party arranged for some small-scale field experiments to ascertain the effect of spraying crops on the bird, mammal, and insect life of the area The results of these experiments reinforced the working party's view that further research was necessary Many of the animal casualties that have occurred have arisen from a lack of care and cooperation The working party emphasise the importance of the precautionary measures, indicated in the report, for spraying contractors, farmers, growers, and bee-keepers

Epidemic Vomiting in Exeter

There was an outbreak of vomiting with diarrhœa in a junior mixed school of 303 children in Exeter, starting on June 8 when 30 children and 1 teacher in various classes fell ill, most of them during school

The following day 25 children, and the next day 18, fell ill. With the dispersal of the school for the weekend the main epidemic was stopped, 2 children only being ill during the weekend and none during the earlier part of the though another 2 children had similar symptoms on June There were several secondary cases among families of children Vomiting was the presenting symptom in 47 the cases, and in 14 of them it was accompanied by The others complained only of nausea or of abdominal or headache Only 5 had diarrhœa as the sole symptom

3 of the kitchen staff developed similar symptoms, 2 June 9 and 1 on June 10 The stools of all 5 kitchen were examined and no pathogens found Only in 2 of children was it possible to have the stools examined they both showed no pathogens No specimen of vomit co be obtained for examination Some of the adults suffer severely from prostration, but in all cases the illness of very short duration The children were not severely and the duration of symptoms was for a maximum of twen four hours

About half the children did not eat dinners in school The kitchen also supplied the infant school, in which there only a few cases secondary to older children in the school The kitchen staff did not have symptoms until second day of the outbreak

The cause was probably a virus of the vomiting type The pattern of the outbreak and occurrence of secondary cases in the homes suggest a *short incubation period, probably about twenty* hours

Smoking in the United States

The United States Census Bureau has reported 1½ million *Americans have given up* cigarette-smo in the past eighteen months[1] This figure is based sample of about 40,000 people interviewed by the for the National Cancer Institute The full results of inquiry will not be published for several months, some preliminary details have been given

Of those who stopped smoking cigarettes, 1 m were men and ½ million were women Most of them under 45 Of 38 million still smoking in the Unite States, 25 million were men and 13 million were wome About 4 million men cigarette-smokers smoke less tha 10 a day, and ½ million smoke more than 40 a day The majority smoke between 10 and 20 a day 3 million American men smoke a pipe regularly and 4 million smoke one occasionally Out of the total adu male population of 50 million, about 34 million estimated to be either regular or occasional smoke About two-thirds started smoking before the age of

Appointments

BICKFORD, B J , M.B Lond F R C S consultant cardiac surg Royal Liverpool Children s Hospital
CHURCHILL DAVIDSON, H C M D Camb , D.A anæsthetist (co sultant) St Thomas's Hospital, London
FLEMINGER J J M D Camb , M R C P D P M asst phys department of psychological medicine, Guy's Hospital Lond
JOHNS, R I J , M R.C.S medical officer city of Manches port department
NEELY, R A , M D Belf whole time consultant clinical pat logist, Waveney Hospital, Ballymena
PHILLIPS R M, M D Lond part time consultant psychiatr St Edward s Hospital, Cheddleton and City General Hosp Stoke on Trent
WOOLF, D L , M R.C S D PHYS MED part time consultant physical medicine, Cerebral Palsy Unit, Stevens Road, Il

Appointed Factory Doctors

DINGWALL, R C MACDONALD, M B Aberd Peterhead A shire
KERSHAW K C , M R C S Tattenhall Cheshire
MIDDLEMISS J L M R C S Bellingham, Northumberland.
ORR JOHN M.B Edin , F R C S Stranraer, Wigtonshire

Colonial Appointments :

BERLIN, H W , M.D district M O St Lucia
BRADBURY E , M A , B CH A.D.M.S Sierra Leone
COHEN R I F R C.S surgeon specialist Fiji
FRASER N D , M B Lpool M O , Uganda
HEATH K I M., M B Belf junior hospital M O , Leew Islands
HORWOOD, D J C , M.R.C.S M O , Uganda
IRVING, J K , M.B Lond M O , anæsthetist, Trinidad
LINSELL, C A , M.B Lond pathologist, Kenya
McLEAN, C M. M B , D O.M.S D O specialist ophthalmolog ministry of health Gold Coast
SLATTERY, M F X., M D S M O , St Vincent
VERRIER, W L I M.R C S S M O Fiji
WALKER A J , M B Lond , D D M.S , Kenya

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[1] Toxic Chemicals in Agriculture—Risks to Wild Life H.M. Stationery Office 1s 6d

[1] *New York Times*, June 22, 1955

Obituary

STUART IAN ALEXANDER LAIDLAW

M D B L B Sc Glasg F R F P S

THE corporation of Glasgow and indeed the health ervices of Scotland suffered a severe loss in the death on June 24 of Dr Stuart Laidlaw at the age of 53 Dr Laidlaw succeeded Sir Alexander Macgregor nearly ten years ago as medical officer of health for the city and had already distinguished himself by able administration and a wide view of his duties

He was born in Glasgow but spent his early years in London returning to Glasgow however for his academic career At the university he gained many distinctions and graduated successively in science, medicine and law and later obtained diplomas in public health and public administration In 1920 three years after he qualified, he entered the public health department of Glasgow From the first he took a special interest in tuberculosis, making a close study of both the clinical and the administrative problems When a colleague visited his office in those days he was sure to be greeted with a friendly and eager discussion about the progress of the campaign against tuberculosis in the West of Scotland Dr Laidlaw had an intimate knowledge of the situation and a remarkable acquaintance with patients and their difficulties. He was specially active in introducing new methods of prevention and treatment, and it was he who developed mass radiography for young people as part of the city's campaign against the disease

[illegible]

On his appointment as medical officer of health in 1945 he broadened his interests and took a vigorous part in the effort to improve housing conditions, especially in the elimination of slums which have always been a dark feature of city life in Glasgow In the same way he became increasingly interested in the development of clinical services to ensure good provision in the new housing areas He was a keen epidemiologist, and during the outbreak of smallpox in 1950 he devoted himself untiringly to the control of the disease; he was one of those who were honoured by the Priory of Scotland of the Venerable Order of St John in recognition of his services His leadership in the care of the aged drew warm approval from many quarters the University of Glasgow recently awarded him the degree of PH D for a careful study of the welfare of people in lodging houses The degree was to have been conferred on July 9

Dr Laidlaw was a man of great charm of character; he had a way of creating a vivid interest in subjects which he took up, and in presenting his views he always gave a sense of keen personal enthusiasm His colleagues in the public-health service in Scotland will miss him, for he showed increasing signs of leadership in his profession and he had played a notable part in organising and developing the post-war services

Dr Laidlaw was twice married His first wife Dr Marion Gray was a fellow student of his and remained in general practice after her marriage She died in 1950 He married in the following year Miss Caroline Blenkinsop who survives him with a young son

Births, Marriages, and Deaths

BIRTHS

DAVIES.—On June 19 at the London Hospital to Patricia (née Ward) wife of Dr D M. Davies—a daughter (Susan Patricia)

Notes and News

A NEW JOURNAL ON ALCOHOLISM

The International Journal on Alcohol and Alcoholism, being the official organ of the International Institute for Research on Problems of Alcohol has links with the leading workers on this subject in every part of the world—as its distinguished editorial board bears witness Prof E M Jellinek and Dr H. Pullar-Strecker the editors are much to be congratulated on their first issue which carries a statistical report on alcoholism in Canada a note on treatment of chronic alcoholism by intensive electroconvulsive therapy (both in English) and a survey (in German) of drinking habits in Austria as well as a classified bibliography on disulfiram (Antabuse) and lists of world publications on alcohol The chief aim of the editors is to present comprehensive country-by-country surveys of specific problems and achievements and to sift and correlate work done all over the world—a thoroughly useful programme. They accept articles in five languages—English French German Italian and Spanish—and give summaries of the gist of each of them in the four languages not used by the contributor

We wish the new journal a long and useful polyglot career It is published three times yearly by Blackwell Scientific Publications, Oxford, at 12s 6d per copy or 30s for the annual subscription (post free)

A SCOTTISH MEDICAL JOURNAL

AT meetings last Monday the Royal Medico Chirurgical Society of Glasgow the Medico-Chirurgical Society of Edinburgh, and the Edinburgh Obstetrical Society agreed to found jointly a *Scottish Medical Journal* The new journal will incorporate the *Edinburgh Medical Journal* (which was founded in 1705 and has lately discontinued publication) and the *Glasgow Medical Journal* (founded in 1828)

The journal will be administered by a governing body of twelve of whom six will represent Glasgow and six Edinburgh The medical societies in Aberdeen and Dundee are to be asked to nominate observers. The editor will be appointed by the governing body; and a joint committee has unanimously recommended the appointment of Dr Alexander Brown of Glasgow

SOCIAL PSYCHIATRY

A RECEPTION was held in London on June 23 to celebrate the first issue of the *International Journal of Social Psychiatry*[1]

Lord Webb-Johnson spoke of the influence of social psychiatry during the past twenty years in furthering the welfare of the mentally ill The therapeutic social club he pointed out was helping to prevent mental breakdown among isolated city dwellers, and the day hospital was affording the full range of modern mental treatment to the mentally ill while allowing them to remain within the community In both these new forms of treatment the policy of treating the patient in his social setting was vindicated by the therapeutic results

Dr Joshua Bierer who with Prof Thomas A C Rennie (Cornell University) is joint editor of the new journal spoke of the development of social psychiatry in this country and abroad It was hoped that the journal would provide a forum for discussion and interchange of experiences between psychiatrists of all disciplines and in all parts of the world. The patients, too would be encouraged to contribute their own viewpoint—a practice inaugurated in the first issue

MEDICAL FILMS

Allergic Diseases in Man (16 mm sound, colour 25 minutes) is a new British film on the causes and theory of allergic conditions, and methods of diagnosing and treating them.

It opens with examples of inhalant contactant and injectant allergens, and explains by means of excellent animated diagrams the differences between the toxin/antibody reaction and the allergen/antibody reaction The importance of an exhaustive case history in investigating possible allergic diseases is stressed and lists of "typical allergic conditions" and conditions often allergic in origin are given Skin testing is shown in detail Methods of reducing allergens in the home are suggested and the theory of desensitising agents is shown on diagrams After a sequence devoted to the preparation of desensitising solutions the incidence of allergic disease is compared with that of other causes of morbidity

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[1] Published quarterly by the Avenue Publishing Company 9 Fellows road London N W 3 25s per annum 7s 6d per issue

The film is well made and the subject is presented in an orderly and convincing way It is available free of charge and should be of particular interest to general practitioners

Resuscitation of Hypothermic, Supercooled, and Frozen Mammals (16 mm, sound, black-and white, 17 minutes) presents some recent experiments at the National Institute of Medical Research

In general shape the presentation suggests a television programme The film opens with a short introduction by a speaker who first poses the problems to be investigated—how to cool a mammal sufficiently to stop respiration and the heart beat while allowing full resuscitation on rewarming and what happens if the body water crystallises—and he then introduces three workers who demonstrate the cooling of a rat until the heart and respiration cease, the magnetron microwave generator and its use for rewarming, and the freezing and resuscitation of a hamster Finally the speaker suggests the clinical significance of the research and indicates lines of further investigation

The film is a fascinating record of research in progress, and will be valuable both for workers in other laboratories studying the subject and for future historians of medical research The investigations are clearly shown, and the commentary by the workers themselves has a rare authority

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University of Cambridge

Dr J D Lever has been appointed a university lecturer in the department of anatomy, and Dr P J Randle a university lecturer in the department of biochemistry

On June 11 the following degrees were conferred

M D—David Bulmer Leonhard Haas H P Lambert, C B McKerrow, F R R Martin, R A. Struthers

M Ch r—J O Robinson

M.B—June P Brody D C L'E Burges, R. J Haythornthwaite, Alan Pollard J O Robinson

University of London

On May 18 the degree of M D was awarded to John Fry

University of Bristol

At recent examinations the following were successful

M D—M. E M Herford, Harold Schnieden

Ch M—P R. Slade

M B Ch.B—Elizabeth Burge, Joyce E Moore, Mavis M Polkinghorne (with second class honours) G K Allwood, Dorothy F Bate, Jean M Bebell Prudence M. Beckingham H F Bolton, M. T Charleston Margaret E Chesterfield J P J Clarke, Shirley A Craven Edith Fuierman, F G Farrelly, D J Foley, J K Hartwell, A J S James, Mary T C A Jorro, Janet H Keevil P M. Lambert Pamela M. Laurence Penelope A Leighton, R G McCormick Nancy Mercer R E Midwinter G A Naylor, J B Neilson H J L Nicholls P J Rovlance, D W Simpson, E M Smith, Anne L Stewart, Edgar Wallace

D P H (part II)—Margaret M. J O Dea, Elizabeth M Sefton, P J Spiller M D M. Reilly

Royal College of Surgeons of England

Faculty of Anæsthetists—A scientific meeting of the faculty will be held at the college, Lincoln's Inn Fields, London, W C 2, on Saturday, July 9, at 10 30 A.M Lord Adrian, O M, will speak on the protopathic system, Mr W Grey Walter, SC D, on electro encephalography in the study of brain disease, Dr B D Wyke on neurophysiological aspects of barbiturate narcosis, and Dr W Blackwood on the pathogenesis of ischæmic and hæmorrhagic lesions in the brain stem secondary to raised supratentorial intracranial pressure

Society of Apothecaries of London

At a meeting of the court of assistants on June 21 with Sir Cecil Wakeley, the Master, in the chair, Dr Redvers Nowell Ironside was elected to the court The Gillson scholarship in pathology was awarded to Dr E A Wright

The following were elected to the yeomanry of the society J C P Grey W R Thrower, H T Calvert, R S Murley, Paul Mine, T D Whittet, H G Dowler R. K. Phillips, J H Crosland, Denis Williams, C S Nicol, J H L Griffin, Hon Geoffrey Bridgeman, George Simpson, A G Aitchison, J M. Brown, F Harwood Stevenson, Ralph Southward

The following were granted the L.M.S S.A

D P Addy G M. Fraser, K. A. Huang, F John, E de M. Taunton, J M Forster, V J Jobson

The following were awarded the diploma of master of midwifery

D B Brown F J Cockersole S A Smith

Nutrition Society

At a meeting of this society to be held on Friday and Saturday, July 8 and 9, at the Physiology Laboratory, South Parks Road, Oxford, there will be a symposium on the nutritional work of F A O, W.H O, and UNICEF The speakers will include Dr Dorolle (Geneva), Dr W R Aykroyd, Dr R C Burgess (Geneva), and Dr S Postmus (Rangoon)

Institute of Diseases of the Chest, London

On Wednesday, July 6, at 5 P M, at this institute, Br
S W 3, Prof E A Boyden, of Minnesota, will give a
on the development of the bronchopulmonary segment
the human embryo

Chinese Red Cross Delegation

On June 24 a reception was held in London, by the C
d'Affaires of the People's Republic of China, in honour
Chinese Red Cross delegation and Madame Li Teh-
president of the Chinese Red Cross Society, now visiting
country

Middlesex County Medical Society

Dr T Rowland Hill will give the John Tate lecture
Wednesday, July 13, at 5 30 P M in the Middlesex
London, S W 1 He is to speak on the National Health Serv
and Its Problems—Lessons Learned Since 1948 All
are invited

Biological Rhythm Congress

This congress will be held in Stockholm from July 15 to
The main subjects chosen for discussion are Rhyth
Phenomena in the Nervous System, Cybernetics, and Rhyth
and Industrial Medicine Further particulars may be
from the secretary of the congress, Anatomiska insti
Karolinska institutet Solnavägen 1, Stockholm

Australian Fellowship in Poliomyelitis Research

The British Memorial Fund, which was set up in Victoria
by public subscription as a gesture of " loyalty, gratitude and
affection " to the British people after the second world war
is offering a fellowship (£A1000) to a doctor whose duties
associate him with public health work in the treatment and
aftercare of poliomyelitis in the country districts of England,
Scotland, or Wales Further particulars will be found in
advertisement columns

Recruitment and Training of Social Workers

The Working Party which has been set up by the Mini
of Health and the Secretary of State for Scotland to examin
the work, recruitment, and training of social workers in th
local authorities' health and welfare services will meet und
the chairmanship of Miss Eileen Younghusband The
members include Dr P C McKinlay, general
of Beverley, Yorks, and Prof A. B Semple, medical
of health for Liverpool.

Blood-donors

Gifts of blood to hospitals in England and Wales throu
the National Blood Transfusion Service numbered 70
1954, compared with 659,674 in 1953 and 669,000 in 1944 (th
previous highest total) At the end of last December the to
strength of the donors' panel was 540,389—a net increase
nearly 25,000 compared with 1953 The National B
Transfusion Service needs 650,000 regular donors to ma
sure that no one need be asked to give blood more than tw
a year, to replace the older donors when they reach the
of 65, and to provide adequate reserves of blood plasma.

West London Medico-Chirurgical Society

At the annual dinner, on June 23, Sir Arthur Gemme
P.R C O G, suggested that the society's continued succ
it is now in its 73rd year—was due to its close
with the West London Hospital, and to the fact that it h
remained a general society Sir Arthur was proposing
President and The Society, and in his reply the
Dr W R Thrower, expressed the view that in these days
bustle a medical society would fail unless it performed
definite function Such societies could survive only if th
preserved the humanities of medicine They were use
in providing a gathering point for informal exchanges T
President deplored the division between general prac
and specialist, which, he said, was something quite
Societies such as the West London could bridge this
Dr Charles Newman spoke with grace and economy of
Guests and Kindred Societies, and Dr Brian Warren
The High Commissioner for New Zealand received on
of the society a gavel presented by Dr Bernard Myers,
former president Finally the President presented to
Russell Brock the triennial gold medal.

CORRIGENDA On the *contents page* of some copies of
week s issue we wrongly described Dr Z A. Leitner as Prof. Z
Leitner F.F A R.C S

Old People in Welfare Homes—In our note last week (p 1335)
fourth sentence should have read " There had been some
deaths at this establishment during the first three months of
year "

THE TREATMENT OF PULMONARY TUBERCULOSIS*

J G SCADDING
M D Lond , F R C P
DIRECTOR OF STUDIES AND DEAN INSTITUTE OF DISEASES OF THE CHEST BROMPTON HOSPITAL, LONDON

I

DURING the past ten years the treatment of pulmonary tuberculosis has been revolutionised by the discovery of antibacterial agents effective against the tubercle bacillus The rapid accumulation of the basic data necessary for the most efficient use of these agents has been a triumph of collaboration between the clinician and the laboratory worker, and their introduction into clinical practice not only has improved dramatically the results of medical treatment of pulmonary tuberculosis but also has released the surgeon already well prepared with operative techniques, from the fear of many of the complications which used to restrain his more radical attempts to help patients suffering from the disease Although many important problems remain to be investigated the main rules for antibacterial treatment with the drugs at present available are now well established and the possibilities both of collapse therapy, medical and surgical and of lung resection, in combination with antibacterial treatment have been extensively explored A review of the present situation and a statement, admittedly personal of current policy may therefore have some immediate practical value before it becomes no more than a historical curiosity

Trends in Mortality and Morbidity

The effect of antibacterial treatment is reflected in recent mortality figures (fig 1) There has been a steady though slow reduction in numbers of deaths certified as due to tuberculosis in England and Wales since 1880 This reduction continued at about the same rate showing no evidence of being affected by the introduction of any one specific therapeutic or preventive measure until the time when antibacterial drugs came into general use about 1948 Since then the rate of fall of mortality has increased considerably, so that between 1948 and 1953 the number of deaths was reduced by 60% That this fall is indeed due to improved methods of treatment, rather than to more effective control of spread of infection is further suggested by the observation that the number of new notifications has diminished much more slowly (by about 11%) over the same period, whereas previously the rates of reduction of numbers of deaths and of new notifications remained approximately similar

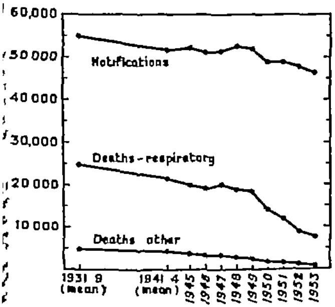

Fig. 1—Numbers of deaths and of new notifications of tuberculosis in England and Wales 1931-53 (Ministry of Health report for 1954)

Moreover, a similar reduction in mortality has been observed in all countries since the introduction of antibacterial drugs, whether their mortality rates were relatively high or relatively low Thus in Portugal the high death rate of 142 per 100,000 in 1950 was reduced to 96 in 1952 while in the United States the low death rate of 27 per 100,000 in 1950 was further reduced to 16 in 1952 The falling mortality from pulmonary tuberculosis is brought into sharp relief by comparison with the rising mortality from lung cancer, the number of deaths from which in England and Wales in 1951 for the first time exceeded, and during 1953 *amounted to nearly twice* the number of deaths from pulmonary tuberculosis

Another epidemiological point is probably of considerable importance in relation to the results of treatment, even though it cannot be stated in such precise numerical terms The childhood infection rate in the community has been greatly reduced In 1949–50 the Medical Research Council National Tuberculin Survey reported that between the ages of 14 and 15 years, 34 6% of children in southern urban areas of England gave positive reactions to an intradermal test with tuberculin taken up to 100 T U if necessary In 1930–31 nineteen years previously among 1003 children examined at the Brompton Hospital of whom only 279 were known contacts with tuberculosis, 82 2% of those aged 14 gave positive reactions to a similar test (Dow and Lloyd 1931) Since, in the latter investigation, the difference in incidence of positive reactions between contact and non-contact children though considerable in the younger age groups was very small at the age of 14, the inclusion of the 279 known contacts affected the percentage of positive reactors at this age relatively little In the M R C. survey of 1949–50 it was found that the incidence of positive reactors in southern urban areas had risen from 34 6% at age 14–15 to 59 3% in the 19–20 age-group Hence an important number of primary infections were occurring in adolescence and young adult life It is probable that this trend towards the avoidance of childhood infection is continuing together with a consequent increase in the number of primary infections in later life Although one of the chief benefits expected from B C G vaccination is a reduction in the incidence and consequences of these late primary infections, it is doubtful whether this vaccine has yet been used widely enough in England to have an appreciable effect in this respect

These points are of importance because a primary infection in adult life tends to behave rather differently from a primary infection in childhood and differently also from pulmonary disease developing in adult life in a patient who has undergone a primary infection in childhood Whereas in childhood the lymph node component of the primary complex is more prominent than the pulmonary component and its behaviour usually determines the course of the illness in later life the *lymph node component is less prominent and the pulmonary component usually assumes the dominating rôle.* Thus in primary infection in adolescents and young adults there is a strong tendency for the primary pulmonary focus to develop into a considerable area of tuberculous pneumonia, in which caseation or cavitation may occur and which may thus prove to be the starting point of a progressive pulmonary tuberculosis Unfortunately no evidence exists about the possible differences in prognosis between pulmonary tuberculosis starting in this way and pulmonary tuberculosis starting in an adult who has undergone a childhood primary infection but it would be unwise to assume that there is no difference in prognosis between these two types of disease This factor may invalidate comparison between the results of treatment in unselected series of young adults now and those obtained in the past at a time when childhood infection was almost universal

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* The Lettsomian lectures for 1955 delivered at the Medical Society of London on April 18 25 and 27 Lectures II and III will appear in later issues.

The Planning of Treatment

One of the chief difficulties in planning treatment for a patient with pulmonary tuberculosis now is the multiplicity of methods of treatment which are available Of these, only antibacterial treatment has been the subject of investigations giving statistically valid results About some other forms of treatment, there is sufficient evidence to convince the general body of experienced clinicians of their value, even though they have not been the subject of statistically satisfactory clinical trials , this group includes thoracoplasty and pulmonary resection About others opinion has varied, and no general agreement has even yet been reached about such old standing methods as artificial pneumothorax and pneumoperitoneum

I think there are good reasons for the absence of valid statistical data about artificial pneumothorax and some other methods of treatment Antibacterial treatment is applicable to all cases, and it was therefore possible to plan trials in which valid control groups were observed or in which patients were allocated randomly to two or more groups each to be treated in a predetermined way With collapse therapy, and particularly with artificial pneumothorax, the situation is very different Only a minority of cases would be regarded as suitable for artificial pneumothorax treatment, and among these a considerable number would be found, after the beginning of treatment, to present complications which would necessitate its abandonment Hence the organisation of a controlled trial of this form of treatment was well-nigh impossible Nevertheless, many critical observers were convinced of its value in cases in which it proved possible This experience dates mainly from the time before antibacterial treatment was available

The value of artificial pneumothorax in combination with antibacterial treatment has not been sufficiently explored and I think it is unfortunate that this method of treatment seems at present to be falling out of use in many centres The variety of possible combinations of anatomical distribution and pathological type of lesions in pulmonary tuberculosis is so great that treatment must be individualised The physician should keep in mind the potentialities of all feasible methods of treatment, and be eclectic in their use In my view there is still a place for most of the methods of treatment which have been used successfully in the past, even though the indications may have changed and the number of cases to which some of them are now applied may have become smaller

The Relevance of Morbid Anatomy

A firm understanding of the basic morbid anatomy of tuberculosis of the lungs is essential to the proper selection of methods of treatment I have already spoken of the different reactions to tuberculous infection of the child (or of the adult of primitive race) and of the adult In the following remarks I shall be referring to the pathological processes in the lungs of adults of European stock or of races having similar reactions to tuberculosis , and indeed, I shall not deal at all with the important problems of the management of tuberculosis in childhood

The generalisation can be made that in adults active pulmonary tuberculosis denotes either tuberculous pneumonia or active tuberculous bronchitis Both of these processes can resolve with the help of effective antibacterial treatment, or even, in favourable cases, by the unaided action of the patient's own defensive and reparative processes In the most favourable cases, such resolution may be complete , a tuberculous pneumonia can resolve as completely as any other bacterial pneumonia, and a tuberculous bronchitis, provided there is no destruction of the bronchial wall, can similarly resolve and leave a normal bronchial lumen But factors of two types militate against the cure of all cases of pulmonary tuberculosis by the natural defence processes of the body supported by sufficiently prolonged antibacterial treatment They are, first, a group of mechanical factors and, second, bacterial resistance to antibacterial agents I shall consider the problems of bacterial resistance in the second lecture Here I should like to discuss briefly some of the mechanical factors which may interfere with cure of the pulmonary tuberculosis by entirely conservative measures The first lesion of pulmonary tuberculosis is, in nearly all cases, a localised tuberculous pneumonia As soon as tubercle bacilli begin to escape from the tuberculous focus, transbronchial spread of bacilli to other parts of the lung may give rise to fresh pneumonic foci However, even extensive pneumonic disease may undergo virtually complete resolution, provided the process of resolution starts early enough , the prompt application of antibacterial treatment is the best means we have of encouraging this favourable result

A tuberculous pneumonia may fail to resolve, either because irreversible changes had occurred before treatment was started, or because response to treatment was delayed until such changes had occurred These irreversible changes take the form of caseation, fibrosis, and persistent cavitation Fibrosis, if not too extensive, is not of itself incompatible with effective clinical cure Residual caseous foci sometimes, and persistent cavities nearly always, lead to failure to attain lasting clinical cure

Residual caseous foci are compatible with long periods of good health, but constitute a potential danger of later reactivation of disease The magnitude of this danger has been very differently estimated by different observers Apparently isolated caseous foci may be accompanied by adjacent small active lesions or by involvement of the bronchi of the sort which I shall discuss later But even if there is no active disease of either of these sorts, and the caseous focus is indeed the only important site of disease, there are still two factors to be considered in assessing the probability of con stability The first is the efficiency of the fibrous t capsule and of the occlusion of the bronchial communication of the focus There seems to be no way in wh clinical and radiological study on a single occasion can determine how secure is the encapsulation of a caseous focus Frequently repeated examinations of gastric contents or of laryngeal swabs for tubercle bacilli culture, and serial radiography and tomography, provide the only information available to the clinician Pathologically some caseous foci look secure enough , but in others there are weak points, especially at the site of the original bronchial communication, so that if the contents liquefy they can be discharged into the b tree Thus a solid focus becomes a cavity, and there is risk of the spread of infection to other parts of the lung Here the second factor concerned in assessing the dan of solid caseous foci comes into consideration—the number and viability of bacilli in the walls and contents of the focus

Several groups of workers have reported the failure attempts to culture tubercle bacilli from residual cas foci resected after long-continued antibacterial treatm (D'Esopo, Ryan, and Medlar 1951, D'Esopo, Bernstei Decker, Raleigh, and Steenken 1953, Steele 195 American Trudeau Society 1953), even though acid rods may be shown to be present by microsc Whether such non cultivable bacilli are truly dea or whether they are simply dormant and are capable reactivation later has been argued inconclusively Ho ever, it has recently been shown that special methods are successful in demonstrating bacilli in considerable proportion of such encapsulated caseous foci, even after prolonged antibacterial treatme (Hobby, Auerbach, Lenert, Small, and Comer 1954) therefore seems that these foci must in practice assumed to contain potentially active bacilli, and thus to constitute a possible source of reactivation of disease whose importance can only be determined by continued observation of a large number of patients. Such caseous foci are in fact occasionally observed to cavitate presumably by liquefaction and emptying of their caseous centres, the frequency of this event is difficult to estimate, but it probably happens rarely with smaller foci and with those in which calcification is evident.

It has become customary to accept some arbitrary size of residual caseous focus *for instance a diameter of 2 cm* as likely to constitute a danger serious enough to warrant resection, but this can be regarded only as a convenient rule of thumb. The incompleteness of our knowledge of these foci has been emphasised after a careful study by MacLeod and Tait Smith (1952).

The risk to a patient who has a non-cavitated caseous focus lies in the future rather than in the present. Persistent cavitation however constitutes an ever present danger both because of complications arising in the cavity itself, such as hæmoptysis and secondary infection and because of the continued excretion of tubercle bacilli from the cavity leading to danger of aspiration spread of tuberculosis to other parts of the lungs. Helm (1951) has shown that the location of fresh foci of disease in established cases of pulmonary tuberculosis can be related to the patient's sleeping posture they appear with significant frequency in the lung which is dependent in the posture usually adopted for sleep. *This suggests* that transbronchial aspiration of infected secretions is an important factor in the spread of tuberculosis in the lungs. Though cavities may close on conservative treatment, only a minority even of small or medium-sized cavities will close in this way. Failure to close may be due to two factors. Firstly if there is considerable destruction of lung tissue and fibrotic change in the remaining lung, it may be mechanically impossible for the remaining lung to over distend sufficiently to permit closure of the cavity. Secondly the bronchial pathway leading to the cavity may be so narrowed by tuberculous changes by kinking or by both these factors that it constitutes a valve, permitting ingress of air during inspiration but obstructing its egress during expiration. *Although a* cavity may occasionally be sterilised of tubercle bacilli by sufficiently prolonged antibacterial treatment, this must be a rare event, and one which will necessitate a very long period of treatment moreover as I shall show in the next lecture, the presence of considerable and persistent cavities is one of the factors associated with the emergence of strains of tubercle bacilli resistant to the antibacterial drugs.

The mechanical effects of bronchial tuberculosis which may prevent the healing of pulmonary tuberculosis are those produced by stenosis at the site of severe bronchial tuberculosis, and by bronchial dilatation. The frequency of involvement of the bronchi in tuberculosis of the lower respiratory tract and its importance in the pathogenesis of the disease have been increasingly recognised in the past few years. It has been discussed by Sayd (1951) and by Clegg (1953). The bronchi are of necessity involved locally in any form of pulmonary tuberculosis. I have already mentioned one of the consequences of such local disease—the possible development of tension cavities. Sometimes either from a focus of tuberculous pneumonia or from invasion of the bronchial wall by erosion from a tuberculous bronchopulmonary lymph node tuberculosis spreads progressively in the bronchial mucosa. Histologically, tubercles are frequently found spreading in a macroscopically normal mucosa to a considerable distance from a grossly visible focus of tuberculosis. It seems that when latent changes of this sort become overt they may manifest themselves in several ways. They may give rise to local ulceration and later stenosis of large bronchi related to a focus of disease in the lung. Less frequently there may be a diffuse involvement of the bronchi in gross tuberculosis.

An important consequence of tuberculosis affecting predominantly the bronchi of an isolated segment or subsegment is the type of lesion which has been called by Clegg a bronchial cold abscess. In this there is a mass of caseous material of irregular shape sometimes pyriform or fusiform, and sometimes with central softening its walls show evidence that they are composed of remnants of bronchial structures disorganised by tuberculosis in direct continuity with a bronchus also affected by tuberculosis and it seems clear that the caseous lesion developed as the result of severe involvement of the bronchi with accumulation of caseous material beyond a local stenosis. A lesion of this sort may be the end result of tuberculous infiltration in the bronchial mucosa either towards the hilum from a focus of caseous pneumonia or peripherally from the bronchopulmonary lymph node component of a primary complex. It may be impossible to determine by which of these two routes the lesion originated and it seems likely that in different populations the frequency of the two origins is different. A bronchial cold abscess is often detectable or at least can be suspected radiologically showing especially in tomograms a pyriform shape with the stalk like shadow of a thickened bronchus connecting it to the hilum. Recognition is important, since this type of lesion is very apt to break down periodically, and conservative treatment is usually unsatisfactory.

Stenosis of larger bronchi gives rise to bronchiectasis, from retention of secretions and damage to the distal bronchial wall secondary infection may follow leading to complete destruction of the normal architecture of the distal part of the lung with mixed tuberculous and pyogenic infection of a mass of tuberculous and bronchiectatic cavities. This type of disorganised bronchiectatic lung distal to a stenosis must be distinguished from three other types of bronchiectasis associated with tuberculosis. The first is the rare true tuberculous bronchiectasis, in which the main brunt of the tuberculous disease is on the bronchial mucosa, with relatively little pulmonary disease. The second is bronchiectasis not in itself tuberculous, secondary to bronchostenosis due to involvement of a lobar or segmental bronchus by local ulceration of the lymph node component of a primary tuberculous infection. This as pointed out by Brock (1950) is especially frequent in the right middle lobe, the right cardiac segment, and the anterior segments of the upper lobes. The third is the non tuberculous bronchiectasis consequent upon the healing with fibrosis of extensive tuberculous disease of the lungs. This is seen most often in the upper lobes. These two latter types—those secondary to bronchostenosis due to now healed primary tuberculosis and to the healing of extensive pulmonary tuberculosis—are late consequences of healed tuberculosis and therefore do not enter into our present consideration of the mechanical effects of bronchial disease on the evolution of pulmonary tuberculosis. Their treatment should be decided in the light of the symptoms which they actually produce. Stenosis of bronchi in the presence of active bronchopulmonary tuberculosis and true tuberculous bronchiectasis do on the other hand affect profoundly the indications for treatment, since a patient with either of these is unlikely to attain bacteriological cure of tuberculosis unless resection of the affected bronchopulmonary segments, lobe or lung is possible.

Conclusion

It is clear that these facts of morbid anatomy have important practical consequences. The situation is complicated by the limitation sometimes imposed upon the effectiveness of antibacterial drugs by the emergence of resistant bacilli which tends especially to arise in patients with the most extensive and active disease. This subject I shall discuss in the next lecture. We have gone far enough, however, to see that even with the most effective antibacterial treatment we are likely to be left with a number of problems which can only be solved by other methods These include residual encapsulated caseous foci, persistent cavities bronchial stenoses, widespread tuberculous bronchiectasis, and bronchial cold abscesses Medical and surgical collapse therapy and surgical resection of lung are required for the treatment of these, and, in some circumstances, in order to prevent or forestall the development of some of them I shall consider these measures later

In concluding this lecture, I shall refer briefly to the difficulty of deciding about the treatment of the individual on the basis of knowledge much of which is statistical Variations in individual reactions to pulmonary tuberculosis of apparently similar type and extent soon become apparent to any observer These were perhaps more obvious before antibacterial agents were available Sometimes the most unpromising looking patients unexpectedly recovered from extensive disease On the other hand, some patients who started with minimal disease and no apparent unfavourable factors nevertheless deteriorated, with setback after setback in spite of the best available management Other patients seemed to go through bad and good phases, so that after a period of perhaps years, [illegible] recurrent setbacks, they entered a more stable phase and eventually attained arrest of their disease

Although these [illegible] in individual reaction to the disease may be [illegible] now, they are still of very great importance The response of patients to antibacterial treatment is far from predictable, and the [illegible] resistance [illegible] tuberculosis is an important factor in [illegible] response to antibacterial drugs, including [illegible] of emergence of resistant bacilli Antibacterial drugs [illegible] the whole range of response to treatment [illegible] improvement, but the range [illegible] I [illegible] of these individual variations [illegible] methods in the treatment of pulmonary [illegible] are so difficult to assess, and require [illegible] scientific assessment somewhat artificial trials based upon the observation of groups of patients with a specified type of disease, allocated at random to different treatments after acceptance as suitable for the trial

The physician charged with advising treatment for the individual must take into consideration the special circumstances of each patient He will consider anything relevant to the assessment of the patient's resistance to the disease in his personal and family history, in his physical habitus, and in his psychological make-up An initial period of observation is an important help in this assessment, in cases of active disease, this will include the observation of the initial response to treatment by rest and antibacterial drugs The patient's economic and social environment will very properly affect some decisions about treatment It is the physician's duty to consider these imponderable factors as well as the facts of morbid anatomy and the results of statistically controlled therapeutic trials

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“There is a widespread feeling expressed often in conversation but seldom in print, that popular or semi popular writing is an activity which should be indulged in only when the age of useful work is past Not surprisingly, it does so happen that some of the best writing is done by those whose reputations are already made, who have learnt from teaching how little can be absorbed in one session, and who have suffered at meetings from those who proceed remorselessly with every last detail but omit any clear explanation of the main point It is an illusion that there is any clear distinction between ability to explain at one level and ability to explain at another There are merely those who can explain, and will, and those who cannot or will not Members of the second group are in the majority They are dependent on the first group for the means to conduct research, since, unless its scope and purpose can be conveyed, means for its support [illegible] lacking —*Science News*, editorial, p 8

ABO BLOOD-GROUPS AND GASTRIC ACIDITY

K H KØSTER
SENIOR SURGEON

ERIK SINDRUP VAGN SEELE
ASSISTANT SURGEONS

SURGICAL DEPARTMENT A, BISPEBJERG HOSPITAL, COPENHAGEN, DENMARK

IN 1953 Aird et al demonstrated an association betwee the ABO blood-groups and cancer of the stomach, group being significantly commoner in patients with this disea than in controls drawn from the same hospitals Aird et al (1954) subsequently described an increased fre quency of blood group O in patients with peptic ulcer, compared with controls

We have compared the distribution of ABO blood groups in patients with carcinoma of the stomach, gastric ulcer, or duodenal ulcer with the distribution in health persons living in the same locality

Previous Reports

GASTRIC ACIDITY

The secretion of acid by the normal stomach and the presence of gastric carcinoma or peptic ulceration has been thoroughly studied, but the figures for outpu of hydrochloric acid are difficult to compare, since the range of variation is very wide and results are expressed differently The output of acid diminishes with ag (Polland 1933) Women with peptic ulceration have lower level of gastric acidity than men (Perman 1936)

From our own observations and from previous report —notably by Polland (1933), Bloomfield et al (1940 Roth et al (1944), and Ihre (1948)—we conclude that th amount of free acid in the stomach ranges from th highest to the lowest values as follows duodenal ulcer gastric ulcer, normal, cancer of the stomach with fre acid, cancer of the stomach with achlorhydria (fig 1)

BLOOD GROUPS

Carcinoma of the Stomach

In 1926 Johannsen, of Copenhagen, collected 348 cas of cancer differen organs includin 14 cases o gastri cancer I the whol series th frequenc of blood group was 6 9 greate than in 53 normal con trols Mo othe attempt to establi a connec ion betwee blood groups an cance (Alex ander 192 Hoche an Moritsc 1926

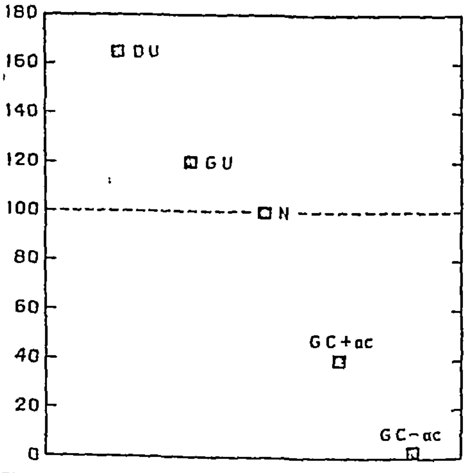

Fig 1—Relative total hydrochloric acid output in five different conditions of the stomach and duodenum D U = duodenal ulcer G U = gastric ulcer N = normals G C. + ac. = gastric carcinoma without achlorhydria. G C − ac = gastric carcinoma with achlorhydria. In the scale 100 represents the value for healthy people aged 20–29 (The estimates for duodenal ulcer gastric ulcer, and normal are derived from Polland 1933 and Roth et al 1944 The estimates for gastric carcinoma with and without free acid in the stomach are derived from the present series)

TABLE I—DISTRIBUTION OF BLOOD-GROUPS AMONG REPORTED CASES OF CANCER OF THE STOMACH

Source	Total no of patients	O (%)	A (%)*	B (%)	AB (%)*
Aird et al (1953)	3632	44·5 (−4·1)	41·8 (+5·0)	7·3 (0·5)	2·9 (−0·3)
Hollander (1953)	704	36·2 (−5·4)	53·1 (+8·0)	7·5 (−1·5)	3·1 (−1·1)

* Difference from controls in parentheses.

yielded inconsistent results partly owing to inadequate controls. But Aird et al (1953) showed in a very large series of cases that the frequency of blood group A was distinctly increased in cases of carcinoma of the stomach, and that the frequency of blood group O was correspondingly lower. Hollander of Basle (cited by Aird et al 1953) also found an increased frequency of blood group A in 704 cases of cancer of the stomach (table I).

Peptic Ulcer

Buchanan and Higley (1921) first studied the distribution of blood groups in patients with peptic ulcer. In a rather mixed group of 172 cases, including besides cases of peptic ulcer some of ulcerative colitis, they found a group O frequency of 59% compared with 43% in the original normal series of Moss (1909).

In 3011 patients with peptic ulcer Aird et al (1954) clearly demonstrated an increased frequency of blood group O and a decreased frequency of group A, compared with the normal population. The results of these workers and of Clarke (1955) are summarised in table II.

Other Conditions with Abnormal Gastric Secretion

Buchanan and Higley (1921) found that among 467 cases of pernicious anæmia 44·2% had blood group A and 41·4% blood group O compared with 40% with group A and 43% with group B in Moss's (1909) series. But the two series are hardly comparable, and Buchanan and Higley conclude: 'The percentages although at slight variance with the original percentages of Moss demonstrate that the causal factor in pernicious anæmia has no relation to blood grouping.'

TABLE II—DISTRIBUTION OF BLOOD-GROUPS AMONG REPORTED CASES OF PEPTIC ULCER

Source	Total no of patients	O (%)	A (%)	B (%)	AB (%)*
Buchanan and Higley (1921)	172	59 (+16)	32 (−8)	5 (−5)	4 (−3)
Aird et al (1954)	3011	55·4 (+5·4)	34·7 (−4·3)	7·4 (−1·6)	2·5 (−1·5)
Clarke (1955)	1407	59·0† (+10·5)	29† (−11·9)		

* Difference from controls in parentheses

† Duodenal ulcer only

R. B. McConnell (cited by Clarke 1955) has demonstrated an increased frequency of blood group A in diabetics who seldom have duodenal ulcer and commonly have achlorhydria.

Neoplasms Elsewhere in the Alimentary Tract

In patients with carcinoma of the colon or rectum the distribution of the ABO blood groups is normal (Aird et al. 1954).

Material

In our department since 1947 all patients have been subjected routinely to blood grouping, at first by the State Serum Institute and since 1951 by the hospital blood bank. The following data relate to patients admitted between 1947 and the end of 1954.

Carcinoma of the Stomach

420 patients with gastric carcinoma were admitted between 1947 and the end of 1954. Of these 321 were transferred from medical departments and 99 were direct admissions. This series is probably representative of all patients with cancer of the stomach.

373 patients underwent operation, and 47 were regarded as inoperable. Of these 47, 46 have died; 18 of these patients died in hospital and necropsy was done in each case.

Thus in 391 cases the diagnosis was confirmed microscopically. Clinically there was no doubt about the diagnosis of gastric carcinoma in the remaining 29 cases.

In 7 cases where the patient was admitted in extremis the blood group was not established. There are thus 413 cases in which the blood group is known.

Peptic Ulcer

We have taken 1047 consecutive cases in which the diagnosis of peptic ulcer was confirmed at operation. Cases in which no ulcer was found at operation are excluded. Most of these patients were transferred from medical departments, having had one or more courses of medical treatment.

TABLE III—DISTRIBUTION OF BLOOD-GROUPS AMONG 14 304 HEALTHY PEOPLE IN COPENHAGEN (BRYDE ANDERSEN 1955)

—	O	A	B	AB
No	5804	6299	1557	644
% of total	40·6	44·0	10·9	4·5

Of the 1047 patients 680 were found to have a duodenal ulcer, 337 gastric ulcer, and 30 both gastric and duodenal ulcers. The ABO blood group was investigated in every case.

This series, since it does not include cases treated throughout by medical methods alone, is not representative of all cases of peptic ulceration.

Pernicious Anæmia

From three medical departments records of some 500 cases of pernicious anæmia were collected, but only the more severely ill patients had been blood grouped.

Controls

In the early months of this year Bryde Andersen (1955) studied the distribution of blood groups in Copenhagen. He selected 14 304 registrations of persons, aged 15–70, whose blood group had been examined in the hospital blood bank. These persons were: (1) patients' relatives

TABLE IV—DISTRIBUTION OF BLOOD-GROUPS AMONG 413 PATIENTS WITH CANCER OF STOMACH

Year	Total	O		A		B		AB	
		No	%*	No	%*	No	%*	No	%*
1947	35	12	34·3	15	42·8	7	20·0	1	2·9
1948	51	19	37·4	26	51·0	4	7·8	2	3·8
1949	38	9	23·7	24	63·1	3	7·9	2	5·3
1950	49	18	36·7	25	51·0	6	12·3	0	
1951	67	25	37·3	35	52·2	3	4·5	4	6·0
1952	48	17	35·4	27	56·3	4	8·3	0	
1953	62	23	37·1	31	50·0	5	8·1	3	4·8
1954	63	18	28·6	29	46·0	12	19·1	4	6·4
1947–54	413	141	34·1 (−6·5)	212	51·3 (+7·3)	44	10·7 (−0·2)	16	3·9 (−0·6)

* Difference from controls in parentheses.

TABLE V—DISTRIBUTION OF BLOOD GROUPS AMONG 413 PATIENTS WITH CANCER OF STOMACH CLASSIFIED ACCORDING TO THE PRESENCE OR ABSENCE OF FREE ACID IN THE STOMACH

Free acid	Total	O		A		B		AB	
		No	%*	No	%*	No	%*	No	%*
Present	106	38	35 9	51	48 1	13	12 3	4	3 7
Absent	195	65	33 2	110	56 4	13	6 7	7	3 6
Unexamined	112	38	34 2	51	45 5	18	16 2	5	4 5
Total	413	141	34 1 (-6 5)	212	51 3 (+7 3)	44	10 7 (-0 2)	16	3 9 (-0 6)

* Difference from controls in parentheses

(2) volunteer blood donors unrelated to patients, (3) groups of factory workers, and (4) platoons or companies of soldiers, often comrades of patients in the hospital No patients are included in this control group

These 14,304 persons represent a cross section of the healthy population between 15 and 70 years of age in Copenhagen, where all our patients live People over 70 (amounting to 6% of the inhabitants and a higher proportion of our patients) are not represented in the control group

Table III shows the distribution of ABO blood groups in the controls

Findings

Cancer of the Stomach

The distribution of ABO blood-groups in the 413 patients is shown in table IV

The relative excess of group A is clear, and the relative deficiency of group O is even more pronounced 51 3% of the patients were of group A, compared with 44 0% of the controls—an excess of 7 3%

TABLE VI—DISTRIBUTION OF BLOOD GROUPS AMONG 1047 CASES OF PEPTIC ULCER

Type of ulcer	Total	O		A		B		AB	
		No	%*	No	%*	No	%*	No	%*
Duodenal	680	342	50 2	261	38 4	60	8 8	17	2 5
Gastric	337	156	46 3	139	41 4	28	8 3	14	4 1
Duodenal + gastric	30	13	43 3	11	36 6	4	13 3	2	6 7
All	1047	511	48 7 (+8 1)	411	39 3 (-4 7)	92	8 8 (-2 1)	33	3 1 (-1 4)

* Difference from controls in parentheses

The presence of free hydrochloric acid in the stomach was investigated in 301 patients Where two Ewald test meals showed achlorhydria the presence of free acid was investigated by a histamine or insulin test 195 were found to be achlorhydric, while in 106 free hydrochloric acid was detected

Table V shows that in the achlorhydric group the frequency of blood group A is very high (56 4%) and of group O correspondingly low (33 2%) The distribution of blood groups B and AB fluctuates rather irregularly, but the over all deviations from the frequency in the controls is only slight

Peptic Ulcer

The blood groups of the 1047 patients with proved peptic ulcer are recorded in table VI The frequency of blood-group A is 39 3%, compared with 44 0% in the controls and 56 4% in the patients with gastric cancer and achlorhydria The frequency of groups A and AB is also lowered, and this deficit is fully accounted for by the increase in blood group O to 48 7% (compared with 40 6% in the controls)

Table VI also reveals a considerably greater prevalence of group O in patients with duodenal ulcer than in patients with gastric ulcer (50 2%, compared 46 3%) and a corresponding fall in group A Ag groups B and AB fluctuate, but over-all their relat frequency is definitely reduced

Pernicious Anæmia

The figures for the 111 patients are shown in table vi

In 10 of these cases carcinoma of the stomach develop The blood groups in these 10 cases were as follows group O 4, group A, 1, group B, 3, group AB, 1, not examined, 1 These small numbers are inadequate for analysis, but th are mentioned so that they may be added to those record by others

BLOOD GROUPS AND GASTRIC ACIDITY

This study has revealed an inverse relation betw the frequency of blood groups O and A in patients w gastric and duodenal lesions Fig 2 shows that the from conditions associated with the least productio of hydrochloric acid to conditions associated with t greatest production of acid is accompanied by an incre

TABLE VII—DISTRIBUTION OF BLOOD GROUPS AMONG 111 CASES OF PERNICIOUS ANÆMIA

O		A		B		AB	
No	%*	No	%*	No	%*	No	%*
44	39 8 (-0 5)	47	42 3 (-1 7)	14	12 6 (+1 7)	6	5 3 (+

* Difference from controls in parentheses

ing frequency of blood group O and a decreasing fr quency of blood group A

The results of previous work in this field are not compared with the present results, since the distributi of ABO blood groups varies considerably between place and another, even in a single country Fig 3 sho the percentage differences between the blood gro frequencies in patients and the related control ser drawn from the results of Aird et al (1953, 19 Holländer (Aird et al 1953), and Clarke (1955) Th differences accord with our results, and with the var tions in gastric acidity expressed in fig 1

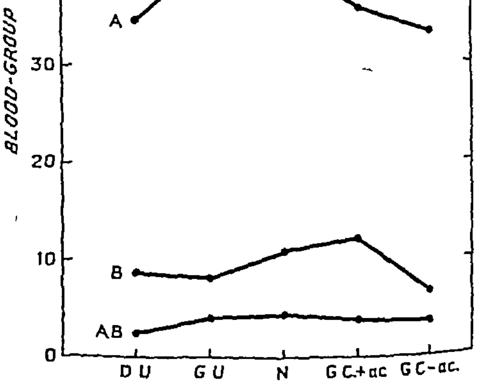

Fig 2—Frequency of blood-groups O, A, B, and AB in five di conditions of the stomach and duodenum arranged in order to the output of gastric acid Abbreviations as for fig 1

TABLE VIII—DISTRIBUTION OF BLOOD GROUPS IN TWO SERIES OF HEALTHY PEOPLE IN COPENHAGEN: (1) AGED 65–102 (THOMSEN 1927) AND (2) AGED 15–70 (BRYDE ANDERSEN 1955)

Age range	Total no	O (%)	A (%)	B (%)	AB (%)
65–102 (1927)	609	44·0	42·0	9·2	4·8
15–70 (1955)	14,304	40·6	44·0	10·9	4·5

Discussion

Studies of the relative frequency of blood groups in certain disorders are usually based on comparison with the frequency in the general population of the locality

The control series in Aird et al.'s (1953) work on blood groups in gastric carcinoma consists of equal numbers of patients chosen at random ; and in the subsequent work on blood-groups in peptic ulcer (Aird et al 1954) 10 000 pregnant women were included in the control series Neither of these control series can be said to be representative of the general population (Allan 1954) ; and in their second report Aird et al point out that the great number of patients with peptic ulcer in hospitals may influence the distribution of blood groups among their controls in favour of group O Furthermore "equal numbers" must be regarded as numerically insufficient when only about 100 cases are being considered as in the Birmingham and Newcastle groups of cases of gastric carcinoma reviewed by Aird et al (1953)

Our different groups of patients with gastric diseases may not be strictly comparable with the general population represented by Bryde Andersen's figures (table III) This control series has not yet been classified with regard to age sex social class and marital status Although unlikely such classification might reveal possibly important discrepancies between controls and patients

One thing is certain: patients with gastric carcinoma are on the whole older than patients with gastric ulcer, and older than our controls in whom 70 years is the upper limit Thomsen (1927) suggested that the distribution of blood groups changed with increasing age But comparison of Thomsen's figures for healthy people aged 65–102 in Copenhagen with those of Andersen for healthy people aged 15–70, also in Copenhagen shows no significant differences (table VIII)

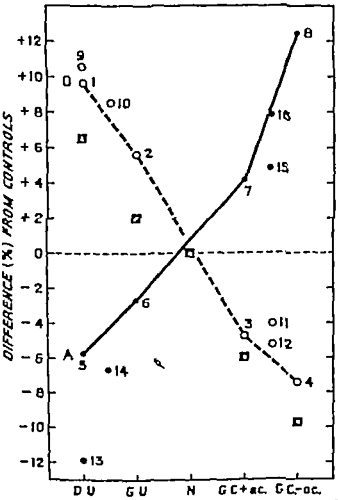

Fig 3—Differences between percentage frequency of blood-groups O and A in gastric and duodenal diseases and in the appropriate control series. Numbers 1–8 represent values found in the present series (tables V and VI) Numbers 9–16 represent values found by previous investigators : 9 duodenal ulcers (Clarke 1955) ; 10 all ulcers (Aird et al. 1954) ; 11 cancer of stomach (Aird et al. 1953) ; 12, cancer of stomach (Holländer 1953) ; 13 duodenal ulcers (Clarke 1955) ; 14, all ulcers (Aird et al 1954) ; 15 cancer of stomach (Aird et al. 1953) ; 16 cancer of stomach (Holländer 1953) Black squares signify gastric acid output (for scale see fig. 1) Abbreviations as for fig 1

Further classification of our controls and cases may throw some light on the occurrence of gastric cancer in different social classes and occupations (Stocks 1950) and on the problems raised by Hansen's (1943) investigations into the incidence and character of peptic ulceration Hansen has demonstrated a profound change in the character of peptic ulcer in the past forty years—from predominance of gastric ulcer in young women to predominance of duodenal ulcer in young men and of gastric ulcer in both sexes at a higher age than formerly This change, which is probably still continuing may be found to be reflected in the distribution of blood groups, when it is possible to compare duodenal and gastric ulcer patients with the controls with due regard to age sex, occupation, and marital status

The study of the distribution of blood groups in patients with achlorhydria not caused by cancer should be continued This is probably of great importance since Mosbech and Videbæk (1950) have shown that pernicious anæmia predisposes to gastric carcinoma These workers suggest that achlorhydria may be hereditarily conditioned and may predispose to both diseases , and so it might be expected that the same increased frequency of blood group A would be found in cases of pernicious anæmia as has been found in cases of carcinoma of the stomach—most strikingly where this is associated with achlorhydria

Patients with gastric carcinoma and blood group A are now being examined with regard to groups A_1 and A_2 and the secretion of group A substance But this investigation is progressing slowly since only a few of the patients are available

Summary

The ABO blood groups have been investigated in 680 cases of duodenal ulcer, 337 cases of gastric ulcer, 106 cases of gastric carcinoma associated with free hydrochloric acid in the stomach, and 195 cases of gastric carcinoma associated with achlorhydria The controls were 14 304 healthy people from the same locality

The patients with duodenal ulcer in whom the secretion of hydrochloric acid was greatest included 50·2% with *group O and 38·4% with group A*

In patients with gastric carcinoma associated with achlorhydria 33·2% were of group O and 50·4% were of group A

The frequency of blood groups B and AB was not similarly reversed

This work has been aided by a grant from the P Carl Petersen Foundation Copenhagen.

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THE SIGNIFICANCE OF

CLINICAL TESTS OF PASSIVE JOINT SENSE

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A STANDARD and easily performed test for the quantitative assessment of sensation in a patient would be of great value in indicating the progress of nerve lesions. In an attempt to establish such a test an investigation was carried out into the reliability of passive proprioceptive sense at the first metatarsophalangeal joint, and into the range of movement necessary before displacement of the toe was appreciated with certainty. The results of this investigation have been described elsewhere (Browne, Lee, and Ring 1954). The purpose of the present paper is to call attention to certain facts which became clear during the course of this investigation and which appeared to have an important bearing on the assessment of passive joint sense as ordinarily carried out in clinical practice.

Experimental Procedure

The details of the method are described in the paper already quoted. The metatarsophalangeal joint was moved by an electric motor at speeds of rotation of 1° and 2° per sec. The angle of rotation that was necessary to evoke the sensation of movement was graphically recorded.

Proprioception in Normal Subjects

The most important fact which emerged from this investigation was the extreme lack of sensitivity of passive joint sense. In a widely used textbook of clinical method (Hutchison and Hunter 1949) it is stated that an angle of 3° should not be exceeded before passive movement is appreciated. In our original investigation, however, the mean angle at which appreciation was registered was 4.4°, and in 10 out of 82 subjects the angle was more than 15°. In 3 subjects regularly, and in others occasionally, no movement was felt until an angle of more than 20° downwards had been traversed. This is close to the limit of downward movement in the first metatarsophalangeal joint, even in young subjects, and with so great a displacement considerable distortion of the surrounding soft tissue inevitably takes place, introducing extra-articular sensations. It is therefore impossible to be certain that even at this displacement these subjects were actually experiencing proprioceptive sensation.

Methods of Clinical Assessment

It may reasonably be asked why, if joint sense is absent or so much impaired in such a high proportion of normal subjects, testing for this sensation has been retained as part of a clinical examination. Four points in particular merit criticism, namely: the method of gripping the toe; the large angle through which the toe is moved; the mode of questioning (which even with pure guesswork on the part of the patient may produce correct answers on 50% of occasions); and the failure to distinguish between the appreciation of active and passive movement.

Textbooks of clinical method recommend that the toe should be grasped at the sides in order to prevent the subject from guessing at movement by appreciating pressure applied in an upward and downward direction. But this is a misapprehension; if the toe is grasped at the sides some distortion of the skin must take place when the toe is moved, and the subject may be able to judge movement from this distortion. If, however, the toe is grasped firmly on the dorsal and ventral aspects the additional pressure on one surface required to move the toe is very small in comparison with the already existing pressure and cannot be detected. The importance of this factor was shown by a patient suffering from tabes dorsalis. When the big toe was gripped at the sides he appeared to have normal joint sense but careful questioning elicited the fact that the patient was assessing movement by skin distortion and that this could be abolished by gripping firmly plantar and dorsal surfaces.

Probably more important than the method of gripping the toe is the angle through which the toe is moved. This angle may be so great that there is considerable distortion of tissues other than those directly involved in registering sensation of passive movement, and such distortion may be more than sufficient to indicate the correct direction.

The third criticism concerns the mode of questioning. It is sometimes suggested that sense of position and passive movement should be tested separately. In practice, however, the toe is usually moved quickly either up or down several times and left in a position which the patient is asked to identify. It is probably justifiable to apply a single test to cover these two sensations since it has been shown by several workers (e.g., Boyd and Roberts 1953) that in the cat certain nerve endings are capable of giving information on both position and movement, and previous work (Browne et al. 1954) suggests that no distinction can be made in man. But any test which seeks to elicit an answer from two simple alternatives suffers from the disadvantage that if subjects give positive answers even when unable to sense (as they sometimes may) they will still appear on the average to judge correctly on 50% of occasions.

Finally, the significance of the distinction between active and passive proprioception is not always fully appreciated in clinical practice. Appreciation of active joint sense takes place only when there is tension in the muscles and tendons passing over that joint, while passive joint sense is the sole source of proprioceptive information under conditions of relaxation. These two types of joint sense appear to depend on the activity of different afferent fibres and differ also in their functional importance. Experimental evidence suggesting that passive proprioception originated in the capsule, and was therefore dependent upon its anatomical configuration, has been given by Lee and Ring (1954). Clinical observations carried out later appeared to confirm this view; when the capsule of the metatarsophalangeal joint w shortened, as in hallux rigidus, the patient was frequently aware of very small movements, and on the other hand, where the capsule was unusually lax, considerable pass movement took place before the sensation was evoked. The relative unimportance of passive joint sense clearly demonstrated by the gross movements required to elicit it in our subjects, in marked contrast to the delicacy of perception normally associated with active joint sense.

These differences were both well exemplified by one subject who, on testing, was found to have an abnormally wide range of movement in most of the peripheral joints, which must be taken as evidence of unusual laxity of the joint capsules. With this laxity there was gross disturbance of appreciation of passive movement of all the peripheral joints, but appreciation of active movement was unimpaired. The subject w unaware of this defect, which carried no apparent disability.

An interesting phenomenon observed in many subjects with poor appreciation of passive sense was a "hunting" movement of the great toe. In these people the instruction to prepare to sense movement in the great caused alternating increases of tone in the flexors an extensors of the toe often producing perceptible small movements up or down probably in an effort to utilise active joint sense to compensate for the failure to appreciate passive movement

These observations indicate that impairment of passive joint sense is of little practical importance to the individual In the course of a neurological lesion it is the loss of active joint sense which results in functional disability Lesions of the posterior columns of the spinal cord may produce loss of both these modes of sensation together with blunting of tactile discrimination and it is the loss of all three (particularly perhaps the last) which causes inability to respond in the ordinary clinical test of passive movement in the great toe

Conclusions

Clinical testing of appreciation of passive movement of the great toe when carefully performed may demonstrate impairment to which no pathological significance can be attached On the other hand in patients with known lesions of the central or peripheral nervous system clinical testing as ordinarily performed may suggest the presence of normal sensation even when this is impaired or absent It would therefore appear that testing passive joint sense at the metatarsophalangeal joint gives no reliable evidence of neurological changes

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SMEARS FROM THE ORAL MUCOSA IN THE DETECTION OF CHROMOSOMAL SEX

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THE skin biopsy test of chromosomal sex is being used ith increasing frequency *as an aid to differential diag*osis in errors of sex development such as hermaphrodit m and gonadal dysgenesis (Moore et al 1953 Barr 1954 955 Marberger and Nelson 1954 Polani et al 1954 ilkins et al 1954 Bromwich 1955 Ehrengut 1955 rumbach et al 1955 Sohval et al 1955) The epidermal uclei of females contain a mass of sex chromatin that is nconspicuous in nuclei of males (Moore et al 1953, Emery nd McMillan 1954) The nuclei of epidermis are similar to those of other human tissues in this respect (Moore and Barr 1954) A sex difference in nuclear morphology has been found in several other mammals (Barr et al 1950, Graham and Barr 1952 Moore and Barr 1953 Prince et al 1955) The sex chromatin of female cells is thought to be *formed by heterochromatic* portions of the two X chromosomes adhering to each other in intermitotic nuclei For reasons that are only partly understood, the XY sex chromosomes of male nuclei do not form a distinctive mass of chromatin

In our experience the skin biopsy test is reliable if the sections are of good technical quality Experience has also shown however that difficulty is sometimes encountered in obtaining sections that display fine nuclear detail The use of smears from the oral mucosa has been investigated in the hope of simplifying the cytological detection of chromosomal sex

Procedure

In 140 subjects (81 males and 59 females) the mucosa of the cheek was rubbed firmly with the edge of a wooden tongue depressor The material obtained was smeared gently on microscopic slides that had been coated with a thin film of Mayer's egg albumin 13 of the smears were from infants aged 2–7 days the ages of the other subjects ranged from 2 months to 62 years The Ayre spatula was a useful substitute for a tongue depressor when dealing with infants

The slides were immersed immediately in Papanicolaou's fixative (equal parts 95% ethyl alcohol and ether) Drying of the smear was avoided The period of fixation was not critical times of from two to twenty four hours were satisfactory The fixed smears were passed through 70% *alcohol, 50% alcohol and distilled* water five minutes in each, with two changes of distilled water

The following staining procedure resulted in good nuclear detail:

(1) Staining in a 1% solution of cresyl echt violet (Coleman and Bell) for five minutes.

(2) Differentiation in 95% alcohol (two changes) for about five minutes.

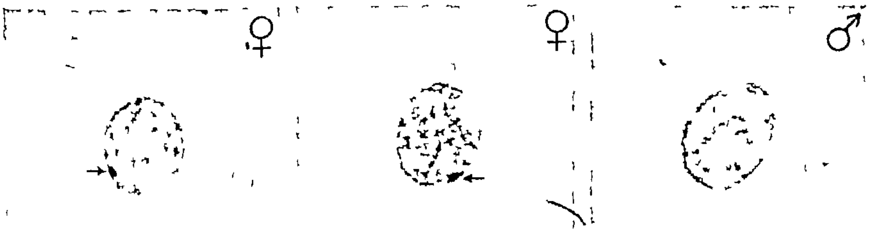
(3) Further differentiation in absolute alcohol checking at intervals with the microscope until the details of cell structure were sharply defined

(4) Clearing in xylene (two changes)

(5) Mounting in picolyte or neutral balsam

Some smears were stained by the Feulgen method for desoxyribose nucleic acid

If the slides are to be mailed to a laboratory for staining and microscopic study they should be transferred from distilled water to a 15% solution of glycerin in water for about two minutes. The excess solution is drained off This treatment protects the smears from drying while in transit The slides should be washed free of glycerin with distilled water before the smears are stained. The procedure of Ayre and Dakin (1946) for cervical smears may be used.



Figs. 1–3—Epithelial cells stained with cresyl echt violet in smears from the oral mucous membrane (× 2000) Fig 1 adult female Fig 2 female infant, aged 2 days. Fig 3 adult male.

Observations

Each of us examined independently the series of 140 smears without reference to the sex of the subjects The sex was correctly diagnosed in 100% of cases by both examiners

Males

The appearance of the nuclei varied from cell to cell, and to some extent from one smear to another As expected, some nuclei were shrunken and pyknotic and unsuitable for study In other nuclei, however, the general chromatin was distributed evenly as small particles throughout the nucleoplasm, with a predilection for the inner surface of the nuclear membrane One or more irregular clumps of chromatin of larger size were seen in various positions within the nucleus in some cells Nucleoli were inconspicuous An epithelial cell characteristic of smears from males is illustrated in fig 3

Females

The typical female sex chromatin was a feature of many nuclei The intensity of staining and sharpness of outline of the sex chromatin varied from cell to cell The sex chromatin was located in various positions in relation to the periphery of the nucleus as seen in optical section It was most definite and easiest to recognise when on the periphery of the nucleus, as illustrated in figs 1 and 2 The sex chromatin was identified in this location in 40–60% of nuclei that were suitable for the study of morphological detail A roughly planoconvex shape was most characteristic, the more flattened surface being adherent to the inner surface of the nuclear membrane In some cells the sex chromatin was very much flattened, appearing as a local thickening of the nuclear membrane Other shapes were encountered The sex chromatin was Feulgen positive Measurements of a hundred masses of sex chromatin (ten cells in ten smears) with a filar micrometer eyepiece produced a mean value of 0 7 × 1 2 μ Moore and Barr (1955) found that the average size of the female sex chromatin was 0 7 × 1 2 μ in sections of several human tissues

Discussion

We believe that, with reasonable care, chromosomal sex can be diagnosed from smears of oral mucosa with very little chance of error The preparation of mucosal smears has the advantage over skin biopsies of simplicity On the whole, smear preparations are easier than skin biopsies to interpret and they require less experience in cytology Further smears can be easily obtained from a patient if the first preparations are technically unsatisfactory and smears can be prepared in the rare instances where permission for a skin biopsy is refused The mucosal smear method of detecting chromosomal sex is suggested, therefore, as an alternative to skin biopsy, over which it has certain distinct advantages The results obtained from study of a smear from the oral mucosa will no doubt have the same significance, in differential diagnosis, as does the interpretation of a skin biopsy (Barr 1954, 1955)

Summary

Smears were prepared from the oral mucosa of 140 persons (81 males and 59 females) and stained with cresyl echt violet

The characteristic female sex chromatin was clearly visible in the epithelial cell nuclei of females, while a similar chromatin mass was not seen in the cells of males

This method has the advantage of simplicity It is suggested as an alternative to skin biopsy for the detection of chromosomal sex in congenital errors of sex development

We are indebted to Mr J E Walker and Mr C E Jarvis for expert technical assistance This work was supported by grants from the National Cancer Institute and the National Research Council of Canada

References at foot of next column

THE ERYTHROCYTE-SEDIMENTATION RATE IN HYPOTHYROIDISM

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IT is well known that acceleration of the erythrocyte sedimentation rate (E S R) may occur in a variety of conditions associated with increased tissue destruction or with alterations in the blood chemistry In endocrine disorders the E S R is variable In thyrotoxicosis, for example, a number of writers have noted that it is sometimes raised (Whitby and Britton 1950) In hypothyroidism, however, so far as I am aware, the reference in the literature to elevation of the sedimentation rate is by Gram (1929) who noted increased sedimentation values in 4 of 9 cases with low basal metabolism Wood (1950), on the other hand, has remarked on the normal E S R in myxœdema For these reasons it is considered that the experience of the clinic, in which acceleration of the E S R has been noted in a high proportion of cases of hypothyroidism, merits publication

Methods

The sedimentation rate was performed throughout by a standard Westergren technique

4 ml of blood was added to 1 ml of 3 8% sodium citrate solution, graduated glass tubes, appropriately marked, being used. The citrated blood was drawn into Westergren tubes as soon as practicable after withdrawal, and the reading in mm. recorded after the tube had stood vertically for one hour at room temperature

Normal values for this method are 3–5 mm for males and 4–7 mm for females, but only values in excess of 10 mm are generally regarded with significance For the purpose of this paper therefore 10 mm has been taken as the upper limit of normal

The Patients

19 patients with hypothyroidism and 4 patients with pituitary hypofunction, in which hypothyroidism was part of the clinical picture, were included in the inquiry 22 of these patients were female Their ages ranged from 13 to 76 years The diagnosis was made on the clinical picture, and in the majority of cases supported by a low basal metabolic rate (B M R), and in every case confirmed by the response to thyroid extract given orally The youngest in the series, a girl of 13, had had her ectopic thyroid gland removed surgically in the erroneous belief that it represented a thyroglossal cyst

Results

The E S R was recorded in all patients before treatment was begun, with the exception of 1 patient wh

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DR MOORE, PROF BARR REFERENCES

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TABLE I—INITIAL ERYTHROCYTE-SEDIMENTATION RATE, BASAL METABOLIC RATE, BLOOD CHOLESTEROL, AND HÆMOGLOBIN PERCENTAGE, BEFORE TREATMENT WITH THYROID EXTRACT

Case no	Age (yr)	Sex	Cause of hypothyroidism	Duration of symptoms	E.S.R (mm in 1 hour) (*on discharge*)	B.M.R. (%)	Blood cholesterol (mg per 100 ml)	Hb (%) (100% = 14.8 g)
1	41	F	Simmonds's disease	14 yr	108 (*48*)	−53	290	65
2	40	F	Simmonds's disease	9 yr	52 (*38*)	−10	250	82
3	76	F	Spontaneous	Uncertain (several yr)	51	−22	308	84
4	54	F	Simmonds's disease	13 yr	50	−20		74
5	62	F	Radio-iodine (I^{131})	10 mos	48		228	94
6	72	F	Spontaneous	Uncertain (1 6 yr)	10	−39		88
7	32	F	Spontaneous	11 yr	40	−31	381	34
8	60	F	Spontaneous	1 yr	37 (*67*)	−14	364	91
9	57	F	Spontaneous	2 yr	36	−23	170	86
10	43	F	Simmonds's disease	8 yr	35 (*30*)	−21	174	81
11	51	F	Spontaneous	3 yr	35 (*50*)	−41	420	72
12	50	F	Spontaneous	1 yr	28 (*6*)	−20	293	68
13	13	F	Postoperative	9 mos	28 (*10*)	−32	593	60
14	55	F	Spontaneous	2 yr	22 (*19*)	−20	182	99
15	39	F	Spontaneous	[illegible] yr	21	+12	342	74
16	26	F	Spontaneous	6 yr	20 (*42*)	−46	333	82
17	62	F	Spontaneous	Uncertain (1 4 yr)	20 (*39*)	−17	143	98
18	62	M	Spontaneous	4 yr	20	− 8	320	102
19	54	F	Spontaneous	2 yr	17 (*31*)	−28	446	90
20	58	F	Spontaneous	Uncertain (1 1 yr)	8	−40	400	92
21	44	F	Spontaneous	1 yr	7 (*10*)	−19	381	91
22	27	F	Spontaneous	4 mos	5	−23	211	100
23	47	F	Spontaneous	4 yr	1	−23	400	82

developed hypothyroidism after a therapeutic dose of radioactive iodine (I^{131}) for thyrotoxicosis (case 5) These results are recorded in table I together with the age sex, ætiology and duration of the hypothyroidism B.M.R blood-cholesterol and hæmoglobin percentage (100% hæmoglobin = 14.8 g hæmoglobin) In 12 patients the E.S.R was again recorded prior to discharge from hospital and this figure is given in parentheses

TABLE II—COMPARISON OF E.S.R BEFORE TREATMENT WITH E.S.R. AFTER TREATMENT WITH THYROID EXTRACT FOR OVER ONE YEAR

Case no	Year	E.S.R (mm. in 1 hour)	Thyroid (grains daily)
2	1950 1954	52 9	1½ + (cortisone 12.5 mg)
9	1953 1954	36 10	1
12	1951 1954	28 15	1½
13	1953 1954	28 6	1½
14	1953 1954	22 13	1
15	1952 1954	21 13	1
16	1947 1954	20 9	1
19	1949 1954	17 10	1

From table I it can be seen that 19 of the 23 recordings exceeded 10 mm per hour 18 being 20 mm or more In only 4 patients was the E.S.R. within normal limits

Several of these patients require more particular mention

Case 20 had an initial E.S.R. of 8 mm but when it was repeated on three subsequent occasions while under treatment it was at all times over 30 mm The B.M.R. was normal in case 15, but the patient was clinically hypothyroid and the blood-cholesterol was raised On receiving gr 2 of thyroid extract daily there was considerable clinical improvement

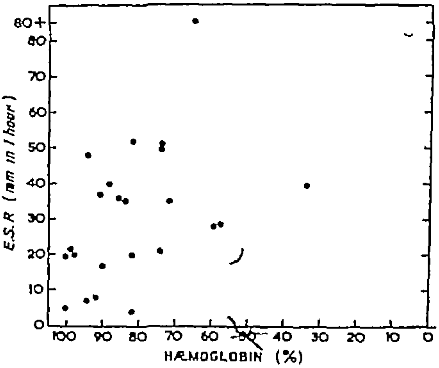
Cases 1 2 4 and 10 had Simmonds's disease all following postpartum hæmorrhage Other endocrine deficiencies were present

From table I it is apparent that the E.S.R at the time of hospital discharge after only two to four weeks of treatment with thyroid extract is very variable in 6 patients a rise was observed and in 6 a fall. Unfortunately only 8 patients who had been receiving maintenance doses of thyroid extract for periods in excess of one year were available for further study but in all 8 patients the E.S.R had fallen from pre treatment levels—in 3 cases to normal in 4 to levels between 10 and 20 mm, while in 1 patient who had Simmonds's disease and who still appeared myxœdematous, the E.S.R had fallen from 52 to 20 mm These results are recorded in table II

Anæmia and the E.S.R

Of the 23 patients in this series 14 had hæmoglobin levels of less than 90% In most cases the anæmia was normochromic but in 4 it was hypochromic In fig 1 the E.S.R is plotted against the hæmoglobin level The results show that the raised sedimentation rate is not related to the hæmoglobin level of the 9 patients with hæmoglobin levels of 90% or more the E.S.R varied from 5 mm to 48 mm, being 20 mm or more in 5 of them

For several reasons the E.S.R has not been "corrected" for anæmia The basis of correction charts is faulty depending on varying dilutions of normal blood in order to manipulate the hæmoglobin percentage red-cell count or packed-cell volume. Such a chart is only valid for the blood sample on which the manipulation has been performed Furthermore in some cases of anæmia, particularly in those due to simple iron deficiency or hæmorrhage no significant alteration in sedimentation



E.S.R in relation to hæmoglobin level in untreated hypothyroidism may occur with the Westergren method (Davis 1946, Terry 1950), on the other hand anæmias due to other causes, such as pernicious anæmia leukæmia, and hepatic cirrhosis, may be associated with a variable increase in sedimentation Anæmia, *therefore*, is an inconstant factor in its effect on sedimentation, depending not only on its degree but also on its cause, and for this no correction table is available

Cholesterol and the E S R

It is well known that hypothyroidism is often associated with a raised blood cholesterol In this series 13 patients with primary hypothyroidism had cholesterol levels exceeding 300 mg per 100 ml Blood-cholesterol was normal in 4 patients with Simmonds's disease despite the presence of symptoms and signs of hypothyroidism In a recent paper by Wilson et al (1954) on incomplete pituitary insufficiency, a low B M R and normal blood cholesterol were observed in all their 8 patients Despite the frequency of a raised blood cholesterol, no correlation between it and the E S R is apparent from the results (table I) Of the 4 patients with normal E S R s, the blood cholesterol exceeded 380 mg per 100 ml in 3 Similar observations in subjects with lipæmia, as judged by elevation of the plasma cholesterol have been made by Ham and Curtis (1938) who found that, although the E S R was raised in certain instances, no causal relationship between cholesterol level and E S R could be established

Incidence of Other Diseases

Apart from anæmia, the most frequent conditions coexisting with hypothyroidism in this series were hypertension and angina pectoris (cases 3, 5, 6, 9, 11, 14, 17, and 20) A patient was considered to be hypertensive if the diastolic blood pressure exceeded 100 mm Hg on admission to hospital The majority of hypertensive patients became normotensive during their period of bed rest Neither hypertension nor angina pectoris are known causes of acceleration of the E S R, and in no case did the electrocardiogram show evidence of recent myocardial infarction One patient (case 5) had a myocardial infarction while under treatment for thyrotoxicosis eighteen months before she developed hypothyroidism

Four patients had Simmonds's disease (cases 1 2, 4, and 10) An increase in the E S R in Simmonds's disease has previously been observed by Wilson (1953) and Wilson et al (1954) One patient (case 7) had been in a mental hospital where a diagnosis of schizophrenia had been made In the remaining 10 patients no other condition likely to influence the sedimentation rate was recognised In particular no apparent source of infection was discovered to account for the raised E S R

Statistics

The correlation coefficient between the E S R and hæmoglobin percentage is $r = -0\ 40$ This value is not significantly different from zero, the value required for significance being $-0\ 42$ *The figure however, is suggestive and could be* significantly altered one way or the other by a few more results

The correlation coefficient between the E S R and B M R is $r = -0\ 32$ This value *is not significantly* different from zero

The correlation coefficient between the E S R and blood cholesterol is $r = -0\ 23$ This value is not significantly different from zero

Conclusion

The object of this paper is to draw attention to the frequency of a raised E S R in hypothyroidism While it is obviously of interest to inquire into the mechanism of this phenomenon, the data at present available do not justify any definite conclusion The results indicate that the raised E S R is not wholly due to the anæmia from which these patients so frequently suffer or that it can be correlated with an increase in blood-cholesterol Alteration in the plasma proteins is known to inf the E S R Electrophoretic studies on patients hypothyroidism have shown a decrease in the albumin concentration and a significant increase in concentration of β globulin Thyroid therapy caused fall in the β globulin (Stern and Reiner 1946) Electro phoretic studies were not performed on the patien in this series, but routine serum protein estimatio were recorded in 15 patients, and 10 were found to ha serum globulin levels above 2 9 g per 100 ml., accepted upper limit of normal in the biochemistry department in this hospital Of these 10 patients, had a raised E S R, while of the 5 patients with norma serum globulin, 3 had normal E S R s These results however, lack full significance through failure to consider *the fibrinogen fraction of the plasma*, as an increase the latter is known to greatly accelerate sedimentat of the red cells

Despite the lack of a definite conclusion as to th cause of the acceleration of the E S R, the facts ar recorded in order to draw attention to what has been, our experience a common finding, and one to which on one previous reference appears to have been made the literature

Summary

In a series of 23 cases of hypothyroidism the E was found to be raised in 19 4 cases in this series ha Simmonds's disease, all had a considerably rais E S R The cause of this phenomenon is briefly discussed

I wish to thank Prof L J Davis for his helpful advice I am indebted to Dr R Robb, of the statistics department University of Glasgow for the coefficients of correlation between the E S R and the hæmoglobin percentage, B M R, and blood cholesterol level Part of the expenses for this work was borne by the Rankin Fund of the University of Gla

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HÆMOPTYSIS AS A SYMPTOM OF RETROSTERNAL GOITRE

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Retrosternal goitre represents but a small grou of thyroid swellings Its interest and importance lie the symptoms and signs produced by pressure Estimat of its frequency differ, probably owing to lack uniformity in the description of this type of goi (Pemberton 1921 Sauerbruch and Felix 1927)

Rundle (1951) classifies retrosternal goitres into fo groups substernal, *the commonest form* and consi of a prolongation of a cervical goitre behind the sternum intrathoracic, wholly in the chest mediastinal, betw the great veins and in front of the aorta, and *plongeants*, intrathoracic goitres which can be forced in the neck by raised intrathoracic pressure, as in coughing

Retrosternal goitre is diagnosed from pressure sym toms at the thoracic inlet and the radiographic appearan of a swelling behind the upper part of the sternum

The commonest clinical manifestations are due tracheal, œsophageal, and vascular compression Dysp nœa, cough, and venous engorgement are prominent Not infrequently paralysis of the recurrent laryng nerve and sympathetic *paralysis* (Higgins 1927) hav een recorded. Hæmoptysis as a presenting symptom oes not seem to have been observed although in the ast five years in the department of thoracic surgery at his hospital three patients with retrosternal goitre have resented with hæmoptysis out of a total of fifteen reated

Case reports

Case 1—A man aged 67 was referred with a provisional iagnosis of bronchial carcinoma Over the previous nine onths he had lost 2 st in weight and for two months he ad experienced hæmoptysis daily, about two tablespoonfuls n quantity and bright red unmixed with sputum.

Examination showed a fit man for his age although he ad obviously lost weight His thyroid gland appeared ormal and trachea central Dilated veins were present over he upper chest and arms No other abnormality was detected n physical examination

Investigations—No tubercle bacilli were seen in the sputum Radiographs of the chest showed a large mass in the upper nediastinum displacing the trachea to the right and the œsophagus to the left Screening did not reveal any movement of the mass on swallowing Diaphragmatic movement vas normal and the lung fields were emphysematous. No adiographic evidence of bronchial carcinoma Bronchoscopy howed a normal larynx The trachea was deviated to the ight slightly and its left wall was indented

At operation a colloid goitre was found extending from the ight lower pole into the upper mediastinum It enveloped he trachea, except its posterior aspect and descended to the evel of the aortic arch After removal of the goitre the atient has had no recurrence of symptoms

Case 2—A man aged 72 complained of dyspnœa on xertion and of hæmoptysis Eleven years previously he had ad an adenoma of the thyroid removed Eight years later e noted that he was dyspnœic on exertion and when lying lown. Six months ago his voice became weak and in the ast two months he had hæmoptysis on two occasions, the lood being bright red but he could not estimate how much

Investigations—Radiographs of the chest showed a large uperior mediastinal tumour displacing the œsophagus forvards and to the left The trachea was far displaced to the eft and laterally compressed

At operation the place of the right lobe of the thyroid was found to be taken by a large adenoma extending into the horax and passing behind the trachea After his operation he patient has had no recurrence of symptoms.

Case 3—A female shop assistant aged 48 was referred in une 1950 with a provisional diagnosis of bronchiectasis. She complained of hæmoptysis lasting seven days in 1949 he blood was dark red and came into the back of her mouth as if it had come from her windpipe " Six months later and hereafter at two-monthly intervals the hæmoptysis recurred— cupful of blood each time and unmixed with sputum

Examination showed a healthy woman with a midline uprasternal swelling which was ill defined and did not move n swallowing

Investigations—Tubercle bacilli were not seen in the putum. Radiographs of the chest showed a soft tissue welling in the left side of the thoracic inlet No evidence of ulmonary tuberculosis. Screening showed that the swelling noved on swallowing and was continuous with the cervical hyroid swelling The trachea was pushed over to the right Bronchoscopy showed no abnormality

At operation a retrosternal enlargement of the thyroid extending from the left lobe was found No recurrence of ymptoms followed the operation.

Discussion

From these three cases it will be noted that the blood vas unmixed with sputum In two cases the hæmoptysis vas considerable and one patient could not estimate the uantity Since these goitres lie behind the sternum here is an increase in local pressure on the surrounding tructures The veins are obstructed before the arteries and became engorged The inferior thyroid vessels ogether with the internal jugular innominate and uperior vena cava depending on the extent of the goitre take part in this congestion This increased venous pressure manifests itself clinically as distended utaneous veins of the neck and upper part of the arms, and sometimes œdema as the venous flow finds an alternative return to the heart At operation troublesome venous bleeding occurs The increased venous pressure is probably also responsible for the hæmoptysis

The trachea derives its blood supply from the inferior thyroid artery (Johnston and Whillis 1944) and is drained by the inferior thyroid veins in which venous engorgement takes place as a result of compression Rupture of a tracheal vein would be associated with bleeding relieved by a drop in the venous pressure—i.e it would be fairly brisk unmixed with sputum and copious

Summary

Hæmoptysis due to retrosternal goitre is described. Three cases are noted A mechanism for the production of this symptom is suggested

I am indebted to Mr W F Nicholson for permission to publish his cases and for helpful advice and to Mr A. Graham Bryce for permission to publish one of his cases

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CORRELATION OF SERUM-VITAMIN B_{12} LEVELS AND URINARY FOLIC ACID IN NUTRITIONAL MEGALOBLASTIC ANÆMIA

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NUTRITIONAL megaloblastic anæmia and the closely related megaloblastic anæmia of pregnancy are considered by most workers to be caused primarily by a deficiency of folic acid and at present folic acid is regarded as the treatment of choice (Davidson 1948 Spies et al 1948, Wilkinson 1948)

Vitamin B_{12} is also therapeutically active in some of these patients in India (Patel and Kocher 1950 Chaudhuri 1951 Das Gupta et al 1953) as I have found it in some of my patients in Malaya Low serum vitamin B_{12} levels have been found in patients with pernicious anæmia and with other types of megaloblastic anæmia (Mollin and Ross 1952, 1954 Unglaub et al 1954) similar low levels have been found among the patients seen here

Details of the interrelationship between folic acid and vitamin B_{12} in the ætiology of megaloblastic anæmia are still largely unknown but that a relationship exists is well established (Vilter et al 1950 Girdwood 1952a and b) I report here a correlation found between the serum vitamin B_{12} level and the urinary excretion of folic acid after a loading dose

Material

The 20 patients studied came from the lower income groups served by the General Hospital Kuala Lumpur Malaya most of them being Indian and Chinese labourers and artisans They all had gross nutritional megaloblastic anæmia proved in each case by marrow biopsy Clinical sprue was not seen by me in this population and four representative patients with severe megaloblastic anæmia gave normal vitamin A absorption curves and normal radiological intestinal patterns. Nearly all the patients had a hæmoglobin concentration of 5 g or less per 100 ml, and had received no previous treatment except iron None of them had severe pyrexia but some had a slightly raised temperature not associated with any clinical infection, as is sometimes seen in severe megaloblastic anæmia There was no gross œdema or other clinical evidence of disease apart from that related directly to anæmia and malnutrition A few patients were excluded when it was found that they had a urinary output of less than 300 ml in six hours during the determination of the urinary excretion of folic acid because a urinary flow as small as this affects the output of folic acid

Methods

The serum vitamin B_{12} levels were kindly estimated by Dr G I M Ross and Dr D L Mollin at the Postgraduate Medical School, London, using *Euglena gracilis* as the test organism (Ross 1952) Urinary folic acid was estimated as recommended by Girdwood (1953a and b), the test organism was *Streptococcus lactis R* (Gradwohl and Kouri 1948) A twelve tube assay technique was used, and the tests were planned for statistical accuracy as suggested by Wood (1953)

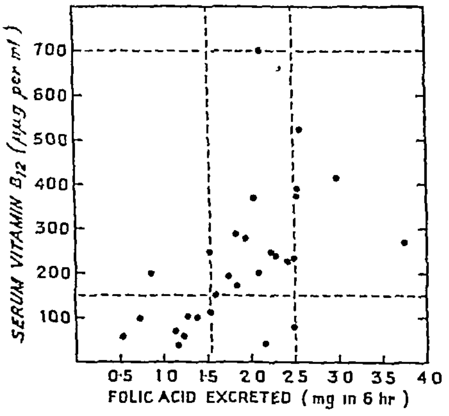
A loading dose of 5 mg of folic acid was given subcutaneously, and the amount excreted in the urine in the following six hours was assayed Folic acid 15 mg was then given each day parenterally for the next five days to ensure tissue saturation Forty eight hours after the last dose the second loading dose of folic acid (5 mg) was given orally and the subsequent six hours urinary excretion was assayed as before

Results

The normal range for total serum vitamin B_{12} is given by Mollin and Ross (1952) as 100–720 µµg (mean 358 µµg) per ml Of the present 29 patients with megaloblastic anæmia 11 had low levels

A normal range of urinary excretion of folic acid was established for 15 patients with normoblastic iron deficiency nutritional anæmia of comparable severity The subcutaneous loading dose gave a mean excretion of 2·07 mg (standard deviation 0·236) and the oral loading dose 1·63 mg (standard deviation 0·238) In the patients with megaloblastic anæmia the excretion of folic acid was below normal after the subcutaneous loading dose in 8 and after the oral loading dose in 11

The accompanying figure shows the relationship between the urinary folic acid and the serum vitamin B_{12} level in these 29 patients, compared with the normal ranges, after the subcutaneous loading dose As the excretion of folic acid decreased, so the serum-vitamin B_{12} level fell, although both remained within normal limits, even though these patients had severe megaloblastic anæmia Only when urinary folic acid reached values below normal did the serum vitamin B_{12} level also drop to a pathological value This regression was highly significant ($0·001<P<0·01$)



Correlation between serum vitamin B_{12} level and urinary excretion of folic acid during six hours after loading dose of 5 mg

The excretion of folic acid after the oral loading dose showed no such correlation, but these figures are presented in the accompanying table, low values presumably indicate poor absorption

Discussion

When a small dose of folic acid is given subcutaneously it may go to the tissues or be excreted in the urine If the proportion of folic acid going to the tissues increa as the body becomes more depleted of folic acid, the amount excreted in the urine will be inversely proportional to the degree of folic acid deficiency In th case the vitamin B_{12} deficiency only develops when th folic acid deficiency has become severe

SERUM VITAMIN B_{12} LEVELS AND EXCRETION OF FOLIC
AFTER A LOADING DOSE OF 5 MG

Case no	Vitamin B_{12} in serum (µµg per ml)	Excretion of folic acid (mg in 6 h	
		After subcutaneous loading dose	After oral loading dos
1	700	2·15	1·45
2	525	2·60	1·50
3	415	3·00	1·90
4	380	2·55	1·65
5	375	2·55	1·00
6	370	2·07	0·34
7	290	1·85	1·18
8	280	1·96	1·15
9	270	3·75	0·7[illegible]
10	250	1·55	0·86
11	250	2·25	0·96
12	240	2·30	1·68
13	235	2·50	1·86
14	230	2·42	1·67
15	200	0·87	2·05
16	200	2·10	0·71
17	195	1·73	0·71
18	175	1·81	1·30
19	155	1·62	2·58
20	115	1·55	1·93
21	105	1·29	0·72
22	100	0·75	—
23	100	1·40	1·60
24	80	2·50	0·59
25	70	1·15	2·16
26	60	1·25	0·71
27	60	0·57	1·40
28	45	2·17	0·66
29	40	1·18	1·20

In pernicious anæmia, which is regarded as primar a vitamin B_{12} deficiency, the excretion of folic acid i decreased (Spray and Witts 1952), as in the pre cases Since pernicious anæmia also responds to fol acid therapy, it can be assumed that there is a folic ac deficiency conditioned by the vitamin-B_{12} deficienc This appears to be the opposite of the hypothesis giv above for these nutritional megaloblastic an Spray and Witts (1952) suggest that a vitamin B deficiency may lead to a conditioned retention of fol acid in the tissues, accounting for this low excretion

Nieweg et al (1954) found that, in non p megaloblastic anæmia, folic acid levels tended to b normal when the vitamin-B_{12} level was low, and vi versa, in about half their pernicious anæmia patient both vitamins were at low levels They also, like Sp and Witts, believe that a vitamin-B_{12} deficiency (influence the storage of folic acid

In the present investigation the excretion of fo acid was normal while the serum-vitamin B_{12} level normal, in spite of the fact that the patients had seve megaloblastic anæmia This supports the suggestio of Spray and Witts that the excretion of folic acid do not measure the tissue depletion but, rather, follows th vitamin B_{12} deficiency

Finally, it is possible that a vitamin-B_{12} defic may develop independently of an already establish folic-acid deficiency

Between these two vitamins it is still not known wh deficiency develops first—which is the horse and wh the cart—but certainly a deficiency of both can be pres in this type of megaloblastic anæmia as observed Malaya

Summary

A close correlation was found between the seru vitamin B_{12} level and the urinary excretion of fol acid after a subcutaneous loading dose of 5 mg patients with severe megaloblastic anæmia

When the serum vitamin B_{12} level was low the cretion of folic acid was low also

I am indebted to Dr D L Mollin and Dr R H Girdwood r helpful criticism

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CHRONIC HYPOPOTASSÆMIA OF RENAL ORIGIN

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MUSCULAR weakness or paralysis due to low serum otassium levels is well recognised and the causes of low erum potassium levels are numerous When renal isease causes disordered potassium metabolism there is sually potassium retention with high serum potassium evels affecting mainly the heart and skeletal muscles ithin recent years however reports have been published of renal disease causing excessive urinary excretion f potassium low serum potassium levels and paralysis

Brown et al (1944) reported three patients with hypootassæmia due to renal disease; Kjerulf-Jensen et al 1951) reported a woman with persistently low serum otassium levels which may have been renal in origin avidson et al (1951) recorded a case of chronic potassium eficiency probably due to renal disease and Earle et al 1951) made prolonged observations on a Chinese with renal ypopotassæmia.

We present here our observations on another patient ith this syndrome who is unusual in having remarkably ttle renal damage

Clinical Record

The patient was seen by one of us (F G S) in consultation on Sept 8 1952 because of generalised weakness nd sudden attacks of paralysis during the previous w months She was a married European woman aged 7 and had been in her usual good health until half way hrough her third and latest pregnancy About this ime she began to have undue fatigue, which became rogressively worse up to the time of her delivery This hird pregnancy like her previous two pregnancies, was bnormal

Her first pregnancy was ectopic necessitating the removal of er right fallopian tube on April 20 1947 Her blood pressure hen was 160/100 mm. Hg and her urine was normal

She became pregnant again in 1948 when her blood ressure and urine were normal. Because of slight albuminuria nd hypertension (blood pressure 165/110 mm. Hg) in the ast few weeks of pregnancy labour was induced surgically wo weeks before the expected date of delivery The puerperium was normal and two weeks post partum her blood pressure had returned to normal

Her third pregnancy began in 1951 the last menstrual period starting on June 10 She had no albuminuria then but her blood pressure was 165/100 mm. Hg and remained about this level during the first trimester fell to about 145/85 mm Hg in the middle trimester and rose to about 165/95 mm. Hg in the last two months Labour was induced on March 14 1952, a week before the expected date of delivery It was during the latter half of this pregnancy that the patient developed excessive fatigue

She felt well on discharge from hospital but after a week at home she again became very tired After two months her milk began to diminish and the baby took an hour over each feed On May 14 1952 after feeding the baby she suddenly collapsed on the bed and could scarcely move an arm or a leg She regained her strength in three days After this episode she continued to be very tired after slight exertion

After a further interval she developed attacks of weakness of the legs in which she would suddenly drop to the ground and have great difficulty in getting up again. There was no disturbance of consciousness in these attacks, and she described them as a feeling as if someone had struck her behind the knees causing her legs to buckle up under her The first such attack came on about three days after her collapse after feeding the baby On this evening she unexpectedly dropped to the floor and her husband had to help her to bed Similar episodes took place about once a week thereafter at any hour of the day

In July 1952 the weakness in her arms became worse causing clumsiness and she often dropped things She would test the power in her legs by raising herself on tiptoe and then take one foot off the ground Often her legs were too weak to support her

As time went by although these recurrent paralyses became no more frequent they were more severe and lasted longer In August 1952 she had two severe episodes and was severely paralysed for several days. The last attack before seeing F G S was on Aug 28 1952 and on this occasion after having afternoon tea, she stood up but on stepping forward she fell to the floor and could not get up She was carried to bed and remained there for five days For the first two days she could not move her legs and could barely lift her arms It was eight days before she could walk without assistance

In all the attacks only the skeletal musculature was affected and there were no symptoms of weakness in the muscles supplied by the cranial nerves. The legs were often affected alone and were always more paralysed than the arms. There had been no respiratory distress The only symptom of abnormal sensation was occasional tingling and numbness of the hands

Her previous history revealed nothing of significance other than the abnormal pregnancies The family history was unimportant.

Routine interrogation brought to light the following points

In the preceding twelve months the patient had developed frequency of micturition, nocturia polyuria and increased thirst.

For several months she had noticed a rather unusual visual defect When reading she could see clearly only the central portion of one line the rest of the page being blurred This disability was so great that she had given up reading

On admission to the Auckland Public Hospital for investigation on Sept. 11, 1952 physical examination gave the following results

She was intelligent and coöperative but languid Careful examination of the nervous system revealed only generalised skeletal muscular weakness, greatest in the legs. No changes in sensory appreciation were detected and all her superficial and deep reflexes were brisk and her plantar responses flexor Her optic fundi were normal she had normal visual acuity and her visual fields were full Her gait was shuffling and unsteady and after walking about twenty five yards she became exhausted and had to support herself by holding on to the wall Her blood pressure was 165/100 mm Hg the cardiovascular system being otherwise normal The respiratory and alimentary systems were normal A catheter specimen of urine contained a faint trace of albumin an occasional epithelial cell and one leucocyte per high power field. The urine was sterile on culture

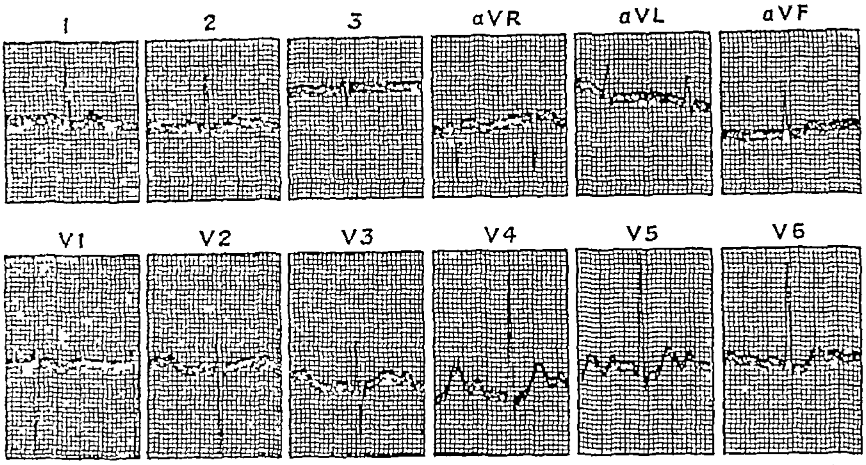

Fig 1—Electrocardiogram on Oct. 3, 1952, when serum potassium level was 2 15 m eq per litre, showing changes characteristic of hypopotassæmia.

Since her attacks of paralysis were similar in certain respects to those occurring in familial periodic paralysis, her serum-potassium level was estimated and was 2 41 m eq per litre Next day it was 2 61 m eq per litre Thus it appeared very probable that hypopotassæmia was the cause of her muscular weakness and episodes of paralysis The hypertension, nocturia, and albuminuria suggested renal disease as the underlying pathology

Special Studies

Laboratory methods—Blood glucose levels were determined by a modification of the Haslewood and Strookman (1939) method and record true glucose values Sodium and potassium levels were estimated with a Beckman flame photometer Glomerular filtration rate was measured by the sodium thiosulphate clearance and renal plasma flow with *p* amino hippuric acid (both by the single injection technique) All other biochemical determinations were made by conventional methods

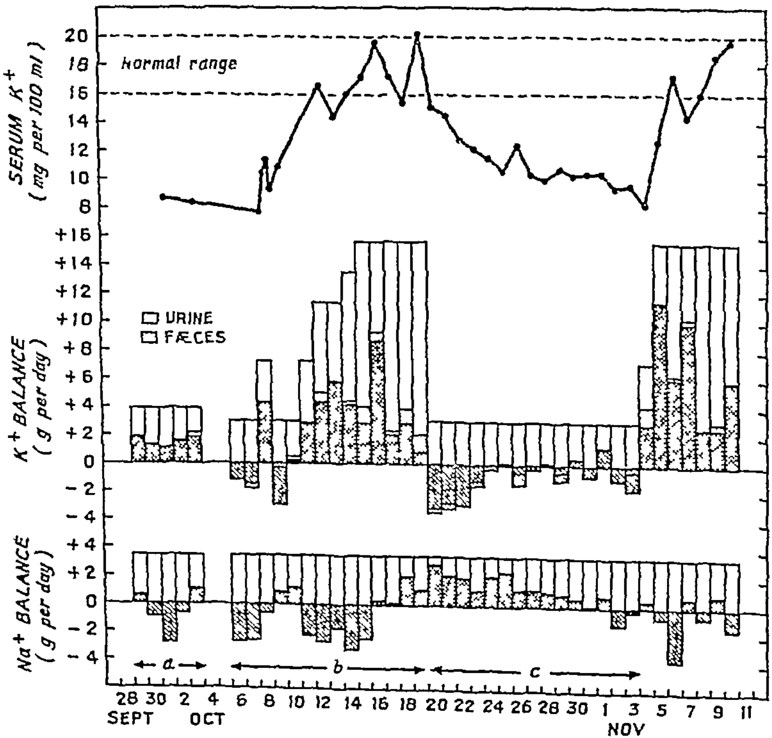

Fig 2—Potassium and sodium balances during first period in hospital *a*, preliminary balance on a stabilised potassium intake of 3 9 g daily *b*, period of potassium therapy; and *c* period following potassium therapy Intake is calculated upwards from zero, and output downwards from top of relevant histogram

Initial Period of General Inv tion and Assessment

This period lasted a from the patient's admis on Sept 11 until the start potassium therapy on Oct

During the month the seru potassium levels were determ under normal dietary condit on seven occasions, the va being 2 41, 2 61, 2 03, 2 36, 2 15, and 2 61 m eq per li The electrocardiogram (fig showed the features typical hypopotassæmia rate 53 minute, P waves of low volt P R interval 0 2 second, ta waves in V_4, V_5, and V_6, ST ments sagging, T waves of l voltage, QT interval 0 48 sec (upper limit of normal is 0 second), and very promin U waves

Chest radiography showed the lung fields to be clear T *left ventricle was prominent, and there was some unfoldi* the aorta The cardiothoracic index was 53 5

The patient was slightly anæmic (Hb 12 1 g per 100 and the erythrocyte sedimentation rate was 23 mm hour (Westergren) Two weeks later examination of the bl showed red cells 4 140,000 per c mm, Hb 12 6 g per 100 and leucocytes 6200 per c mm (neutrophils 89%, 1%, lymphocytes 10%) The stained film was normal

The urine contained a trace of protein and an occas epithelial cell and leucocyte but showed no growth on cult A Van Slyke urea clearance test done on Sept 21 gav blood urea level of 34 mg per 100 ml and a mean clearance value of 50% After nineteen hours' abst from fluids the specific gravity of the urine was 1 016

Other routine laboratory examinations gave results normal limits except the low levels of plasma protein and follicle stimulating hormone (F S H) total plasma p 5 4 g per 100 ml (albumin 3 7 g per 100 ml, globulin 1 per 100 ml), colloidal gold flocculation 0 thymol turbi 1 6 units, Takata Ara negative, sodium 148 m eq per litre, blood-glu 70 mg per 100 ml., serum calcium 9·5 per 100 ml serum phosphorus 2 8 mg 100 ml, plasma carbon dioxide c power 66 vols per 100 ml (HCO_3 29 7 per litre), plasma chloride 101 m.eq litre, plasma cholesterol 210 mg per 100 Wassermann reaction and Kahn test n tive, urinary excretion of 17 ketos (Callow method) 4 1 mg per twenty hours, urinary gonadotrophin—pitu follicle stimulating hormone assayed the mouse uterine enlargement method Klinefelter et al (1943)—*less than 6 6* units per twenty four hours, and metabolic rate + 20%

The fasting blood glucose level was 74 per 100 ml. After an oral dose of 100 of glucose the blood levels at half intervals were 112, 148, 152, 154, 152, 1 and 75 mg per 100 ml No glucose in the urine After this oral dose of g the serum potassium level fell from 2 1 74 m eq per litre

The urea clearance test was repeated an oral dose of 15 g of urea the standard clearance value being 64%

An intravenous pyelogram showed from both kidneys within five minutes. was distortion of the calyces on the side, and the appearance was be consistent with mild chronic p nephritis The shadows of the ureters bladder appeared normal.

A full dietary analysis showed that patient's diet had been adequate in respects The patient was placed on a trolled dietary intake of potassium for

AL CLEARANCE DETERMINATIONS THE RESULTS ARE MEAN LUES FOR TWO CLEARANCE PERIODS CORRECTED TO A DY SURFACE AREA OF 1·73 SQ M THEY ARE EXPRESSED ML. PER MINUTE EXCEPT THE UREA CLEARANCE WHICH RECORDED AS A PERCENTAGE OF NORMAL (STANDARD OR XIMAL DEPENDING ON URINE FLOW)

Date	Rate of excretion of urine (ml per min)	Sodium thiosulphate clearance (G.F.R.) (ml per min)	p amino hippuric acid clearance (E.R.P.F.) (ml per min)	Urea clearance (% of normal)	Endogenous creatinine clearance (ml per min)
.21 1952	1·2			60%	
25	1·4			64%	
17	5·4	108		80	
4	4·6	91		81%	
3 1953	13·8		172		
24	7·0	108		107	124
14	10·9		170		140

E.R.P.F. effective renal plasma flow
G.F.R. glomerular filtration rate

s, and the excretion of sodium and of potassium was deter ed by analysis of the urine and fæces. The calculated ssium of this diet was 3·0 g daily which was slightly ter than that of the ward diet (about 3 g daily) The lt of this preliminary balance study is shown in fig 2a and onstrates a net retention of about 7·5 g of potassium in the days.

)uring this period the patient was languid and thetic and preferred to rest in bed was weak and unsteady on her feet dropped things frequently Her ual defect continued to hamper her ding She was constipated and said t she had been constipated for some nths before admission Although she very weak she had no attacks of alysis while in hospital

iod of Potassium Therapy

)uring this period the excretion of assium and sodium in the urine and es was determined

he intake of potassium from the ordinary d diet was about 3 g daily (the sodium tent of the diet was about 3·5 g daily) er a test dose of 8 g of potassium chloride en on Oct 8 larger doses were started on 11 the potassium intake rising from 7·7 g this date to 15·6 g on Oct 15 (8 g of potas m chloride thrice daily after meals) at which el it remained until Oct 19 when potassium rapy was abruptly discontinued The ct of this treatment on the serum potassium el and on the excretion of sodium and assium is shown in fig 2b There was during this period et retention of about 35 g of potassium equivalent to out 17% of the total body-potassium and a loss of sodium ticularly during the initial stage of the potassium therapy

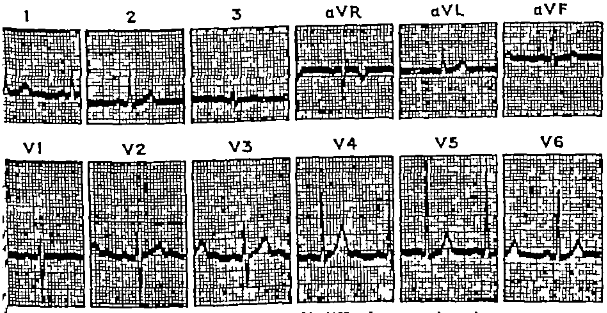

Fig. 3—Electrocardiogram on Jan. 20 1953 after potassium therapy

On Oct 17 thiosulphate clearance and urea clearance were simultaneously estimated. The results (see table) show that the glomerular filtration rate and urea clearance were within normal limits. The urine flow averaged 5·2 ml a minute

As shown in fig 2b the serum potassium level rose to normal after four days supplementary potassium The electro cardiogram was then normal, being identical with that shown in fig 3 which is the electrocardiogram taken on Jan. 20 1953 after about two months potassium therapy

When potassium therapy was begun the patient's condition changed dramatically Associated with the rise of the serum potassium level to normal was a return to normal muscle tone, power, and coördination and her personality changed: she felt so full of energy that for the first few mornings she used to run along the corridor to the bathroom from being languid and apathetic she became alert and eager and she herself commented on this change The frequency of micturition, nocturia, and polyuria disappeared

Period Following Cessation of Potassium Therapy

This period (fig 2c) was one of potassium loss and sodium retention

The serum potassium level gradually declined to 2·15 m eq per litre on Nov 4, when the results of thiosulphate clearance and urea-clearance tests were not significantly different from those obtained previously (see table)

During this period of the balance experiment it was clear that owing to excessive urinary excretion there was a negative balance for potassium under normal dietary con ditions when the serum potassium level was within normal limits. At first about 6 g of potassium was excreted daily (about 28% of the potassium filtered by the glomeruli) and even when the serum potassium level fell to 2·56 m.eq per litre some 20% of the potassium filtered by the glomeruli was still excreted in the urine The normal kidney excretes only 10–15% of the filtered potassium under ordinary dietary conditions.*

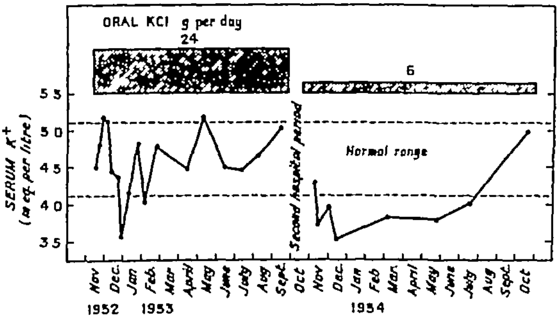

Fig 4—Serum-potassium levels in 2 years during which the patient was under outpatient supervision

Certain other laboratory examina tions were made Chromatography of the urine showed a normal excretion of amino acids, and a specific gravity fixation test done on Nov 8 gave a maximal concentration of 1·022 after sixteen hours deprivation of fluid.

When potassium chloride was withheld the patient soon relapsed to her previous state of weakness, lethargy, and depression, and restricted (tubular) vision recurred

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* The potassium and sodium clearances could not be assessed precisely with thiosulphate during the determina tion of the glomerular filtration rate, because this substance inhibits renal tubular reabsorption of both potas sium and sodium

After the remarkable transient improvement under potassium therapy, her depression was worse than on admission, making further depletion for more investigations at that time unwarranted Therapy with potassium chloride (24 g daily) was resumed on the evening of Nov 4 and continued for about twelve months

Outpatient Supervision on Potassium Therapy

For the next twelve months she received potassium therapy while under supervision as an outpatient

After her discharge from hospital on Nov 11, 1952 serum potassium levels were determined at first weekly and later monthly, the values with one or two exceptions falling within normal limits (fig 4) Thus no particular difficulty was experienced in maintaining a normal serum potassium level

Redetermination of some of the previous biochemical estimations after several weeks of potassium therapy gave the following values in the serum total non protein nitrogen 19 mg per 100 ml total protein 5 9 g per 100 ml (albumin 4 3, globulin 1 6 g per 100 ml), sodium 147 m eq per litre, chloride 105 m eq per litre, phosphorus 3 4 mg per 100 ml, calcium 9 3 mg per 100 ml, carbon dioxide combining power 52 vols per 100 ml (HCO_3 23 2 m.eq per litre) The urinary excretion of 17 ketosteroids was 4 3 mg in twenty four hours (Callow method) and of F S H less than 6 6 mouse units in twenty four hours Clearance of *p* aminohippuric acid determined on Feb 3, 1953, gave a mean value of 432 ml a minute for the two clearance periods (see table) This suggested some impairment of tubular excretory function for this substance (normal 594±102 ml a minute) and supplied additional evidence that the renal defect predominantly affected the tubules

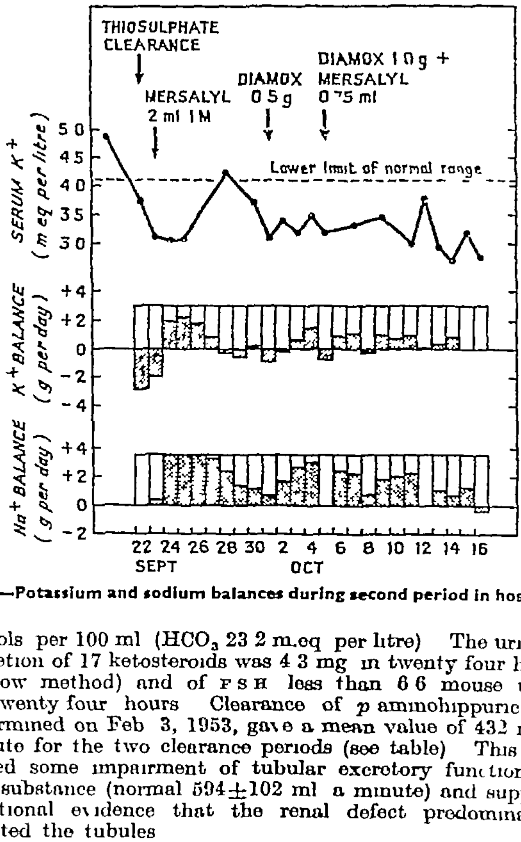

Fig 5—Potassium and sodium balances during second period in hospital

The patient remained perfectly well during the ensuing twelve months, with no recurrence of the initial presenting symptoms The large dose of potassium chloride, 8 g thrice daily after meals, was rather trying, and, since the precise nature of the renal defect leading to the excessive urinary loss of potassium was not revealed by the previous investigations, it was thought advisable to readmit the patient for further study It was hoped that reassessment would make possible a reduction of the maintenance dose of potassium chloride and might throw some light on the ætiology

Second Period of Investigation

The patient was admitted to hospital on Sept 21, 1953, for a further experimental period

Potassium therapy was discontinued on admission, and a dietary régime was instituted which gave a calculated potassium intake of 3 g daily The twenty four hour urine was collected each day and analysed for sodium, potassium, and creatinine, which substances, and others were also estimated in the serum according to circumstances (fig 5)

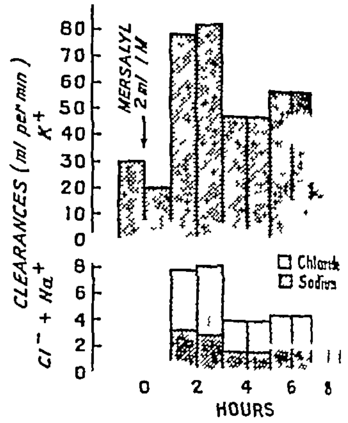

Fig 6—Effect of intramuscular mersalyl' on excretion rates of potassium, and chloride

The tests included thiosulphate and *p* aminohippuric acid clearances and other tests intended to assess more accurately various aspects of renal tubular function

The use of the carbonic anhydrase inhibitor 2 acetyl amino 1,3 4 thiadiazole 5 sulphonamide (Diamox) for investigation of a tubular excretion of potassium was made possible throu kindness of Dr F C Ottati of Lederle Laboratories Di

The figures for the thiosulphate and *p* aminohippur clearances (see table) were in substantial agreement those obtained previously They showed that the degr impairment of glomerular filtration rate was too slight t detected with certainty, but that the *p* aminohippur clearance was a little below the lower limit of normal C firmatory evidence was offered by the urea and endog creatinine clearances

To determine whether the unusual excretion of p was due principally to a failure of tubular reabsorption an unusually active tubular excretion, 2 ml of mersalyl given intramuscularly, and the effect of this on the rat excretion of potassium, sodium, and chloride ions was st (fig 6)

If it can be assumed that the mercurial inhibits all specialised functions of the renal tubules, and if the potas excreted in the patient's urine were mostly due to a tubular excretion, it might be expected that a suitable of mercury might produce a recognisable fall in the excret rate of potassium In the experiment shown in fig 5 a initial decrease in the excretion of potassium was observed followed, however, by a very considerable ri the excretion rate no doubt due to reduced reabsorption the proximal tubules Repetition of the experiment smaller doses invariably produced an increased excretion potassium, and hence did not separate distal tubular exc from reabsorption in the proximal tubules It seems th dose of mercurial sufficient to inhibit distal tubular acti will always simultaneously reduce reabsorption in the prox

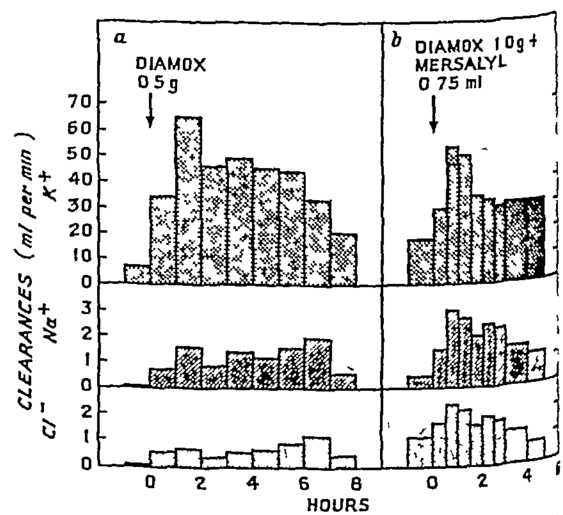

Fig 7—Excretion rates of potassium, sodium and chloride: a oral diamox 500 mg, b after oral diamox 1 g and mersalyl 0 75 ml given simultaneously

les, the net result being either no change at all in the etion of potassium or increased excretion due to the inant effect on the proximal tubules The excretion of ssium by the distal tubules is thus no more sensitive to urials than is the reabsorption of potassium by the imal tubules

rather unexpected consequence of the use of mersalyl that during the following five days the urinary excretion oth sodium and potassium remained exceptionally small resultant strongly positive potassium balance caused the m potassium level to rise to the lower limit of normal out any alteration in the dietary intake

glucose infusion was given to investigate the maximal ular resorptive capacity (Tm_G) for this substance During infusion the potassium clearance increased from 20 to nl a minute and that of sodium from 0 7 to 7 7 ml a ute A similar effect on the potassium excretion was d by Earle et al (1951) in their patient who in these umstances excreted more potassium in the urine than d have been filtered by the glomeruli Our patient s ssium clearance did not however exceed the glomerular ation rate at any time

e glucose Tm calculated from two clearance periods was mg a minute

stal tubular function was investigated with diamox either e or in combination with a small dose of mersalyl

g 7a shows the effect of 500 mg of diamox by mouth e excretion of potassium sodium and chloride There is ly a very pronounced increase of potassium excretion

rliner et al (1951) have shown that the production of ogen ions and the excretion of potassium by the distal tubules share a common metabolic pathway and that ference with the production of hydrogen ions by a onic-anhydrase inhibitor leads to increased excretion of ssium. The increased excretion rate of potassium after administration of diamox in this patient can reasonably terpreted as indicating an essentially normal distal tubular anism for potassium excretion

e effect of the administration of 1 g of diamox by mouth the simultaneous injection of intramuscular mersalyl ml is shown in fig. 7b it is seen that the potassium nse to the diamox is reduced in magnitude and duration he mercurial This experiment offers confirmatory nce that the increased excretion of potassium previously rved after the administration of diamox was due in part ust to active tubular excretion

ce an oral dose of 500 mg of diamox increases potassium nce to a maximum of 65 ml a minute while the maximal ium clearances observed normally in this patient were 30 ml. a minute it can also be inferred from these ments that the capacity of this patient s kidneys for tubular excretion of potassium is much greater than the of excretion normally present.

experiment was made on the effect of oral caronamide o hourly for two doses gave at the end of four hours a nced rise in the excretion rate of potassium, sodium hloride (maximal clearances 38 0 1 8, and 2 8 ml a e respectively)

the conclusion of these tests the patient was rged from hospital on a maintenance dose of ium chloride 2 g thrice daily On this dosage remained perfectly well although the follow up tassium values (fig 4) have been a little below the nge, and indicate that a slightly larger dosage ium chloride would be advisable.

Discussion

the publication by Brown et al (1944) of three exces ive potassium loss in chronic nephritis it recognised that serum potassium levels may be ere renal disease

urrows et al (1949) found much potassium in the atients with renal failure and low serum potassium ome of them Elkinton et al (1949) reported serum levels lower than 3 5 m eq per litre in 4 of 26 with renal insufficiency and Schoch (1951) found m potassium levels in cases of advanced renal cy

te of the fact that renal disease leads in some minor degrees of potassium depletion from excessive urinary loss depletion severe enough to cause muscular weakness and paralysis seems to be comparatively rare

Three additional cases (Earle et al 1951 Kjerulf-Jensen et al 1951 Davidsen et al 1951) have been reported since 1944 and the patient described by Earle et al (1951) is the only one who has been investigated in detail

Our patient is remarkable in that the renal damage is very slight indeed compared with the cases previously published The glomerular filtration rate is within normal limits and the effective renal plasma flow is only a little below the lower limit of normal The Tm_G points to diminished reabsorptive capacity of the proximal tubules Distal tubular function assessed by the potassium response to a carbonic-anhydrase inhibitor is qualitatively and roughly quantitatively normal and there is no acidosis and no apparent failure of hydrogen ion production and base conservation

On the basis of our experiments we consider it probable that this patient's renal lesion consists of a mild impairment of tubular function, and that it is the diminished proximal tubular reabsorption of potassium that is responsible for the unusually large urinary losses

There is no convincing evidence about the nature of the pathological process responsible for the renal damage The evidence in favour of chronic pyelonephritis is inconclusive There is no history of a urinary tract infection and no organisms were found on culture of two catheter specimens taken at widely separated times The only suggestive finding is the slightly abnormal pyelogram On the other hand the history of persistent mild hypertension aggravated during pregnancy suggests that mild nephrosclerosis may be the basic renal lesion Whatever the nature of the renal damage it has shown no detectable change in the two years during which the patient has been under close supervision

There remains no doubt about the efficacy of potassium therapy and the absence of any other contributory lesion Supplementary potassium caused a disappearance of her presenting symptoms and restored her electrocardiogram to normal A point of interest was the disappearance of the constipation which had troubled her for some months before her first admission This would be in accordance with recent reports of hypopotassæmia associated with postoperative ileus Under potassium therapy she still has a slightly raised blood pressure but is perfectly well and has no other clinically recognisable abnormality When her serum potassium level returned to normal, she lost her curious visual defect and could read and see the whole page clearly We could not determine the cause of this defect If weakness of the ciliary muscle had been responsible and had prevented accurate accommodation it probably would have caused blurring of the whole field of vision but the patient could still see a restricted central area quite well

Comparison of the urea-clearance determinations done soon after the patient s admission with those done later showed appreciable differences which exceed the limits of experimental error Possibly the chronic depletion of potassium before the patient s admission to hospital aggravated the renal damage since renal lesions due to hypopotassæmia have been described The earlier investigations (Follis et al 1942) were done on rats and have been amply confirmed but species differences make it impossible to apply them directly to man In two patients dying in a state of potassium depletion (Perkins et al 1950 Keye 1952) vacuolation of the renal tubular epithelium was found which agrees with the results of experiments on animals but both patients had chronic diarrhœa, and coexisting deficiencies of other substances may well have been responsible for the lesions observed To some extent the same complicating factors are present in the findings of Schwartz and Relman

(1953), who determined the renal function of two patients in a state of potassium depletion due to the over use of laxatives, but the improvement in renal function obtained when the laxatives were omitted and the potassium depletion was made good, is very strong evidence that potassium depletion appreciably impairs renal function It therefore appears likely that our patient's renal condition was aggravated by the chronic hypopotassæmia, although when the depletion was made good the original renal defect still remained

Summary

A case of chronic hypopotassæmia with muscular paralysis due to mild renal disease is described

Tests showed no significant abnormalities other than mild impairment of renal tubular function

The abnormal urinary loss of potassium is probably due to reduced proximal tubular reabsorption

Special thanks are due to the patient, who has with unfailing cheerfulness submitted to all the tests described and obeyed all the instructions given Many members of the hospital staff have given valuable assistance in the investigation of this case, especially Sister J Macdonald and Mrs S Collinson, of the biochemical laboratory

Addendum

Recently Conn (1955) has described a new clinical syndrome which he terms primary aldosteronism It is characterised by severe hypopotassæmia resistant to potassium therapy, alkalosis, increased serum sodium, decreased sodium and chloride, and elevated potassium content of sweat and saliva Conn believes this to be due to excessive secretion of aldosterone by the adrenal cortex and associated with an increase of this hormone in the urine One such case is described by him, and he refers to other cases (Earle et al 1951, Evans and Milne 1954 Mader and Iseri 1954, Wyngaarden et al 1954) as examples of the same syndrome In view of this new development, it became of some importance to determine the aldosterone excretion of the subject of this investigation, and Dr J G Llaurado of the Otago University Medical School very kindly agreed to perform these assays for us Preliminary results are suggestive of an increased excretion of aldosterone, but, since one of the controls, an apparently healthy laboratory assistant, showed similar values, the results must be regarded as inconclusive It is hoped to pursue further studies along these lines

While there are many points of similarity between our case and that described by Conn, pronounced differences also exist For example, our case was not resistant to potassium therapy, symptoms were completely relieved, and the serum potassium elevated to within the normal range, by oral potassium chloride There was no alkalosis

An adrenal cortical tumour was demonstrated in Conn's case, which therefore constitutes a most convincing demonstration of primary aldosteronism Whether our case will ultimately prove to have a similar explanation must remain an open question for the present time It appears likely, however, that cases such as those described by Wyngaarden et al (1954) and Earle et al (1951), and many others in which there is ample evidence of severe renal damage (frequently supported by necropsy findings, showing also apparently normal adrenal glands), offer strong evidence that excessive urinary excretion of potassium may in certain cases be due to a primary renal lesion, the excessive aldosterone production, if present, being secondary or compensatory

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CERVICAL PREGNANCY

R C CUMMIN

M B, B Sc Wales M R C O G

SENIOR GYNÆCOLOGICAL REGISTRAR, LLANDOUGH H
CARDIFF

A PRIMARY cervical pregnancy may be considere enough to attract attention and sufficiently int to report In a search of the literature a cases can be found, but these have appeared exclusively in the foreign journals

Case-record

A married woman aged 20, gravida 2, had her last period on July 12 1954 The first pregnancy had twenty months earlier in a normal confinement of a full term child birth weight 6 lb 5 oz (2 80 kg) The personal history had been uneventful Menstruation alway been regular occurring every twenty eight day lasting five to eight days

She was admitted as an emergency to Llandough H Cardiff on Oct 10 1954 because of vaginal bleeding said she had not felt well during this pregnancy continuous vague lower abdominal pain. In the early of the morning before admission she had severe and nausea Some four hours later at about 6 A.M., micturition, she passed several large blood clots per v The bleeding persisted and arrangements were made transfer to hospital There had been no vomiting or symptoms and the bowel function was normal

She was a healthy young woman who did not appe ill or to have lost a lot of blood She felt very tired was clearly distressed The temperature was 97°F 96 per min and blood pressure 140/85 mm Hg The and lungs were normal On inspection of the abdomen was a swelling rising from the pelvis and reaching the level of the umbilicus This was smooth, tensely cyst appeared to be bilocular The lower swelling was resembling a distended bladder and softer than the mass to which it appeared to be attached Fœtal p not detected and movements had not been felt A examination after preliminary catheterisation rev cervix to be very full, effaced, and one finger dilated os in the sacral position In the anterior fornix there soft tender swelling the size of a Jaffa orange, and and to the left a firmer mass which resembled an cyst The findings pointed to a diagnosis of m abortion with a possible torsion of an ovarian cyst

As her general condition was good and the bleed slight, it was decided to delay operation until the had become complete She was accordingly tr pethidine and ergometrine and carefully observed following day there was a recurrence of abdominal acute retention of urine developed The bleed minimal and no products of conception were passed temperature was now 99°F, and a course of penicill started The hæmoglobin was 8 6 g per 100 ml. white cell count 10,300 per c mm (77% polymorph urine was normal microscopically

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At this stage it was decided to examine the patient under -esthesia and perform laparotomy if necessary Under -esthesia the cervix was found to be two fingers dilated -e softer pelvic tumour appeared to be the pregnant uterus which was attached a much firmer swelling which resembled -undal fibroid A finger was introduced into the cervical -al and digital evacuation commenced The membranes -re bulging through the cervix and were unruptured On -ploring the cavity the placenta was found to be occupying -ballooned out anterior portion of the cervix Great -ficulty was encountered in separating the placenta and -ring this process the membranes ruptured and a fœtus -s extracted At this stage the true nature of the placental -plantation was detected The cervix formed a roughly -orical cavity approximately the size of an orange with -opening admitting the tip of the finger at its summit -is opening was the internal os with the body of the uterus -arly identified above it A uterine sound passed through -internal os to the fundus extended for about 3 in (7 6 cm) -ere was much bleeding during removal of the placenta -ich necessitated immediate packing of the cervical cavity -ore curettage was even contemplated The fœtus measured -n (15 2 cm) in total length and weighed ½ lb (226 8 g)

A blood transfusion was started and the pack left in situ -twenty four hours *There was an irregular pyrexia up to* -°F for two days, after which the temperature became -rmal and remained so until the patient was discharged -ome on the eighth postoperative day

Three months later the patient was seen again. She had -n perfectly well since discharge from hospital and had no -mplaints. Menstruation had returned and was a little -vier than normal but there was no pain Pelvic examina- -n showed a healthy normal sized cervix with a patulous -ernal os The body of the uterus was retroverted and -ky but freely mobile The adnexa were normal

Comment

The existence of a cervical pregnancy a rare and -usual example of an ectopic gestation has been -cognised as a clinical entity since the end of the last -ntury but until lately the number of reported cases -s small

-n excellent reviews of the literature Studdiford (1945) -l later Baptisti (1953) together found a total of -cases, including 4 of their own More recently -nagan and Walsh (1954) have described a further case -ropean literature has contained most of these reports -l it is believed that the present case the 47th to be -orded, is only the 2nd to appear in the British -rature, that of Hyslop (1935) being the first

-early all cervical pregnancies *terminate in abortions* -ore the twelfth week of gestation but this is not -ariable and cervical pregnancies have been carried -ond the twentieth week and almost to term Most -hors agree that hæmorrhage can be most alarming -sometimes fatal This is particularly so in the more -anced types and in these cases Studdiford (1945) -sidors that hysterectomy may be the best line of -roach.

-he condition, as in this case is seldom recognised -r to operation and no doubt many abort spon- -eously and pass unnoticed This patient presented -usual features associated with this type of pregnancy -amely vaginal bleeding vague lower abdominal pain -backache In addition there was some disturbance -micturition which culminated in acute retention and -s surprising that this symptom is not more common -ætiology is not known and it is doubtful whether -uma by dislodging the ovum can play a part It is -resting however to note that this particular patient -receive several severe blows in the lower part of her -omen when she was nine weeks pregnant.

-wish to thank Mr M. D Arwyn Evans for his kind -mission to publish this case

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GASTRIC ATROPHY WITH SUBSEQUENT PERNICIOUS ANÆMIA AND PRONOUNCED SUBACUTE COMBINED DEGENERATION OF THE CORD

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SINCE the introduction of the flexible gastric biopsy tube in 1949 (Wood et al) its value in the diagnosis of subacute combined degeneration of the cord without changes in the bone marrow or in the peripheral blood has been emphasised (Doig et al 1950 Jewesbury 1954)

Doig and Wood (1950) reported the finding of complete gastric atrophy (Motteram 1951) in 43 of 45 cases of pernicious anæmia and/or subacute combined degeneration of the cord. The remaining 2 cases had polymorph infiltration in addition to atrophy of the gastric mucosa On the other hand 2 patients showed typical gastric atrophy without either disease in its florid form 1 was a young man without symptoms, who has remained well and the other was a man aged 65 with a long history of indigestion who had minimal neurological symptoms of subacute combined degeneration of the cord with no changes in the peripheral blood or in the bone marrow Now five years later, this man has developed overt pernicious anæmia and subacute combined degeneration of the cord and forms the subject of this report

Case report

A man aged 65 presented in February 1949 stating that for fifty years he had had flatulent dyspepsia coming on after meals and relieved by powders. On direct questioning he admitted to occasional tingling and numbness in the sole of the left foot for three years and in the right foot for six years but only on getting into bed at night after a full day s farm work There was no family history of pernicious anæmia He had received no treatment with liver extracts.

On examination his blood pressure was 170/95 mm Hg Neurological assessment by one of us (E G R) at that time was as follows : Although in type the dysæsthesiæ in the feet are characteristic of subacute combined degeneration of *the cord they are unusual in two respects—the duration* without change and the fact that the arms and hands are not involved as well as the legs—but neither of these points is definitely against the diagnosis. The tongue is a little pale shiny and rather denuded of fur Motor power seems normal in spite of mild osteo arthritic changes muscular tone is normal There is a little unsteadiness in the heel knee test but this is very slight. However this has its correlation in some unsteadiness in walking The deep reflexes are equal and active the superficial abdominal reflexes present and the plantar responses flexor There appears to be some diminution of superficial sensibility below a level about 2 inches above the ankles Appreciation of position and passive movement is very slightly defective in the left great toe and sense of *vibration is diminished over the knees and ankles* more so over the left malleolus than the right The unusual feature however is that the diminution is greater over the knees than the ankles There is no muscular tenderness Thus it appears most probable that the patient has a mild chronic type of peripheral neuritis, and I think that it is most likely that he has an early stage of subacute combined degeneration, but at this stage no certainty exists on clinical grounds.

Investigations—Hb 14 3 g per 100 ml red cells 5 200 000 per c.mm white cells 7000 per c.mm ; mean corpuscular volume (M C V) 83·4 c.µ mean corpuscular Hb concentration (M C.H C) 32% barium meal normal histamine-fast achlorhydria Wassermann reaction negative bone marrow normal no evidence of megaloblastosis normal nucleated cell count *gastroscopy some atrophy seen no evidence of peptic* ulcer or neoplasm serum bilirubin level 0 5 mg per 100 ml

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Working with the aid of a grant from the National Health and Medical Research Council of Australia

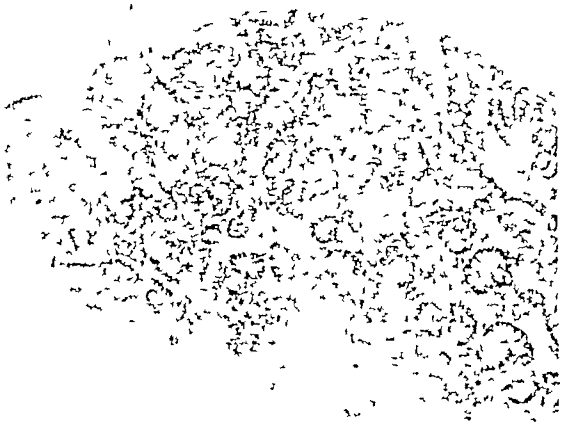

Fig 1—Gastric biopsy on Feb 12 1949 mucosa villous surface epithelium and most gastric glands contain many goblet cells cellular infiltration of lamina propria slight Appearances are those of gastric atrophy with intestinal metaplasia At this stage the patient had no hæmatological or neurological evidence of vitamin B_{12} deficiency in its florid form (Hæmatoxylin and eosin × 70)

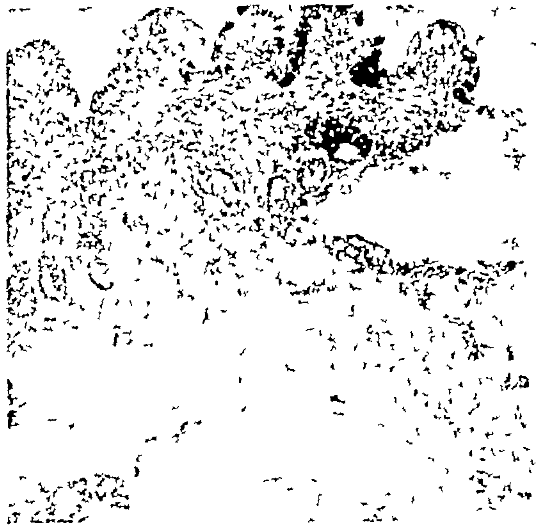

Fig 2—Gastric biopsy on July 1, 1954 appearances unchanged (carmine × 70)

Diagnosis—In terms of modern nomenclature, as suggested by Jewesbury (1954) it would be said that the evidence favoured peripheral neuropathy due to deficiency of vitamin B. However the ataxia was greater than would be accounted for by the degree of involvement of peripheral nerves, and this suggested the possibility of involvement of either spinocerebellar or pyramidal tracts in the lateral columns of the cord but without gastric biopsy this diagnosis could only be tenuous

Subsequent Treatment The patient was seen periodically over the succeeding years being admitted to hospital for review in October 1949 September, 1951, July, 1953, and June, 1954, besides being seen frequently in the outpatient department On all these occasions the clinical and laboratory findings were unchanged, the achlorhydria persisted and there was no evidence of *macrocytosis* in either peripheral blood or bone marrow On June 29, 1954, examination of his blood showed Hb 12 1 g per 100 ml, red cells 4,100,000 per c mm, white cells 6000 per c mm (*normal differential count*) His neurological status was unchanged indeed on July 6, 1954 there were only minimal sensory changes This lack of alteration in symptoms and signs raised *doubts about the* suggested diagnosis of subacute combined degeneration of the cord

Deterioration—In September, 1954, the patient wrote stating that he had muscular weakness, *especially in* the legs His knees were likely to give way when he was walking, and his equilibrium was easily upset He had "gone numb from the toes to the belt" and he found it impossible to do up the small buttons of his shirt His immediate admission to hospital was arranged Up to this time he had received no treatment with either liver extract or vitamin B_{12}.

On admission he stated that his flatulent dyspepsia had persisted unchanged and that for six weeks he had noted pins and needles in hands and feet, associated with progr numbness, loss of balance, and *stiffness and weakness in th*

On examination his blood pressure was 130/80 mm Hg liver was palpable 2 cm below the right costal margin spleen was impalpable *Examination of his nervous s* (E G R) on Sept 29, 1954 was reported as follows onset of dysæsthesiæ in the hands, although delayed the spread from the *lower limbs to the trunk* (up *to about* fifth thoracic dermatome) complete the clinical picture dysæsthesiæ of subacute combined degeneration of the c There is no *evidence of involvement of the pyramidal* although some ataxia is apparent in the lower limbs The reflexes have become less active, being now almost ab There is slight *diminution* of superficial sensibility over hands and lower limbs Appreciation of the position great toes is less accurate than before He fails to feel vibr below the 10th *thoracic spine* The threshold *for discrim*tion between two points is slightly raised, but stereogn accurate '

Investigations—Hb 12 4 g per 100 ml, red cells 3,90 per c mm M C V 97 c µ, M C H C 32%, white cells per c.mm, with some hypersegmentation of polymor barium meal *normal*, histamine fast achlorhydria, puncture, marrow cellular with occasional megaloblas giant band forms of leucocytes, serum bilirubin level 0 per 100 ml, serum vitamin B_{12} less than 0 05 µg per

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† The serum vitamin B_{12} assay was done by Mr L A of the *department of biochemistry, University of* bourne, using a modified microbiological method correcting for the presence of methionine (normal b method about 0 3 µg per ml)

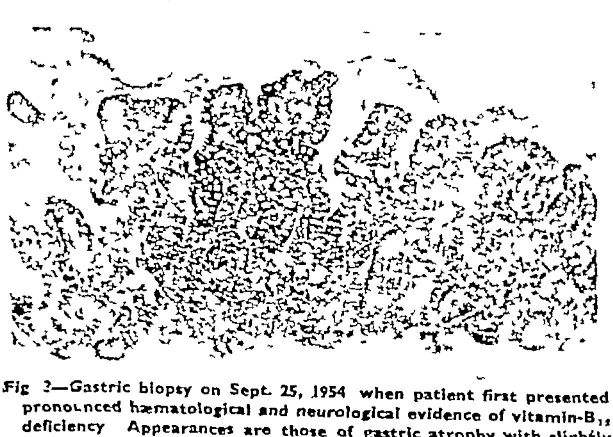

Fig 3—Gastric biopsy on Sept. 25, 1954 when patient first presented pronounced hæmatological and neurological evidence of vitamin-B_{12} deficiency Appearances are those of gastric atrophy with slightly increased cellularity of lamina propria (Hæmatoxylin and eosin.

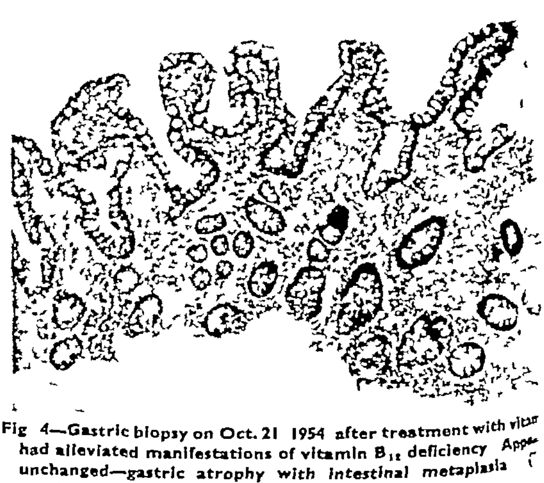

Fig 4—Gastric biopsy on Oct. 21 1954 after treatment with vita had alleviated manifestations of vitamin B_{12} deficiency Appe unchanged—gastric atrophy with *intestinal metaplasia* (toxylin and eosin × 70)

Treatment with parenteral vitamin B_{12} was begun on Sept 30 954 100 µg daily for three days and then 50 µg daily for venteen days This produced a rapid and pronounced sub ective response, and at the end of this course the patient as greatly improved His Hb increased to 13 3 per 100 ml d cells to 4 700 000 per c mm and reticulocytes to 1 3% n Oct 7 1954 and his bone marrow was wholly normo lastic on Oct 13 1954 He gained 5 lb in weight

Follow up—He has remained well since and carried on his ork as a gardener on regular injections of vitamin B_{12} 00 µg monthly When last seen on Feb 8 1955 he reported at the "fuzzy wuzzy" feelings of the lower limbs were less nd he could again do up his buttons Examination showed ight improvement of superficial and deep sensibility and of e ataxia of his lower limbs

Gastric biopsy was first done on Feb 12 1949 and showed mplete gastric atrophy of pernicious anæmia type (fig 1) he mucosa was thinned and the surface and glandular pithelium showed 'intestinal metaplasia' to a mucus creting type containing many goblet cells Wandering-cell filtration was minimal The biopsy findings altered little in bsequent specimens obtained on Oct 21 1949 Feb 9 950 Sept 29 1951 Aug 16 1952; July 7 1953 July 1 954 (fig 2) Sept 23 1954 (fig 3) Oct 21 1954 (fig 4) eb 10 1955 On every occasion complete gastric atrophy ith intestinal metaplasia was present although the degree wandering-cell infiltration of the substantia propria varied ightly over the years The appearances were unaffected by eatment for four months with vitamin B_{12} as would be pected from our previous experiences (Doig and Wood 950 Finckh and Wood 1953)

Discussion

This elderly patient first reported with dyspepsia d only minimal subjective neurological symptoms were certained by the physician Investigation of his spepsia showed complete gastric atrophy—the classical rnicious-anæmia stomach For this reason a detailed examination was made of the peripheral blood and bone marrow which showed no evidence of megaloblastosis His dysæsthesiæ suggested the diagnosis of subacute combined degeneration of the cord, but it was impossible to state that the patient had not got some mild peripheral neuritis even though achlorhydria was present The finding of gastric atrophy also favoured the former diagnosis but at that time certainty was lacking because we were only just starting our assessment of gastric biopsy The picture was unchanged for five years, during which time the patient was given no therapy He then developed typical symptoms and signs of both pernicious anæmia and subacute combined degeneration of the cord —vitamin B_{12} deficiency There was rapid response to treatment with vitamin B_{12}

This patient thus provides evidence which strengthens our belief that gastric atrophy precedes the development of both pernicious anæmia and subacute combined degeneration of the cord in their florid forms and encourages physicians to be watchful of the early manifestations of subacute combined degeneration of the cord particularly dysæsthesiæ. Indeed at this early stage gastric biopsy may be the only other positive finding although the excellent researches of Mollin and Ross (1954) on the level of vitamin B_{12} in the serum may provide a second valuable aid in the early diagnosis of this important disease

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New Inventions

TISSUE FORCEPS FOR CÆSAREAN SECTION

A TISSUE FORCEPS has been developed for use on the ges of the uterine wounds in the lower-segment sarean-section operation This instrument (fig 1) has e following features :

(1) The gripping edge is broad so it provides hæmostasis m bleeding uterine sinuses as in the Green Armytage ceps

2) The gripping surface is grooved to prevent slipping t the action is soft so the instrument s not damage the uterine edge whence ding will occur

3) The instrument is angled so the shank flat this elevates the uterine wound and racts the abdominal wall wound making ease of access in suturing (fig 2)

4) The handles have been placed so t the bows are closer together than usual with tissue-forceps making the rument neat and compact in use

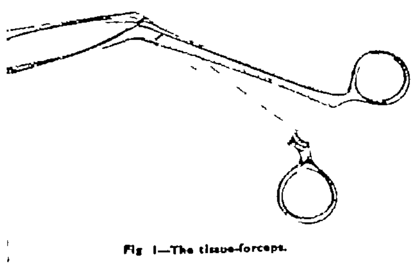

Fig 1—The tissue-forceps.

There does not appear to be a similar instrument embodying these features. Other forceps designed for use on the uterine edge are straight and the handles have an annoying tendency to fall over to the midline interrupting the work requiring an assistant to steady the instrument and failing to elevate and retract the wounds The usual tissue-forceps have a gripping surface which is sharp and narrow causing tissue damage and not helping hæmostasis.

The new forceps are of greatest value when placed at the lateral angles of the uterine wound which in British practice is usually transverse in lower-segment operations Each instrument elevates its corner retracts the abdominal wall and secures hæmostasis in an area where these aids are important. Control of the upper and lower wound edges in the midline is usually of lesser importance; a stay suture, placed in the midline below the proposed lower segment incision and before it has been made helps to prevent retraction of the inferior wound margin and may be replaced by the forceps if hæmostasis is required, the angle of the instrument enabling it to lie conveniently out of the operator's way over the symphysis pubis

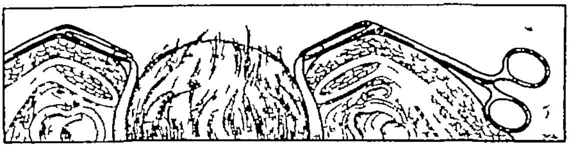

Fig 2—The tissue-forceps in use

The instrument has been specially made by Messrs Allen & Hanburys Ltd. 48 Wigmore Street London W 1 I am grateful to Miss M J Waldron of the department of medical illustration Guy's Hospital for the drawing of the forceps in use

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Reviews of Books

Surgery of the Heart

CHARLES P BAILEY, M D, M SC (med), F A C S, F C C P, professor and head of the department of thoracic surgery, Hahnemann Medical College and Hospital, Philadelphia London Henry Kimpton 1955 Pp 1062 £9

"THE road to the heart is only 2 to 3 centimetres in a direct line, but it has taken surgery nearly 2400 years to travel it and it took surgery 98 years to pass from the pericardium to the epicardium, across a space that is such only potentially" This quotation from Sherman, who wrote it in 1902, is a fitting introduction to Dr Bailey's comprehensive new work—which embodies almost every known development in cardiac surgery His exceptional and possibly unique experience eminently qualifies him to describe and pronounce on the merits of the individual operations and his book, though it starts conventionally with a historical survey, is essentially practical, proceeding via anæsthesia and general technical aspects to the individual lesions and their treatment Much space is given to pathological anatomy and necessary investigations, but most of the text (admirably illustrated by line drawings) is concerned with the technique of treatment Clinical selection and postoperative appraisal are deliberately given less attention than might be expected, since a companion volume on the medical aspects has been prepared The chapters range in merit from outstanding ones on mitral stenosis and atrioseptal defects to a weak one on pericarditis But the general standard is high and the book bears the stamp of a vast surgical experience thus some 24 pages are allotted to "unexpected technical problems" encountered during the surgery of mitral stenosis Professor Bailey would be the last person to suggest that surgery of the heart had become static, and indeed it moves so fast that some of the operations described here have been modified or discarded since the book was written He is to be congratulated on the way in which, in the midst of a busy surgical life, he has made his experience available to others

Viral and Rickettsial Diseases of the Skin, Eye and Mucous Membranes of Man

HARVEY BLANK, M D, Squibb Institute for Medical Research, Columbia University, University of Pennsylvania, GEOFFREY RAKE, M B, Wistar Institute of Anatomy and Biology, Squibb Institute for Medical Research London J & A Churchill 1955 Pp 285 60s

THE different diseases grouped together under this title reflect the research interests of the authors, but although the book is admirably written, it is difficult to know to whom it is addressed Perhaps it is best suited to dermatologists (there are fewer chapters for the ophthalmologists) interested in making detailed investigations of certain virus diseases of the skin and mucous membranes The descriptions and explanations are very clear, and little or no specialised knowledge is required of the reader The chapters dealing with herpes simplex, chickenpox and zoster, herpangina, warts, molluscum contagiosum, and the virus diseases of the eye are all excellent, and show how expert knowledge can be translated into simple and authoritative language One or two chapters—such as those on the exanthematous diseases and the common cold—bear less of a personal stamp and seem to be added mainly for good measure

Man in a Cold Environment

Physiological and Pathological Effects of Exposure to Low Temperatures ALAN C BURTON, PH D, professor of biophysics, University of Western Ontario, OTTO G EDHOLM M B head of division of human physiology, National Institute for Medical Research, Medical Research Council London Edward Arnold 1955 Pp 273 30s

THIS is the second of a series of monographs which are being produced at the request of the Physiological Society There have been several books published lately on the effects of temperature, and the subject is receiving world-wide attention This monograph, however, touches only lightly on what has already been said, and such [illegible]ion as there is is useful and illuminating in the main, it covers new ground Man bega tropical animal who has steadily moved away fr hot zones of the earth, not because his powers of logical adaptation increased, but because his inte development enabled him to use material th protect himself For man, the cold regions of th are, for various reasons, rapidly growing in impo short air-routes cross the North Pole, meteor stations are needed in polar regions, and even in ten zones ship-wrecked or air-wrecked men still suff and hardship in open boats Hypothermia deliberately produced to make difficult or pre impossible operations more safe, and it is poss maintain animal tissues at temperatures far freezing-point for long periods, yet ensure normal s on rewarming Even whole animals may be ke state of suspended animation not far above fr with return to completely normal life The great i ance of these observations lies not only in pure re but in the prospect they offer of banking of tis viable form, and of discovering the best methods o ment of those suffering from exposure They thro too, on the best means of clothing and housing, comfort and efficiency shall be maximal, both a and rest This involves many things, from the rede of the cut of gloves, to a study of why certain m feel warm and others cold This, in turn may the whole textile industry, for it seems probabl artificial fibres, by a suitable arrangement of me compressibility, can be adapted for all circumsta

All these matters and man's reactions in many tions are discussed in this book in a very readabl A final chapter deals with problems for future rese

Coagulation of Blood

Methods of Study Editor LEANDRO M TOCA M D New York and London Grune & Stratton. Pp 240 $5 75

THIS laboratory manual has been compiled by a of authors under the sponsorship of the panel on coagulation of the Committee on Medicine and Su of the National Academy of Sciences, National Re Council of the United States of America If the cr for a laboratory manual are that its instructions s be clear and complete, and should indicate the pref method for any estimation and the reasons for times using alternatives, this one has shortcomings wishing to seem to dictate "standard" methods authors give alternatives without any indication of relative value or particular use The methods, in ge seem unnecessarily complex, and not all of them applicable in most laboratories in this country is a valuable section by Tocantins on the workin of circulating anticoagulants which conveniently together the techniques for these studies but, o whole, British workers will find themselves bette with the publications already available to them

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Old Age in the Modern World (Edinburgh E. Livingstone 1955 Pp 647 35s)—In compiling this of the congress of the International Association of Geront held in London a year ago, the editorial committee (Dr Boucher Dr O Olbrich Mr W A Sanderson, Dr Sheldon, Prof R E Tunbridge, and Dr Marjory W have followed a policy of selection rather than co "giving preference to communications containing material opening up new avenues of thought, or authoritative reviews" For the historical record a report is to be deposited in the library of the Royal Soc Medicine

Genetics and the Inheritance of Integrated N logical and Psychiatric Patterns—Volume the Research Publications of the Association for Rese Nervous and Mental Disease reports the proceedings meeting held in New York in December, 1953 The is by Prof Davenport Hooker (London Baillière, T & Cox 1955 Pp 425 76s 6d)

Symposium on Atherosclerosis—The report of th posium has been published as National Academy of —National Research Council Publication 338 The was held, at the request of the United States Air Fo March, 1954, under the chairmanship of Dr Irvine H. (1955 Pp 249 $2)

THE LANCET

LONDON SATURDAY JULY 9 1955

Hospital Buildings

The announcement last February by the Minister of Health that an extra £17 million is to be spent on hospital buildings in the next two years[1] put a term to sixteen years' virtual standstill in construction This long interval has been due in the first place to the war, which halted almost all work of this kind secondly to the post war scarcity of materials and labour, and the priority given to new houses and latterly to the many other calls on the country s resources—including a call still not fully answered for new schools Meanwhile the need for renovation and innovation has steadily mounted It is estimated that in one region alone the cost of rebuilding the hospitals to a uniform, modern, but not extravagant standard will be £90 million The allocation of £17 million will do something to solve the problems arising from the redistribution of population since 1939, to reduce the gross inadequacies of mental hospitals and to enable economy measures requiring capital outlay to be applied (see p 85) But it does much less to finance minor capital works the continuing restriction on which is causing anxiety to all concerned with hospitals

Since the Appointed Day much adaptation has been undertaken at relatively low cost (about £9 million per annum) but at the present rate of progress even the existing list of much needed minor capital works will not be worked off for many years At many hospitals the hygienic standard in the kitchens is far below the level in industrial catering and even after an outbreak of food poisoning it may take a management committee two or three years to find, say, £750 for proper toilet facilities The need is not only for replacement but also for expansion In the past sixteen years there has been a medical as well as an administrative revolution in the work of hospitals, demanding reorganisation and extension, particularly of outpatient and ancillary departments Faced with overflowing departments and insufficient accommodation for their staffs, many hospitals are greatly troubled by their situation

Where but to the Exchequer can they turn? They are already getting valuable aid from voluntary organisations King Edward s Hospital Fund for London for example has lately made a grant of £250 000 to mental hospitals and the Duke of GLOUCESTER, the Fund s president has remarked that the possibility of some help from outside sources such as leagues of friends or from a body like the King s Fund, provides a stimulus and encouragement out of all proportion to the actual amount given (see p 86) Though direct appeal to the public by hospitals is rightly barred by statute this does not mean that people of good will should be in any way deterred from giving or bequeathing money to them More support of this kind might reach them if boards and committees were showing greater boldness in their use of the money already at their disposal The distribution of free money is uneven some hospitals have large sums some very small Some of those that have a good deal are applying it to urgent works that are unlikely to be paid for out of Treasury funds in the next few years but others, reluctant to spend on any scheme that the Exchequer may eventually finance are carefully husbanding their resources This we believe is wrong The main responsibility for hospital construction rests with the Government but obviously the Government cannot at present patch all the many gaps and more enterprising use of local funds would afford present comfort to patients hearten staffs, promote local initiative and point the way for the generous.

Stomach and Blood

Thirty years ago, when we learnt that pernicious anæmia was due to the stomach's failure to secrete the ' intrinsic factor (hæmopoietin) it was confidently expected that a pernicious type of anæmia would develop in patients who had been subjected to partial gastrectomy But in fact this did not happen megaloblastic anæmia developed in only a very few such patients and then not until perhaps eight or ten years after the operation Thus BLAKE and RECHNITZER[1] who reviewed the records of 50 men and 54 women who had undergone partial gastrectomy, found that though 40% of the men and 45% of the women had iron-deficiency anæmia, only 1 woman and none of the men had a megaloblastic anæmia The explanation is that in man the glands in the upper part of the stomach are important secretors of hæmopoietin, and this portion remains intact after all forms of partial gastrectomy But in the past ten years total gastrectomy has been carried out, particularly for carcinoma high up in the stomach, for gastric ulcer high up on the lesser curvature, and for structural abnormalities Because so many of the patients have carcinoma of the stomach only some survive long enough for anæmia to become manifest, but among the survivors the incidence of anæmia is very high BLAKE and RECHNITZER examined 10 patients who had had total gastrectomy and 8 of them were anæmic in 6 the blood picture was macrocytic and in 3 the marrow was megaloblastic PAULSON and HARVEY[2] examined 27 out of 80 patients who had undergone total gastrectomy at Johns Hopkins Hospital from 1914 onwards in 23 the operation was for removal of a gastric carcinoma Iron deficiency anæmia appeared within two or three months of the operation and this they attribute to slow loss of blood from inflamed and eroded areas in the gut above and below the œsophagojejunal anastomosis the fæces contained occult blood, and the anæmia responded satisfactorily to oral administration of iron Next, macrocytic anæmia appeared in 12 patients between six months and two years after the operation, and in 7 more up to seven years afterwards Finally, megaloblastic anæmia, with typical changes in bone-marrow appeared in 6 patients, between two and seven years after the gastrectomy This anæmia responded in each case to treatment with vitamin B_{12}, but 1 patient seemed to need folic acid as well

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[1] See *Lancet*, 1955 i 110

[1] Blake J Rechnitzer P A *Quart J Med* 1953 22

[2] Paulson M Harvey J C *J Amer med As* 19

The fact that megaloblastic anæmia develops in all patients who survive long enough after total gastrectomy fits in with our present hypothesis that the intrinsic factor is secreted mainly in the upper part of the stomach and is essential for the proper absorption of vitamin B_{12} from the food **Callender** et al[3] found that absorption of vitamin B_{12} was severely impaired after total gastrectomy They gave small oral doses of vitamin B_{12} containing radioactive cobalt and followed the excretion of the radioactive material in the fæces When a healthy person is given orally 0 5 µg of this labelled vitamin B_{12}, about 30% of the Co^{60} from the vitamin is excreted in the fæces Patients with classical pernicious anæmia given the same dose excrete about 90% of the radioactive cobalt **Callender** et al gave the same dose to 8 patients who had had total gastrectomy, 6 for gastric carcinoma 7 of these patients excreted on average 80% of the Co^{60}, representing an impairment of absorption of vitamin B_{12} of the same order as that in pernicious anæmia, the 8th patient excreted about 66% of the dose administered The patients were then given the same dose of vitamin B_{12} together with a source of intrinsic factor prepared from pigs' gastric mucosa, the excretion in the 7 patients was reduced from 80 to 57%, and in the patient with 66% excretion the proportion improved to 29% Thus there seems to be little doubt that total gastrectomy leads to a loss of intrinsic factor as severe as that in addisonian pernicious anæmia In 4 of these patients the red cells showed no macrocytosis at the time of the test, but in 3 (including the 1 patient with relatively low excretion of the vitamin-B_{12} test dose) some megaloblastic change was found in the marrow

Another way of finding out how total gastrectomy affects the absorption of vitamin B_{12} is to follow the changes in serum level This is not easy since the method is microbiological **Mollin** and **Ross**,[4] who introduced the method using euglena, found very low serum-vitamin B_{12} levels in 2 patients who had had total gastrectomy two years before, both patients had severe anæmia and megaloblastic marrow at the time **Pitney** and **Beard**[5] followed the changes in serum-vitamin-B_{12} after total gastrectomy for carcinoma of the stomach and found that for eight months serum-B_{12} levels remained in the normal range, though they were falling, after eight months the level was subnormal, and at sixteen months the level was as low as in pernicious anæmia But the patient still had no megaloblastic anæmia, nor had this appeared when metastases caused her death nineteen months after the operation This variable latent period between the failure of vitamin B absorption and the appearance of megaloblastic anæmia may be due to variation in the vitamin B_{12} stores in the body **Girdwood**[6] has estimated from assays of normal human tissue that there may be 1000–2000 µg of vitamin B_{12} stored in the body of a person with normal nutrition, and if the daily requirement of vitamin B_{12} is of the order of 1 µg, the latent period may clearly amount to years This latent period has been recognised during the natural development of pernicious anæmia On p 69 of this issue Dr **Graeme Robertson** and his colleagues record the case of a man who had a gastric biopsy carried out in 1949 because of dyspepsia and paræsthesiæ in the feet in the absence of any anæmia The biopsy showed complete gastric atrophy of the pernicious anæmia type, and repeated examinations at intervals over the next six years showed no significant change Five years after the first biopsy typical pernicious anæmia developed, with ataxia and depressed reflexes in the legs, and this responded well to treatment with parenteral vitamin B_{12} **Paulson** and **Harvey**[2] noted that the jejunal mucosa atrophied in some patients after total gastrectomy, and they suggest that this may also play a part in the precipitation of anæmia in these patients All this information warns us that megaloblastic anæmia will certainly follow total gastrectomy if the patients survive long enough, though the latent period may be a year or more Since the level of vitamin B_{12} in the blood falls after a few months there is a good case for treating these patients with regular parenteral vitamin B_{12} as a measure of prevention

Another quite distinct set of researches involving studies of the blood and the stomach connect gastric lesions with blood-groups **Aird** and his colleagues reported figures which showed that patients with gastric cancer were more often in group A than would be expected from the normal distribution of blood groups,[7] whereas patients with peptic ulcer showed a preponderance of group O[8] On p 52 of this issue Dr **Køster** and his colleagues report a similar investigation in Denmark Of the patients with duodenal ulcer 50 2% were in group O and 38·4% in group A, and of the patients with gastric u associated with achlorhydria 33 2% were in group and 56 4% in group A The distribution of blood groups in the general population of Copenhagen according to a recent survey by **Bryde Andersen** is group O 40·6%, group A 44 0%, group B 10·9%, and group AB 4 5% As **Køster** and his colleagues graphically show, the shift from disorders associated with the greatest to the least gastric output of hydrochloric acid is accompanied by a decreasing frequency of group O and an increasing frequency of group A The results suggest that there is a genetic factor in the incidence of gastric cancer and of peptic ulcer, and there may be a link with pernicious anæmia since there is now considerable evidence that gastric cancer is unusually common in patients with perni æmia and possibly in their relatives too.[9] The ext step should perhaps be to make an extensive rvey of the distribution of blood groups in patients ith pernicious anæmia and in persons with achlor ydria. With regard to achlorhydria, **Rappaport's**[10] arning should be borne in mind: achlorhydria hould not be diagnosed unless it is histamine fast; nd by this criterion it is quite uncommon before he fifth decade of life.

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[3] Callender, S , Turnbull A., Wakisaka, G *Clin Sci* 1954, 13 231
[4] Mollin, D L , Ross G I M. *J clin Path* 1952 5 129
[5] Pitney W R , Beard, M F *Arch intern Med* 1955, 95, 591
[6] Girdwood R H *Biochem J* 1952, 52, 58
[7] Aird I , Bentall, H H , Roberts, J A F *Brit med J* 195 i 799
[8] Aird I , Bentall, H H , Mehigan, J A., Roberts, J A F *Ib* 1954, ii, 315

Trophisms and Tumours

Knowledge of the stimulating and restraining ction of trophic hormones on normal reactive tissues s being applied with increasing frequency and enter rise to the treatment of tumours derived from esponsive or "target" cells. The original impetus iven at the end of last century to the idea of therapy y surgical removal of an organ with trophic prop erties—the ovary for breast cancer and the testis for rostatic hypertrophy—was not long sustained but was superseded by improved surgical techniques for xcising the diseased organ and by radiotherapy for ancer. The recent revival of the idea of removing a rophic influence is due to **Huggins** and his collaborators,[11 12] who extended it by using an antagonistic ormone which might be expected to have an effect equivalent to castration. By that time stilbœstrol, which has properties akin to ovarian œstrogens, had been synthesised by **Dodds**. Alone or combined with orchidectomy, stilbœstrol commonly brings about striking improvement in subjective symptoms and in signs, including shrinkage of primary and metastatic growths of the prostate. Furthermore in postmenopausal patients with breast cancer about 20% derive great benefit from stilbœstrol. The mechanism of stilbœstrol's action is unknown, and in neither disease can a favourable response be predicted. Attention next centred on the adrenal gland, which is another source of gonadal hormones. **Huggins** and **Bergenstal**[13] introduced adrenalectomy, with or without gonadectomy, for prostatic and breast cancer.[14] The anterior lobe of the pituitary gland is the ultimate source of many trophic hormones, and hypophysectomy and destruction by implanted radon seeds have now been added to the treatments of breast cancer. **Huggins** has expressed the hope that eventually these drastic operations will be succeeded by nothing worse than a swallowed pill. Realisation of such a hope depends on the extraction in quantity or the synthesis of trophic hormones and on more precise information about their actions and interactions. Tests of administered trophins may be complicated by the development of antihormones, for those derived from the hypophysis are protein in nature. It may require an injection rather than a pill to put all anterior pituitary cells out of production.

What kind of success can be expected? So far only palliation has been claimed, but with a complete set of the pure substances greater or different effects may emerge. There is also the possibility of cancer prevention. It is still not known how the very substantial regression which does sometimes occur is brought about. **Bielschowsky**[15] reviews some of the few morphological descriptions of sites of tumour regression after hormone therapy. He laments the paucity of adequate accounts, from which much might be learnt. So far as can be gathered, there is a lytic or possibly hydropic degeneration in some neoplastic prostatic cells, squamous metaplasia in others, and no apparent constant specific change in those which appear to remain viable. Connective tissue is often converted from dense collagen to more delicate fibred, loosely constructed tissue. The dual responses of cells to trophic hormones—by secretion or cell proliferation—should be borne in mind. The lytic or hydropic appearance often resembles post secretory exhaustion.

Pursuit of these ideas experimentally has not proved successful. **Horning**[16] studied grafts of a chemically induced prostatic adenocarcinoma in mice which were treated with stilbœstrol by implantation of pellets. Development of the neoplasms was retarded, compared with those in untreated control mice; but none regressed completely. The neoplasms were, however, dependent on androgen, for they failed to grow in young castrated males. In contrast with failure to cause regression, it is often possible to influence the evolution of animal tumours. A considerable variety of growths may now be provoked by hormones and other carcinogens. Some of these remain benign; others depend for continued existence or increase in aggressive properties on the hormone or other substance that first caused their appearance, or even on a non carcinogenic agent; others again are autonomous from the start.[17 18] The interaction of thyroxine deficiency and thyroid stimulating hormone in spontaneous and experimental tumours of the parent organs are most instructive in revealing what **Bielschowsky** describes as the internal environment of neoplasia. Here, it might have been supposed, is a well developed field for testing the efficacy of treatment by hormonal trophisms and antagonisms. It is, moreover, one in which quantitative observations can be attempted. Yet no experiments appear to have been made on malignant tumours beyond the stage of dependence, save for one clinical case treated beneficially with thyroxine after administration of radio-iodine.[19] The hope is that the condition of dependence so readily demonstrable in the evolution of animal tumours is a feature in the evolution of cancer in man—and that it might be exploited to prevent or arrest the disease. Carcinoma of the thyroid is probably largely prevented now, just as goitres are, in goitrous districts where thyroxine secretion is maintained at adequate levels by means of iodine. But the existence of dependence in human tumours, similar to that in animals, has yet to be proved. The pathological responses to trophic hormones (in contrast with their morphogenic and physiological reactions) differ so greatly between species and even between individuals in the same inbred strain that their character in man can probably be judged only by observations in man.

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9. *Lancet*, 1954, ii, 1215.
10. Rappaport, E. M. *New Engl. J. Med.* 1955, 252, 802.
11. Huggins, C., Stevens, R. E. *J. Urol.* 1940, 43, 705.
12. Huggins, C., Stevens, R. E., Hodges, C. V. *Arch. Surg., Chicago*, 1941, 43, 209.
13. Huggins, C., Bergenstal, D. M. *Cancer Res.* 1952, 12, 134.
14. See Pyrah, L. N., Smiddy, F. G. *Lancet*, 1954, i, 1041.
15. Bielschowsky, F. *Brit. J. Cancer*, 1955, 9, 80.
16. Horning, E. S. *Ibid*, 1949, 3, 211.
17. Foulds, L. *Cancer Res.* 1954, 14, 327.
18. Furth, J. *Ibid*, 1953, 13, 477.
19. Balme, H. W. *Lancet*, 1954, i, 812.

Annotations

TIME AND THE MENTAL NURSE

'The ward of the mental hospital is life, and the mental nurse—perhaps unknowingly—is endeavouring to help the patients to live more fully and to raise themselves above the circumstances of their disease The job is therefore one of tact, affection and skill in dealing with individuals and as the observers saw it, this is the prime work of the mental nurse, surpassing in importance the functional duties recorded from minute to minute on the observation sheet '

In thus summing up the mental nurse s work, Mr H A Goddard and his team of observers are saying again what we all know but are sometimes apt to ignore—that the essential quality of good nursing, and perhaps especially of good mental nursing, cannot be trapped in an analysis of the way the nurse spends her time, however carefully this is done Mr Goddard s job analyses, as we know from his report [1] on the work of nurses in general hospitals are very carefully done indeed His new analysis, *The Work of the Mental Nurse*,[2] undertaken at the request of a joint committee of the Manchester Regional Hospital Board and the University of Manchester, is likely to prove as useful as its forerunner for the way the mental nurse is required to spend her time can either enhance or hinder her tact, affection, and skill the ponderables for better or worse, influence the imponderables

Work in 14 wards of three hospitals (two for mental defectives and one for mentally ill patients) was studied, and a list was made of 89 activities which could be grouped under the headings of administration and organisation, nursing supervision and domestic work As usual a close analysis of activities reveals some surprises For instance the amount of " passive supervision "—that is supervision apart from any other activity—turns out to be *much greater* in male wards than in female wards and suggests the question, "Is all this supervision really necessary ? " It might be supposed that male patients were more troublesome, or more difficult to restrain in moments of excitement than female patients but there was no evidence that this was so unexpected behaviour specifically due to the mental illness of patients is relatively unimportant in the ordinary work of the ward " It may be, Mr Goddard suggests that female patients need less supervision than male patients, or it may be that there is a temperamental difference between male and female nurses, the females being more inclined to look for and find some occupation about the ward But he argues whatever the reason, if so much passive or custodial supervision by trained nurses turns out to be unnecessary, then some nurses could be released from this occupation for other work , and moreover some of the time given to " passive " supervision could be spared for "active" supervision of skilled activities of a therapeutic type This, he suggests, is one of the central problems of mental nursing, and merits careful consideration

Less surprising are his findings that the formal training received by the student mental nurse bears little relation to the job of the trained nurse , that her daily duties do little to prepare her for the preliminary State examination that the amount of practical tuition given to her on the wards amounted in no case to more than five minutes a day and that the allocation of duties to her was dictated solely by administrative necessity Mr A N Oppenheim and Miss Beryl Eelman, in their review of the training of nurses at Bethlem Royal and the Maudsley Hospitals,[3] also made it plain how ill the preliminary state examination serves the needs of the student mental nurse "Mental nursing," Mr Goddard suggests, "is such an important subject in its own right that it demands a scheme of training formulated expressly for its own purpose " We fully agree with him

For four hours of the day, his team found, the staffing of the wards is at half-strength , and, owing to the arrangement of mealtimes for staff and patients, these four hours fall at times when the concentration of patients in the wards is at its peak If mealtimes could be so distributed that all the staff were on the wards from 8–9 A M and from 12 30–2 P M many routine tasks—such as bathing and haircutting, which are difficult to complete in wards where patients are out at work all day—could be done more easily, and (he suggests in disquieting italics) *possibly more often* All the nurses worked on the "long day" system, which gives them an average of two full days or more off duty every week but also means that they work a span of 7 A M to 7-8 P.M. on most of the other days The strain of this long stretch of exacting work begins to tell on their tempers by the end of the day , and Mr Goddard urges the adoption of one of various possible shift systems Such systems have obvious advantages, but many nurses feel these would not outweigh the opportunity the present arrangement gives them of getting away from the hospital for a night, or two nights, every week In view of the nature of their work it ought to be possible to offer them both a night off weekly and a shorter daily span , but while they remain so scarce and precious this apparently cannot be done Nevertheless, with better economy in the use of trained staff, with the fullest possible use of nursing assistants (who should be given a good practical training) and part time staff, and with better selection of student nurses, some reduction in the strain should be possible Immediate ways of cutting down work, Mr Goddard points out, would be to make drastic revisions of unnecessary secretarial work done in the wards, and to organise the disposal of soiled linen so that it does not need to be counted by five or six different people every time it goes to the wash (A method which avoids all such counting has, in fact, been long in use at the London Hospital, and might well be universally copied) Stocktaking could also be simplified by setting up a central linen store and cutting down the vast stocks of unused clothing kept in some wards Finally, a vast amount of distasteful work caused by the incontinence of patients could be greatly reduced by forming groups of patients for habit training

Such reforms as these can only come from within the hospitals We support Mr Goddard in urging every mental hospital now suffering from shortage of staff to review the work, and the way it is done, with the aims of getting rid of unnecessary tasks, using trained staff to better advantage, and encouraging students to think well of mental nursing as a career

INVASIVE TUMOURS OF THE PITUITARY GLAND

PITUITARY adenomas are generally described as simple expanding lesions Few metastasising neoplasms of the pituitary have been described, and those which have been reported have not been accepted as such by critical reviewers [1] [2] But spread by the cerebrospinal fluid only has been recorded by Cairns and Russell [3] , and a well-defined group of locally invasive lesions has been recorded These were termed " invasive adenomas " by Sir Geoffrey Jefferson, F R S , in his Sherrington lecture [4]

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[1] The Work of Nurses in Hospital Wards Nuffield Provincial Hospitals Trust 1953 See *Lancet* 1953 i 379

[2] Manchester University Press 1955 Pp 151 10s

[3] The Function and Training of Mental Nurses London, 1955 See also *Lancet* 1955 i, 753

[1] Willis, R A The Pathology of Tumours London, 1953 p 626

[2] Winkelman N W , Cassel, C , Schlesinger, B *J Neuropath.* 1952, 11, 149

[3] Cairns H W B Russell, D S *Brain* 1931 54 377

[4] The Invasive Adenomas of the Anterior Pituitary By Sir GEOFFREY JEFFERSON, M S Lond , F R C S F R.S , emeritus professor of neurosurgery, University of Manchester Liverpool University Press 1955 Pp 63 5s

These are not common tumours—Jefferson suggests that they account for about 10% of all pituitary tumours—but their recognition is important since surgical treatment of them is hazardous and unsuccessful They do not necessarily grow very quickly the duration of the illness varying from three months to seventeen years and there are no distant metastases In the case published by Spark and Biller[5] the patient survived for twenty years although evidence of invasiveness was present two years after the onset

Symptoms indicating this kind of adenoma are trigeminal pain and hypo-æsthesia or anæsthesia and involvement of the oculomotor nerves when these are present the tumour is nearly certainly invasive Papillœdema is significant (since atrophy from direct pressure on the optic nerve is the rule in pituitary tumours) and so is monocular blindness Though these tumours are more often chromophobe than acidophil they give rise to acromegalic features more commonly than do ordinary pituitary tumours

NEW JOBS FOR THE OLD

WHENEVER we urge the elderly not to retire at the first pensionable moment but to carry on with their jobs—or perhaps with less exacting jobs—we should have in mind what jobs are appropriate for them and whether there are enough of these to go round In a first report on alternative work in later life [6] made for the Nuffield Foundation Mr Le Gros Clark and Miss Dunne have extracted from successive census reports figures showing the drift of men into certain occupations in later life. The 16 occupations examined are known to be some of those into which older men move and fuller details about them were sought from the industries and offices which offer them

They included watchmen office cleaners estate labourers caretakers, lift attendants gardeners hall and hotel porters lodging house and boarding house keepers kitchen hands messengers, 'other railway workers (that is to say carriage cleaners point oilers toolmen lampmen turntable men and washing machine men) other road transport workers (including bath-chair attendants, car park attendants cartage checkers toll men and pointsmen) others in personal service (a *mixed company of arcade playground beach lavatory and chair attendants* domestic handymen lodge-keepers and others) and porters not elsewhere specified (that is, porters other than railway hall and hospital porters—a group which includes various market porters barrow porters outside porters, warehouse porters and the like)

In 1951 these occupations employed between them 546 700 men—a very small proportion of the 15 million occupied males in the country but the proportion of men over 55 in these occupations was unusually high 37% as against 17% of men of this age in the total occupied male population These are not the only jobs however into which men move when they are growing elderly concealed within the census tables as the authors say there must be many light labouring and packing jobs which are being done by elderly men indeed it must be so for a calculation based on their figures suggests that there must be four times as many men over 55 at work in other occupations as there are in the 16 they have selected for examination It looks in fact as though employers are finding suitable jobs for many men over 55 From the country's point of view this is not perhaps of great moment however since most men go on working anyhow till they are pensionable at 65 What we need to know is the proportion of men aged 65 who would like to go on working but are unable to find an appropriate job This study shows that some men move after middle life, into occupations, such as the 16 examined where they can hope to continue till retiring age and perhaps beyond it Perhaps by taking thought we could, by offering others clear opportunities to make such moves help them too to prolong their working lives

CONGENITAL GALACTOSÆMIA

CONGENITAL galactosæmia is remarkable as perhaps the only true state in which the mother's milk is poisonous to her child It is also one of the few disorders in which knowledge of the genetic risks within a family may lead to early and effective treatment The first report of this disorder in Britain appeared in 1952[1] over twenty five years after Goppert's[2] clear description It is now certain that most cases have been missed even now when the diagnosis is made it is not unusual to find that an elder brother or sister probably died from the same condition unrecognised[3,4]

Essentially the illness consists in a partial failure to metabolise the galactose with a consequent rise in blood galactose and its appearance in the urine The clinical manifestations are uniform in type but varied in degree Failure to thrive liver enlargement galactosuria and albuminuria are constant findings mental retardation cataract jaundice amino aciduria, and a tendency to bleed are also common The symptoms and signs are probably directly due to the effect of the galactosæmia and Cusworth et al[5] have shown that this is also true of the amino aciduria Usually a lactose free diet leads to rapid improvement But cases have been recorded in which even early treatment was unsuccessful In 1 of these cases treatment was begun on the fourteenth day but despite initial improvement a decline set in and the child died eight weeks later in this child the amino aciduria never disappeared[4] Other children have remained mentally retarded despite early treatment[6,7] This has led to the suggestion that the mental defect may be an independent feature of the condition But Komrower and Holzel[8] note that the milk preparation commonly used in 'lactose free' diets unfortunately contained a small amount of lactose Mr Salt and his colleagues[9] and Dr Matheson[10] have had satisfactory results with a low lactose synthetic milk powder prepared in this country On the other hand, Dr Holzel and his colleagues whose letter appears in this issue are not convinced that this powder is entirely satisfactory and they suggest an alternative feeding formula

Early diagnosis is of the greatest importance and full understanding of the genetics of the condition would be a powerful aid An inborn error of metabolism is prima facie likely to be due to a recessive gene Cox and Pugh[4] noted that the published reports and the families of their own cases were consistent with this mode of inheritance on the assumption that many workers had not asked about cousin marriages between the parents and that the high proportion of sibs affected is due to the greater ease with which the diagnosis is made in families with several affected children Holzel and Komrower[11] reported a family study in which they applied galactose tolerance tests, by MacLagan's[12] method, to the near relations of their patients In all the five families studied at least one parent had an abnormal lactose tolerance but in only one family were both parents abnormal in this respect One pair of parents were first cousins, but only one parent was abnormal on the test Of six clinically unaffected sibs, three were found to have abnormal galactose tolerance These findings do not accord with the hypothesis that galactosæmia is due to the homozygous state of the gene which in the heterozygous state produces only an abnormal galactose tolerance, since the hypothesis requires that both parents should be heterozygotes in nearly every case But the response of healthy people to a test dose of galactose varies greatly, and possibly the test is too insensitive Further progress should come when the *responsible enzyme deficiency* has been detected Schwarz et al[13] have reported a first step in this direction They found that the red blood cells of galactosæmic children after a milk feed showed accumulation of galactose-1-phosphate but no increase in glucose-1-phosphate, suggesting a failure to transform the former substance to the latter In that event it would be phospho galacto isomerase whose function is deficient Even now there seems to be good grounds for hoping that in time it will be possible to pick out the parental couples at risk *before the first affected child has been* born

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[5] Spark, C Biller S B *Arch Path (Lab Med)* 1943 35 93

[6] New Jobs for Old Workers By F Le Gros Clark and Agnes C Dunne. From the Nuffield Foundation Nuffield Lodge Regent's Park London N W 1 1955 Pp 19 A limited number of copies can be obtained free of charge

[1] Bray P T Isaac R J Watkin A G *Arch Dis Childh* 1952 27 341

[2] Goppert F *Berl klin Wschr* 1917 54 473

[3] Donnell G N Lann W R *Pediatrics* 1951 7 503

[4] Cox P J N Pugh R J P *Brit med J* 1954 ii 613

[5] Cusworth D C Dent C E Flynn F V *Arch Dis Childh* 1955 30 150

[6] Townsend E H Mason H H Strong P S *Pediatrics* 1951 7 760

[7] Clay P R Potter C T *Arch Dis Childh* 1955 30 147

[8] Komrower G M Holzel A *Brit med J* 1951 ii 810

[9] Salt H B Ross C A G Gerrard J W *Lancet* 1955 i 1177

[10] Matheson W J *Ibid* July 2 1955 ii 41

[11] Holzel A Komrower G M *Arch Dis Childh* 1955 30 155

DIABETES AND GLYCOGEN STORAGE IN THE LIVER

Winston Evans, Littler, and Pemberton[14] have described 4 diabetics who stood out from the remaining 800 in their clinic by exhibiting characteristics of what seems to be a new syndrome All 4 were young "brittle" diabetics (the oldest was 25) with large livers, shown to be *full of glycogen*, and a pronounced tendency to hypoglycæmia It is already well known that hepatomegaly is common in young unstable diabetics, but at necropsy in such cases the liver is found to be distended with fat rather than with glycogen Hæmochromatosis is another (though rare) cause of hepatomegaly in diabetics, but one for which there was no evidence in *these 4 cases* Experimental work on diabetic animals[15] has usually *shown that the level of liver glycogen falls* in states of insulin deficiency , but this is not necessarily so in man[16] Where normal or high liver glycogen co exists with insulin lack the associated hyperglycæmia may be responsible for the high glycogen level[15] Hyper glycæmia may have played a part, too in raising the liver glycogen of the 4 patients described by Winston Evans and his colleagues, but the tendency to hypo glycæmia is unexplained Insulin favours glycogen synthesis and these 4 patients had large *doses of* insulin , yet this does not seem a reasonable explanation of the excess liver glycogen, for this is not characteristically found in cases of insulin secreting *adenoma* of the pancreas In 1 of the 4 cases laparotomy was performed to examine the pancreas, but the result was negative

This syndrome has features in common with the classical glycogen storage disease of von Gierke—namely, the large liver filled with glycogen and the tendency to hypoglycæmia—but *unlike the state* in von Gierke's syndrome, there was no fasting hypoglycæmia or raised blood cholesterol The *possibility that the liver* glycogen was abnormally stable, as it is in glycogen storage disease, was tested by intravenous infusions, in 3 of the cases, of glucagon according to the technique of Kirtley and his group,[17 18] and in fact the blood sugar level rose little Results of adrenaline tests are unfortunately not given The possibility therefore remains that the tendency to hypoglycæmia was due to inadequate glycogenolysis It would be of great interest in such cases to make detailed studies of the glycogen, as has been done by Cori[19] and Andersen[20] in glycogen *storage* disease These diabetics may have a similar structurally abnormal liver glycogen[20] or lack a specific enzyme, such as glucose 6 phosphatase,[18] necessary for glycogen breakdown

RECRUITMENT OF HOSPITAL ADMINISTRATORS

THE present standard of hospital administration is uneven, and a working party of the Hospital Discussion Group suggest[21] that too little is being done to secure men and women capable of undertaking successfully its varied duties and responsibilities More should be done for instance to attract university graduates, and to offer them prospects comparable with those of other branches of public service, if not of industry Senior appointments should not *of course be reserved exclusively* for graduates, for opportunities and encouragement should be given to those who enter the hospital world straight from school, and to some senior entrants who join it from other walks of life But at present recruitment from the universities is almost at a stand still, and the hospital service will suffer if this is not remedied

If graduates are to be recruited, then special measures (the working party say) must be taken to train them. Possibly King Edward's Hospital Fund, with the Institute of Hospital Administrators, might organise a three year training scheme for which candidates would be selected by a panel representative of hospital authorities and of the medical profession The number selected would be related to the number of senior posts—estimated at about 20—likely to fall vacant each year, and the competition for vacancies would be open to those within the service as well as to new entrants from universities or elsewhere

Hospital administration will always be chosen as a career partly for the satisfaction that the job gives, but it would be unrealistic to try to improve recruitment and training without considering the range of salaries offered There are now, it is stated, some 430 senior posts, with salary maxima ranging from £1095 to £2400 a year, the 22 secretaries of undergraduate teaching hospitals being the only officers at the top of the scale Before the start of the National Health Service a few posts carried *salaries* which would now be worth over £3000 These have been brought within the new salary structure at considerably lower rates, while the general level of salary scales *has* been progressively depressed until the maximum salary in the service is well below the higher ranges of the Civil Service, local government, or the national boards Inevitably able young men will think long and hard before entering the hospital world, while many already in the service may begin to look elsewhere The working party feel that these relatively low scales are due at least in part to the organisation of the Administrative and Clerical Whitley Council, in which the management side is largely dominated by the Ministries and the staff side by local government and trade-union organisations whose hospital membership is an unimportant fraction of their total strength The solution here, they believe lies in a reassessment by the Ministry of Health of the real nature and responsibilities of hospital administration and in splitting the Whitley Council into two sections the staff side of the administrative section giving representation to organisations with a substantial membership of senior hospital officers

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[12] MacLagan, N F *Quart J Med* 1940, 9, 151

[13] Schwarz V Solberg L Komrower G. M., Holzel, A *Biochem J* 1955 59 xxii

[14] Evans, R. W Littler T R , Pemberton, H S *J clin Path* 1955 8 110

[15] Bodo R. C , Co Tui, F , Farber L *Amer J Physiol* 1933, 103, 18

[16] Vallance Owen, J *J clin Path* 1952, 5, 42

[17] Kirtley W R , Waife S O , Peck F B *Proc Soc exp Biol*, *N Y* 1953 83, 387

[18] Kirtley W R Waife, S O , Helmer, O M Peck, F B *Diabetes*, 1953 2 345

[19] Cori G T *In* Experimental Diabetes and its Relation to the Clinical Disease Oxford, 1954 , p 186

[20] Andersen D H *In* Carbohydrate Metabolism Edited by V A Najjar Baltimore 1952 , p 28

[21] *Hospital* June, 1955, p 395

Administrators in all walks of life expect more criticism than thanks for their efforts and some critics dissatisfied already with hospital and health service administration may dismiss the working party's report as a piece of special pleading for still bigger and better empires for bureaucrats Yet as the report points out the lower the quality of hospital administrators, the greater is the danger of the growth of impersonal bureaucracy and centralised control and if we want a better service we must be prepared to plan for it and if need be pay for it

ARTIFICIAL RESPIRATION BY INTERMITTENT POSITIVE PRESSURE

As long ago as 1816 Waterton paralysed an ass with curare and kept it alive by inserting a bellows into its trachea so administering artificial respiration by intermittent positive pressure *The same principle using less homely apparatus has been used for decades to* maintain respiration in experimental animals It is therefore astonishing that it was not until the epidemic of poliomyelitis in Denmark in 1952 that intermittent positive-pressure respiration (I P P R) was used in the treatment of respiratory paralysis in man

The technique of I P P R for this purpose at first a brilliant improvisation,[1] is now becoming established [2–4] and at a recent meeting of the section of otology and laryngology of the Royal Society of Medicine at Cambridge on June 17 this subject was discussed and the experience of the Oxford respiration unit directed by Dr W Ritchie Russell was reported Dr A Crampton Smith described three types of patient who were liable to die from acute paralysis First there is the patient with paralysis of swallowing often referred to by the more general term bulbar paralysis If this patient is nursed sitting up or lying supine secretions inevitably and continuously trickle down his trachea with fatal consequences He must be treated by postural drainage in the prone or semi prone position and in difficult cases a tracheotomy may also be required to maintain a clear airway Second there is the patient with paralysis of the respiratory muscles He should be treated in a tank respirator and to minimise the risk of inhalation of vomit it may be advisable during the acute illness to aspirate the stomach through a nasal tube Third there is the patient in whom paralysis of swallowing and of respiration are combined In this case the health of the lungs cannot be maintained in a tank respirator even with postural drainage for the uncompromising inspiration provided by the machine causes secretions and worse still vomit to be inhaled It is the combination of paralysis of respiration and of swallowing that is the absolute indication for I P P R. Air is blown into the lungs by a cuffed tracheal tube passed through a tracheostome *and the safety* of the method lies in the fact that the inflated cuff not only makes an airtight seal which enables ventilation to be provided easily but it also prevents secretions or vomit in the pharynx from reaching the lungs.

The patient with respiratory weakness who is treated in a tank respirator is in grave danger if swallowing becomes paralysed I P P R must be instituted as soon as paralysis of swallowing is detected but there will often be a slight delay before arrangements can be completed for tracheotomy During that period a cuffed endotracheal tube should be passed to guard the lungs against vomit *or secretions Similarly, when a* patient is being treated for paralysis of swallowing respiratory power must be tested regularly This can be done either by measuring the vital capacity with a spirometer or by making the patient take a deep breath and count as far as he can A normal subject can count up to 60 in a single breath

It is agreed on both sides of the Atlantic that tracheotomy is called for in the patient who has paralysis of both respiration and swallowing but American practice is to keep the patient in a tank respirator even with a tracheostome[5] The disadvantages of this are obvious compared with I P P R the tracheostome interferes with the neck seal access to the patient for nursing and physiotherapy is difficult and changes of the patient's posture are limited Moreover tank respirators are many times more expensive than apparatus for I P P R There is on the other hand no compensatory advantage in using a tank respirator in the presence of a tracheostome and indeed as Bower[5] has pointed out it is physiologically identical with I P P R. No doubt the Americans continue to use tank respirators in these circumstances because they naturally like to exploit to the full the extraordinary skill that the best American centres have acquired in their management

Will I P P R supplant the tank respirator? Though some Scandinavian opinion seems inclined to think that it will it is difficult to accept this view at present for a tracheostome, life-saving though it is in some circumstances brings certain difficulties with it It makes chest infections much more common and this is not altogether offset by the fact that it also renders them easier to treat Moreover for the patient whose ultimate respiratory recovery is poor the closure of the tracheostome may present serious difficulties and dangers because of his inability to cough

At the Cambridge meeting Dr J M. K Spalding reported the results obtained at Oxford by treatment with I P P R Prolonged artificial respiration is often thought of in terms of poliomyelitis, but it is striking that of 11 cases treated with I P P.R only 5 were poliomyelitis, and even this figure was artificially inflated for 2 of the 5 patients were brought from overseas There were 4 cases of *acute toxic polyneuritis* 3 of these recovered completely and 1 still under treatment was gradually improving Although these patients may at their worst have complete paralysis of almost all voluntary muscles, the expectation that they will eventually recover fully makes it all the more important to get them over the acute stage Other cases treated with I P P R. included one of severe tetanus[6] in which recovery was complete and one of barbiturate poisoning which proved fatal

The value of I.P P.R is now established and every hospital should know where this treatment is available Long term treatment makes heavy demands on medical nursing and ancillary staff all of whom must be experienced For this reason units that are prepared to treat these cases must be situated in a large hospital and since a variety of diseases may call for I P P R this will usually be a general hospital It is perfectly safe to transport these patients under skilled supervision preferably by an anæsthetist, and all respiration units should be ready to send a team to fetch their patients

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Special Articles

ERADICATION OF LEPROSY IN BRITISH TERRITORIES

RÔLE OF REPEATED SURVEYS OF CONTACTS

Sir Leonard Rogers
K C S I, C I.E, M D *Lond* LL D, F R C P F R C S, F R S

During forty years researches on leprosy I established in 1915-17 the first effective treatment of the disease in early cases especially, by injections of sodium hydnocarpate This caused great destruction of lepra bacilli in infectious mucocutaneous cases—now designated by the less descriptive term "lepromatous"

In 1921-23 I studied the literature of the previous fifty years in order to find out how to discover the numerous early amenable cases Under the centuries old type of compulsory segregation these early cases were overlooked or hidden until too advanced to be rapidly cleared up by the hydnocarpate treatment The old segregation system had therefore become worse than useless, it was actually harmful I was thus led to formulate a new system for controlling the disease

A Plan for Reduction and Eventual Eradication

The failure of segregation—as practised for a century in South Africa and intensively for forty four years in the Philippine Islands—was due in the absence of any effective treatment, to delay in discovering and segregating the cases The average duration of the symptoms before the patients were segregated was seven to nine years During this time they infected numbers of their households and other close contacts, most of whom developed their first symptoms within the next five to ten years and thus brought about a recrudescence of the disease and so on indefinitely

My epidemiological studies had also shown that 95% of new infections were derived from close (usually house) contact with mucocutaneous cases in which each day myriads of lepra bacilli were discharged from the nasal cavities I concluded that only this highly infectious type, constituting but one fifth of the total cases, are in urgent need of isolation Moreover, I noted that a large proportion of new cases arise in children and adolescents who have usually lived for years with earlier cases, and this makes it necessary to examine all house and other contacts every year or two *after* the infective case has been removed from among them, so as to detect early symptoms and treat the disease before it reaches an infective stage My advice therefore was

(1) Only the 20% patients who are highly infective need o be segregated—with proportionate decrease in the heavy ost of the policy of segregation When an effective remedy offered, patients will accept segregation for the sake of eatment

(2) After segregation of the infective cases all the people close contact with them should be repeatedly surveyed detect early symptoms Early cases can have *outpatient* eatment economically at the hospitals and at special clinics, he development of "indeterminate" cases into a highly fective stage can thus be prevented, and the plague can be ayed

This plan was first followed in a rapidly spreading utbreak of leprosy in the small South Pacific island of auru The prevalence was reduced in three years by 0% (Bray 1930) and in eight years by two thirds rant 1934)—an unprecedented success

In a large scale trial in South East Nigeria Kinnear rown and Davey (1942), using hydnocarpate obtained seven years a 45% decline of the very high prevalence 113 per 1000 The work was then taken over by the igerian Government and greatly extended with the aid the simple oral sulphone treatment

Austin (1935) has reported good results in Fiji, whe the cases were scattered over 322 islands, and therefo had to be concentrated in a central leprosarium has recently been able to allot one-third of his accom modation to patients from islands outside the F group

In South Africa the medical authorities found on third of their 2501 segregated cases to be negati bacteriologically The release of these patients and th adoption of modern control measures led to ma voluntary admissions of early cases, and resulte during the fifteen years up to 1938, in the dischar as uninfective of 4502, or 66% of the greatly increas number of known cases (Rogers and Muir 1940) 1953, with the sulphone treatment, 12,000 cases had bee so discharged and the prevalence of the disease had fall to approximately one third of the rate before mode methods were used (Davidson 1953)

The practicability of controlling leprosy by the measures has thus been demonstrated Their applic bility throughout British territories and with modific tions to meet special conditions, remains to be considere

Cases per Square Mile

With the aid of data accumulated for table i *Leprosy* (Rogers and Muir 1925-46) I have work out the accompanying table of leprosy prevalenc populations, and leprosy cases per 100 sq miles

The table as a whole shows 750,000 cases in Briti Dominions, spread over 2,500,000 sq miles This revea a formidable task in applying control measures

Part I shows the more accurate leprosy data in t surveyed areas of West and East Africa Those of t unsurveyed territories (parts II-IV) are based for t most part on estimates made by successive medic secretaries of the British Empire Leprosy Relief Assoc tion (BELRA) during repeated tours since it commenc work in 1924 The latter figures are probably still bel the true numbers, but they are the most reliable availab

Those of surveyed British African territories amou to 645,000, or 86% of the total, with the inclusion those of unsurveyed areas, the African figure rises 98% of those in British-administered territories, whose welfare Great Britain is responsible Moreov in the African surveyed areas 153,000 cases are classed highly infective, requiring isolation at great expen together with repeated surveys of their contacts

The chief object of this article is to point to the w variation in leprosy prevalence per sq mile and suggest possible modifications of the full modern cont measures in relation to local conditions

The Territories Reviewed

I Surveyed Areas of West and East Africa

Nigeria shows a total of *400,000 cases, or 20 per 1* *population and 108* per 100 sq miles The infect cases are estimated at 100,000 The success of the c trol measures in the south east, already mention together with the establishment of the efficacy of s phone treatment with dapsone orally by Lowe (195 led the Nigerian government, with continued help fr BELRA, to extend the control measures through Nigeria At the end of 1953 58,000 cases, or 14 of the total, were under treatment—the *largest* prop tion in any extensive British territory Still m important, 29 5% of infective cases were isolated 302 special villages, with a corresponding reduction newly arising cases, mostly in children

This left control in *East African* territories (245, cases, 53,000 infective requiring isolation) as the m important remaining task I have elsewhere dealt w the gradual progress of control measures in East Afr (Rogers 1954) The sample surveys of Ross In furnished the data in the table of five territories At

PREVALENCE OF LEPROSY IN BRITISH TERRITORIES

Territories	Population	Sq miles	Population per sq mile	Cases	Cases per 1000 population	Cases per 100 sq miles
Part I—In Surveyed Areas of Tropical Africa						
Nigeria	20 000 000	3[illegible] 031	66	400 000	20 00	108
Uganda	4 935 176	93 981	53	80 000	17 80	[illegible]
Kenya	5 181 1[illegible]3	[illegible]4 0[illegible]8	[illegible]3	35 000	10 20	16
Tanganyika	7 071 168	36[illegible] [illegible]88	19	80 000	[illegible] 00	22
Nyasaland	2 049 150	47 950	43	30 000	11 30	62
Northern Rhodesia	1 6[illegible]0,899	290 3[illegible]3	6	20 000	11 20	7
Total	43 9[illegible]0 116	1 37[illegible],584		6[illegible]4 000		
Part II—In High prevalence Areas of Unsurveyed Territories						
Zanzibar and Pemba	10[illegible]	510	[illegible]80	1311	4 96	242
Mauritius	[illegible]60 000	805	30[illegible]	2250	8 38	280
Straits Settlements	1 000 000	[illegible]17	4013	1200	1 [illegible]0	530
Hong Kong	[illegible] 31 000	391	5941	38,400	16 57	9840
West Indies	[illegible] 90 000	7650	312	[illegible]700	1·00	281
Part III—In Moderate prevalence of Unsurveyed Territories						
Gold Coast	4 111 680	91 130	[illegible]3	[illegible]0 000	9 10	2[illegible]
Sierra Leone	1 838 000	28 000	66	18 000	13 10	65
Southern Rhodesia	1 0[illegible]8 000	130 300	13	6,500	3 36	43
Federated Malay States	4 080 000	50,000	8[illegible]	3127	0 60	62
Fiji Islands	[illegible]8 000	7100	40	2773	13 90	39
British Guiana	444 000	83 000	5	1172	[illegible] 80	47
Part IV—In Low prevalence Areas of Unsurveyed Areas						
Somaliland	600 000	68 000	8	[illegible]00	0 33	0 3
Union of South Africa	1 118 000	4[illegible]3 000	24	5105	0 77	1
South African Protectorates	1 042 000	[illegible]93 188	3	1[illegible]05	1 20	[illegible]
British North Borneo	360 000	30 000	10	[illegible]00	1 40	2
Solomon Islands	95 000	11 500	8	900	9 57	8
Grand totals	67 3[illegible]5 198	[illegible] 587 033		750 433		

end of 1953 the percentage of cases under treatment was 10 7 in Tanganyika 8 6 in Uganda 8 5 in Northern Rhodesia and 4 5 in Nyasaland in the last it was being extended rapidly thanks to a legacy of nearly £250 000 from an enlightened European resident

Three leprosaria are being constructed with a research laboratory at one of them but provision has yet to be made for the great majority of the infective cases It will probably be necessary to provide many model villages for their isolation so it is fortunate that Dr Kincar Brown has already commenced their construction in Uganda where he is now leprologist

The new data of populations per sq mile in column 3 of the table and of leprosy per 100 sq miles in column 6, are of great importance in connection with surveys of contacts to detect early cases for in East Africa the rates per sq mile are both below those of Nigeria and vary widely among themselves Thus the cases per 100 sq miles are 108 in Nigeria but only 22 16 and 7 respectively in Tanganyika Kenya and Northern Rhodesia in which the populations per sq mile are also very low When dwellings are widely scattered and communications are poor there is likely to be less spread of leprosy among the neighbours of people with the disease

For the detection of a large proportion of newly developing cases it may prove sufficient under such conditions to limit the biennial surveys to houses of known leprosy patients and those of relations and intimate friends with whom they come into most close contact

It is to be hoped that similar epidemiological surveys may be carried out in areas around the new leprosaria under construction in East Africa to ascertain if this suggestion is of practical value

The task of controlling leprosy in the vast infected East African territories is so immense that adoption of the full control measures is likely to be limited for some time to the towns and more densely inhabited areas Any success will lead to their wide extension as has already happened in Nigeria As more and more of the leprosy patients attend hospitals and clinics in order to obtain the effective oral dapsone treatment the medical authorities are better able to recognise the areas of high prevalence most suitable for applying methods of control that will eventually eradicate the disease

II Unsurveyed Territories with High Prevalence per 100 sq miles

These are all comparatively small overcrowded islands where hot humid climates favour the disease The prevalence of leprosy ranges from 242 per 100 sq miles to no less than 9840 in Hong Kong to which leprosy cases flock in from Chinese territory to obtain treatment

Under these conditions all the indigenous people are exposed to infection, although new cases are most likely to arise in houses with earlier ones. They are just the areas in which isolation of the infective lepromatous cases combined with two yearly examinations of all the people for newly developing ones, are essential if the incidence of leprosy is to be rapidly reduced Only repeated surveys of all the people with immediate treatment of the early and indeterminate cases which might otherwise soon become infective, can prevent recrudescences of the disease but in the long run measures of this kind will prove to be a great economy These islands are pre eminently suited to the application of the complete system of control that I have been persistently advocating during the past three decades

III Unsurveyed Territories with Moderate Prevalence per 100 sq miles

Here the populations per sq mile and the leprosy rates per 100 sq miles can be reckoned in tens—against hundreds in the areas of part II and unities in those of part IV In other respects they show greater variation in the local conditions

The *Gold Coast* and *Sierra Leone* are the most important with estimates of 20 000 and 18 000 cases respectively These estimates give rates per 1000 so much below those of Nigeria with its very similar climatic conditions, that they are probably underestimates

Southern Rhodesia has a better climate and a lower leprosy rate per 1000 The medical authorities do not consider it necessary to carry out surveys of sample areas and they rely on treatment of cases at hospitals and dispensaries

The *Federated Malay States* have a hot humid climate similar to the adjacent high-incidence area of the overcrowded Straits Settlements In the former there is much jungle with few inhabitants, so it should suffice to confine full control measures to those areas in which most cases are found

British Guiana presents somewhat similar conditions, for a large part of the inhabitants are concentrated near the 500 miles of coastline Much of the 83,000 sq miles, extending far inland to the northern boundary of Brazil, is inhabited by a few thousand aboriginal Indians, whose isolation prevents the spread of leprosy Hence full control measures seem to be needed only in the coastal zone, where a good deal has been done in the past three decades, for this was the first British territory to modify its compulsory segregation law to permit uninfective cases to be treated as hospital outpatients

Fiji—Good results of the application of control methods in these islands have already been mentioned

IV Unsurveyed Territories with Low Prevalence per 100 sq miles

In four of these territories the population per sq mile is not above 10 and in the fifth it is 24, the leprosy rates per 100 sq miles lie from 0 3 to 8 only *Somaliland, South Africa* and the *South African Protectorates* have low humidities unfavourable to leprosy, and repeated examination of the whole populations is both impracticable and unnecessary On the other hand repeated examination of known contacts is advisable, and, as already remarked, has proved its value in the successful control methods in use throughout the Union of South Africa during the past three decades

North Borneo and the *Solomon Islands* have hot humid climates but sparse populations (8 to 10 per sq mile) Here again only examination of contacts of known cases is likely to be required

Summary and Conclusions

The discovery in 1915–17 of an effective treatment of fairly early cases of leprosy rendered the centuries old compulsory segregation of all discovered cases harmful as well as futile Under the segregation policy cases were hidden during the early years when they were amenable to hydnocarpates

During 1921–23 a study of former records showed that 95% of new infections arise through close contact with advanced mucocutaneous (lepromatous) cases After such infection the disease may not be manifest for five or ten years, but some cases soon become infective Children and adolescents are especially susceptible

I therefore advised that only the highly infective cases, constituting only some 20% of leprosy patients, should be isolated in leprosaria and special villages The population of the controlled areas should then be surveyed every two years or so for a decade, and all newly developing cases, as well as other uninfective ones, should have outpatient treatment at hospitals and special clinics

By the intensive use of these measures unprecedentedly rapid reductions of leprosy prevalence were obtained in the South Pacific island of Nauru in a high incidence province of South-East Nigeria, in South Africa, and in the Fiji Islands

The varying prevalence of leprosy per 100 sq miles has been studied and possible modifications of the control measures to suit local conditions have been considered

In the surveyed areas of West and East Africa which include 645,000 cases or 86% of those in British territories, control measures are being rapidly extended

The highest prevalence rates are in overcrowded isl with several hundred cases of leprosy per 100 sq mil In these, full control measures are essential

In areas with the moderate incidence of 22–65 cases 100 sq miles, it is probably impracticable to do more th carry out repeated surveys of the house and other clo contacts of known cases This should enable a large propor of new cases to be found and treated early

In areas with only 1–8 cases per 100 sq miles, surveys o contacts of known cases should certainly suffice

It is estimated that there are still about 7500 leprosy cases among 68 million people spread ov 2$^1/_3$ million sq miles of British administered territor Especially now that the more effective sulphone trea ment is available, it is possible to envisage the stead reduction, and eventual eradication, of the disea given the necessary staff and funds

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TWO ASPECTS OF TUBERCULOSIS

The annual conference of the British Tuberculos Association held in Cambridge from June 28 to July 1 under the presidency of Dr F A H Simmonds, includ discussions on Migration and Tuberculosis and on Maj Thoracic Surgery

Migration and Tuberculosis

Dr Norman Macdonald (Clare Hall) discussed pulmonary tuberculosis in patients born overseas Of 258 such patients in hospitals in the London area and the Home Counties, about half were of European origin, a third were coloured, and the remaining sixth came from Malta or Cyprus, these two islands contributed more than all the countries of Southern and Western Europ Males outnumbered females 2 1 Three quarters of the patients were over 25 years of age, only 12 were unde 20 The group from North, Mid, and East Europe wa the oldest, many being refugees Apart from student most patients had come to find work, and only 6 specifically for treatment The majority were resident in central London, especially the sector north and west of Charing Cross Few coloured patients came from the East End or from south of the Thames

Of 21 patients with active disease on arrival 16 were admitted to hospital within three months and only 1, a Indian, after more than six months Excepting Nort Europeans, most were diagnosed in the early year after arrival

Early acute lesions predominated in Cypriots, African and West Indians, in Europeans the lesions were mor often of the later or recrudescent type Indians show an even proportion of both types The early type lesion was twice as common in patients of rural origin Stress factors were commonly elicited in all group much the commonest factor was over-work, particularl over-time Next came mental strain due to difficulties adjustment, homesickness, and anxiety Stress wa particularly evident during the period immediately arrival, change of climate and food, and especially the pace of life, created difficulty

In the north west Metropolitan region a survey showe that an average ward of 15 patients contained 12 British 2 Irish, and 1 patient born overseas That the In accounted for twice as many beds occupied as all th overseas contingent was explained by their nu (20,000 arriving per annum), their youth (majority und

5), the predominance of females, and the large pro ortion of rural stock West Indians (recently arriving t the rate of about 10 000 per annum) had so far pro uced relatively few cases because many had been here nly a short time, they were older (70% over 25) and here were fewer females but the type of lesion found ave rise to some concern Immigrants from Europe ere not now a large problem Many regions scarcely had n immigrant problem

To deal with the situation the country of origin could ndertake routine radiography and tuberculin testing f intending migrants with B C G vaccination of negative eactors, but this would give rise to difficulties if mposed as a requirement for entry to this country The ongregation of migrants in particular areas and in ertain trades (catering clothing and building) suggested ow mass diagnostic facilities might be concentrated he matter should be tackled as an epidemiological roblem and the medical profession should prepare a orkable scheme There remained the difficult problem f overcrowding and legislation might be considered for ompulsory radiography and tuberculin testing of those ngaged in handling food and drink

Dr MICHAEL FLYNN (co West Meath) discussing the rish aspects, described how the flow of emigrants rose apidly after the famine of 1847 till by 1901 the popu ation had been reduced by half Since then the rate had fallen, but between 1901 and 1926 the number averaged 6 000 per annum the majority going to the United States from 1931 onwards Britain became the major eceiving country, and since the war young females had redominated The greatest exodus to Britain was from he western counties—the least urbanised areas where ates of tuberculin positivity were low

Of 1105 patients in Dublin sanatoria 202 (17%) came rom outside co Dublin but 21% of the general popu ation were born outside this area The position was different therefore from that in London It could be xplained by many patients of rural origin returning ome for treatment by tuberculosis morbidity being considerably higher than that in London and by the ajority of migrants to Dublin coming from the adjacent einster counties where tuberculin positivity was more revalent than in the West furthermore a higher propor ion were students professional people or skilled workers 10% of patients on the Irish register had developed uberculosis in Britain and returned home often infecting other members of their families others broke down some ime after return constituting a considerable epidemio ogical problem In 1951–53 in co Roscommon of 121 ew cases in the 15–34 age group 60% had resided in reas outside the county —31% in Britain Both internal nd external migration were therefore important and the eturned migrant was also a source of possible danger

Dr J CYRIL JOYCE (co Roscommon) urged the adoption of a preventive approach While housing utrition, and working conditions were not matters over which doctors exerted direct control they should empha ise the importance of these and make recommendations o the authorities Certain medical and public health measures could be put into effect without undue delay B C G vaccination of negative reactors amongst the young adult population should be undertaken if possible, before the migrant left home Difficulty in getting the selected groups to attend clinics should be overcome as far as ossible by propaganda in the press radio and cinema; but such propaganda might not have sufficient effect on the people chiefly concerned A better method would be o seek the coöperation of employers and trade unions n Ireland in making a tuberculin test and radio graphic examination a part of pre-employment medical examination

Emigrants to the U S A were required to have a radiographic examination but not a tuberculin test Tuberculin negative susceptibles were therefore often accepted while others with healing primary lesions who were less of an epidemiological risk were rejected American thought on this matter required reorientation

Routine B C G vaccination of school leavers in emigrant areas in Ireland was being undertaken, but its effective ness might not persist at 15–25 years of age People of urban origin, particularly natives of Dublin where the tuberculin positivity rate was high should be examined radiographically before leaving home

Uncontrolled emigration to Britain was a difficult problem, but a concentrated effort in cities to which immigrants were attracted should yield results The appointment of a social worker preferably Irish who could contact migrants in their places of employment and recreation would help People entering certain occupations should have a tuberculin test as a routine feature of the pre-employment medical examination

The changing tuberculin state of the populations of both Britain and Ireland necessitated periodic review of the position Tuberculin testing should be accorded its rightful place in the epidemiological control of tubercu losis, large scale tuberculin surveys should become routine in all areas and would help both countries to formulate a definitely preventive approach to the problem of migration and tuberculosis.

In the discussion Dr JAMES DEENY (Dublin) pointed out that active recruitment, often of skilled workers was a feature of present day emigration from Ireland Dr EDWIN JAMES (Dungannon) suggested that the tuberculin positive migrant was the chief source of danger Dr W HARTSTON (London) expressed doubt as to whether migration constituted much of a problem Dr MACDONALD and Dr FLYNN replying emphasised the vulnerable position of the tuberculin negative migrant

Major Thoracic Surgery

Dr L E HOUGHTON (Harefield) described preliminary findings in a national survey of major thoracic surgery for pulmonary tuberculosis conducted jointly by the British Tuberculosis Association and the Society of Thoracic Surgeons. Seventy five surgeons throughout England and Wales contributed information on all their patients who had a major operation for pulmonary tuberculosis between April 1 1953 and March 31 1954 In all 8500 cases were admitted to the survey

Cases were classified according to type of disease; other information included the period from first diagnosis the state of the contralateral lung details of previous treatment and preoperative sputum state These data were collected from the various hospitals and follow up was conducted through the hospitals and chest clinics. The administrative work was carried out at Harefield Hospital

It was, said Dr Houghton too early to draw definite conclusions but he gave a personal assessment based on 5584 cases Only 47% of the cases of extrapleural pneumothorax had perfect results, compared with 52% of those treated by pneumonectomy 79% of segmental resections, and 85% of thoracoplasties.

One problem was the procedure to advise for the treatment of persistent unilateral apical lesions 1511 cases of this type were considered and the mortality of those treated by thoracoplasty and resection was com pared The mortality after resection was three times that after thoracoplasty

Mr B BENJAMIN (statistical adviser) presented an official preliminary report based on 3183 cases operated on in the five months April to August, 1953 It was not a clinical trial with random allocation of cases to different forms of treatment but a large survey with wide distribution of material

At the end of the first year only 0 7% of cases were lost sight of In 12% of the whole series no positive sputum had ever been recorded at any time

Very roughly it could be said that the majority of patients had chronic cavitated disease in one or more lobes, and that in many the other lung was involved In more than half the cases there was a history of over two years since first diagnosis, and during this time many had had collapse therapy or other surgical treatment The sex and age distribution was typical of the tuberculous population excluding the elderly 84% were given chemotherapy lasting six weeks or more, preoperatively

Bronchopleural fistula was the most serious complication This was recorded in 141 patients (4%), of whom 17 died within a year The incidence was highest in the segmentectomies, although most of the deaths occurred in the lobectomy groups

At the end of the first year 91% of the survivors were radiographically satisfactory, and 7% had positive sputum Two thirds of the latter were in the thoracoplasty group In the resection groups only 5% had a positive sputum recorded more than six months after operation compared with 23% in the thoracoplasties The total tuberculous mortality was 3% (96 cases) About two thirds of the deaths occurred in the first month The mortality for pneumonectomy was 9 2%, for thoracoplasty 2%, and for segmentectomy 1 3% Mortality increased with age and with extent of disease, it was much greater in cases with persistent chronic cavitation Almost half the deaths occurred in cases with a positive sputum recorded a month before operation—a group numbering 23% of the whole

Sir **CLEMENT PRICE THOMAS** said that, as regards morbidity and mortality it was cavitated disease that counted Thoracoplasty had the lowest mortality excluding segmental resections in cases submitted to the latter operation there was a minimal amount of disease Fewer of the segmentectomies (50%) had cavities, compared with thoracoplasties (88 9%) Lobectomy had twice the mortality of thoracoplasty He believed that the high incidence of bronchopleural fistula in segmentectomies was due to the recording of air-leaks, as the mortality in segmentectomy was small compared with that in lobectomy Contralateral spread occurred in 2 9% of thoracoplasties and in 2 4% of lobectomies This worsened the prognosis, for the patient with bilateral disease was known to fare badly Persistent cavitation after thoracoplasty was found in only 5 3% This was a great advance on the position ten years ago The decrease in early mortality was due to preoperative chemotherapy In his own series those who died had persistent cavitation Every effort should be made to convert the sputum and close the cavities before operation Chemotherapy should be continued for at least six months after operation, or longer if residual disease were present

Mr T **HOLMES SELLORS** was unable to be present, and his paper was read by Mr L D Abrams, of Harefield Hospital When his patients waited eighteen months for surgery, 15% did not need operation when their turn came The personal element in the selection of cases was important Mr Holmes Sellors thought that a control series was necessary but that a statistical evaluation of such a series would not be possible

Three quarters of the patients were fit or working at the end of twelve months, a third were doing full-time work This was a quicker return to work than he would have thought possible In men resection predominated up to 25 years of age, whereas in women it was commoner than thoracoplasty up to 35 There must be cases where the same type of disease was treated differently in men and women, for cosmetic reasons this might later enable the two methods to be compared He was surprised that lobectomy had a mortality twice that of thoracoplasty, and greater than that of lobectomy for bronchiectasis

Mr **HUGH REID** (Liverpool) presented figures for operations performed in North Wales in recent years Ten years ago patients had long histories, and problem was one of sclerosis and cavitation now came with negative or no sputum Physicians asked surgeons to remove small foci, and that was why fewer thoracoplasties were performed

Dr A K **GOLEBIOWSKI** reported results at Pr Hall from 1949 to 1953 all cases were reviewed year The postoperative mortality had greatly d since 1949–50 probably owing to increased preop chemotherapy

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VOLUME OF BODY-FLUIDS

AT a meeting of the Renal Association in London June 30 Dr Alexander Leaf (Massachusetts Gen Hospital Boston, and department of biochem Oxford University) and Dr Oliver Wrong (Manche Royal Infirmary) opened a discussion on Control the Volume of the Body fluids

Dr **LEAF** said that the constancy of body wa attests to the precision with which the quantity of its constituent, water, is maintained The volume of int cellular fluid depends on the function of each indivi cell, whose volume is the result of a balance bet intracellular oncotic pressure, tending to cause swell and active extrusion of sodium, tending to cause shr age As the number of cells in the organism rema constant, so does the volume of intracellular fluid T volume of extracellular fluid (E C F), however, depend on some integrated regulating mechanism wh operates through an as yet undiscovered receptor pa way Dr Leaf described two physiological states which evidence of fluid volume regulation is appar and in which such regulation further aggravates existing disturbance in body fluid concentration T first is that of too little sodium in the body Deficie of the major extracellular cation results in a reductio E C F volume, which is minimised by retention of wa and dilution of the body fluids This disturbance h been produced experimentally in dogs and man and is seen in clinical salt depletion and in the relative sod deficiency which may complicate congestive hea failure and cirrhosis The second condition is that of much water in the body Excess of pure water result overexpansion of body fluid volume which the b attempts to rectify by a large excretion of sodium Th condition was produced experimentally by prevent with 'Pitressin' the excretion of a large water load clinical counterpart is seen in water intoxication Th observations leave little doubt that there exists a mechanism which jealously protects the constancy E C F volume even, if need be, at the expense of concentration of body fluids

Dr **WRONG** gave an account of further investigat of the sodium diuresis of pitressin induced water retentio When overhydration is produced rapidly by the venous route there is a delay of six to ten hours befo maximal sodium diuresis By contrast, expansion E C F by physiological saline results in an immedi sodium diuresis which persists for up to forty hours Dr Wrong postulated that differences glomerular filtration of sodium explain these fin Following water retention, plasma sodium falls and tered sodium is not increased, after a significant de sodium diuresis results from the activity of nervous humoral mechanisms responding to increase in E volume The immediate sodium diuresis after int venous saline is probably the result of an increase filtered sodium, homœostatic mechanisms reduc tubular reabsorption contribute to the prolonged sod diuresis Increased bicarbonate excretion was constant observed to accompany the sodium and chloride diur of pitressin induced overhydration Thus expansion E C F promotes renal loss of its three main ionic c nents A similar loss of bicarbonate has been erved during diuresis induced by corticotrophin in hrotic patients

In the discussion Dr W J O'CONNOR described periments in the dog in which he had estimated sodium retion when the concentration of plasma proteins s altered by infusions or when the blood pressure was ered by occlusion of the carotid arteries or during usions of adrenaline In every case changes in sodium retion followed the expected changes in glomerular ration rate (G.F.R.) He thought that the increased retion of sodium in the experiments described by the akers could be explained by small increases in G.F.R. dium excretion might be doubled by increases of .R. of the order of 5% and the curve of the relation p between these two variables might be shifted by ministration of corticotrophin so that increased lium excretion would not be seen until a higher G.F.R. s reached but after that a further increase of 5% uld again double the excretion He thought that the ual G.F.R. was more important in determining the e of sodium excretion than the filtered load, for the mer might increase with the G.F.R. when the plasma lium concentration fell

Dr LEAF admitted that it was very difficult to tinguish between the rôles of the glomeruli and of the bules in determining the changes in sodium excretion ich he had described but he thought that there was finite evidence that changes in tubular function were least partly responsible and that in regulating sodium ncentration in the urine it must be the tubules that d the last word

Dr M D MILNE noted that in Dr Wrong's experints an increase in bicarbonate excretion was less an that of sodium and wondered what other anion uld be excreted in greater quantity Dr WRONG ought that this difference was probably accounted for decreased excretion of ammonium

Dr OLIVER GARROD said that in the dog deoxycortone tate prevented an increase of sodium excretion follow g a rise in G.F.R. Dr A A G LEWIS thought that n and dog handled sodium loads differently It was sier to change the G.F.R. in the dog this might plain why dogs could excrete large sodium loads so pidly In man tubular influences might predominate pointed out that the speakers had described changes sodium output with changes in E.C.F. volume but t the latter could also produce changes in water out t by affecting the secretion of antidiuretic hormone Wilkins and his group in Boston had found that the plication of congesting cuffs to the thighs invariably voked antidiuresis when the subjects were not water ded He himself working with Dr T M Chalmers d Mr G L S Pawan had repeated these experiments hydrated subjects and antidiuresis had not occurred seemed probable that the control of volume was in is case secondary to that of tonicity when secretion antidiuretic hormone was completely suppressed by a ter load a reduction of volume was no longer effective stimulating it

Mr G J SOPHIAN said that large doses of corticotrophin d been found to have no effect on sodium and water cretion in pregnant women and thought that tubular nction must be modified by pregnancy

Dr H E DE WARDENER noted that the urine might come hypertonic to the plasma when the G.F.R. was arply reduced This change might occur within twelve nutes of reducing the G.F.R. and might be reversed ree and a half minutes after increasing it so it could rdly be due to the production of antidiuretic hormone. LEAF thought that renal ischaemia might be partly ponsible but agreed that this influence might be pected to lead to isosthenuria and would probably t be so short lived

HOSPITAL BUILDING PROGRAMME

ON Feb 9 the Minister of Health announced the Government's plan to speed hospital building[1] In the House of Commons on July 1, he gave details of the programme for 1955–58

WORK IN HAND

On the following 10 large schemes work has already begun or will be started during 1955–56

Regional Hospital Boards	
Newcastle	Newcastle General Hospital—pathological institute and regional blood transfusion centre
Sheffield	Balderton Mental Deficiency Hospital—development scheme (phase I)
North West Metropolitan	New hospital at Welwyn (phase I)
South East Metropolitan	Lewisham Hospital—new outpatient department
South West	Horton Hospital Estate—centralisation of boilers
Birmingham	Coventry and Warwickshire Hospital—development scheme (phase III)
Liverpool	New mental-deficiency hospital Greaves Hall (phase I)
Boards of Governors	
United Bristol Hospitals	Royal Infirmary—joint university heating scheme
United Oxford Hospitals	Radcliffe Infirmary—development scheme
St Thomas's Hospital	St Thomas's Hospital—reconstruction

PROBABLE STARTERS

For the programme for 1956–57 and 1957–58 the Minister has selected 35 schemes as probable starters To encourage speedy action by the boards he has included projects to a total value of more than the £17½ million fixed as the ceiling for these years In general the projects which are ready soonest will be started first But any of these schemes which are not started by the end of 1957–58 will have first claim on the resources of 1958–59 The selected schemes and the year in which they are scheduled to start are given below:

Regional Hospital Boards		
Newcastle	New hospital for West Cumberland	1956–57
	Prudhoe and Monkton Mental Deficiency Hospital development scheme (phase I)	1956–57
	(phase II)	1957–58
	Middlesbrough General Hospital accident and orthopædic department	1956–57
Leeds	New hospital at Huddersfield (phase I)	1957–58
Sheffield	Scunthorpe and District War Memorial Hospital development scheme	1956–57
	Aston Hall Hospital extensions	1957–58
	Doncaster Royal Infirmary development scheme	1957–58
East Anglia	St. Luke's Hospital Lowestoft reconditioning scheme	1956–57
	Peterborough and District Memorial Hospital—extensions	1957–58
North East Metropolitan	North Middlesex Hospital—new outpatient department	1956–57
	South Ockendon Hospital—extensions	1956–57
	New hospital for Harlow (phase I)	1957–58
South West Metropolitan	St James' Hospital Balham—development scheme (phase II)	1956–57
	New hospital for Crawley (phase I)	1956–57
Oxford	New hospital for Swindon (phase I)	1956–57
South Western	Southmead General and Stapleton hospitals—geriatric accommodation	1956–57
	Digby Hospital—additional accommodation for mental patients	1956–57
	New hospital at Truro	1957–58
Wales	West Wales Hospital Glangwili—development scheme (phase I)	1956–57
	Caernarvon and Anglesey Hospital, Bangor—development scheme	1956–57
	New hospital at Swansea (phase I)	1957–58
	Llanfrechfa Grange Mental Deficiency Hospital—extensions	1957–58
Birmingham	New mental hospital at [illegible] (phase I)	1957–58
	New hospital at Coventry	19[illegible]
Manchester	Cranage Hall Hospital—additional accommodation for mental defectives	
	New hospital at Wythenshawe (phase I)	
Liverpool	Newchurch Mental Deficiency Hospital—extensions	

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[1] See *Lancet* 19[illegible]

Boards of Governors		
United Newcastle Hospitals	Royal Victoria Infirmary—new outpatient department	1957–58
United Leeds Hospitals	General Infirmary—extension to outpatient department	1956–57
United Sheffield Hospitals	New teaching hospital Glossop Road (phase I outpatient department)	1956–57
United Cambridge Hospitals	Addenbrooke's Hospital—development scheme (phase I)	1957–58
United Manchester Hospitals	Royal Infirmary—reconstruction scheme	1956–57
University College Hospital	New dental hospital—Mortimer Market W 1	1956–57
Charing Cross Hospital	New hospital at Northwick Park	1957–58
Guy's Hospital	Guy's Hospital surgical ward block	1957–58

The immediate programme thus includes 14 new hospitals, including 9 new general hospitals Work on some of the schemes may be spread over ten years It is expected that they will provide about 6000 more hospital beds half in general hospitals and half in mental and mental deficiency hospitals During 1956–58 the boards will also have available £19 million for normal capital expenditure

A further £6 million has been set aside for plant replacement during 1956–58 It is to be allocated among the boards according to the number of their beds

WORK OF THE KING'S FUND

The Duke of GLOUCESTER, presiding at the annual meeting of King Edward's Hospital Fund for London on June 27, referred to a special report about mental hospitals, recommending an allocation of £250,000 to be spread over three years and including three grants on a larger scale than usual

'As the report points out, the factors which stand out most prominently today are first, the legacy of old and often gloomy buildings inherited from the past which confront us on every hand. Even if the Government and the regional authorities can increase the priority accorded to the mental hospitals, new needs and higher standards will quickly absorb whatever may become available Against such a background the possibility of some help from outside sources, such as leagues of hospital friends, or from a body like the King's Fund provides a stimulus and encouragement out of all proportion to the actual amount given There is still an immense field for voluntary help The second prominent factor is the change taking place in the whole attitude towards the mentally ill and in their treatment here and there pioneer work has been undertaken to provide, within the existing framework of the hospital, a more normal way of life and a much more cheerful environment for the patients The report recommends that the Fund should sponsor three of the major schemes now being planned, and also continue grants of the kind which they have been making for the last few years "

Lord ASHBURTON, treasurer, said that income for the year apart from special receipts amounted to £337,717, and there had been a modest increase in subscriptions and donations Legacies had amounted to £24,253 This was less than usual, but the current year showed signs of improvement Expenditure for the year had amounted to £331,476

Mr MALCOLM McCORQUODALE, seconding the adoption of the report of the subcommittee on mental and mental deficiency hospitals, said that in the past five years the Fund had spent £136,000 on such hospitals Of this, £30,000 had been spent on helping to improve the catering service This was regarded as so important that it was proposed to earmark £50,000 of the new allocation for the same object About £100,000 would be earmarked for grants for general amenities, as it was said on all sides that these grants gave encouragement and help far beyond their intrinsic value Finally, the subcommittee had been left in no doubt that for patients who had been successfully treated there was a great need for means of rehabilitation to help them to adjust to the demands of everyday life It was proposed, therefore, to the remaining £100,000 of the new allocation for schemes with this object One was for an occ centre, one for a social centre, both within ho and one for a community centre for outpatients aimed at providing purposeful activities for patients and helping them to return to ordinary relationships

Public Health

THE ISOLATION OF BACILLUS ANTHRACIS FROM BONES

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IN an earlier paper (Davies and Harvey 195 described 14 cases of anthrax among workers in a c factory The raw material responsible was sun bones from the Near and Middle East

There is little information about the frequency which *Bacillus anthracis* can be isolated from bones bone products Glynn and Lewis (1912) isolated organism from 1 out of 4 samples of bones supposed have produced anthrax in dock labourers Jones (had 11 positives out of 14 samples of ground meal which were incriminated in human and cases of the disease Jamieson and Green (1955) r the presence of *B anthracis* in 3 specimens of bone associated with human anthrax cases Animal was the method used in all instances

We decided to investigate all cargoes of imp bones destined for the chemical factory over a period eighteen months No attempt was made to select those consignments whose processing was related anthrax cases at the factory, though 2 such in did occur during the period of the investigation

Method

Animal inoculation appeared to be the most del method available (Wilson and Miles 1946)

The samples obtained consisted of 500 g of co crushed, but not powdered, bones Only 1 sample taken from each consignment The whole sample ground in a large mincing machine The difficulty in process varied from sample to sample, and there generally a residue which was too hard to be b down

In accordance with the technique described by J (1942) the resulting powder was well mixed and then di into 15 g quantities, each of which was added to 150 m sterile Ringer's solution The whole was shaken at inter over a period of three to four hours This mixture was heated at 65°C for five minutes and cooled A volume 100 ml was centrifuged, 90 ml of the supernatant discarded, and the deposit was re suspended in the re 10 ml 2 ml of this final mixture was injected subcutane into a guineapig that had been passively immunised tw four hours before with 1000 I U *Clostridium welchii* anti 500 I U *C septicum* antitoxin, 1000 I U *C oedem* antitoxin, and 500 I U tetanus antitoxin

The number of animals inoculated from each 500 g depended on the amount of material suitable for inj after the grinding process was completed Between two nine animals were inoculated from each specimen

There was a single departure from this routine, wh more elaborate survey of one particular ship load was mples of 500 g each were taken from different parts of the and *six animals were inoculated from each sample* ing a total of thirty six in all for the one cargo

he macroscopic and microscopic diagnosis of anthrax noculated animals was confirmed by post mortem cultures n from the inoculation site and from the spleen

Results

amples representing 41 cargoes of bones yielded 5 tives (12 2%) 4 positive ship loads came from istan, and 1 from Syria

he irregularity of distribution of anthrax spores within 500 g sample is shown by the following results :

ne sample inoculated into seven guineapigs positive in one

ne sample inoculated into four guineapigs positive in two only
ne sample inoculated into six guineapigs positive in one only

s just possible however that the animals themselves ed to some extent in susceptibility especially towards small numbers of *infecting* organisms

he more extensive survey carried out on one cargo rising 6 samples and thirty six animals yielded no tive isolations.

ut of a total of one hundred and eighty three guinea s inoculated, fourteen died of intercurrent infection to clostridia in spite of previous protective inocula n The possibility that a few positive results were sed owing to premature deaths among the animals us to try out cultural methods for detecting anthrax ction in the material

our plates made with a series of dilutions of the dered bones were employed in an attempt to obtain racteristic cultural appearances of *B anthracis* described by Furnch (1912) The selective medium of rce and Powell (1951) containing lysozyme and natin designed for the isolation of anthrax spores n soil was also used Both cultural methods, how r *proved to be completely unsuccessful* with the vily contaminated material under review

Conclusions and Summary

nthrax spores were demonstrated by animal inocula n in 5 out of 41 cargoes (12 2%) of imported bones r a period of eighteen months

he sample examined from each cargo consisted of g of crushed bones only and it often happened that y one out of many guineapigs inoculated developed hrax A result of this kind suggests that the pro tion of cargoes found to contain infected bones was ery considerable underestimate This would agree h a suggestion made in *The Lancet* (1952)

ultural methods were found quite unsuitable for the terial studied

During the eighteen months of the investigation in te of the probable high incidence of infection in the material reaching the factory only 2 cases of anthrax urred among the workmen suggesting that *B anthracis* a relatively low degree of infectivity for man Similar nclusions have been reached in the past in the case of nery workers dealing with infected hides

Ve wish to thank Mr J R D Jenkins for considerable nical assistance and Mr W R *Williams, sanitary* pector Llantrisant and Llantwit Fardre Rural District ncil who collected the specimens.

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VOMITING AND DIARRHŒA DUE TO COPPER IN STEWED APPLES

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CONTAMINATION of food by copper has long been recognised as a cause of illness For example Thomas Percival of Manchester (1785) in an account of the death of a 17 year-old girl which he considered was the result of eating pickled samphire strongly impregnated with copper stated :

> Notwithstanding the repeated warnings that have been offered to the public concerning those insidious poisons which gain an easy because an unsuspected admission into the human body ; few precautions have hitherto been taken against their baneful effects Copper and lead in one form or other are employed in the construction of almost every culinary utensil ; and as these metals have been fully proved to be *injurious* to our system the *careless* use of *them puts* us in daily hazard, not only the loss of health, but even of life itself

This indicates the confusion at that time between the symptoms of copper and lead poisoning As Lewin (1900) has pointed out from the middle of the 18th century copper was regarded as harmful the symptoms of lead poisoning being transferred to copper and a pathology of copper poisoning similar to that of lead was constructed Now that copper and lead poisoning are clearly distinguished and because copper utensils have been largely replaced by ones of aluminium or stainless steel illness attributed to accidental contamination of food by copper is rare and the small outbreak recorded here may be of interest

The Outbreak

Those affected fell ill soon after eating stewed apples prepared in a central school meals kitchen on Nov 24 1954 About 60 lb of apples were placed in a large tinned copper vessel raised to the boil in about 15 min and simmered for 35 min. The stewed apples were distributed to various school dining rooms in aluminium insulated containers and eaten by 87 adults and 438 children at their midday meal.

In one infant school where some of the teachers noticed that the apples tasted slightly bitter 9 children and 3 adults became ill The children vomited almost immediately after eating the fruit 1 child also had slight diarrhœa later in the afternoon while at school 1 adult suffered from nausea all afternoon and at 6 P M she vomited three times. Another vomited immediately after eating the fruit and the third had nausea about 30 min after finishing the meal and diarrhœa lasting 9 hours beginning at 1 P.M her bowels being opened ten times in all

The vessel in which the fruit was cooked was usually used with a heavily tinned inner container in which the food was placed so that it did not touch the inner surface of the copper itself *On this occasion the fruit was placed directly* in the vessel whose tin lining had worn away in places exposing metallic copper Before the experience of this outbreak I would not have thought that the amount of copper exposed would have dissolved sufficiently to cause symptoms

Discussion

The toxicity of copper has been reviewed by Davenport (1953) Brightly polished copper is not readily attacked by food but in practice it is not possible to prevent the formation of a film of oxide which is more easily dissolved Copper in contact with fruit juice and exposed to the air is rapidly dissolved (Monier Williams 1949) For example tomato purée prepared in copper evaporating plant could be sold containing up to 100 parts per million (P P M) of copper (Chief Medical Officer's report for 1934)—now reduced under the Food Standards (Tomato Ketchup) Order 1949 to not more than 50 P.P M

A sample of the apples concerned in this outbreak was recovered from the pig bin and contained 90 P P M of copper At this concentration the equivalent of the *B P* emetic dose of copper sulphate (gr 5–10 of a 1% *solution) would have been present* in about 2 lb of the fruit According to Clark (1940) such a dose produces vomiting in a few minutes It is unlikely that the distribution of the metal would have been even and some samples would probably have contained more than this

Of the 7991 outbreaks and family outbreaks of food poisoning notified to the Ministry of Health between 1939 and 1953, 10 were thought to be due to chemical agents and of these only 1 was caused by copper (Chief Medical Officer's reports 1939–53) In that instance drinking water became contaminated from a corroded geyser (Griffin 1951) Copper in drinking water was also responsible for another earlier outbreak, where the water had been boiled in a large untinned, unlined copper (Hebblethwaite 1928)

In the case described by Percival (1785) a girl of 17 amused *herself whilst under the hands of the hairdresser with eating* pickled samphire of which she consumed two breakfast plates full amounting to 2–3 ounces The samphire contained copper and she suffered from abdominal pain and vomiting and died 10 days later

Meat and vegetable soup cooked in a copper vessel, the inside of which was ' devoid of all characteristic appearance and was covered with incrustations which could be readily detached " was responsible for persistent diarrhœa among the inmates of a workhouse (Fosbroke 1883–84)

Gardner (1925) described a boy aged 5 who vomited after eating bread contaminated by particles of copper from a bronze bearing in a conveyor belt in which the flour used had been carried

Symptoms due to contamination of fruit and vegetables are infrequent Cases have been described where the vehicles for the copper were rhubarb (Sidney Smith 1948), peas (Dixon 1944), and spinach (Ceresa 1947)

The rhubarb case occurred in 1866 when one of a family who had eaten rhubarb stewed in an imperfectly tinned and dirty copper vessel, had severe vomiting and died The peas *had been cooked in a partly tinned copper and produced* violent diarrhœa and abdominal pains in 42 men of military units 8 hours after eating them Samples of the peas thought to have produced the symptoms were not available for analysis, but trial peas cooked later in the same copper showed gr 10 5 of copper per lb The spinach had been boiled in a poorly tinned copper pot, and 3 of those who ate it suffered from acute abdominal pain, vomiting, diarrhœa of greenish colour with mucus and blood, and fever

Recommendation

To avoid danger, when copper vessels are used for cook*ing fruit they must be adequately tinned* Sidney Smith (1948) mentioned that it was the custom for caterers to have their coppers retinned under contract arrangements three monthly Local inquiry among caterers, canteens, and hospitals has shown that very few are now using copper vessels Those that do have them retinned as necessary, usually about once a year

Summary

A small outbreak of vomiting and diarrhœa was due to the contamination of stewed apples by copper Other outbreaks of this rare kind of food-poisoning are mentioned

My thanks are due to Dr E K Macdonald, medical officer of health, Leicester, for his interest and encouragement, to Mr F C Bullock city analyst, for the report on the chemical analysis, to Dr N S Mann, director, public health laboratory, for the bacteriological reports, and to Mr T W Beresford specialist sanitary inspector, who undertook the local inquiry into the use of copper vessels by caterers, &c

References at foot of next column

Poliomyelitis Vaccination

Experimental findings which may prove of co able importance to the ultimate success of poliom vaccination have been announced in *Science* reported [1] that E M Zitcer, J Fogh, and T H r backe, of the University of California, have cultr all three types of poliomyelitis virus on human pla amnion A vaccine prepared from virus grown in way *would be free from one of the possible* disadva of the Salk vaccine—namely, the risk of sens induced by monkey-kidney tissue A vaccine th been prepared in Sweden [2] is made with strains of *grown on aborted human fœtal tissue*

First Quarter in Scotland

In the quarter ended March 31 this year [3] the in Scotland was 18 3 per 1000 population, which 0 8 less than the rate for the corresponding quar 1954 and 0 1 below the average for the previous years Stillbirths amounted to 25 per 1000 total l The death-rate was 15 1 per 1000 population—0 8 than in first quarter last year and 0 1 above the fi average The infant-mortality rate was 36 per 100 births (2 below last year's figure), and the death-rate was 22 per 1000 live births Deaths tuberculosis amounted to 25 (respiratory 22) per population, compared with 31 (28) in the first quar 1954 and a five-year average of 46 (41)

Infectious Diseases in England and Wales

Disease	Week ended Ju		
	4	11	18
Diphtheria	7	15	10
Dysentery	829	855	359
Encephalitis			
Infective	1	1	[illegible]
Postinfectious	1	5	3
Food poisoning	290	244	261
Measles excluding rubella	24,687	27,722	21,83
Meningococcal infection	24	23	16
Ophthalmia neonatorum	30	34	48
Paratyphoid fever	5	7	11
Pneumonia, primary or influenzal	388	493	393
Poliomyelitis			
Paralytic	26	35	91
Non paralytic	5	9	[illegible]
Puerperal pyrexia	203	253	239
Scarlet fever	448	447	55
Smallpox	—	—	—
Tuberculosis			
Respiratory	507	750	[illegible]
Meninges and C N S	17	6	15
Other	67	97	105
Typhoid fever	3	1	6
Whooping cough	1244	1781	1666

*Not including late returns

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1 *New York Times*, July 1, 1955

2 See *Lancet*, 1955, i, 965

3 Quarterly Return of the Registrar General Scotland Deaths, and Marriages registered in the quarter ended Ma 1955 H M Stationery Office Pp 32 2*s* 6*d*

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In England Now

unning Commentary by Peripatetic Correspondents

e *Lancet*, may I respectfully suggest, Sir has said unkind things in its time about Dr John Snow as pidemiologist: thus in discussing his views on the lessness of decomposing matter and the noxiousness fected water-supplies you wrote in 1855— in riding obby very hard he has fallen through a gully hole has never since been able to get out again though fence you might cite your comment on his work on roform "The man who has left us such a legacy ot be said to have lived in vain' This morning you n proved your benevolent editorial neutrality by ing me as your peripatetic representative to watch epidemiologists unveil a sign on the public house in idwick Street which has been renamed the *John Snow* house formerly the *Newcastle on Tyne* stands near site of the notorious Broad Street pump which was storm centre of the disastrous outbreak of cholera in On unveiling the sign which bears a portrait r Snow by Mr Cosmo Clark Prof Bradford Hill commended the owners Messrs. Watney Combe & for their gesture of sincere respect to one he outstanding figures in the history of British icine.

o-one need be surprised however, if Dr Snow looks n from his sign with rather a quizzical air for he a life-long abstainer relaxing only in his later years lrink an occasional glass of wine. His interest in king was indeed severely epidemiological Cholera rife in Scotland he noted partly because the national it was diluted with water infected beyond the septic power of its alcoholic content The young man came to bury his brother dead of cholera paid the itable penalty of drinking water from the Broad et pump with the brandy which capped his hurried h Immunity to the spread of infection from the p was obtained by workers in the local brewery who a reasoned preference for their own product. (By an ic chance the only patient reported in the district ing the epidemic in London in 1866 was a teetotaller) w noted such facts dispassionately accepting them out prejudice as evidence one way or another We ect that he would accept with like equanimity the gical but enduring tradition that we should com norate our great men whatever their personal es in the names and signs of our inns A scroll hin the house describes his claim to immortality to the cendants of those in whose service he spent his too f life Already, visiting epidemiologists from overseas e called at the *John Snow* to toast the immortal nory, and to scratch their heads anew at this quaint ntry which can produce both so logical a genius and so adoxical a memorial

* * *

y son was right; every time I walked my left foot t plop on the ground and I soon convinced myself re was some weakness of the dorsiflexors. So there it ; I had foot-drop, and couldn't understand why re didn't seem to be any local reason and I could only k some toxic cause was responsible, of which alcohol med the most likely Pretty hard I thought, for I d or had more than the average.

hat night I tried to palpate my liver, and wasn't much ased when my wife said I looked like a girl trying to l her baby kicking The next morning at breakfast to nter any further ribald remarks I gave a brief homily the family on the serious nature of the condition ting that they might even lose their wage-earner l leaving them very chastened and myself feeling omplete cad, but half pleased that others had something to worry about too

he anticlimax came a few hours later, when my ghter remarked casually that she thought the lopping noise must be due to the large flat metal d I'd accidentally trodden on and which was firmly ven into the sole of my shoe

I am always surprised how many of my colleagues' minds are still immersed in the naive evolutionary theories of the 19th century, which presents Science as the high and blessed region of clarity and light, and the Psyche as the muddy reptile-ridden swamp out of which man has painfully climbed, and which he must at all costs avoid if he is not to be again sucked down into its murky depths All very true, perhaps, but a somewhat biased and over-anxious presentation of the Facts of Life Nowhere is this clearer than in their reaction to any suggestion that we should examine the dream world in the clarifying light of objective science They firmly refuse to treat it as an objective fact, worthy of the highest powers of reason, rather than as a peculiar specialty concerned chiefly with deranged minds. The Freudians indeed, purport to explain the whole of human motivation by a simple *reductio ad penem* If this were all that is to be found in the psyche it might be as well for the generality of men to leave it alone. But it is not so Be of good cheer by stepping boldly down again into the reptilian swamp you may uncover a crock of gold at least as often as a crocodile To do this, however involves a reassessment of some of the premises of Science; and while Science will urbanely discuss its conclusions, it simply hates to have its premises touched. I love it I love it, and who shall dare——?" says Science, and indeed one can well sympathise, for it is such a very comfortable armchair From its depths hard words are hurled at the offending head; flying through the air come sticks and stones like "retrograde, "obscurantist' and inevitably 'the Celtic twilight'—that heaven sent phrase that has saved generations of scientists the pain of examining an inconvenient aspect of life

* * *

How much better they order these things in America The new art of motivation' of doctors by the big drug houses, for instance has been graphically portrayed in the *Sunday Times* Instead of relying on the usual flood of pamphlets and rather pathetic importunism of travellers one of the firms organised a nation wide series of golfing meetings for doctors, including free green fees, cocktails, a steak dinner and balls stamped with the name of the druggist. No wonder their sales rose by 12% in a month No explanation is given as to why one State was left out, but there the sales rose only by 3%

A similar method of attracting attention to proprietary drugs in England might not please the Ministry of Health but the Ministry could easily organise a rival golfing meeting with even bigger prizes. Perhaps British Railways would lend some of their courses for the event.

* * *

A patient phoned me this morning She said, 'I am speaking from a telephone chaos, doctor'

* * *

One of our housemen is wearing a permanent grin; but the more sensitive ward sister still shudders at the thought.

Last week on the senior physician's round, the dear old lady in bed 6 announced loudly to a recent arrival that the old gentleman was one of these out-of-date doctors who was taking a refreshment course The clever young house doctor she added kindly took him round to see the interesting cases once a week.

* * *

News from school—On Tuesday we investigated the lay out of — — — Church in a Divinity Lesson The vicar gave us an interesting talk about boars and highwaymen I would not like to say which of the two he was After this talk we went up the tower I think without the vicar knowing it and we all climbed into the belfry In this there was a large and complicated mass of machinery for working the bells About twenty five of us got among it When we were all settled in there lying between the spokes of the wheels and sitting on the axles the vicar began to ring the bells and since the ground was quite a long way away it became quite dangerous I myself was trying to get close to a bell to read the inscription on it when it began to ring but I am still here I had to write a letter to him to thank him for his kindness

Letters to the Editor

ORAL PENICILLIN IN THE ELDERLY

SIR,—In most situations, penicillin remains the most widely used antibacterial agent and, inevitably, a large proportion of patients treated with this drug are elderly people In those individuals, the infection requiring treatment is often sufficiently mild to justify the use of oral penicillin—with obvious advantages to doctors, nurses, and patients

Practically nothing is known, however, about the effectiveness of oral penicillin in old people It is notoriously difficult to assess the effects of a drug in older subjects by purely clinical observation, and we felt there would be greater practical value in showing whether or not effective blood-levels of penicillin could be obtained in old people—as has been shown in children and young adults—after the drug had been given by mouth For no definable reason, we did not expect the results to be encouraging

The report is based on a series of 43 patients whose ages ranged from 68 to 92 years There were 20 women and 23 men All were patients in acute geriatric wards Oral penicillin was given experimentally, rather than therapeutically to the selected subjects, and only those were chosen for the study who could be relied upon to cooperate All subjects were willing participants in the trial, and consent was sought only after simple explanation of what was to be done and of what we were hoping to discover

Two tablets (each containing 200,000 units benzathine penicillin) were given every six hours for four days and patients took their meals at the customary times Samples of venous blood were removed at appropriate intervals after the initial dose of penicillin to determine hourly penicillin levels (table I), and on the second third, and fourth days of the experiment just prior to a dose of penicillin in order to find the minimal blood levels (table II) The blood penicillin levels were estimated by the dilution method[1] In addition, an attempt was made in each case to assess the correlation between the penicillin levels and the state of hydrochloric acid production in the stomach, and the function of the kidneys—as far as this could be measured by simple means such as urine analysis for albumin, and specific gravity, and blood urea estimation

TABLE I—HOURLY SERUM PENICILLIN LEVELS

Time after penicillin	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr
Average values (units per ml)	0 139	0 284	0 499	0 3[illegible]8	0 513	0 218
Lowest value recorded (units per ml)	0 068	0 068	0 068	0 136	0 068	0 034
Highest value recorded (units per ml.)	0 544	0 544	1 088	1 088	2 176	1 088
No of patients	17	25	17	26	17	25

TABLE II—DAILY SERUM PENICILLIN LEVELS

Day of observation	2nd	3rd	4th
Average values (units per ml)	0 288	0 320	0 295
Lowest value recorded (units per ml)	0 034	0 068	0 068
Highest value recorded (units per ml)	1 088	1 088	2 176
No of patients	40	39	16

As shown in the tables, satisfactory penicillin blood-levels were obtained in every case No significant difference could be found between patients who had achlorhydria and the others, nor between those who showed any signs of renal dysfunction and the "normals" There was a notable absence of diarrhœa, the only troublesome side-effect which we had expected

The results, which ran counter to our expectations, seem to provide a rational basis for giving penicillin by mouth to elderly patients as an alternative to administration Oral penicillin may be part convenient for elderly patients in the treatment of conditions as mild cutaneous or respiratory tract tions, and as a "prophylactic" in the presence of infarction or acute congestive cardiac failure

We wish to thank those house physicians, ward laboratory technicians, who helped us in this study thine penicillin ('Permapen') oral tablets were suppl Pfizor Ltd

Perth Royal Infirmary and
Bridge of Earn Hospital

JOHN H PRAIN
RONALD G SIMP

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[1] Recent Advances in Clinical Pathology London, 1951, p 116

ARTIFICIAL RESPIRATION BY INTERMIT POSITIVE PRESSURE

SIR,—Professor Pask (June 25) gives a useful in pointing out that some respirators sold for pr intermittent positive pressure respiration have s a flow rate as to be virtually useless for this The pressures attained close to the tracheal tub largely influenced by the flow-rate from the and I entirely agree with Professor Pask that the of inspiration required for a given tidal air is by this I did not go into this problem in my (May 28), but Dr Young and I have a paper in in which the relationship between tidal air and of rise of pressure at the tracheal tube is more detail, and our findings are in general with those expressed by Professor Pask

The Radcliffe Infirmary,
Oxford

J M K SPALD

SELECTION OF BLOOD FOR TRAN

SIR,—In their interesting and instructive art June 25, Dr Mollison and Miss Cutbush describe in which P positive red cells were hæmolysed when transfused to a patient whose serum anti-P agglutinins P negative cells showed a survival Anti P is probably the commonest naturally occurring irregular agglutinins to be fou human serum and, although it has generally been sidered that such antibodies, and similar ones anti A_1 anti M, and anti-N, may be ignored matching blood for transfusion, providing they clearly demonstrable at 37°C, Dr Mollison and Cutbush s report suggests that a revision of may be desirable

Many laboratories already cross-match blood room temperature as well as at 37°C and thus detect most instances in which strong irregular of this type are present in the recipient s serum the South West Regional Transfusion Centre our for many years has been, besides the routine tes 37°C to carry out a cross-matching test against suspended donor cells at blood-bank temperature 6°C) in preference to one at room temperature temperature was chosen for the following reasons

(1) ABO incompatibility is more marked at 4°C room temperature

(2) Possible complications in reading the test from presence of strong anti A or anti B hæmolysins in recipient's serum are practically eliminated

(3) Even weak anti P, anti M, and anti A_1 agg are detected at this temperature when the proposed blood contains the corresponding antigen

Whenever time and circumstances permit, any bloods agglutinated at 4°C are deemed unsuitable fo patient, and further bottles are cross matched sufficient "compatible" bottles have been This procedure has proved satisfactory in practice providing a control is included of the recipient's cells suspended against his serum at 4°C, the complication of cold auto agglutinins can be and ignored hough it may be argued that agglutinins such as P are of no clinical importance, unless active at temperature we have had personal experience ases where antibodies of this type have exhibited an ase in thermal amplitude and potency as a result of fusion and/or pregnancies Similar cases have been ted [1,2] It is clear therefore that in at least a ortion of cases in which these antibodies are present he recipient's serum they must be regarded as tially dangerous,' and it would seem only to be e patient's best interest to find donor blood whenever icable that is not agglutinated at 4°C as well as 37°C

ith West Regional
ansfusion Centre
Bristol

GEOFFREY H TOVEY

A NEW ENTERIC ORGANISM

r—After your annotation of June 25 I should like emark that the occurrence and clinical rôle of the al group of micro-organisms described by McDonald [3] had been noted as early as 1920 by Kristensen and n [4] and more extensively in 1937 [5]

nder the designation *Salmonella java* Dr Kauffmann groups all strains which serologically belong to the *S paratyphi B* but ferment *d* tartrate and do not uce slime wall That the atypical paratyphoid lli' mentioned belong to this group is evident ly from the descriptions by the English authors partly from a re-testing just made by Dr Kauffmann e of the English strains

he absence of dulcite fermentation and of the specific phase is not common to all strains of the p *S java* subtypes have been established by their aviour towards dulcite rhamnose, and inosite

java provides a very good example of a special of pathogenicity (acute enteritis) associated quite tly with a definite combination of biochemical t" (*d* tartrate fermentation) and antigenic struc (serological identity with *S paratyphi B*)

tens Seruminstitut
Copenhagen

MARTIN KRISTENSEN

MENTAL RETARDATION

r—Dr Alford (June 18) pleads that the mentally rded child should be recognised as in every other ect normal and be given more understanding and pathy

hile I agree with most of what Dr Alford says n my experience with educationally subnormal dren—and especially the adults in charge of them— ghtly different emphasis seems necessary

nderstanding and sympathy are, in any human, tly limited quantities, depending first on the giver secondly on the response Unless able to reinforce erstanding by reason the adult is only too apt to ve like Lady Catherine De Bourgh who when her shioners were quarrelsome discontented or too r' was accustomed to silence their complaints ' to scold them into harmony and plenty'

o say that these children are normal in every other ect but handicapped in mind is to give only part of truth They differ from others not only because r reasoning power judgment, memory, and con ration are weaker but also because their instinctual es are or appear to be stronger The explanation is that the urge for immediate satisfaction does not ive the same continuous growing check from the eloping ego and from recognition of connections he outside world The postponement of gratification, which is the hallmark of civilisation is a less well recognised necessity We have then the only too common outbursts of temper in the school and in the home, as well as the large number of sexual problems in the growing adolescents The understanding these children require should extend to the type of influence which is most successful and that is the emotional atmosphere in which the child lives

When one considers the kind of homes most of the children come from they seem to be largely of two types (1) those in which level of intelligence is generally low and where partly in consequence various social evils have been at work for many years and (2) intellectually superior homes, in which there may be no social evils but the child may be harmed by rejection and resentment With the second type of home a rational sympathetic approach is often successful though it may come too late With the first type only palliative remedies, applied to the child can be used When an educationally subnormal child has acquired faulty violent responses to the world, the most one can hope for is to modify them slightly

London S.W.15

HEDY SYMONDS

CHLORPROMAZINE AND EPILEPSY

SIR —The ethics of medical research are rightly causing much concern at present I feel that some comment should be made on the letter from Dr Fabisch in your issue of June 18

Dr Fabisch explains that chlorpromazine is known to be a possible cause of convulsions He reports that a convulsion recently occurred during electro encephalography in a patient under *treatment* with chlorpromazine Presumably he concluded that chlorpromazine would be likely to increase the abnormality of the E.E.G in epileptics and might well cause frank convulsions He reports that chlorpromazine was then given to 14 epileptics and was in fact found to increase the abnormality of the E E G in 7 His conclusion is that caution may be advisable in treating patients with the drug'

If this experiment had been carried out entirely on adults with their consent freely given after full and clearly understood explanation then of course no criticism could have been made But how can the use of at least one child in such an experiment be justified ? The risk to the child was slight ; but if there had been a mischance what explanation could have been given ?

A mischance in treatment can be understood and is a risk that must often be accepted but how could this be called treatment when the anticipated effect was to aggravate however temporarily, the manifestation of the patients disease*

London N 1

R E W FISHER

*** We have shown this letter to Dr Fabisch who writes as follows

SIR —The investigations were carried out after consent had been obtained from all adults after full explanation of the purpose of the investigation and possible side-effects In the case of the child the matter was explained to the mother carefully and in detail and her *consent* obtained The mother remained sitting by the side of the child throughout the investigation as it is customary in E.E.G examinations of children who come as outpatients to this hospital

The purpose of the investigations referred to is to elucidate the effect of chlorpromazine on the E E G of epileptics References in the English and American literature are scanty and so far no significant changes appear to have been reported [1–3] For this reason the

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ollison P L Blood Transfusion in Clinical Medicine Oxford 1951.
evine P Ferraro L R Koch, F *Blood* 1952, 7 1030
cDonald J C., Price, A Taylor J *Mon. Bull Minist Hlth Lab. Serv* 1955, 14, 83
ristensen, M. Bojlén, K *Zbl Bakt* 1920, 114 86
ristensen, M *Bull Lager* 1937 129 390 Bojlén K., Clemmesen, O. Lomholt M. *Ibid* p 401 Kristensen M., Kauffmann, F *Z Hyg InfektKr* 1937 120 110

[1] Bennasi P Cuniberti G *Electroencephalography clin Neurophysiol* 1953 5, 641
Chagass, C. *Ibid* 1955 7 306
[3] Samuel I A *Lancet* June 25 1955 p 1327

effects observed were not expected From the results obtained until now it appears that in patients with unstable and abnormal inter seizure recordings the abnormal phenomena increase in frequency of occurrence and/or duration after intravenous chlorpromazine Whether these are the same patients who are more likely to have a seizure while receiving chlorpromazine (by the intramuscular or oral route) than those with a stable recording cannot be ascertained from the data obtained so far But the findings suggest a method of excluding perhaps some patients from chlorpromazine medication who otherwise might suffer a " mischance in treatment "

The effect of chlorpromazine as used in these investigations is similar to that observed on activation of the E E G by hyperventilation and photic stimulation Both these methods are used routinely in E E G work with children and adults Well known effects in epileptics of these two recognised and accepted methods are the provocation of significant abnormal phenomena or their increase in frequency of occurrence and/or duration The additional information obtained in this manner increases the clinical usefulness of the E E G , and the very slight risk of causing a seizure is therefore accepted as justified The ethics of using hyperventilation and photic stimulation are, I think, not in doubt

Nottingham. W FABISCH

THE MERRYGOWHIMBLES

SIR —I was most interested in the Widdicombe letter in your issue of June 11 Surely a little soap and water applied to the hands at suitable times would check the onrush of *Shigella sonnei* I am proud to be a member of the St John Ambulance Association, which offers courses to all food-handlers, which may not only bring freedom from food poisoning and infection to the consumer of their products, but also enable the candidates successful in the examination to obtain a decorative certificate which they can hang up on their wall

London, S W 1 JOHN ELTON

MODIFICATIONS OF THE BLEASE PULMOFLATOR

SIR,—The Blease pulmoflator has recently been modified for use both in anæsthesia and in the ventilation of paralysed patients

There are two significant changes from the original design for anæsthesia A negative pressure phase has been added which allows a negative pressure of up to 5 cm of water to be applied during expiration In practice this gives an adequate tidal volume of respiration with a smaller positive pressure during inspiration than is necessary with the standard model To avoid obstructing venous return, a prolonged expiratory pause is necessary during artificial respiration by simple intermittent positive pressure, and this pause is greatly reduced by the phase of negative pressure[1]

The other modification of the machine is the fitting of a spring loaded leak to the compression chamber This causes a change in the inspiratory curve, bringing it nearer to that produced by manual compression of the reservoir bag, and this appears to produce better filling of the lungs for a given inspiratory compression

When the machine is intended for the artificial respiration of paralysed patients a different head is supplied with it This incorporates a non return expiratory valve so that there is no rebreathing Air is drawn into the concertina reservoir during the expiratory pause, with a special inlet for oxygen if required The oxygen percentage in the inspired air can be calculated from an observation of the tidal air This is calculated directly from a scale and pointer attached to the concertina, and from the respiratory rate

The length of inspiration and expiration can be adjusted independently The pressure in the inspiratory phase can be varied from 4 to 30 cm of water, and in expiration the pressure can be adjusted to between 0 and –5 cm of water This wide range of control makes it suitable for use in as well as adults

An efficient sucker and a simple humidifier are porated in the machine, but a more elaborate th statically controlled humidifier, as described by Mar and Spalding,[2] can be used The apparatus is s that it can be used in an open ward, and it is sug that a warning bell should be fitted lest there sh an electrical failure under such conditions

We are grateful to Mr J Blease for allowing us t his latest modification of the apparatus, which is now manufactured for use in this country

A I PARRY B
S D K STRIDE.

The London Hospital, E 1

LOW-LACTOSE MILK FOR CONGENITAL GALACTOSÆMIA

SIR,—In your issue of June 4 Mr Salt, Dr Ro Dr Gerrard recommend a low lactose synthetic powder for the treatment of congenital galacto We feel that the clinical and biochemical data as re do not entirely justify their recommendation and in different circumstances it may even be harmful

The authors introduced the synthetic milk when patient was seven months old and presumably o weaning diet Thus the total amount of " milk " would be smaller and the quantity of ingested gal reduced

The baby's admission to hospital at the age of three suggests that the disease was not of the severity that fatal in the first few weeks of life The authors' findi blood galactose level of 18 mg per 100 ml. forty five after a test feed indicates that this preparation mus contained considerably more than 2 8 mg of lactose rapid disappearance of small amounts of galactose fr blood is not necessarily due to successful katabolism sugar We have shown that in galactosæmic infants accumulates in red blood-cells (and presumably also cells) in the form of galactose 1 phosphate[3] and th metabolism of cells containing this phosphate is Preparations containing only small amounts of ga when given over an extended period, could well lead to accumulations, and our own experience has shown th severe case 0 5% of galactose (as found in casein) can lead to cataract formation within three weeks.

May we therefore plead for the use of a completely ga free diet and offer one which has proved most successfu treatment of a number of cases[5] It is based on a published by Moll and Stransky[6] as a form of milk f for cases of infantile gastro enteritis It can be prep any intelligent mother in the ordinary household a not require the expenditure of dollars or any special licence

The " pudding " provides a high caloric food with essential components of fat, protein, and carbohydr needs to be complemented with calcium and th vitamins It is prepared as follows

Stage I—Stir 6 ounces of a milk free cereal (e g , Ro groats) with 14 ounces of water

Stage II—Mix thoroughly 3 ounces of sugar and 2 egg

Stage III—Beat 2 egg whites, a pinch of salt, and a bicarbonate of soda

All the ingredients are finally mixed, put into a pan wh been greased with a vegetable margarine, and dusted w cereal The mixture is then heated for half an hour in water One part of the strained pudding is mixed equal part of boiled water Each ounce of this prep contains approximately 30 calories For very young one third of pudding to two thirds of water can initially

A HOLZEL
G M KOMRO
V SCHWARZ.

Department of Child Health,
University of Manchester

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1 Hubay C A Waltz R. O Brecher, G A Praglin J Hingson R. A *Anesthesiology*, 1954 15, 445

2 Marshall, J , Spalding, J M K *Lancet* 1953 ii, 109

3 Schwarz, V , Golberg L , Komrower, G M , Holzel, A *J* 1955, 59, xxii

4 Schwarz, V , Golberg, L , Komrower, G M., Holzel, A the press)

5 Holzel A *Med Ill* 1954, 8 44

6 Moll, L , Stransky, E *Jb Kinderheilk* 100, 3

POLIOMYELITIS AND REMOTE TONSILLECTOMY

SIR,—The Medical Research Council committee (July 2) onclude that persons whose tonsils have been removed re more likely to have the bulbar form of poliomyelitis han those who have not had the operation even if ears have elapsed between the removal of the tonsils nd the onset of poliomyelitis They are not in favour f a theory that there may be some local condition of he pharynx which on the one hand is an indication r tonsillectomy and on the other makes the child more able to bulbar poliomyelitis even after the operation Though I am not an ardent tonsillectomist I think e should pause and consider this point in more detail acey[1] says "In man the incidence of paralysis has een possibly slightly greater in heavier children nd in persons with a particular recessive gene fair hair r of mongoloid or subendocrinopathic type characterised y a tendency to growth without corresponding develop ent hypogonadism and various stigmata

Now the incidence of tonsillectomy itself varies in ifferent types It is for instance much more common n asthmatic children I have shown[2] that children nd university students who have postnormal occlusion f the teeth are more likely to have suffered this opera ion The postnormals may well belong to the sub ndocrinopathic type mentioned by Lacey I think that here may be a common cause for both the tonsillectomy nd the attack of poliomyelitis and this could be a ocal one connected with the development and shape of he mouth and jaws.

Bath HUGH R F WALLIS

SIR,—I doubt whether it is fair to contrast a group of onsillectomised children with a control group of average hildren The former presumably have a poor resistance o upper respiratory infections, and it would therefore e reasonable to expect a more severe attack of oliomyelitis in this group than in a group of average hildren

Hove. G A FRASER

BAYTENAL IN PSYCHIATRY

SIR,—'Baytenal' is a recently introduced thio- arbiturate consisting of the sodium salt of 5 5 allyl (2 ethylpropyl) thiobarbituric acid It is a yellowish owder easily soluble in water producing a solution aving an alkaline reaction The drug is dispensed in ials containing 1 gramme and it is used intravenously s a 10% solution Good results have been reported in ver 350 cases where baytenal was used as a short acting anæsthetic[3]

Preliminary investigation in psychiatric cases indicates hat it is useful in securing a rapid safe coma prior to ectroconvulsive therapy (E C T) either with relaxants r alone

Following its use in E C T I have used a new technique nveniently referred to as narco relaxation in cases where nsion is a prominent feature I explain to the patient that e treatment will not necessarily cure his condition, but he ill secure rapid relief from his tension and anxiety and this ill enable him to cope with his difficulties more satisfactorily y the breaking of the vicious circle that is usually operating n neurotic conditions.

The patient lies in bed with the head propped up and the rm to be used for the injection is placed in a comfortable osition. 1–$1^1/_2$ ml of 10% baytenal solution is injected into suitable elbow vein over a period of 50–70 seconds. The atient is asked to state when he feels the effects of the drug d this is usually 1–$1^1/_2$ min after the injection begins here is much relief from tension and a feeling of well being he baytenal is thereafter injected at the rate of 1 ml. during ach 5 min or alternatively 0·2 ml may be injected at minute tervals

This procedure maintains the patient in a state of contented relaxation without impairment of consciousness At any time during the injection sopor or sleep may be produced by increasing the rapidity of the injection and withholding the drug for a minute or two will bring the patient back to consciousness. At the end of 25 min the needle is withdrawn He may dress 5 min later and he is usually able to leave the hospital 10 min or so after cessation of treatment. It is desirable that he be accompanied He should have been advised not to have a meal for about 3 hours prior to having the treatment For elderly patients gr $^1/_{100}$ atropine should be given before the treatment The treatment may be repeated at weekly intervals.

No side reactions vomiting or drug rashes have been noted and excitement does not occur

I have found baytenal narco relaxation a great help in the treatment of cases of neurosis where tension is prominent and also in tension states accompanying paranoid schizophrenia

Barnsley Hall Hospital,
Bromsgrove Worcestershire M G MCCOLL.

NOISE IN HOSPITAL

SIR,—For about a week recently I was a patient in a large provincial hospital where I was treated with great efficiency and kindness but the incessant *noise* from early morning until late at night was wearing to the stoutest nerves

The most trying thing was the slamming of doors —cars lorries, ambulances, room doors cupboard doors, and above all the entrance door to the ward Wooden floors are not quiet and the tramping of feet went on all day Furniture and utensils, crates tins, and pails were pushed and dragged dropped, flung and bumped about and laden trollies clattered and rattled on their way So it was not surprising that repairs were necessary and there seemed to be plenty of energetic workmen with hammers Then there was the loudspeaker calling Dr So and So and the telephone, both in constant use

These were just some of the noises which it seems to me tend to undermine the good the hospital is doing for the patient Much of this noise is quite unnecessary and could be prevented, and I know there are hospitals where much has been done in this direction It is to be hoped that all hospitals will soon tackle this ma seriously and see to it that all unnecessary nois eliminated

London N W.3 IDA SEYMO

ADENOSINE TRIPHOSPHATE IN PAROXYSM TACHYCARDIA

SIR,—We would like to add some observatio Dr Somló s letter and your annotation of May 28.

So far we have given over 300 intravenous injections of adenosine triphosphate (A T P) ('Atriphos') to 52 patients suffering from supraventricular paroxysmal tachycardia Single doses of 10–70 mg have been used without harmful side-effects Only exceptionally is it necessary to exceed 40 mg If so, we give the dose in two parts, the second 20–30 minutes after the first Only when the attack is over during the shift to normal rate, have we observed a few seconds asystole accom panied by severe malaise but no permanent effect

One patient who had very frequent attacks received 53 injections at this hospital and 130 at other institutions—a total of 183 in less than four years. This patient had hypertension and signs of myocardial damage We tried to relieve the first attack with various drugs, but three days treatment did not stop it The heart began to fail on the fourth day, so we decided on intravenous A T P The response was prompt Since then the patient has had many attacks and has been given A T P each time yet the cardiac condition is com pensated and the electrocardiogram has shown no change during the whole period.

Neither in this case nor in others where physical measures and sedatives have been ineffective can we

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1 Lacey, B W *Lancet* 1949 i 849
2 *Dent Rec* 1953 73 619
3 *Dtsch med. W* 951 79 001

see any justification for delay in giving A T P Our experience warrants the conclusion that A T P is clearly indicated in paroxysmal tachycardia

In patients seen for the first time in an attack, we do nothing until an E C G has been taken We think this is important for two reasons the prognosis varies with the type of paroxysmal tachycardia, and during the intervals between attacks, treatment varies according to the cause of the attacks In paroxysmal tachyarrhythmias, for example, hyperthyroidism may be responsible

Finally, we should like to add that the prompt and excellent effect of intravenous A T P in paroxysmal tachycardia suggests that it has a specific action, and that there is a connection between the rise and fall in the adenosine triphosphate content of the myocardium and the onset and subsidence of attacks

Municipal Hospital, Budapest

K KOMOR
ZS GARAS

ECLAMPSIA TREATED WITH CHLORPROMAZINE

SIR,—During the pharmacological investigation of chlorpromazine, it was noted that it potentiated the action of anæsthetic, hypnotic, and analgesic drugs, so producing a state of somnolence[1] The changes both in behaviour and in the electroencephalogram after the administration of chlorpromazine resembled strikingly the findings of Magoun et al[2,3] in monkeys in which the ascending pathways from the centrally placed reticular formation in the brain stem had been interrupted This and other neurophysiological findings suggested that the action of chlorpromazine could be explained by a suppression of the awakening upward discharge from the ascending reticular formation[4]

In view of these findings indicating a central depressant action with a marked affinity for the hypothalamus a clinical trial of chlorpromazine was undertaken in cases of eclampsia in Chittaranjan Seva Sadan

During the period October, 1954, to March, 1955, 46 cases of eclampsia were treated as follows

	Time (hr)	*Chlorpromazine*	*Promethazine*
	0	25 mg (i v)	25 mg (i v)
	1	25 mg (i m)	—
	5	25 mg (i m)	25 mg (i m)
n	12	25 mg (i m)	—
of	20	25 mg (i m)	25 mg (i m)

the end of the first hour 50 ml of 50% glucose solution for 5 ml of 10% calcium gluconate solution were given intravenously

Only 1 out of 46 patients treated died 14 babies were born dead in 12 of these cases fœtal heart sounds could not be heard before treatment began In this series 38 were primigravidæ, 18 had antepartum, 20 intrapartum, and 8 postpartum eclampsia 9 had more than ten fits and 8 more than twenty fits before treatment After treatment was started, there were less than ten fits in 28 cases and more than ten fits in the remaining 18 cases

The range of fall of blood pressure was variable The drop in the first hour after treatment began varied from nil to 80 mm Hg, the average being 36 mm Hg Psychosis developed in 4 patients in 2 it lasted for four days and in the other 2 for thirty days

It is too early to draw any conclusions from these data, but this small series suggests that eclamptic patients are very susceptible to the action of chlorpromazine

Chittaranjan Seva Sadan
Calcutta

SUBODH MITRA
Director
KANAK DAS GUPTA
Deputy Visiting Surgeon

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[1] Courvoisier, S, Fournel, J, Ducrot R, Kolsky, M Koetschet, P *Arch int Pharmacodyn*, 1953, 92 305
[2] Magoun H W The Harvey Lectures 1951–52 Baltimore, p 53
[3] Frech, T D Magoun H W *Electroenceph clin Neurophysiol* 1949 1 48
[4] Das, N N, Dasgupta S R Warner, G *Arch int Pharmacodyn*, 1954, 99, 451

BLOOD-GROUPS AND REPRODUCTION

SIR,—The first large investigation in which the sex the ABO blood group of newborn infants was recor was a painstaking series of 2331 Hamburg infants repor in 1930 by Haselhorst[1] From 1924 to 1930, howev seven very much smaller European series, giving a of 1658 infants, were reported,[2–8] as well as some oth of which the details are unobtainable at present these seven series taken together the sex ratio of t infants of the same group as their mother is highes B, intermediate for O, and lowest for A, and the sa descending order is found in Haselhorst's series. eight series are combined in table I

In 1951 Sanghvi[9] reported on 864 New York infants, an 1954 Johnstone[10] on 2429 London infants (these are combi in table I with 151 studied by Hurst et al[11]), and in b series the sex ratio of the infants of the same group as th mother is again highest for B and lowest for A (The rati AB ex AB in all the series combined is 1 03—31 30) T significantly low sex ratio of the A infants ex A mother compared to O ex O and B ex B, in his New York (as in his non white series of 1330 infants) was the pred of Sanghvi's communication The present finding of date which, like Johnstone's, reproduces Sanghvi's s observation arose from belated consultation of a source-boo which has long been out of print If Sanghvi's results further confirmed it would be interesting to compare with those for infants with hæmolytic disease, for such unrepresentative in respect of birth rank and ABO g distribution

TABLE I—SEX RATIO OF WHITE NEWBORN INFANTS OF THE S ABO BLOOD GROUP AS THEIR MOTHER

Miscellaneous authors (1924–30)					Miscellaneous authors (19		
Male infants	Female infants	Group of mothers	Ratio of male to female infants		Group of mothers	Male infants	F In
156	128	B	1 22	1 31	B	77	7
189	155	O	1 07	1 10	O	565	5
529	535	A	0 99	0 96	A	443	4

In all the foregoing (white) series combined, excluding of Grunfeld and Schmundak,[6] from which the data are extractable, the sex ratio of the infants of a *different* gr from their mother is 1 12 (271 243) for the B infants of no mothers 1 05 (549 525) for the O infants of non O moth and 1 03 (529 516) for the A infants of non A mothers Koller's series[13] of 400 infants of undifferentiated paren the descending order is B–O–A) *On the other hand*, the ra are 1 12 (567 505) for the non A infants of A mothers, (230 236) for the non B infants of B mothers, and (505 520) for the non O infants of O mothers In the s of Hirszfeld and Zborowski[3] much the highest sex ratio 2 87 (23 8)—was that of the infants of (all) AB mothers, the authors remarked that "If this finding were confirmed would have far reaching theoretical significance" Their series apart, however, the descending order of sex ratios of t infants of all mothers is B mothers (1 12), AB mothers (1 O mothers (1 05), A mothers (1 02)

In 1000 of Haselhorst's cases[1] the group of the father was noted, while Johnstone[10] grouped 2100 families with newborn infants and 1691 of their sibs Johnstone pointed that in these 2100 *families* the sex ratio of the infants *lowest* for the infants of B fathers, and in Haselhorst's s this ratio is second lowest Indeed when the series are bined, omitting the families in which the parents have the same group (table II), the descending order of sex ratio

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[1] Haselhorst, G *Z KonstLehre*, 1930, 15, 177
[2] Dossena, G *Ann Ostet Ginec* 1924, 46 335
[3] Hirszfeld L Zborowski, H *Klin Wschr* 1925, 4, 115
[4] Badino, P *Riv ital Ginec* 1927 6, 650
[5] Klaften, E *Mschr Geburtsh Gynäk* 1927, 76, 91
[6] Grunfeld, W, Schmundak, D *Ukr Zbl Blutgr* 1928, 3,
[7] Kirwan Taylor G K *J Path Bact* 1930, 33, 313
[8] Goroncy, C *Z Geburtsh Gynäk* 1930, 97, 30
[9] Sanghvi, L D *Nature Lond* 1951 168, 1077
[10] Johnstone, J M *Brit J prev soc Med* 1954, 8 12
[11] Hurst J G, Taylor, H C, Wiener, A S *Blood*, 19
[12] Lattes L Individuality of the Blood London, 19
[13] Koller T *Arch Klaus Stift VererbForsch* 1926,

I—SEX RATIO OF WHITE NEWBORN INFANTS AND SOME EIR SIBS, FROM ASYMMETRIC ABO MATINGS OF HASEL E (1930) AND JOHNSTONE (1954)

Female infants	Group of fathers	Ratio of male to female infants		Group of mothers	Male infants	Female infants
5[illegible]	AB	1 60	1 [illegible]5	B	2[illegible]3	178
563	O	1 07	1 03	A	504	570
558	A	1·0[illegible]	1 0[illegible]	O	507	5[illegible]5
[illegible]7	B	0 93	0 91	AB	80	94

pring of mothers—namely B–A–O–AB—is completely l in the infants of fathers. (See also Allan [14]) Further he combined series have appreciably fewer (female) of B mothers than of B fathers; and there are also ly fewer daughters than sons of AB fathers Whether rtage of infants of B mothers if confirmed by further exists from conception or is caused by intra uterine n might be decided by comparison of the blood group ition of the offspring as well as the parents in abortion h malformation prematurity and postmaturity ison of engaged couples and sterile couples might also minating

is connection it is of interest that in 52 toxæmic preg reported by Dossena [15] and in 57 random pregnancies d by Goroncy the shortest mean period of gestation it of the female offspring of the B mothers (Dossena s o series has an excess of B mothers.) In Grunfeld and idak s series [4] too, the ratio of full term to non full fspring (of undifferentiated sex and blood group) was 24 53) for the O mothers 2 00 (180 90) for the A s, and only 1 53 (141 : 92) for the B mothers This artly explain why the mean duration of labour was 7 hours for the O mothers 14 hours for the A mothers ly 12 5 hours for the B mothers Again, Grubb and t's series [16] of 737 marriages, as the authors point out excess of B and AB wives with a history of abortion It worthy of note that in the series of Grunfeld and idak the ratio of mothers whose age at menarche had rlier than 13 to those in whom it was later than 17 was 6 : 0) for O 4 14 (29 7) for A and only 1 60 (16 : 10) (See also Vuori [17])

wing Koller [12] (in a series of 26 twins) Goroncy [8] d the length as well as the weight of 283 infants ng the foregoing 57 and the shortest mean length was the female infants of the B mothers (table III) The B s infants (of undifferentiated sex) were on average than those of the O and A mothers in the series of y [8] Hirszfeld and Zborowski,[18] and Klaften [5] but were r than them in the series of Haselhorst [3] Badino [4] and n and Podvinec [19] The descending order of mean s of infants of undifferentiated sex was A–O–B in the of Hirszfeld and Zborowski and of Haselhorst but was) in Goroncy s series

III—GESTATION PERIOD AND BODY LENGTH OF WHITE NEWBORN INFANTS

ata of Dossena (19[illegible]5)		Data of Goroncy (1930)				
estation d (mos)	Group of mothers	Ratio of male to female infants		Group of mothers	Mean body length (cm)	
Female infants		Gestation period	Body length		Male infants	Female infants
6 57	B	1 30	1 05	B	50 8	48 6
7 58	A	1 12	1 02	O	50 7	49 5
8 00	O	1 08	1·02	A	51 3	50 1

deen and North East of Scotland
lood Transfusion Service
Bacteriology Department
University of Aberdeen

T M ALLAN

Allan T M Lancet, 1951 ii 1022
Dossena, G Ann Ostet Ginec 19[illegible]5 47 608
Grubb R., Sjöstedt S Ann hum Genet 1955 19 183.
uori, A. K. Acta Soc Med. Duodecim. 19 9 12 1
Hirszfeld, L., Zborowski, H Klin Wschr 1926 5, 741
pstein B. Podvinec E Jb Kinderheilk. 19[illegible]8 71 123

A COLOURLESS SUBSTITUTE FOR CANADA BALSAM

SIR,—Some years ago [1] you published a letter from me recommending Silicone D C 804 ' as a mounting medium It has important advantages, and is quite successful for pathological sections, but its molecular weight is too high to allow it to penetrate tissues especially plant cuticles

A mixture of seven parts of Lucite **44** (du Pont de Nemours & Co) and one part of Aroclor 4465 (Monsanto Chemical Corporation) dissolves readily in xylene giving a stable residue after evaporation, with a refractive index much the same as that of Canada balsam, with no colour whatsoever and with good adherence to glass The resin mixture penetrates plant cuticles easily and it has a very low acid value

I have to thank my friend Mr Ed. Frison of Anvers, for calling my attention to these resins an article from his pen on their use separately will appear shortly in *The Microscope* My own contribution has simply been to combine them in suitable proportions to balance the low refractive index of the former against the high one of the latter in such a way as to give a resin equivalent to Canada balsam. Mr A. G Palmer chief laboratory technologist at the General Hospital Hereford has very kindly helped me in testing these resins

Holme Lacy Hospital
Hereford

D S SPENCE.

The Editor of the *Medical Directory* writes The accuracy of the directory depends on the return of the annual schedule which has recently been posted to members of the medical profession Should the schedule have been mislaid I will gladly forward a duplicate upon request The full name and year of qualification of the doctor should be sent for identification The directory is published by Messrs J & A. Churchill Ltd 104 Gloucester Place, London W 1

Parliament

Medical Tests for National Service

IN the House of Commons on June 27, Mr NORMAN DODDS complained of anomalies in National Service It was not his concern whether or not a well known cricketer was asked to do his two years National Service, but it was his concern that if that cricketer could be exempted because of his physical limitations, no other man who was as bad or worse in the physical sense should be called up to serve in the Armed Forces Many young men he said who put up fantastic feats of physical endurance did not seem to be well enough to share the burden of compulsory service He had a long list of boxers, tennis players, jockeys, racing motorists, cricketers and footballers who so far had 'dodged the column in a most blatant way There seemed to be one law for the athletes and another for the *not so athletic* An inquiry was necessary to show either that these allegations or insinuations were totally unfounded, or to make changes which would provide a deeper sense of justice and fair play all round, not only among the men who served, but among parents, many of whom felt that their sons were not having a square deal

Mr HAROLD WATKINSON parliamentary secretary to the Ministry of Labour and National Service said that in the Government s view there was no reason for such an inquiry It was the determination of the Minister of National Service, the Prime Minister, and all the Service Ministers that National Service should continue to rest on the only possible basis—that it was fair and equally applied between one man and another whatever his social background Whether a man was good at tennis cricket, or football did not enter into it There was an appeal procedure from the National Service medical boards, and out of 300,000 medical examinations made since the appeal procedure started there had been only 2071 appeals, or 0 8% Even in those appeals the original grading was confirmed in 42% of the cases—and indeed in 11% the gradings were raised.

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[1] *Lancet* 1947 ii 850

Though everyone knew that there was this right of appeal, the number of appeals was small, and more than half of the gradings were either confirmed or raised Jockeys were deferred for training, as he thought they should be If an apprentice in the engineering industry could get deferment why not a jockey? At the end of two years training a man was called up if he was found fit for service The medical requirements of different Services were bound to vary For example, the medical standard for any pilot in the R A.F was different from that of a man in the Royal Army Pay Corps who would do nothing but sedentary home duties There had been a lot of talk about racing motorists, but the Minister was satisfied that on proper medical grounds the action taken was correct The medical tests were as accurate as medical science could make them, and there was no differentiation between men who were called up, except on proper medical grounds For that reason the Government rejected an inquiry as unnecessary

QUESTION TIME

Possible Recall to National Service

Mr W W Hamilton asked the Minister of Labour if he would make a statement on the steps taken by his department to keep track of all National Service men discharged on medical grounds to ensure that they were recalled if there had been sufficient recovery from the original physical disability —Sir Walter Monckton No such steps are taken, as, in accordance with the policy laid down during the war years by the then Minister of Labour, it has not been the practice to recall for further service those National Service men who are discharged on medical grounds Mr Hamilton Would it not be reasonable to consider recalling men whose condition, they having been discharged on medical grounds and having had a subsequent operation, has been found to have improved? Is the Minister aware that the impression created in my mind and in the minds of many people is that there has been preferential treatment of a certain person? The only way to remove these doubts is to have this man medically re examined after the operation which he is to have and, if his condition is found to have sufficiently improved, to recall him —Sir Walter Monckton I do not think that it would be very wise just because of one case—even if the hon gentleman's assumptions were accepted—to alter a practice which has stood for fifteen years

Pharmaceutical Advisory Committee

Replying to a question, Mr Iain Macleod, Minister of Health, said that this committee of the Central Health Services Council, together with the standing medical and nursing advisory committees, had been asked for advice about the adoption of a standard system for settling responsibility for the custody and issue of dangerous drugs and scheduled poisons in hospitals, and also for recording the requisitioning and issuing of them No other questions had been referred to the committee during 1954, and no advice had been received from them.

N H S Convalescent Homes

Replying to a question, Mr Macleod said that the number of convalescent homes in the National Health Service for each region was as follows

Region	No of homes at Dec. 31, 1953	Total bed complement	% of convalescent beds to hospital beds (excluding mental and M D)	Average weekly cost per patient 1953–54		
				£	s	d
Newcastle	5	153	0 93	8	10	0
Leeds	11	658	2 9	7	12	11
Sheffield	13	686	3 2	9	0	5
East Anglia	4	222	2 6	7	15	11
N W Metropolitan	11	518	2 5	8	6	2
N E Metropolitan	4	135	0 62	6	18	1
S E Metropolitan	15	1125	4 3	6	19	1
S W Metropolitan	8	422	1 5	8	0	4
Oxford	6	324	4 1	9	3	8
South Western	9	385	2 1	7	5	9
Wales	2	84	0 52	8	4	2
Birmingham	6	284	1 1	10	16	2
Manchester	8	286	1 1	10	4	10
Liverpool	7	435	2 9	8	15	4

N H S Reciprocal Arrangements

Replying to a question, Mr Macleod gave the information about foreign countries with which reciprocal agreements entitling British subjects to treatment

1 *Multilateral agreements* —A reciprocal agreement between the United Kingdom, France, Belgium, the N and Luxemburg for giving medical treatment to indigen A convention extending this arrangement to all memb Council of Europe was signed in December 1953 and between those countries which have ratified it (the United the Irish Republic, the Netherlands, Norway, Denmark, Saar)

2 *Bilateral agreements* —Agreements are in force wher subjects employed in France, Italy, the Netherlands, and Lu who participate in the social insurance schemes of thos can have their United Kingdom insurance taken into reckoning their entitlement, and that of their dependants to benefit Agreements with Austria, Belgium, the Germa Republic and Sweden are being negotiated

War-pensioner Hospitals

Replying to a question, Mr Macleod said that satisfied that the time had come to make arrange the transfer to the administration of the appropriate boards and management committees of two of th pensioner hospitals, as had already been done for th pensioner units at Taunton, Cosham, and Stoke Ma Administrative responsibility for Dunston Hill Gateshead, and for Mount Pleasant Hospital, would be transferred from April 1 next The special of these hospitals as centres for war pensioners wou changed, and pensioners would continue to receive priority of admission and treatment and the facil enjoyed in the past The representative w organisations would be consulted when making appo to the hospital management committees and hos mittees, to ensure adequate ex Service representat necessary steps would be taken to safeguard the all the staff concerned.

Cost of Prescriptions

In answer to a question, Mr Macleod said that the cost per N H S prescription during September, 1954, compared with 48 59*d* in January, 1954

Poliomyelitis Vaccine

Mr S P Viant asked the Minister of Health, in fact that an antipoliomyelitis vaccine can now be through eggs to be administered by mouth, if he wou his orders for the Salk vaccine, which is prepared from tissue —Mr Macleod replied I am advised that the d ment of an egg vaccine against poliomyelitis is still experimental stage In the circumstances it would be to reject other available vaccines, subject to all proper tests

Registration of Opticians

Replying to a question urging that early steps taken to prepare a Bill for the registration of opticia on the report of the Crook Committee, Miss P Hornsby Smith said the Minister of Health was legislation on this subject must wait until Parliament was available, and he could not say when that would

Mr William Griffiths Is the hon lady aware th of spectacles in chain stores have been increasing recently and in absolute contrast to what happened after the introduction of the National Health Servic such sales dwindled practically to nil? This matter grave concern among hospital workers —Miss Ho Smith A large measure of agreement has been re discussions with the professional bodies We hav intention of introducing necessary legislation when mentary time can be found.

Advertisements in Hospitals

Mr Arthur Lewis asked the Minister if he was aw appointment cards issued by St Bartholomew's Ho patients contained advertisements for proprietary toothpaste urging the patients to use a particular toothpaste, and whether he would stop this pr Mr Macleod said that he was informed that th recently been some unauthorised use of appointment this kind in the dental department of the hospital board of governors regretted the occurrence and had immediate steps to ensure that it would not happen

Home Confinements

ying to a question Mr MACLEOD said that the percen home confinements in 1954 was 36 4

Hospital Waiting lists

lying to a question Mr MACLEOD said that the number ple waiting for admission to hospitals in England and was 470,213 in December 1954 compared with 503 584 ember 1951 Of these 2 11% and 1 75% respectively hronically sick, the overwhelming majority of them old people

Medical Services in the Gas Industry

ying to a question Mr GEOFFREY LLOYD Minister of nd Power said that 9 of the 12 gas boards now had ne medical officers and 2 had appointed medical tants

Diary of the Week

JULY 10 TO 16

lay, 12th

COLLEGE OF PHYSICIANS OF LONDON Pall Mall East S W 1
M. Lord Amulree Modern Hospital Treatment and the Pensioner (F E. Williams lecture)
COLLEGE OF SURGEONS OF ENGLAND Lincoln s Inn Fields ndon, W.C.2
M. Prof. H Olivecrona (Stockholm): Hypophysectomy (Moynihan lecture)
UTE OF NEUROLOGY National Hospital Queen Square ndon W C.1
L Prof Guido Fanconi (Zürich) Pathomorphosis of Diseases of the Central Nervous System occurring in the Last Fifty Years.

esday 13th

IATION OF CLINICAL BIOCHEMISTS
P.M (Westminster Medical School Horseferry Road London S.W 1) Dr D D Van Slyke Renal Disease

sday, 14th

UTE OF LARYNGOLOGY AND OTOLOGY 330 Gray's Inn Road ondon, W C.1
M. Dr Evelyn Robe (Chicago) Physiology of the Larynx (Film.)

y, 15th

COLLEGE OF SURGEONS OF ENGLAND
M. Prof A. B MacGregor Treatment of Fractures of the Mandibular Condyle. (Charles Tomes lectures.)
EMICAL SOCIETY
.M. (University College of North Wales Bangor) Scientific papers

Appointments

ER, ROBERTA C. M.B. Belf D P.H. M.O.H. East Retford.
E, E. E. M D N U I senior asst. psychiatrist Coppice ospital Mapperley Notts.
ELL, R. H., D.M. Oxfd: consultant department of pathology adcliffe Infirmary Oxford.
J S, M.D Glasg M.R.C.P consultant asst physician undee Royal Infirmary and Maryfield Hospital
W A. M.B. Belf D.P H. M.O H and school M O Cirencester.
R, A. L M.D Lond asst M.O Surrey county council Guildford)
PSON R. C W M B Lond F.F.A R.C.S. D.A part time onsultant anæsthetist, Charing Cross Hospital London

n Transport:
ES G C. M R.C.S i/c North East division medical centre at Manor House
EKS J L., M.B Lond M.O at the South West division medical centre

l Liverpool Hospitals:
OURKY J D M.R.C.S F F.A R.C.S. D.A. consultant anæsthetist.
DING J E M.B Lpool, F.F.A. R.C.S D.A. consultant anæsthetist.
EAD A. L. M.D St. And F.F.A. R C.S., D.A. consultant anæsthetist.

Births, Marriages, and Deaths

BIRTHS

S.—On June 16 at Queen Mary's Hospital, Hong Kong to bella, wife of Surgeon Lieut.-Commander B Victor Jones. .N —a son

Notes and News

THE DOCTOR'S SHARE IN HOSPITAL MANAGEMENT

THE Secretary of State for Scotland s Standing Advisory Committee on Hospital and Specialist Services has appointed a subcommittee 'To consider how medical participation in the control and management of hospitals can best be secured in Scottish conditions with reference to (*a*) the employment of medical superintendents, their functions recruitment and training and (*b*) medical staff committees their constitution and functions.' The members are

Sir George Henderson (chairman) formerly secretary Department of Health for Scotland chairman board of management Edinburgh Royal Infirmary, Mr William Dick, vice-chairman board of management, West Fife Hospitals Mr W W Galbraith F.R.F P.S *member of the Joint Consultants' Committee (Scotland)* Mr J F A Gibson, C.A vice-chairman, board of management Glasgow Royal Mental Hospital; Mr W M Mackinlay J P., convener of finance committee, board of management Glasgow Royal Infirmary, Prof G L Montgomery, F.R.F.P.S chairman, Scottish Health Services Council Lady Taylor M.D J.P member of the North Eastern Regional Hospital Board.

The secretary is Mr J B Hume Department of Health for Scotland

TRAINING OF MENTAL NURSES

THE system of training nurses now adopted at Rubery Hill Hospital, Birmingham, was described at the annual public meeting of the hospital on June 22 by Mr David Rhydderch chairman of the management committee Formerly he said a nurse had a course of three years entirely devoted to mental nursing after which she could be sent to a general hospital for two years to complete her general training In the new (four year) course the nurse goes to Rubery Hill for the first year and to the general hospital for the second She sits for the final general certificate at the end of three years and the final mental certificate at the end of four I do not pretend the course is an easy one It is not But the student with the proper educational background who is determined to succeed is assured at the end of four years of a well paid career throughout the whole of the British Commonwealth, since the status conferred on her by the General Nursing Council is an open passport to employment anywhere within the Commonwealth This fact is often overlooked both by established students and by girls seeking an adventurous career '

USE OF EDINBURGH HEALTH CENTRE

Edinburgh Town Council last week considered a report by the health committee which stated that during the past year clinic attendances at the Sighthill health centre totalled 5104 (*Scotsman* July 1) The centre which was opened two years ago (see *Lancet*, 1953 i 1038) includes accommodation for a child welfare centre, mothercraft class and school health and dental clinics and has a toddlers playground For this accommodation and its share of the cost of heating lighting and other services the committee pays £6600 per annum. At the meeting Bailie Tom Hunter said that the cost per attendance worked out at £1 5*s* 5*d* Mr James Ross suggested that the health committee might approach the committee of management or if necessary the Secretary of State for Scotland, to try to ensure that the services at the centre were fully used and that representatives from responsible community organisations in the area should be added to the committee of management.

ARTIFICIAL RESPIRATION

GENERAL recognition that the Holger *Nielsen is by far the* best method of artificial respiration for general use has meant the rewriting of first-aid manuals Thus the new one issued by the Irish Red Cross Society [1] is largely devoted to its exposition. That the advantages of this ingenious reconciliation of the seemingly opposed virtues of the Schafer and Silvester methods are genuine and not merely theoretical will be borne out by anyone who has used it or seen it used in practice Most doctors were brought up on the older methods and it is important that they should learn the newest method to put the matter at its lowest it is not agreeable to have it demonstrated to one in public after an accident by a very junior Red Cross amateur The method is one which can be readily learnt from a book and this manual provides an entirely sufficient account In the next edition we should like to see more about the manual Eve s rocking method for children, which can be used to begin artificial respiration (especially urgent with small bodies) while still standing in water, and the sitting method for use in small boats

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[1] Manual on Artificial Respiration and Resuscitation Pp 20 From the Red Cross Society 25 Westland Row Dublin

PREVENTING INDUSTRIAL DERMATITIS

Complete Cleansing (16 mm, sound, colour, 15 minutes) is a new film designed to minimise cases of industrial dermatitis by encouraging workers to use barrier creams, protective clothing, washing facilities, and a cleanser to remove oil and grease from their hands

After an introduction referring to the needless loss of man hours through dermatitis diagrams illustrate a section through the skin and the way blockage of the sebaceous ducts by grease can lead to trouble Cases of dermatitis are shown A sequence showing the bacteriological investigation of cutting oils follows, and the film ends with the wrong and right ways of cleaning the hands of oil and grease

The film is very useful for showing to industrial workers, and the diagrammatic sequence is excellent

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University of Birmingham

On July 2 the following degrees were conferred

M D—W T Cooke, Brian MacMahon (with honours), H G H Richards

D Phil—* Ishar Dyal Singh, E A Smith, A G W Whitfield

M.B, Ch.B—Molly Hill (with second class honours), Jean E M. Baron, Brenda L Bodenham, F S Boi Doku, Ann D Braham, Jeanne L Brough, G T Brown, K G Buckler P Chaucoir, Jay Gopal Chitnis A E Cutler Tara Singh Dogra * Denise J Duchesne, J L Dyke Elizabeth A. Fisher, Christine M. Fitzgerald C B Franklin, Elizabeth George, J D Goode, C M Green Peter Hall, Sheila P Hancock Barry Hansell A J Harbott, M A Harper, Pamela A Harris, B G Herwin, John Haslam C N Haynes, R W Heslop Margaret W Hill Owens, R. Holliday Gabriel Horn, Julia Hurford, G T Kelly, J N Kille, D G Lerard J D Long, Leslie Lewis, H McD Liegeois, J B Love Mary Mackay R B Miller, Valerie Millward Mary G M Moss, P M. Moss, S H Nicolaides, G D Officer A. L Parker, A W Parkes, J L Pearce, D C Pearson Eric Peters D M Price B B Reid, R F Reynolds, M T Rigby, R. O Rimmer M. L Rutter, Frank Sayer, Betty V Scott, R. O Shapiro, Helen R Sharples, Roy Summerly, Robert Tinkler, J A. Tooth G Varley, D M. Ward, M S Warwick, J L Webster Myrtle E White, B N Williams, M A Woodhouse

* In absentia.

University of Manchester

Mr K Bullock, PH.D, F R I C, reader in pharmaceutical chemistry in the university, has been appointed to the chair of pharmacy in succession to Prof. H Brindle, M.SC, F.R I C, who retires in September

Royal College of Surgeons of England

Moynihan lectures—On Tuesday, July 12, Prof H Olivecrona (Stockholm) will speak on Hypophysectomy, and on Tuesday, July 19, Dr Frederick Coller (Ann Arbor) will speak on Splenectomy These lectures will be held at 5 P M, at the College, Lincoln's Inn Fields, London W C 2

Fellowships in Clinical Research

The Medical Research Council have made the following new appointments to fellowships in clinical research for 1955–56

Dr D A Davey, medical research fellow St Mary's Hospital, London

Dr A H Gowenlock, resident clinical pathologist, Manchester Royal Infirmary

Dr S H Taylor, senior house-officer department of medicine, Queen Elizabeth Hospital, Birmingham.

Ciba Awards

The Ciba Foundation has made the following awards for 1954–55 for research into the problems of ageing

S M. Friedman (University of British Columbia) £400, E M Hartsook (Pennsylvania State University), M. M Hoffman (McGill University), J E Lovelock (National Institute for Medical Research London) and H Sobel (Cedars of Lebanon Hospital, Los Angeles) each £250, W Hobson (Sheffield University) and E Geiringer (Glasgow Hospital for Sick Children) each £100

National Association for the Paralysed

At the annual general meeting of this association on June 23, Lord Kilmaine stressed the continuing importance of voluntary personal service in the Welfare State He also urged the need for coördination among the voluntary organisations, and suggested that a merging of sectional interests and a greater pooling of resources would do most to further the interests of the disabled themselves The association's latest annual report records the progress towards the provision of a long stay hostel and a sheltered workshop with accommodation for the young chronic sick and the growth of its holiday scheme On July 18 the offices of the association will be moved to 1, York Street, Baker Street, London, W 1

Medico-Legal Society

Mr William Latey, Q C, has been elected president.

Royal Medical Benevolent Fund

The annual general meeting of the Fund is to be Thursday, July 28, at 5 P M, at 11, Chandos Stre The president, Lord Webb-Johnson, will take the c

Middlesex County Medical Society

The John Tate lecture which Dr Rowland Hill wa given to this society on Wednesday, July 13, h postponed

United Cambridge Hospitals

Mr R H Parker has been appointed chairma board of these hospitals in succession to Mr Thomas Shaw, who remains a member

Central Medical School, Fiji

Dr A R Edmonds has been appointed prin Mr K J Gilchrist lecturer in anatomy and surgery school

International Congress on Criminology

The third international congress is to be held in from Sept 12 to 18 The main subject for discussio Recidivism Further details may be had from Mr H. 25, Weymouth Street, W 1

American Dermatological Association

The association is offering prizes for original previously published, on some fundamental aspect of tology or syphilology Essays should be sent (not l Nov 15), to Dr J Lamar Callaway, Duke Hospital, North Carolina

VIII International Congress of Pædiatrics

This congress will be held next year from July 2 Copenhagen under the presidency of Prof. Prebe Further particulars may be had from the secretary congress, Domus Medica, 12A, Kristianiagade, Co Denmark

Ernest and Minnie Dawson Cancer Trust

In 1956 this trust will offer two prizes, of £1500 for essays on cancer its early diagnosis, causes, and treatment The awards will be subject to the entries The competition is open to all general practitioners in Lancashire or Yorkshire Further will be found in our advertisement columns

Appeal to Privy Council

Dr R T N Simpson has petitioned for an appe medical committee of the Privy Council against the of his name from the Medical Register which was by the medical disciplinary committee of the General Council on May 26 (see *Lancet*, 1955, i, 1172) Dr Si name will remain on the register pending the appeal.

Doctors' Handwriting

At a meeting of the Northern Ireland General Services Board Mr G D Stewart, the secretary, sa the standard of doctors' handwriting on prescriptio deteriorated Mr J P Duff, the chairman, said th time ago doctors who wrote illegibly had been the board would refuse to pay for their prescriptions their writing improved, and this had been followed b improvement At its latest meeting the board warn twelve of the worst offenders that their writing improve

Sickness Benefit

In 1954 new claims for sickness benefit numbered 7,173,000—the second lowest figure since 1950 The of current claims reached its peak in mid February 1,100,000), falling steadily to 800,000 in August and slowly to 970,000 in December—a little higher than t same month in earlier years The cost of sickness be the year ended March 31, 1954, was nearly £85 million figures are included in the Report of the Ministry of P and National Insurance for 1954 (Cmd 9495 H.M. Stat Office 4s)

Dr Leslie Eddey, until recently chief medical officer ministry of health of the Gold Coast, has accepted a t appointment from the World Health Organisation to school for the training of health assistants in Katmandu,

CORRIGENDUM *Peroneal Spastic Flat foot*—In our art on this subject (June 18, p 1262) the name of Mr N J was mis spelt

THE TREATMENT OF PULMONARY TUBERCULOSIS *

J G SCADDING
M.D Lond F.R C P
OR OF STUDIES AND DEAN INSTITUTE OF DISEASES OF
THE CHEST, BROMPTON HOSPITAL, LONDON

II

impressive volume of factual knowledge of the use
ibacterial drugs in tuberculosis has been accumu
in the period of little over ten years since the
ery of streptomycin Nevertheless there remain
important problems on which there is legitimate
nce of opinion about the interpretation of existing
and many which have not yet been investigated
n connection with the drugs in current use and
ition, new drugs of several different types are under
igation All that I can hope to do therefore, in a
discussion of the chemotherapy of tuberculosis, is
sent a personal view of the present pattern of a
y developing situation and to indicate some
le future trends

three antibacterial drugs in most general use are
omycin p aminosalicylic acid (P.A.S), and iso
nic acid hydrazide (isoniazid) Those in occasional
or special indications, include viomycin, oxytetra
e (terramycin) and the thiosemicarbazones The
ones, never very widely used have virtually fallen
use in tuberculosis Certain substituted diphenyl
eas have been found to have an antibacterial effect
st tubercle bacilli in vitro and in the laboratory
l but no reports have yet been published of clinical
igation of them (Eisman Konopka, and Mayer
Konopka, Eisman, Mayer Parker and Robbins

A chemotherapeutic action entirely different from
f any drug at present used against tuberculosis has
demonstrated in the laboratory for certain surface
agents, or detergents ; and although these have
no practical applicability, their mode of action is
teresting that I shall refer again to them later
anamide, which has been investigated clinically in
nited States, also has certain interesting properties
ich I shall speak later

tance to Antibacterial Drugs in Current Use

three drugs in general clinical use owe their
peutic effect, as far as is known entirely to a direct
acterial action The first really effective anti
rial agent available against the tubercle bacillus
treptomycin ; and experience with this very soon
d that its action was limited sooner or later by the
rance of drug resistant tubercle bacilli (Medical
rch Council 1948) It appeared also that resistant
ma appeared most rapidly and to the highest degree
se patients who have the most extensive disease the
est constitutional disturbance and the largest
ies (Bignall Clegg Crofton Smith Holt, Mitchison
Armitage 1950) These presumably are those in
n there are the greatest number of tubercle bacilli
actively multiplying It is generally agreed that
most important way in which resistant bacilli appear
genetic mutation Mutations having the property
sistance to a single antibacterial agent may appear
hance in any bacterial population When they
ge in sufficient numbers to be detected in patients
r treatment it is because they have continued to
iply while multiplication of sensitive bacilli has
selectively depressed The chance that resistant
tions will arise is clearly greater the more numerous and the more actively multiplying are the bacilli in the patient's tissues On this hypothesis, the effect of the concurrent administration of a second antibacterial agent on the chance of emergence of resistant bacilli will depend upon whether resistance to the two agents depends upon the same mutation If the mutant resistant to one agent is not primarily resistant to the other—or in other words, if resistance to the two agents depends upon different mutations—concurrent administration of two drugs in effective dosage should prevent or greatly delay the emergence of resistant bacilli This has been found to be the case with any pair from the three commonly used drugs, streptomycin P.A.S and isoniazid It is important to note that this statement is true only if the bacilli are initially sensitive to both drugs and if the drugs are given in effective dosage. The theoretical background of this concept of the mechanism of bacterial resistance has been outlined by Mitchison (1954b)

Data about the effectiveness of various dosages of antibacterial drugs in delaying the emergence of bacterial resistance are provided by the reports of the various Medical Research Council investigations and by the investigations of the Veterans Administration and of the Public Health Service in the United States The combination of P A S with streptomycin is effective in limiting the rate of emergence of streptomycin resistant bacilli but is most effective only if the dosage of P A S is high as much as 20 g daily of the sodium salt 5 g and 10 g daily were found to be less effective (Medical Research Council 1952b) Precise data about the efficacy of intermittent (twice or thrice weekly) administration of streptomycin with daily P.A.S in limiting the rate of emergence of P A S resistant and later of streptomycin resistant bacilli are not available, although there is reason to suspect that this combination may be less effective in this respect than daily streptomycin with P A S the immediate clinical effect of intermittent streptomycin with P A.S seems satisfactory (Tempel Hughes Mardis, Towbin and Dye 1951 Dye 1952) Streptomycin, 1 g daily, with isoniazid, 200 mg daily is effective both clinically and in producing a low incidence of both streptomycin and isoniazid resistance but if streptomycin is given intermittently with isoniazid daily there is a considerable risk of the emergence of isoniazid resistant bacilli (Medical Research Council 1953c 1955) The combination of isoniazid with P.A.S is most effective from the point of view of the avoidance of bacterial resistance and as little as 10 g daily of sodium P A S may safely be given with 200 mg of isoniazid (Medical Research Council 1953c 1955)

It may seem odd that I have dealt with the effectiveness of these various drug combinations in limiting the emergence of resistant bacilli before discussing their clinical efficacy I have done so in order to emphasise the viewpoint which has been characteristic of British workers in this field—that bacterial resistance should be a matter for constant concern with the physician treating tuberculosis with antibacterial drugs The patient with resistant bacilli labours under personal and social disadvantages As far as he himself is concerned the drug to which his bacilli are resistant is unlikely to benefit him further and if given in combination with another drug it will not protect against the emergence of resistance to that drug Socially he becomes a special danger to the community If bacilli continue to be excreted in his sputum or if after a period of good health he suffers a relapse and bacilli reappear in his sputum the infection which he will be liable to pass on to others will be with drug resistant bacilli since bacterial resistance appears to be a fixed characteristic

This apprehension about the dangers of drug resistance led at first to reluctance to continue the administration of antibacterial drugs even in approved combinations

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Lettsomian lectures for 1955 delivered at the Medical
Society of London on April 18 25 and 27 Lecture I
appeared last week.

for more than limited periods of the order of three or four months. Several considerations have led most physicians gradually to increase the duration of antibacterial treatment. The availability of more than one effective pair of antibacterial drugs was an important factor. Another is the fact that the data about bacterial resistance have been derived for the most part from patients having the sort of disease most favourable to the emergence of resistant strains—namely, acute rapidly progressive disease with extensive caseation and cavitation. It is highly probable that the danger of the emergence of resistant strains from less extensive and active lesions is considerably less; and in patients who show a good initial response to antibacterial treatment, with disappearance of bacilli from the sputum, indicating that the multiplication of bacilli has been slowed or stopped, the probability of the appearance of resistant mutants is much diminished. Treatment of such patients is often continued for a long time, on the hypothesis that the continued administration of antibacterial drugs after the activity of the disease appears clinically to have been controlled may well be useful in inhibiting the growth of bacilli—acting, as it were, as a prophylactic against reactivation of disease while the natural defences of the body consolidate the position. Another point which has been advanced in favour of more prolonged antibacterial treatment is that a laboratory report that the strain of bacilli isolated from a patient's sputum is resistant may mean only that a small proportion of the bacilli present are resistant; and therefore continued treatment may for a time benefit the patient by its effect on the still sensitive majority of the bacillary population. But it is important to remember that if treatment with a combination of drugs is continued after some of the bacillary population has become resistant to one of the drugs, bacilli resistant also to the other will be liable to appear in due course.

Pathogenicity of Isoniazid-resistant Tubercle Bacilli

Recently, this rather straightforward and clearly definable view of the significance of bacterial resistance has been challenged in relation to isoniazid. It has been shown, and widely confirmed, that tubercle bacilli rendered highly resistant to isoniazid showed loss of virulence for laboratory animals (Steenken and Wolinsky 1953, Middlebrook and Cohn 1953, Barnett, Busby, and Mitchison 1953, Mitchison 1954a). It is only strains of bacilli all of which are very highly resistant which show this loss of virulence; the loss of virulence has been demonstrated only for laboratory animals; and bacilli of the lower level of resistance which is more frequently found clinically are normally virulent.

The loss of virulence has been correlated with cultural peculiarities of the isoniazid-resistant bacilli; these bacilli appear to be deficient in catalase, an iron-porphyrin-containing enzyme causing release of oxygen from hydrogen peroxide, and require a source of this enzyme in the culture medium (Cohn, Oda, Kovitz, and Middlebrook 1954, Cohn, Kovitz, Oda, and Middlebrook 1954, Middlebrook, Cohn, and Schaefer 1954). On the other hand, bacilli of a lesser degree of resistance show catalase activity and are pathogenic.

Middlebrook, Cohn, and Schaefer (1954) have found that resistant bacilli of the catalase-negative type appeared only in the sputum of patients whose treatment with isoniazid was started at a dosage of not less than 8 mg per kg body-weight; they therefore claim that treatment should be started at this dosage, with the implication that isoniazid can then safely be given alone, since all resistant mutants which emerge in patients receiving such heavy dosage will be avirulent. Moreover, they suggest that avirulent highly resistant bacilli may be permitted to multiply in the walls of cavities, where they find a ready source of catalase from degenerating polymorphs, although they may be unable to survive elsewhere in the body. In these circumstances, it is the persistence of bacilli in the sputum may n clinical activity of tuberculosis, and thus in under treatment with large doses of isoniazid a sputum may not have its normal serious signific

If these suggestions are true, they will be revol in their effect; but the very fact that their implications are so very attractive should great caution in accepting them. Neverthele is no reasonable doubt that isoniazid is di important respects from streptomycin in its effe instance, though tuberculous meningitis h observed to develop during streptomycin trea said not to develop in patients under treatm isoniazid (Clark, Elmendorf, Cawthon, Muschen McDermott 1952), and in the laboratory and Smith (1953) have shown that isoniazid intracellular tubercle bacilli, whereas str does not.

Clearly, there are very important proble investigated in relation to the practical appl isoniazid; but they can only be solved by planned and controlled investigations of large n patients. Until unequivocal results are avail such investigations the wise physician will co treat his patients on the supposition that resistance is unfavourable, and to plan an treatment in such a way as to minimise the emergence of resistant bacilli.

Toxic Effects of Antibacterial Drug

Toxic effects, though rarely serious, may the normal course of treatment with antibacte and the possibility of their occurrence may inf choice of drug combination.

The most important toxic effect of streptom the eighth nerve, particularly its vestibular div dizziness, vertigo, and unsteadiness in walki appears to be a direct toxic effect of the drug due to sensitisation. It is more frequent in olde Fortunately, the damage is not usually progre the administration of the drug is stopped, an tional effect steadily diminishes as other mec equilibration take over the function of the labyrinth.

With streptomycin, the incidence of seriou to the auditory division of the eighth nerve is On the other hand, dihydrostreptomycin, introduced into clinical practice because it siderably less damage to vestibular function, shown to cause a significant incidence of nerv which in some cases has proved to be progre administration of the drug was stopped (Christie, and Howlett 1951, Don and Greg This nerve deafness is irreversible, and of co can be no satisfactory compensation for loss o Accordingly, it seems far preferable to accept slight risk of labyrinthine damage which is e the commonly used levels of streptomycin do than to run a numerically smaller risk of nerv from dihydrostreptomycin.

Curious paræsthesiæ around the lips and experienced by some patients soon after inj streptomycin, but are not troublesome. important toxic effects of streptomycin are reactions, which may take the form of drug r fever, and, rarely, generalised reactions in w is accompanied by such manifestations as lyn pathy and arthropathy. These sensitivity include a contact dermatitis which affects t administer the drug rather than the recipients necessitates special care in the technique of to minimise the chances of contamination of of the nurse (Crofton and Foreman 1948, M Health 1953). Streptomycin sulphate is to be the streptomycin calcium-chloride complex, because it ves rise to less pain on intramuscular injection

The principal direct toxic effects of P.A.S are on the mentary system—nausea vomiting, abdominal dis mfort, anorexia and diarrhœa They tend to be rather ore troublesome the larger the dose of the drug but ost patients are able to tolerate the full dose of 20 g ily of sodium P.A.S Sensitivity reactions, with skin hes and constitutional symptoms and rarely jaundice o occur Disturbance of serum electrolytes with low um potassium level has also been reported but may in the main attributable to the increase in sodium ake entailed by the long continued administration of e sodium salt of P.A.S

By comparison the toxic effects of isoniazid are atively few Although symptoms referable to the ntral nervous system were reported when the drug was st used, they are exceedingly uncommon in the doses ing used at present Psychological symptoms on with awal of the drug and peripheral neuritis, have been ported Sensitisation is rare

Choice of Antibacterial Drugs

The choice of combination of antibacterial drugs for lividual patients is sometimes a rather arbitrary atter, but certain considerations should be borne in nd

The clinical effectiveness of the three double com rations is comparable Streptomycin and isoniazid pears to be very slightly more effective, as judged by eed of effect on clinical and radiological manifestations disease than streptomycin and P.A.S and the latter mbination similarly rather more effective than iso azid and P.A.S But the differences are small and explained individual differences in response to the rions drugs are occasionally seen The disadvantage giving streptomycin and isoniazid—individually the o most effective drugs—in combination is that if the bercle bacilli infecting the patient become resistant to e of them, they are likely to become resistant also to e other and thus the two drugs with the most potent tibacterial action will become ineffective for that tient As already stated, it is necessary to give eptomycin daily with isoniazid if the chance of the ergence of bacilli resistant to isoniazid is to be nimised For these reasons I prefer when it seems ely that antibacterial drugs will be the principal form treatment, to start with either streptomycin and P.A.S isoniazid and P.A.S Where the disease is acute with tensive cavitation and caseation, daily administration streptomycin sulphate 1 g and P.A.S 20 g of the dium salt, should certainly be the first choice in the sence of complicating factors, since this is the type of e in which the danger of the emergence of resistant ains of bacilli is highest and the reason for avoiding e simultaneous administration of the two most effective ugs is therefore strongest A few patients prove so tolerant of P.A.S that isoniazid has to be substituted for In older patients, a combination of either P.A.S with niazid or P.A.S with streptomycin two or three times week, should be chosen

Isoniazid and P.A.S form an attractive combination, ce they can both be given by mouth Their toxicity for practical purposes that of the P.A.S alone; and is is not serious since it has been shown that dosage P.A.S as low as 10 g daily may safely be used in this mbination I usually give 200 mg of isoniazid with g of sodium P.A.S daily in four divided doses; this mbination is especially suitable for patients with less tive disease in whom rapidity of response need not be a ime consideration, for older patients, and for long term atment especially of outpatients.

The possibility that the patient's bacilli are resistant to one or more of the drugs must sometimes be considered before starting treatment At present a patient who is not known to have been in close contact with a person who has in the past undergone anti bacterial treatment for tuberculosis, nor himself has previously received such treatment may with reasonable certainty be assumed to be infected with bacilli which are sensitive to the commonly used antibacterial agents Ideally sensitivity tests should be done before starting treatment, but the amount of laboratory work entailed makes this a counsel of perfection for all but the most favoured communities In practice, if a patient's history gives no reason to suspect that the bacilli might be resistant, treatment may be started on the assumption that they are sensitive. But if he has previously received treatment with antibacterial drugs sensitivity tests should be carried out, and the results known before starting treatment If he has in the past received treatment with one drug alone urgent treatment should be planned on the assumption that the bacilli are likely to be resistant to that drug This means that the combination of the two drugs which he has not previously received should be chosen Similarly, if the patient is known to have been in contact with a person who has received antibacterial treatment and it seems at all possible that his infection was derived from that person preliminary sensitivity tests are highly desirable The results of these tests will influence the choice of treatment in obvious ways. The preliminary testing may delay the start of treatment, but there are few patients who will come to harm if kept at rest in bed while awaiting the result of a sensitivity test Much harm may be done by the wrong choice of antibacterial drugs

Clinical Effects of Antibacterial Drugs

Before discussing some of the antibacterial agents which are still under investigation I should like to say something on the use of antibacterial drugs in con junction with a conservative régime as the sole method of treatment in pulmonary tuberculosis.

The indications for the use of these drugs in general are now very wide Used wisely they play an essential part in the management of all forms of active tuberculosis As I showed in the first lecture tuberculous pneumonia which has not yet reached the stage of caseation can resolve completely Accordingly it is in those cases in which the lung lesions are of recent origin, and still in a predominantly pneumonic stage, that antibacterial treatment has the best chance of securing resolution and clinical cure without the need for further measures Sometimes it is possible to be certain about the recent origin of disease—e g when a patient happens to have had a radiograph of the chest which was normal within a short period before the disease was detected or when the pneumonic disease arises while the patient is under observation because of an old focus of tuberculosis thought to be quiescent

Although it is nowadays fairly often possible to be certain of the recent origin of disease because of the increasing frequency of mass radiographic examinations it is more often possible only to make an estimate of the probable age of newly diagnosed disease from the date of onset of symptoms and the quality of the radiographic shadows Quite often, the extent of irreversible lung damage—i e, of caseation persistent cavitation and fibrosis—can be assessed only after observing the initial response to treatment If no persistent cavities are observed, small persistent shadows indicative of encapsu lated caseous foci or fibrosis or changes of both these types may usually quite safely be left provided their appearances are stable there are no bacilli in the sputum, and no clinical evidence of active disease or of broncho stenosis.

Antibacterial treatment is often useful in arriving at an assessment of the activity of disease discovered on

[illegible] Library
S. M. S. Medical College

routine radiography in a patient who is symptom free In such a case, failure of the shadows to resolve after an adequate period of antibacterial treatment is good evidence that, if they are due to tuberculosis, the disease is not active, on the other hand, resolution indicates activity and the need for thorough treatment In this application, the combination of isoniazid with P A S is especially useful for two reasons Firstly, it can be given very conveniently to outpatients, and secondly, it cannot be of benefit in any disease except tuberculosis, and therefore improvement after its use may have diagnostic significance if there is doubt about the cause of a radiographic shadow

Antibacterial treatment is of very great value in patients with tuberculosis involving the main bronchi Bronchoscopy is advisable before treatment is ended, in order to determine whether any main or segmental bronchus has become narrowed, and lengthy treatment is advisable even in those cases in which healing occurs without bronchostenosis

Many patients unfortunately will first come under observation at a time when their disease has already led to irreversible changes Especially when there is persistent cavitation these are the patients in whom the possibility of the early emergence of resistant bacilli is greatest Accordingly, I think that in such cases the physician should avoid unnecessary delay in the adoption of whatever measures may be necessary and possible to deal with persistent cavitation, and should review the situation frequently in order to determine the best time for any further intervention which may be indicated I also think it reasonable sometimes, when dealing with a patient in whom the disease at the beginning seems likely, on account of its extent and acuteness to cause irreversible changes, to attempt to forestall the development of persistent cavitation by the "medical" collapse methods of artificial pneumothorax or phrenic paralysis with pneumoperitoneum In addition to persistent cavitation, another danger signal in a patient under treatment with antibacterial drugs is the continued presence of bacilli in the sputum in the absence of obvious cavitation, it calls for investigation especially to determine whether tuberculous changes are present in the larger bronchi, so that any appropriate additional treatment may be undertaken without delay

There remains for consideration the use of antibacterial treatment in those patients with chronic and extensive disease for which neither collapse therapy nor resection is feasible Many physicians have, quite justifiably, had qualms about the use of antibacterial drugs in these patients, because in them the risk of the emergence of resistant bacilli is high, and they form an important potential source of infection in the community On the other hand, most of these patients will derive benefit from treatment, certainly until such time as their bacilli become resistant, and there is now considerable experience of patients of this type who have had long continued antibacterial treatment with impressive results In my view, each case should be considered on its merits The special dangers which he may constitute to the community should be explained to the chronic sputum positive patient before embarking on prolonged antibacterial treatment, in order to ensure his cooperation in the essential precautions against spread of infection

Such treatment as an outpatient, while the patient remains partly ambulant, is extremely valuable in the elderly I will quote briefly an example of this

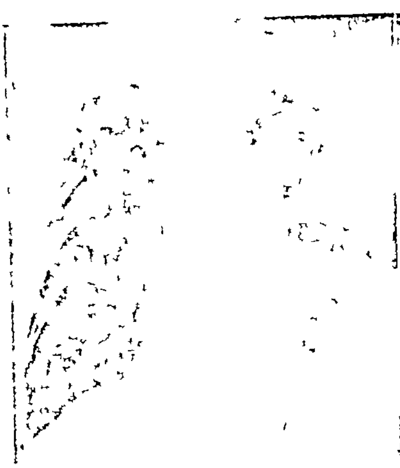
Fig 2—Case 1: Radiograph, March 25, 1954

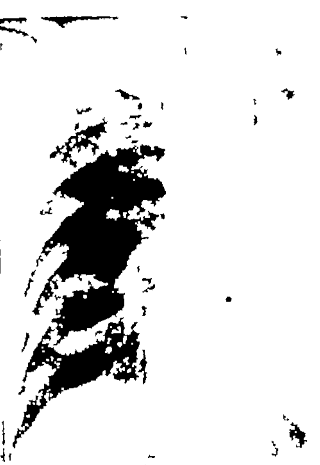
Fig 3—Case 1: After 10 months' treatment with isoniazid and PAS

Case 1—A man, aged 72, presented with sympto long standing chronic bronchitis The radiograph, showed evidence of widespread tuberculous changes, looking old (fig 2), and tubercle bacilli were found sputum He was treated with isoniazid and P A S in the dosage for one year, with a gain of 10 lb in weight, appearance of bacilli from sputum cultures, and clearing of radiographic shadows (fig 3)

I now regard isoniazid and P A S as the best tion of drugs to use for outpatient treatment, in the older patients The duration of treatment is difficult to decide The considerations which I men at the beginning of this lecture have enc progressive increase in the duration of an treatment, which I will admit I have been more enforce since the effectiveness of the combination of two drugs which can be given by mouth became I now continue antibacterial treatment, intended t definitive, for at least three months after the last ev of activity of disease has disappeared, and con longer than this in cases in which the disease was at all extensive

Less Commonly Used Antibacterial Drugs

Other antibacterial drugs than streptomycin, P and isoniazid will usually be considered only for pati whose bacilli are insensitive to at least two of the commonly used drugs Viomycin, isolated in 1950 *Streptomyces floridæ* or *puniceus* (Finlay et al. Bartz, Ehrlich, Mold, Penner, and Smith 1951) app have an activity against the tubercle bacillus comp with that of streptomycin, though slightly less more toxic than streptomycin, the toxic effects be both divisions of the eighth nerve, on the kid (causing albuminuria and cylindruria), and on electrolyte balance It is occasionally useful for pati whose bacilli are resistant to other antibacterial age Oxytetracycline (terramycin), while having a ba static effect on tubercle bacilli only in relatively concentrations (Hobby, Lenert, Donikian and P 1951), seems to be effective in limiting the rate emergence of resistant strains when it is given in bination with streptomycin (Miller, Sands, Walker, and Tempel 1952, Rothstein and Johnson 1954, Schr and Moyer 1954) For this purpose it seems necessar give it in doses as high as 5 g daily, and this is liable to give rise to unpleasant side effects, espec on the gastro intestinal tract, so that some patients unable to tolerate it Recently, a small scale in gation has suggested that similar doses of oxytetra given with isoniazid may be effective in delaying emergence of isoniazid resistant bacilli (Stewart, Tur

Crofton 1954) In addition to the present uncer ity about the optimal dosage, oxytetracycline has the dvantage of high cost Its use is therefore justifiable y when no other drug is available to combine with ptomycin or isoniazid

emotherapeutic Agents Acting Through the Tissues of the Host

should now like to consider briefly some agents of a e not yet suitable for clinical use, but which are of y great interest since they have a therapeutic effect xperimental tuberculosis of a novel character Their perties were discovered almost by accident Hart and s at the National Institute for Medical Research were rested in the possible effects of lipæmia on tubercu s in mice A commercial non ionic detergent Triton 0' was known to produce a rise in blood cholesterol phospholipids They therefore administered this to cted mice and found quite unexpectedly, that it ibited the development of tuberculosis Since the ic effects were severe, including convulsions they and ir colleagues synthesised a series of surface active yoxyethylene ethers, similar in structure to Triton 0 and investigated their therapeutic and pharmaco cal effects Certain of these were found to be thera tically active in vivo against tuberculosis in mice ough showing no antibacterial effect in vitro (Corn h Hart Rees, and Stock 1951 Rees 1954 Cornforth t, Nicholls Rees, and Stock 1955) These agents ress tuberculin sensitivity and the activity of ious members of the series in this respect corresponds herapeutic activity (Hart, Long and Rees 1952) On other hand their activity in producing lipæmia bears relation to their therapeutic activity Mackaness 4) has shown that while the addition of one of the ergents to infected tissue-cultures has no effect hocytes harvested from rabbits previously treated h the detergent inhibit the growth of tubercle bacilli ch they subsequently ingest in vitro Here we have, refore a chemotherapeutic agent exercising its effects ough the cellular defence mechanisms of the host but hout direct antibacterial effect. Unfortunately even least toxic of the products synthesised up to the sent although lacking the acute toxic effects of on A 20 produces liver damage on prolonged inistration in experimental animals

he development of an agent of this group suitable for ical use might well mark a milestone in the history he chemotherapy of tuberculosis Failures in treat nt with current antibacterial drugs seem in many ances to be attributable mainly to failures of host stance, and it may well be that the develop nt of an agent having chemotherapeutic activity ough an effect on the defence mechanisms of the host uld be the answer to the problem which such cases sent.

may not be inappropriate to mention here the ial properties which have been claimed for the bination of pyrazinamide with isoniazid Pyrazin de alone has a relatively feeble chemotherapeutic vity in tuberculosis comparable to that of P.A.S io, and bacilli rapidly become resistant to it (Yeager roe and Dessau 1952, Phillips, Larkin Litzenberger ton and Haimsohn 1954 Steenken and Wolinsky 4) In combination with streptomycin or P.A.S it rs no special advantage (Schwartz and Moyer 1954) the combination of pyrazinamide with isoniazid ms to have a specially potent action in sterilising the ies of tubercle bacilli in the laboratory animal Dermott Ormond Muschenheim, Deuschle McCune Tompsett 1954) and has been claimed to have an sually potent effect in the treatment of pulmonary rculosis in man (McDermott and others 1954 chenheim McDermott McCune Deuschle, Ormond Tompsett and Stern 1954 Campagna, Calix, and Hauser 1954) Here we have a substance of relatively feeble activity against the tubercle bacillus in vitro, and when given alone in vivo which appears to have an effect of special potency when given in combination with isoniazid to the experimentally infected animal or to the human patient It is tempting to speculate whether its action may not at least partly be mediated through the defence mechanisms of the host, like that of the detergents Unfortunately, pyrazinamide also like the detergents may cause hepatitis on prolonged administration, and this complication has occurred with disturbing frequency in the patients treated with isoniazid pyrazinamide This combination must therefore at present be regarded as under investigation, and not yet suitable for normal clinical use

The rapid development of antibacterial drugs has not unnaturally tended to concentrate attention upon the idea of a direct attack upon the tubercle bacillus. Host factors in determining the outcome of tuberculosis, which of necessity engaged the interest of the physician treating the disease before these drugs were available, have received relatively little attention from clinicians recently A few physicians have been interested in the effects of substances acting on the tissues of the host as adjuvants to antibacterial drugs Hormones, such as cortisone and corticotrophin and tuberculin have been tried in this way I think it would be fair to say that no conclusive clinical results can yet be reported, but the interest in host factors which these attempts show is significant In the chemotherapeutic surface active agents we have striking evidence from the laboratory of the possibility of attacking tuberculosis through the defence mechanisms of the patient, not slowly and uncertainly by non specific supportive measures, but directly by substances having a specific action in stimulating definable aspects of the cellular defences Perhaps it is from this direction that the next great advance in the treatment of tuberculosis will come.

CLINICAL PITFALLS IN THE ELDERLY*

S M Vine

M A M.B Camb M R.C P

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There is much truth in the saying that ' the pattern of disease changes in the elderly and it is the change in common signs and symptoms which leads to diagnostic difficulties Very little has been written on this subject, so I have chosen common examples exclusively from 600 women whom I have seen in their homes during a period of fourteen months some 200 of whom have been further examined and treated in the geriatric unit of Brighton Hospital. In all cases a diagnosis from the patient s own doctor was available

Œdema of the Legs

This is a common source of difficulty in diagnosis for it is very often interpreted as indicating heart failure But in the elderly the commonest cause of œdema is increased capillary permeability with which may be associated anæmia starvation or hepatic fibrosis, and consequent changes in the osmotic balance between blood and tissue fluids. Again many old people become immobile the vis a tergo of the veins is lost and the muscular pump no longer assists venous return Venous obstruction from old thrombophlebitis longstanding varicose veins, or abdominal tumour is another common cause which should be excluded before the œdema is held to be renal or cardiac

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* Based on an address given to the Brighton and Sussex Medico Chirurgical Society on Oct 7 1954

Heart-failure

Besides œdema other manifestations which may be the results of heart failure can prove misleading—breathlessness on exertion, for example Changes in the bony thorax and the lungs may be responsible for the reduced exercise tolerance in old age, and the heart may be entirely innocent Venous engorgement in the neck, so often present before œdema in early congestive failure, can be caused by emphysema, increased blood-volume from any cause, tricuspid disease, obstruction of the superior vena cava, anæmia, or heart block (not necessarily with failure) If there are also fine crepitations at the bases of the lungs, then a diagnosis of heart failure is more likely, but it must be remembered that in the elderly skeletal changes may restrict aeration of the lung bases, and that deep inspiration is often followed by crepitations for a short period, other audible sounds—e g, of chronic bronchitis—may often complicate the issue As for the pulse, the rate is more important than the rhythm, since of course in failure the rate is commonly raised A rate of 80 or less, with auricular fibrillation and no other signs does not indicate a failing heart indeed fibrillation, with a slow ventricular rate and no clinical or electrocardiographic evidence of heart disease, is so common in old people that it can be totally disregarded in deciding how to manage the patient These patients will not thank you if you digitalise them (Elderly patients vomit after digitalis for three reasons rarely because they are truly intolerant, sometimes because of an overdose, and often if their heart does not need digitalis)

Is there then any reliable sign of established heart-failure? There is one that can be relied upon—the triple rhythm which is best heard at the lower end of the sternum I must make it quite clear that by triple rhythm I mean the addition of the third or fourth sound, and not to splitting of either the first or second sound Since it is often difficult to distinguish between the third or fourth sounds by ear alone, and there are benign causes of a third sound, it is wise never to diagnose heart failure on less than two positive physical signs in addition to a suggestive history

Hypertension

No patient in this small series had malignant essential hypertension, and I have never seen the condition over the age of 62 If we may exclude renal hypertension, the only remaining common form is so called "benign essential hypertension" As it is not always benign, and is hardly essential, a better term is "idiopathic primary hypertension" This is extremely common, particularly in elderly females Using the old term, essential hypertension *does not cause any symptoms* it is the associated arteriosclerosis which does so, or the anxiety state of the patient who knows his blood pressure I never take the blood pressure on a domiciliary visit, for one casual reading is valueless, and fair estimate of hypertension can be formed by examination of the heart, looking particularly for the dynamic thrust of the left ventricle, the displaced apex, the loud aortic second sound, and the state of the retinal vessels The sphygmomanometer used under resting conditions is useful to confirm the clinical diagnosis, but the actual figures do not matter In no other age group can the use of the sphygmomanometer be forsaken with greater confidence If a man of 45 is found to have a basal pressure of 220/100 without symptoms, his investigation and [illegible]tment is extensive and vigorous Although blood-r[illegible] does not normally increase significantly in eld[illegible] the finding of such a pressure at 75 would [illegible] investigation nor treatment, since no benefit to the patient is guaranteed and no accident can be foretold or prevented What we do is to avoid using the term "blood pressure" only alarms the patient and makes a convenient which to hang all manner of symptoms, and en sloth and invalidism At present few doctors give tensive drugs to the elderly since there is a impression that they increase the liability to thrombosis and ischemic heart disease

We may have to modify our views if the c of Shenkin and Novack (1954) are confirmed in the They have investigated the behaviour of cerebral in several groups of hypertensive patients, and found that in hypertension *unaccompanied* by sclerosis there was a rise in cerebral vascular res (C V R) without any change in the cerebral b (C B F), whereas in the presence of coexisting sclerosis the C B F was itself significantly re Arteriosclerosis was diagnosed in this series of either on radiological or ophthalmoscopic or on a history of vascular occlusion Conversely arteriosclerosis was present without concomitant tension there was no significant effect on either or C B F Thus, there may exist a group of elderly p with essential hypertension, but without arteriosclerosis in whom it would be worth while re the hypertension as a prophylactic measure arteriosclerosis Once the latter is established will be decreased so it would be dangerous to re blood pressure

In this respect, beware tolazoline ('Priscol similar vasodilators after a cerebral vascular Many of them lower blood-pressure, and Clarke colleagues at Hammersmith have proved no C B F with tolazoline (Clarke et al 1954) If any substances do dilate the cerebral vessels, they m increase cerebrospinal-fluid pressure At a tim œdema may be accompanying an area of infarction any further increase of intracranial would be dangerous

Arteriosclerosis

In cerebral arteriosclerosis the early symptoms largely mental or largely physical, but careful e tion of the nervous system will always reveal of both When a patient has had a cerebral thr causing a hemiparesis and recovers function, will reveal that he also had some memory behaviour change, or change of temperament be thrombosis Both problems have to be tackl other causes of organic dementia—notably, tumour, G P I, chronic alcoholism, and bromide tion—must first be excluded The difficult pati those with predominantly mental changes reasons

(1) Relatives are scared of them, and feel it is to keep them at home

(2) They need someone to keep a constant eye but in mild cases that someone need only be another in a welfare home

(3) They must be kept up and about, or incontin supervene, and incontinence in cerebral arter is an advanced, not an early, symptom Once prese never recover with the patient in bed

(4) They are intolerant of changes in environ routine move their bed or favourite chair, chan place at table, and an episode of dementia follows.

(5) Many of them are afraid They seek and tigh the doctor's hand at the bedside and they reluctantl But few can say of what they are afraid perhaps insecurity

The prospects for these patients have been tionised by chlorpromazine My assessment is complete, but chlorpromazine has ousted phenob as a hypnotic, and bids fair to rival aspirin as useful drug for the elderly.

Coronary Thrombosis

' silent " coronary becomes more common as age ces but it is silent only in comparison to the tic picture in the classical case I have seen many ts who have become helpless as a result of a fall ten the cause was a heart attack probably a severe ry thrombosis, though in some cases when con ness was lost it was impossible to exclude Stokes s' syndrome Those who recovered never gave a y of chest pain Thus indigestion, bizarre chest or pain unaccustomed nocturnal restlessness or an *lained fall are four presentations of a very common*)

Anæmia

emia easily heads the list of those conditions most missed in the examination of the elderly which ity since most anæmias respond fairly rapidly to ient My own pitfall was suspecting anæmia where existed by attaching too much significance to facial

The commonest cause of pallor in the elderly is eration in a small relatively airless room for months n years on end and if the patient has been used fresh air and has developed a tan through the an indoor life gives the complexion a grey yellow hue which at once brings anæmia to mind but o misleading The conjunctiva is also an unreliable but the pale smooth tongue cracks in the angles mouth and the colour of the palmar creases and finger pulps tell their own story Entwine the it's fingers with your own and compare the pulps u cannot differentiate the patient's fingers from own then they are unlikely to be anæmic

bably most people over the age of 70 either have chydria or hypochlorhydria. Since acid is believed essential for the absorption of iron some iron ency anæmias may respond only to intravenous py

lisonian megaloblastic anæmia, though a rare tion has its greatest incidence over 60 There were iagnosed cases in patients visited last year Now ect to find 1 case in every 100 visits A recent ple illustrates how difficult diagnosis can be

w a woman of 82 who ten days previously had taken bed saying she was worn out and could work no more ad never in her life required medical attention The ositive finding was pallor On admission next day her as 23% and classical blood changes of megaloblastic ia were present There was the expected reticulocyte use to vitamin B_{12}. She was soon fully convalescent ent home within a month of admission

e puzzling anæmia in the elderly is that in which ed-cell count is 3 to 3½ million, *the cells being* ocytic and normochromic with no increase in locytes. In younger people the commonest cause l be acute hæmorrhage, but an increased reticulocyte would be expected Such a count is never found chronic blood loss, nor do chronic nephritis chronic ions, or cancer produce it, and one must suppose in common with other tissues the bone marrow *ing and becoming hypoplastic* Fortunately many ese anæmias improve to some extent with general and adequate nutrition of the patient, but when they do so a transfusion of fresh cells is the only remedy ransfusion in the aged is not a procedure to be taken lightly

Myxœdema

yxœdema is usually diagnosed at a glance but *s not recognised at once it is* incredibly easy to miss after a full clinical examination Sir William Gull s original description of 1873 wrote

ho complexion is fair at a first hasty glance there might pposed to be a slight general œdema of it but this is not med by a future examination, whilst the beautiful delicate rose purple tint on the cheek is entirely different from what one sees in the bloated face of Renal Anasarca.

Later writers commented on the Dresden-china or porcelain complexion but this *is not always a feature and* I have the impression that the classical complexion is present only when the myxœdematous patient has an associated anæmia for although anæmia commonly accompanies myxœdema, it is by no means invariable The presenting symptoms of myxœdema are legion including increasing weight paræsthesiæ and joint pains constipation deafness and *mental apathy* To these I would add one further *symptom which seems to predominate* in the elderly—*unexplained bad temper* which seems comparable to the viciousness displayed by mild cretins

Parkinsonism

The misleading cases of parkinsonism I see have no tremor and the patients are referred to hospital because they have become less and less active until they are unable to fend for themselves Or since this is an asymmetrical disease except for the face, a clumsy arm or hand may be the presenting feature There is commonly pain in the joints of the affected limbs and as the wrist is the second most common site for rigidity, rheumatoid arthritis may be mimicked The earliest physical signs involve the eyes blepharoclonus on lightly closing the lids weakness of convergence infrequency of blinking *and best of all Wartenberg's blinking sign which is* diagnostic of parkinsonism This is elicited by standing behind the patient and tapping the glabella. In parkinsonism both eyelids blink in time with the tapping and this will continue indefinitely Wartenberg also discovered a head falling sign based on the fact that rigidity is usually first detectable in the neck but this sign is difficult to elicit in the aged

Arthritis

It is amazing how many elderly people will resign themselves to several years of hip knee or shoulder pain believing that it is an inevitable accompaniment of ageing rather than seek advice at an early stage when outpatient treatment is possible.

Diagnosis is sometimes far from straightforward beware the elderly patient who has signs and symptoms of osteo arthritis confined to one large joint particularly the hip Before we had a portable X ray unit we treated these patients without X ray examination but we never do so now In 3 cases of unilateral arthritis the cause was found to be an impacted fracture of the femoral neck which the patient could never recall sustaining in 4 cases symptoms were due to secondary deposits in the upper femur or ilium ; and in 3 cases we found Paget's disease of which there was no clinical evidence elsewhere The response to mixed endocrine therapy in Paget's disease has been dramatic and one can now reable some patients who would otherwise be complete cripples.

Though a radiograph will reveal osteo arthritis, the radiological appearances should not be allowed to influence or determine treatment Often the hip with gross X ray changes has few or no symptoms, whilst its fellow shows little evidence of disease yet gives incapacitating symptoms

Gastro Intestinal Disorders

Considering how common gastro intestinal problems are in younger people, functional dyspepsia and peptic ulceration are comparatively rare in the old At necropsy no matter how much the *brain kidneys, heart, lungs* skin or bones may have degenerated the guts often look good for another lifetime

There are two common non malignant intestinal conditions which may jeopardise life in later years and may be classed as emergencies. The first is fæcal impaction, without doubt the commonest cause of persistent diarrhœa in the elderly and usually presenting as fæcal incontinence Diagnosis is easily made by rectal examination, but relief may be difficult and a simple rule is that if the mass cannot be moved by the examining finger without causing pain, admission to hospital is imperative The second condition is diverticulitis In the old, pericolic abscess is a common complication and all too often leads to generalised peritonitis Perhaps at this age it is to be expected that peritonitis will prove fatal, but one prefers to diagnose it before necropsy It is the paucity of physical signs and lack of change in symptoms which makes the diagnosis of this complication so difficult and often unsuspected until the patient is moribund

The Greatest Pitfall

But the greatest of the pitfalls (and clinical in the widest sense) is the belief that the problems created by an increasing proportion of aged in the population can be solved by finding more hospital beds The purpose of entering hospital is to become fit enough by the quickest possible means to lead a useful life outside it, and that applies to all ages My idea of the practical medicine of the elderly is founded on three principles

(1) The elderly shall receive the same skilled attention as younger patients do

Does that sound reasonable ? Then consider but on implication We have a rehabilitation ward of 34 female beds There is one physiotherapist on the ward from 9 15 A M to NOON on five weekdays It is impossible to use the physical-medicine department it is also impossible for the physiotherapist to have under treatment at any one time more than 16 patients, otherwise her treatment becomes inadequate The average time for treatment is eight to twelve weeks There is in fact a queue in the ward for treatment and that hinders turnover Add another physiotherapist and beds are freed more quickly but until those patients who already occupy beds in geriatric units are able to receive all necessary treatment, it is a crime to consider increasing the actual number of beds A bed in itself solves nothing unless the patient is going to be properly treated and the first need is for adequate ancillary staff to carry out that treatment

(2) *Any patient* whose illness or disability *begins* over the age of 65 either dies or can be reabled within one year, except when advanced mental change is present

To this statement the cynical are apt to say, " what about disseminated sclerosis or advanced rheumatoid arthritis, you can't get those patients out " No, but they are *not* geriatric problems, and their illness did not arise over 65, but they occupy beds because they have brought their disease with them into old age In time, we hope, when the cause of these conditions is known, rational treatment will prevent crippling in old age, and so these patients will disappear from the long stay wards In fact already, except for the advanced dementias whom it would be unkind to certify, the long stay annexes as we have known them are on their way out There is little use for a nucleus of beds in which patients are dumped simply because the available facilities will not allow proper management

(3) A hospital is not a permanent residence

Every week we are asked to see aged folk, often without near relatives, who in the natural process of ageing are becoming less able to cope with the strain of being totally independent and who require *assistance to keep them healthy* Apart from the inhumanity, admission to hospital in these circumstances is a dangerous and negative policy Therein lies the problem, for the responsibility of keeping them healthy lies with the local authority and not with the regional board The local authority provides nursing and other non medical assistance in the homes and when permanent attention is required, provides accommodation in welfare homes, that is, part-III accommodation under the National Assistance Act of 1948 The accommodation provided in Brighton and East Sussex is excellent but not yet enough of it Not only have the welfare auth difficulty in housing all the cases assessed by their officers, but this shortage of welfare accommodat the biggest single factor in delaying discharge of reabled women from hospital The beds are there are blocked by patients who are as fit as they ever be, and should not be in hospital but who cannot entirely for themselves Blame either the local auth which has fallen badly behind in its welfare pro or blame a system which allows the elderly to be ject to the dual authority of a regional board " treatment " and the local authority for " after

The Welfare Home

I hope that in the near future there will be a of the functions of the welfare home As yo the broad criteria of admission are " ambulant to manage stairs, of good behaviour, able to f dress themselves, and continent " It is rat looking for the finer points at a cattle marke present basis of assessment is often wrong since it disability and discounts ability, while the whole is seldom considered at all The usefulness individual should be the key to selection, and th of irremediable disability minimised to help the and not, as at present, magnified as an excuse to them as hospital patients I expect welfare ho provide the same assistance as it is reasonable to in a household of average intelligence, but assessment should be made by a doctor or by a l as at present, is a delicate matter which I will not

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THE TREATMENT OF

INDIRECT INGUINAL HERNIA

A CRITICAL REVIEW OF A SMALL PERSONAL SER

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THE treatment of indirect inguinal hernia is major surgical problem Many surgeons have son with their own particular method All may have failures at times , but in a personal series of 289 o tions carried out between 1940 and 1951, an or recurrence rate of 15 7% came as a great disappointn A critical review of the series may be of some val others besides myself

From table I, it will be seen that whereas the rec rate for primary indirect hernia was 12 8%, that recurrent indirect hernia was 36 7%—nearly three t as much

For analysis, the series is divided into two six periods—an Army series in 1940–45, and a p series in 1946–51 All the Army patients were m aged 17 years and over, and for uniformity only pat in this category have been included in the post-war s

TABLE I—THE TWO SERIES (1940–51) (MALES AGED 17 OVER)

Operation	Number	Traced	Recurrences	Recurr rate
Primary indirect hernia	255	218	28	12 8
Recurrent indirect hernia	34	30	11	36
Total	289	248	39	15

Army Series

he Army series (table IIa) comprised 178 operations of ch 161 (90 5%) were simple herniotomies (excision ne only) The remaining 17 grouped together as her methods," comprised 4 Gallie repairs 7 silk ice repairs, 1 Tanner slide," 1 Bassini 1 Wyllys rews (modified cord left superficial to external que), and 3 described as repair by cremaster overlap ind the cord "

TABLE IIa—ARMY SERIES 1940–45

Operation	Numbers	Traced	Recurrences	Recurrence rate
ple herniotomy	161	133	19	14 3
r methods	17	13	7	
Total	1 8	146	26	1 8%

he term simple herniotomy denotes ligature and ision of an indirect sac The sac is approached through separated fibres of the cremaster muscle and then by sion of the infundibuliform fascia. The cord was not laced from its bed Great care was taken to ensure t the sac was removed completely, its neck being isfixed and ligatured with linen thread or silk and the mp seen to retract under cover of the conjoined scles. The cremaster muscle was then sutured in its mal position in front of the cord.

his operation was adopted in the majority for the owing reasons which seemed cogent at the time

It was expected that most of the patients would be lthy young adult males with early congenital hernias.

It was felt that with secure ligature of the neck and iplete removal of the sac with minimal damage to the ctures of the inguinal canal, reliance could be placed on the flammatory and healing reaction which consolidates parts nd the internal ring (Keith 1923)

Hamilton Russell (1922) and Gallie (1924) both thought t the cure of indirect hernia particularly in children and ng adults, depends on complete removal of a congenital formed sac with avoidance of damage to the posterior wall he inguinal canal which is normal in these patients

Later in November 1942, Max Page published the results follow up of 142 operations for indirect hernia in which ple herniotomy was done in 86 (60 6%) The recurrence was 9·3% compared with 15 4% for fascia lata repair and 3% for other methods Max Page pointed out that simple niotomy was done for the smaller hernias in which the s were not unduly stretched and the musculature good, he regarded such an operation as the best for oblique nias in healthy young men between 18 and 35

he follow up of this series was begun in 1947 (two rs from the date of the last operation) Of the total 178 operations 146 (82%) were traced There were 26 urrences, a recurrence rate of 17 8% For primary nia (127 traced) there were 20 recurrences (15 8%) l for recurrent indirect hernia (19 traced) there were ecurrences (31 6%)

SIMPLE HERNIOTOMY

)f 161 operations 133 (82 6%) have been traced There e 19 recurrences a recurrence rate of 14 3% (table IIb)

TABLE IIb—SIMPLE HERNIOTOMY

Operation	Numbers	Traced	Recurrences	Recurrence-rate
primary hernia	134	108	17	
h orchidectomy	11	10	0	
h orchidopexy	4	4	1	
al for primary hernia	149	122	18	14 8%
al for recurrent ndirect hernia	1	11	1	9 1%
Total	161	133	19	14 3%

For Primary Hernia

In a total of 122 traced, there were 18 recurrences (14 8%) The type of recurrence is known in 13 of these and all were indirect It was seen in 3 and confirmed at further operation in 10 The error has therefore occurred at the site of the internal ring Of 15 in which the time of appearance of the recurrence is known 8 recurred within one year 4 between one and two years 2 between two and three years and 1 at three years eight months so that 12 (80%) recurred within two years 10 of the 18 recurrences had further operations by other surgeons The following repairs were done Gallie 4 Bloodgood (modified rectus flap) 2 silk lattice 1, McArthur 1 Bassini 1 and a simple herniotomy 1 In 1 (a Gallie) the result is unknown Of the remaining 9 all were successful 5 were seen and found free from further recurrences—2 Gallies at two years and five and a half years, 2 Bloodgoods at two years eight months and five years and 1 Bassini at three years ten months 4 reported no further recurrence—the McArthur at nine years three months the silk lattice at five years four months the simple herniotomy at five years and a Gallie at four years eight months

With orchidectomy for undescended testicle—In a small series of 11 operations of which 10 have been traced there were no recurrences It is accepted that orchidectomy with ligation and removal of the cord at the internal ring and from the inguinal canal lessens the tendency to recurrence and it is possible therefore that the presence of the cord maintains the patency of the unclosed ring

With orchidopexy—There was 1 recurrence in 4 operations It would seem that in the age group under review orchidectomy is preferable to orchidopexy for the treatment of the undescended testicle provided the other testicle is normal If orchidopexy is attempted it is imperative to close the ring after excision of the sac

For Recurrent Indirect Hernia

The nature of the original operations is unknown In 11 traced there was 1 recurrence a recurrence rate of 9 1% This patient age 20 had a thick recurrent indirect sac which was excised The transversalis fascia was accidentally incised and sutured but no formal repair was done The first recurrence, being indirect, was due to an error at the site of the ring and this error was repeated by doing a simple herniotomy Four years later the patient had a further operation but the type of this recurrence is not known It is surprising therefore, that although this error was repeated in 10 other recurrent cases, 2 had not recurred again at two years 1 at two and a half years, 2 at four and a half years 4 at five years and 1 at six years.

OTHER METHODS

Of 17 operations 13 have been traced. There were 7 recurrences 2 (1 direct, 1 further operation) after 3 Gallie repairs for recurrent indirect hernia 3 (1 each) after a Tanner 'slide' a silk lattice repair and a Wyllys Andrews all for recurrent indirect hernia and 2 (1 indirect 1 further operation) after 2 ' cremaster overlap behind cord operations for primary hernia Of 8 operations for recurrent hernia in this group no less than 5 again recurred

DISCUSSION

A recurrence rate of 14 3% following simple herniotomy is unacceptable Even with great care in selection about 9% may be expected to recur The risk therefore is unjustifiable in the type of case under review The operation however was successful in 114 instances As Ogilvie (1937) has pointed out it may succeed when the hernia is due to a congenital sac into which contents have only recently or occasionally descended These sacs are tubular processes varying in length according to the degree of unobliteration of the processus vaginalis The neck is sharply demarcated from the parietal peritoneum and there is no difficulty in locating the exact site for ligation The tubular process therefore can be completely removed, and if contents have only recently or occasionally descended there is no stretching of the internal ring If the opening of the processus could be viewed from within the peritoneal cavity, it would appear as a sharp, rounded hole in a plain or slightly concave surface If this opening be forced forwards by any sudden increase in intra-abdominal pressure, it will drag on or "take up" parietal peritoneum, and the proximal part of the processus becomes acquired The opening is now no longer sharp and rounded but has shelving edges, and the neck of the sac becomes funnel shaped thus rendering accurate ligation of the neck impossible Once the opening into the sac becomes funnel shaped, contents readily enter The sac increases in length and the neck dilates the internal ring Simple herniotomy will now fail

Importance of the Principle of Closure of the Internal Ring

In congenital sacs —As early as 1929 Ogilvie warned that when dilatation of the neck of the funicular process had taken place, simple removal of the sac was inadequate, and he advised repair by approximation of the edges of the transversalis fascia over the stump of the sac He again emphasised this in 1937 and enunciated the basic principles of hernia surgery as (1) removal of the sac and (2) closure of the hernial canal at its commencement, of which he regarded the second as the more important He went on "except in certain instances, secure closure of the hernial orifice is an indispensable step without which the removal of the sac is of no more than temporary value" Edwards (1943) showed that in a personal series (with Capper) of 131 operations for recurrent hernias, 75% of the recurrences were indirect—i e the original hernia was reproduced The weak spot therefore, is at the site of ligation of the sac and he held that repair of the internal ring is an essential part of the operation In the young muscular subject, he made a strong plea for general adoption of complete excision of the sac with repair of the transversalis fascia without disturbing the cord from its bed This view was also strongly supported by Patrick (1944) in discussing a series of 70 cases of recurrent hernias of which 52 (74 3%) were indirect He advised an accurate repair of the transversalis fascia at the deep inguinal ring, which should then, he thought, be narrowed on its lateral aspect

The view is now held that once contents have entered a patent funicular process, the ring can no longer be regarded as a normal aperture and should be closed in all cases of congenital hernia except in infants and very young children An indirect recurrence is known to have occurred in a boy aged 12 in which this important step was omitted

In primary acquired sacs —Here the ring is forced by extraperitoneal fat which drags down the parietal peritoneum with it The ring is stretched from the beginning and the funnel-shaped peritoneal sac, as it increases in size continues to dilate the ring The primary cause of these hernias seems to be a failure of the ring, and at operation particular care is necessary not only to close the dilated ring but to reinforce it as well

Encroachment of the Ring on the Posterior Wall of the Inguinal Canal

This occurs when the ring is stretched beyond a diameter of 3 cm (Ogilvie 1937) The result is twofold (1) increasing destruction of the posterior wall of the inguinal canal medial to the epigastric vessels, and (2) increasing loss of obliquity of the canal by approximation of the rings Simple closure and reinforcement of the closed ring is now inadequate and some method of repair or reconstruction of that part encroached upon is essential There are many ways of doing this, but the basic principle is the same and depends on an appreciation of the "normal defences" of the inguinal canal

The Normal Defences

If the internal oblique and transversalis muscles origin from the whole length of Poupart's ligament, would be no weakness To allow for the passage cord the origin of these muscles is limited to the half (internal oblique) and outer third (transv There is thus an area of transversalis fascia unprot by these muscles How is protection afforded and does it fail ? Hamilton Russell (1922), in discu cause of direct hernia, said that failure was d muscular weakness In 1924 Keith described inguinal "shutter" mechanism Ogilvie (1929) ac the view of a muscular sphincter and considered became incompetent from deficient muscular to increased intra abdominal pressure Later (193 held that the normal defences were based on a f framework protected by a muscular guard, the framework being a greatly toughened transversalis Lytle (1945) recalled that Testut (1904) described ligaments or bundles of reinforcement of the tran fascia—the ligament of Henle (falx inguinalis), the ment of Hesselbach (ligamentum interfoveolare), the ilio pubic band of Thompson This part of th therefore, is especially toughened and adapted to protection where it is required Acceptance of the that the tough transversalis fascia and not the sphincter is the important factor in the defence o inguinal gap has some bearing on the principles m when a reconstruction of the inguinal canal is

Failure of the Normal Defences

In indirect hernia, failure is brought about by atrophy of the tough transversalis fascia medial to epigastric vessels by the encroaching inner margin of internal ring The principle of repair should then be to reconstruct the transversalis fascia without to other structures of the inguinal canal Perhap completely satisfactory way of doing this has yet devised, and failure, if it occurs, can be attribute (a) inefficient repair of the transversalis fascia, (b) concomitant damage to other structures

The question of whether it is possible or de attempt to render efficient a muscular sphincter sidered inefficient from atrophy and/or weakness of muscles, is not easily answered Bassini's operation to be based on this, and those repairs in which the layer is prolonged artificially by foreign mater Poupart's ligament By interposing an additional they might well supplement the repair of the tra fascia, but their use inflicts further damage on the tures of the inguinal canal The Tanner "slide" (T 1942) and Bloodgood's operations are designed to both this damage and the insertion of foreign and both interpose a formidable barrier—the f plane of the muscles, the latter superficial to them

Importance of the Principle of Repair or Reconstruct the Transversalis Fascia

It is implicit in the above that the repair s primarily reinforce, and where necessary reconstruct transversalis fascia, and should therefore be on plane of this fascia and deep to the conjoined muscle this way the internal ring previously closed is also forced For reinforcement, plication or darning of fascia has much to commend it, since it does not damage to other structures But it cannot be where the fascia has been destroyed by an enl internal ring, and here a reconstruction of the po wall of the canal and of the ring is necessary

Post-war Series

These principles of—(1) suture of the ring and (2) forcement or reconstruction of the transversalis were applied to a post war series begun in 1946 Fo forcement and reconstruction, it was decided to adopt method known as the stay-lace (Sampson Handley silk lattice (Ogilvie 1937) The only modification oduced was that of inserting the silk or linen thread p to the muscle layer and therefore in close contact ı the transversalis fascia An attempt was made to ure the upper anchorage as far as possible through the er border of the rectus sheath but it must be admitted frequently failed and a muscle anchorage was in fact n used As the transversalis fascia is attached to the p aspect of Poupart's ligament it was felt that this ment and not the pubic ligament of Cooper should be l for the lower anchorage The latter a strong bundle ibres firmly attached to the pectineal line is closely rporated with the pubic lamina of the fascia lata of thigh (Buchanan 1910) Laterally it runs deeply into pelvis and fades away and is thus difficult to use for the ral part of the repair It has, however, been used with ess (McVay and Anson 1942) The cord is drawn later and the repair effected up to its medial aspect so that ring previously closed is also reinforced The external que was always sutured superficial to the cord This been called the posterior silk lattice repair it is only posterior to the cord but also posterior to the ie of the conjoined muscles

he series (table IIIa) comprised 111 operations of oh 92 (82 9%) were posterior silk lattice repairs ision of sac and suture of ring was done in 9 and the

TABLE IIIa—POST WAR SERIES 1946–51

Operation	Numbers	Traced	Recurrences	Recurrence rate
sion of sac and ture of ring (1 with chidectomy)	9	9	0	
erior silk lattice pair	92	85	7	8 ••
r methods	10	8	6	
Total	111	102	13	12 7

aining 10 consisted of 4 Gallie repairs, 5 silk repairs posterior silk lattice) and 1 Wyllys Andrews dified)

xcision of sac and suture of ring was used where simple ure of the ring without reinforcement was considered quate and where the size of the ring was such that it had encroached upon the transversalis fascia The margins he ring were defined and approximated with continuous iterrupted silk or linen thread sutures In most the cord removed from its bed and the ring closed on its medial ect.

osterior silk-lattice repair was used where some reinforce it of the sutured ring was considered necessary the repair g limited to the region of the ring Where the ring was ted and had encroached upon the transversalis fascia, the ir was extended accordingly; but owing to difficulty in ssing the degree of encroachment it was usually begun lose as possible to the pubic spine and carried laterally up he medial aspect of the cord thus also reinforcing the on of the sutured ring

f the 111 operations 102 (91 9%) were traced There o 13 recurrences, a recurrence rate of 12 7% For nary hernia (91 traced) there were 8 recurrences %) and for recurrent indirect hernia (11 traced) e were 5 recurrences (45 5%)

EXCISION OF SAC AND SUTURE OF RING

a small series of 9 operations there were no recur es In 1 patient aged 38 orchidectomy was also done in atrophic undescended testicle with a congenital nal sac The dilated ring was sutured with continuous He was free from recurrence when seen two years months later The results (minimum two years) in remaining 8 were also satisfactory Their ages were 7 30 (2) 40 42 44 and 65 5 had long scrotal sacs ith narrow necks except 1 in which the neck of the sac was wide and acquired ' In only 2 was the ring considered to be much dilated—in one (above) from an acquired funnel-shaped neck in the other from extra peritoneal fat In 1 the cord was not disturbed, the ring being closed on its lateral side after excision of the sac In the remaining 7 the cord was removed from its bed In 6 of these the ring was closed on the medial side of the cord which was held laterally In 1 the ring, dilated by much extraperitoneal fat which was removed, was closed lateral to the cord

For selected cases this method seems to be ideal since it restores the normal anatomy and does not damage the structures of the inguinal canal

TABLE IIIb—POSTERIOR SILK LATTICE REPAIR

Operation	Numbers	Traced	Recurrences	Recurrence rate
For primary hernia	83	76	5	
With orchidectomy	1	1	0	
Previous orchidectomy (1917)	1	1	0	
Total for primary hernia	85	78	5	6 1%
Total for recurrent indirect hernia	7	7	2	28 0%
Total	92	85	7	8 2%

POSTERIOR SILK LATTICE REPAIR

Of 92 operations 85 have been traced, two years or more after operation (table IIIb) There were 7 recur rences a recurrence rate of 8 2% Of 7 untraced 3 died between one and two years after operation and 1 five years later from carcinoma of bronchus. He was seen one year three months after operation being then free from recurrence but subsequently he could not be traced until his death

For Primary Hernia

In 78 traced, there were 5 recurrences a recurrence rate of 6 4% 4 of these recurrences were direct, 3 having further operations at one year five months four years three months, and four years six months later All were found to have direct funicular sacs passing through a defect in the transversalis fascia near the pubic spine 1 seen at five years ten months had a small direct recur rence also near the pubic spine The 1 indirect recurrence occurred in a patient aged 63 who had a large left hernie en glissade This had recurred when he was seen two years four months later

For Recurrent Indirect Hernia

In 7 operations, there were 2 recurrences a recurrence rate of 28 6% 1 patient aged 57 had a further very small indirect recurrence when he was seen seven years later The other aged 35 had a possible direct recurrence four years later but this was not definite The recurrence rate is high but the numbers are very small.

OTHER METHODS

Of 10 operations, 8 have been traced There were 6 recurrences 2 (1 indirect 1 direct) after 3 Gallie repairs for very large primary hernias (a left hernie-en glissade being 1 of the 2 recurring) 3 (1 direct, 1 sliding followed by a direct after a further operation in the same patient) after three silk repairs for recurrent indirect hernias and 1 (indirect) after a Wyllys Andrews for primary hernia

A small experience of the Gallie repair in the two series has been unfortunate for out of 8 operations 4 have recurred.

Conclusions

The results in these two small series are disappointing errors have been committed and there is much to learn It seems hardly necessary to reiterate that the operation of simple herniotomy should be reserved exclusively for infants and very young children In all others a decision must be made as to whether it is safe to rely on suture of the ring after excision of the sac, whether the sutured ring should then be reinforced, or whether it is necessary to reinforce or reconstruct part or the whole of the transversalis fascia forming the posterior wall of the inguinal canal On this decision rests success or failure Some would reconstruct in every case, and it cannot be denied there is much to be said for what Max Page (1942) called the "hammer" as distinct from the "harmony" school I believe, however, that provided the ring is efficiently closed, and where necessary reinforced, this method will give satisfactory results in those cases in which there is no encroachment of the ring upon, nor weakness of, the medial part of the transversalis fascia Its advantage is that it does not interfere with nor damage the structures of the inguinal canal

Where the medial part of the transversalis fascia is weak but not encroached upon, plication or darning of the fascia, as used by many, might well supplement or even supplant a posterior silk-lattice repair and might have prevented the direct funicular recurrences after the latter method The fault however, may have been a purely technical one for all these recurrences were due to a defect in the transversalis fascia near the pubic spine Edwards (1945) noted that this type of hernia was found only 3 times in 501 primary operations, but 13 times in 131 recurrent cases It is possible that in primary cases the defect is a congenital one, the sac being acquired whereas in recurrent cases the defect is acquired and the result of damage to the fascia possibly due (as Edwards points out) to disturbing the cord from its bed, the subsequent repair failing to make good the damage done Failure to find a suspected indirect sac, or removal of a small inadequate one without disturbing the cord from its bed, may result in missing a primary direct funicular sac and may account for some "recurrences"

Posterior silk lattice repair, as used, failed as a method of treating recurrent indirect hernia and of reconstructing the posterior wall of the inguinal canal as in hernie en glissade, but so also did 4 out of 6 Gallie repairs for similar hernias

Summary

Simple herniotomy (excision of sac alone) used in 90 5% of a series of male patients aged 17 and over, gave a recurrence rate of 14 3% All the known recurrences were indirect This method should be reserved exclusively for infants and very young children

Excision of the sac and suture of the ring with reinforcement where necessary, is an ideal operation where the transversalis fascia of the posterior wall of the inguinal canal is strong and sound and the ring has not encroached upon it In a small series of 9 operations (suture without reinforcement) there were no recurrences

The removal of the cord from the internal ring and inguinal canal in orchidectomy for undescended testicle greatly increases the prospect of cure of the associated congenital hernia—even, it would seem, without suture of the ring In 10 such operations there were no recurrences

The method of posterior silk lattice repair gave a recurrence rate of 8 2% Of 7 recurrences 5 were direct These recurrences might have been prevented if preliminary plication of the transversalis fascia had been used to supplement the repair The method is inadequate for reconstruction of the posterior wall of the inguinal canal in very large hernias and in hernie en glissade

Other methods used have been briefly discussed, but, although the recurrence rate is high, the numbers are small The results of these, however, have been included in the over all recurrence rate of 15 7%

I am much indebted to the Director General of Army Medical Services for allowing me to use the records of my Army cases My thanks are also due to those surgeons who have operated upon my recurrences (with success in instances where known), and to many—particularly Sir Heneage Ogilvie and Mr Harold C Edwards—who contributed so much to this subject

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SEMI-SOLID AGAR MEDIA FOR RAPID CULTURE OF TUBERCLE BACILLI

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METHODS of culturing tubercle bacilli both clinical material and in experimental work are m ways unsatisfactory Many media that have been de are useful for special purposes, but there is a need f simple "general purposes" medium which would rapid growth both of laboratory cultures and of st freshly isolated from patients, would reliably supp growth of small inocula, would be suitable for rapid sensitivity tests, and could be used for viable c and for quantitative studies of the bacteriostatic bactericidal action of antituberculous drugs S medium would also be useful for standardising vaccine In the course of searching for a medium of kind it was learned that a semi solid agar medium being used at the National Collection of Type Cu (Colindale) for viable counts on freeze dried cul including *Mycobacterium tuberculosis* Two accounts of semi-solid agar for the culture of *tuberculosis* were then discovered (Drea 1940, Midd 1952) It was also learned that semi solid agar me was being used for viable counts of tubercle bac the Rockefeller Institute (Dubos 1955) The possibilities of this type of medium do not, ho seem to have been appreciated Some prel experiments, described here, suggest that it might great value for all the purposes mentioned above

Materials and Methods

Cultures

Strains of tubercle bacilli used were the stock lab tory strain of *M tuberculosis var hominis* H37Rv variants of this strain made resistant to isoniaz streptomycin, a strain of B C G originally obtained Dr R J W Rees, and an isoniazid resistant va (Knox 1955) Concentrates of patients' sputa were pared by the NaOH method (Public Health Labo Service Report 1952)

Media

The semi solid agar media used were those of Kir as modified by Mackie and McCartney (1953) and D and Davis (1946), to each of which was added ag final concentration of 0 1–0 125 g per 100 ml Oxoid (Oxo Ltd) and Davis agar (Davis Gelatin [N Z] L were both satisfactory Horse serum (seitz filtered) added aseptically in a final concentration of 10 Kirschner's medium, and bovine albumin fracti (0 35%) and Tween 80 (0 05%) to Dubos medium.

For use, media were heated to melt the agar and c to 50–55°C Horse serum (or bovine albumin and T 80) was added and, in some experiments with sp concentrates, malachite green (1 in 128,000), and mplete medium was distributed aseptically into test bes plugged with cotton wool These were kept in ks in a water bath at 48°C ready for inoculation

ethod of Inoculation

The tubes were inoculated by means of dropping ettes either with cultures of tubercle bacilli (undiluted serially diluted) or directly with sputum concentrates d were then incubated at 37 C In many experiments er inoculation the cotton wool plugs were replaced rubber bungs to eliminate evaporation No harmful ect of these upon growth could be detected

amination of Cultures

Inoculated tubes were examined after two days and at ervals thereafter Early growth was made easily ible by immersing each culture tube in a larger tube measuring-cylinder filled with xylol or alcohol This aned the culture tubes eliminated troublesome reflec ns from the glass walls especially at the bottom and uld be used to give some magnification Further gnification (about × 2) could be conveniently obtained a 4 × 3 in rectangular lens (Britex Scientific struments Ltd) placed in front of the xylol containing be. Illumination was by means of an ordinary light lb placed slightly obliquely behind the tube to be amined This system is referred to as the lens system r greater magnification a hand lens (× 6) was used tead of the rectangular lens

Results

owth of Tubercle Bacilli (H37Rv Strain)

In complete Kirschner or Dubos media containing out 0 1% agar with large inocula (of the order of llions of viable units) growth of tubercle bacilli 37Rv) was often easily visible to the naked eye in ee to four days, and with the lens system in two days. owth occurred mainly near the surface of the agar wn to a depth of about 5 mm With smaller inocula ousands or hundreds of viable units) the organisms w in discrete colonies often visible with the lens stem in three to four days and to the naked eye in out five to ten days These colonies when they first came visible were of uniform size for 2–3 cm below agar surface but as incubation continued colonies t below the surface grew much larger than those uated more than about 5 mm below the surface th still smaller inocula (100 viable units or less) growth s somewhat slower, but colonies could sometimes be n and counted with the lens system in five to seven ys. These were at first fairly even in size throughout medium, but on further incubation colonies near the face sometimes became larger than those in the depth the medium A typical experiment is illustrated in accompanying figure

ect of Agar Concentration

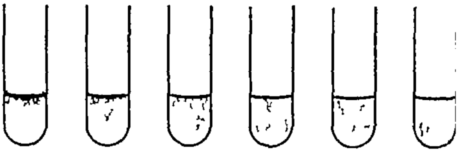
A concentration of 0 1–0 15% was the most satis tory Lower concentrations gave even more rapid owth but below 0 05% the media were too soft to give crete colonies In concentrations above 0 2% growth s considerably delayed and even partially suppressed

pth of Agar

The best results were obtained in 6 × $^5/_8$ in tubes h 3 ml quantities of medium or less or in 3 × $^1/_2$ in es with 1 ml quantities or less If the agar column s too deep growth was uneven and mainly con trated near the surface. Growth was, however some es inhibited immediately below the surface and satisfactory results were obtained also if the agar umn was too shallow (2 mm or less)

owth of Other Strains of Tubercle Bacilli

In addition to the H37Rv strain its isoniazid and eptomycin resistant variants both grew well and idly in the complete Kirschner and Dubos semi ld agar media The strain of B C G and its isoniazid istant variant grew rather more slowly but in semi solid Kirschner agar growth from large inocula was easily visible in five days



Growth of *M. tuberculosis* H37Rv in Kirschner's medium containing 0 125% agar Inoculum t tenfold dilutions (a f) of a ten-day-old Dubos culture ranging from 10- to 10-

Culture of Sputum Concentrates

Sputum concentrates prepared by the NaOH method were inoculated by means of dropping pipettes into tubes of semi solid Kirschner or Dubos medium with or without malachite green With some of these specimens growth characteristic of tubercle bacilli was easily visible in three to four days Microscopic examination at this time confirmed that the growth consisted of myco bacteria, and further incubation and subculture con firmed that the organisms were tubercle bacilli It should be emphasised that these concentrates had been prepared from selected microscopically positive sputa and there fore might reasonably be expected to yield positive cultures Further work is in progress to determine the value of semi solid agar with or without dyes such as malachite green in routine primary culture of clinical specimens

Drug sensitivity Tests

Indirect tests—In semi solid Dubos agar medium the sensitivity of pure cultures of tubercle bacilli to isoniazid and streptomycin could be readily determined after two to three days incubation The H37Rv strain was sensitive to 0 01–0 05 µg per ml of isoniazid and to 0 15–0 3 µg per ml of streptomycin in both liquid and semi solid Dubos medium Whereas however in the liquid medium a shift in the end point, especially with isoniazid occurred on continued incubation (Knox et al 1952) in the semi solid medium a few colonies appeared after two to three weeks incubation in the tubes imme diately above the last tube showing growth equal to the control If the number of viable organisms inoculated was determined the semi solid agar media thus gave information not obtainable with liquid media about the proportion of drug resistant organisms in a culture

Direct tests—Drug sensitivity tests were also easy to perform directly on sputum concentrates With some patients sputa the results of such direct sensitivity tests could be read in three days The routine use of semi solid agar for this purpose is being investigated

Viable Counts

When serial dilutions of ten-day-old cultures of the H37Rv strain in liquid Dubos medium were inoculated into tubes of semi solid Kirschner or Dubos agar count able numbers of colonies were usually given by a dilution of 1 in 10^6 and the viable count was of the order of 100–500 million organisms per ml of liquid culture The counts in semi solid medium compared favourably with the counts given on Tarshis blood agar (Tarshis 1953) which is known to give counts comparable to those given by Löwenstein-Jensen medium More detailed quantitative studies are in progress.

Discussion

Semi solid agar media have certain great advantages over solid agar media for the growth of tubercle bacilli Agar in the concentrations of 1–2% necessary to give a gel firm enough for surface culture is often highly inhibitory to tubercle bacilli, but in the concentration of about 0 1% used in the semi solid media it allows at least as rapid growth as the corresponding liquid media and is equally reliable in giving growth of small inocula With semi solid medium there is not the same risk of contamination or dehydration which so often spoils cultures of tubercle bacilli on the surface of agar plates, and the presence of a few contaminating organisms is not so disastrous as in liquid media

It is not uncommon to find that cultures of tubercle bacilli which grow rapidly when first inoculated into a new medium do not continue to grow on further incubation Redmond and Bowman (1955) found that lysis of tubercle bacilli was accelerated in media containing glucose but deficient in ammonium salts Lysis has not yet been observed with certainty in the semi solid Kirschner or Dubos agar media in this Laboratory, but Dubos (1955) has stated that it may occur in media of this kind which he has also used for viable counts

The precise formulæ here used may therefore need to be modified, but the media described are promising enough to warrant further extended trial both in experimental work and in the investigation of clinical specimens

Summary

Profuse and rapid growth of tubercle bacilli was consistently obtained on Kirschner or Dubos media made semi solid by the addition of agar in a final concentration of about 0 1%. With large inocula growth was easily visible in two to three days, while with small inocula discrete colonies could be counted in seven to ten days The medium has been used successfully for rapid primary cultures of tubercle bacilli from patients' sputa, for tests of drug sensitivity which can often be determined in two to three days, for recording small numbers of viable organisms, for rapid viable counts, and for quantitative studies of the action of antituberculous drugs

It is a pleasure to thank Miss E Swan for expert technical assistance, Mr D E Seymour of Smith & Nephew (Research) Ltd for supplies of isoniazid ('Pycazide'), and the Medical Research Council for a grant for technical *assistance*

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" Experts in building and using computing machines are not to be derided for suggesting that they can fill in some of the blank spaces in the physiology of thought It is unfortunate that they have *pressed* their ideas in so domineering a fashion as to suggest that anyone who is not immediately persuaded of the correctness of their view is either excessively stupid, reactionary, or a firm believer in the supernatural This is undeserved It probably will be the case that developments in communication engineering will bring better suggestions than any yet made It is to be hoped that they will be put forward more in the spirit of 'Let us see how it would be if so and so,' rather than This is it, stupids!' So far I find them inadequate to tell me why one man composed the 'Pastoral Symphony,' another painted 'The Night Watch,' another wrote the Summa Contra Gentiles,' another 'Paradise Lost,' another the 'Vita Nuova,' another 'Don Quixote, another 'The Critique of Pure Reason,' another 'The Battle Hymn of the Republic,' another 'Sanctuary,' and yet another 'The Sexual Behavior of the (American) Female' I do not feel that geometrical diagrams bring us any nearer to understanding the difference in thinking or in the individual genius that produced such diverse masterpieces any better than I understand exactly what it was in the nervous system that produced nursery rhymes like 'Little Boy Blue'"—SIR GEOFFREY JEFFERSON, F R S *Clinical Neurosurgery* London, 1955, p 5

PSYCHOPROPHYLAXIS IN LABOUR

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> " in labour the woman's true character is reve
> If it is harmonious and loving, all goes well" (Ernest J
> 194

THE publication, in 1033, of Grantly Dick Re *Natural Childbirth*, in which the psychological probl of pregnancy and labour are given so much emp may be regarded as a natural reaction to exc mechanisation in obstetrics—a trend observed in F as well as in other countries during the preceding At this time the most important feature of prenatal was examination of the anatomical relations of pregnant woman the prognosis of labour was based on the measurements of the pelvis and the po of the fœtus In the early stage of pregnancy atter was directed chiefly toward the measurements of pelvis, which were used as a standard to determine time of onset of labour Yet in spite of all these maternal mortality during childbirth and the was on the increase from 1928 (Bourne et al 1950)

Another factor contributing to mechanisation wa use of anæsthesia, which for a century had been as the solution of the problem of pain during This also deprived investigators of the opportun study the psychological aspects of labour, ju their importance was beginning to be appreciated.

Wigand (1822) devoted several pages of his tex to the psychological aspects of labour In his book wives are cautioned to avoid giving cause for concer anxiety to the woman in labour, and cases are cite show how its progress may be slowed by anxiety apprehension but restored by a reassuring attitude reassuring words To ensure the desired atmospher the delivery room, he admitted only the husb servant, and mother of the parturient woman removed birds, dogs, and anything that might a the woman in labour "Briefly," he said, "I endeavoured to bring as much seriousness, silence dignity to this matter as I possibly could," and he sa that a wide and untilled field still awaited psycholo obstetrics

Not until 130 years later did Read succeed in r covering this field obscured from view by the mit anæsthesia He regards patience, calm, personal inte confidence, cheerfulness, and personal observatio the six important factors in the conduct of the phys or the midwife The considerable success of his met undoubtedly is also largely due to its going far to r the grievances harboured by women about the c system of treatment in pregnancy and labour, w prevents their consciously participating in the proce labour The doubt about the use of labour under a thesia has perhaps been most clearly expressed Helene Deutsch (1945) "Perhaps its only effect that the woman is poorer for having missed a g experience Perhaps both mother and child have denied something profoundly important"

In assessing the value of Read's method the m criterion should not be its success in those co where anæsthesia or analgesia has been genera employed, for in such countries emotional and subjec factors must complicate any comparison Another tant factor will be the lack of a proper control group using any kind of anæsthesia or analgesia Hence th seemed to be considerable advantage in a test of t method in the Netherlands, where childbirth is genera conducted on the assumption that a normal healt woman should be able to go through a normal lab without requiring any form of relief of pain by dru

TABLE I—ANALYSIS OF 800 WOMEN AS REGARDS PREPARATION FOR LABOUR

Preparation	Primiparæ				Multiparæ				Grand total
	Age (yr)			Total	Age (yr)			Total	
	18–25	26–30	31 or more		18–25	26–30	31 or more		
e	80	79	40	199	32	53	84	169	368
lecture of explanation and instruction	20	34	10	64	8	10	15	33	97
y instructed and trained	85	108	34	227	14	32	62	108	335

mal labour is indeed regarded as so ordinary and ural a process that there is no objection whatever to taking place in the home Partly no doubt this itude has been formed by doctors, but partly it is *ived from and associated with the spirit and culture* r he people. For Margaret Mead (1949) writes

> Women may be expected to groan or shriek in a manner igned to make all young female spectators indisposed rards birth and definitely predisposed to shriek when their it time comes. Or women may learn that a woman in our should behave with quiet decorum paying attention the business in hand and certainly not dissipating her ngth or disgracing her family with a lot of loud mouthed ling So childbirth may be experienced according to the aning given it by the culture as an experience that is *ngerous and painful interesting and engrossing matter-of* t and mildly hazardous, or accompanied by enormous *ernatural hazards*

When the adolescent girl is taught to regard labour as normal physiological event, attended with tolerable in and relatively little danger it becomes possible for r to welcome the experience If, in addition the pain t may be further relieved by preparing her for labour suggestion and autosuggestion there would be vious advantage and it is with this object that ad s method—consisting in instruction combined th breathing and relaxation techniques and supple nted by exercises during pregnancy—has been used nce 1949 to prepare expectant mothers in the Training hool for Midwives in Amsterdam (van Eps 1954)

Analysis of 800 Cases

In recent years detailed records have been kept also the mental aspects of labour—the woman's behaviour, r reactions in the delivery room and her subjective periences This enabled us to classify 800 cases of rmal labour according to these mental reactions and compare the results obtained They fell into three oups (table I)

(1) 97 women received instruction from a doctor in a ssion lasting two to three hours during which the course pregnancy and labour, as well as the anatomical, ysiological, and mental aspects, were explained to em, and lines on which to base their behaviour were ggested

(2) 335 women were carefully prepared for labour esides the aforesaid session they attended on average n lectures given by a physiotherapist, during which ey again received extensive instruction, supplemented y classes in pregnancy exercises breathing and relaxa on techniques, and the correct method of bearing own during the first stage.

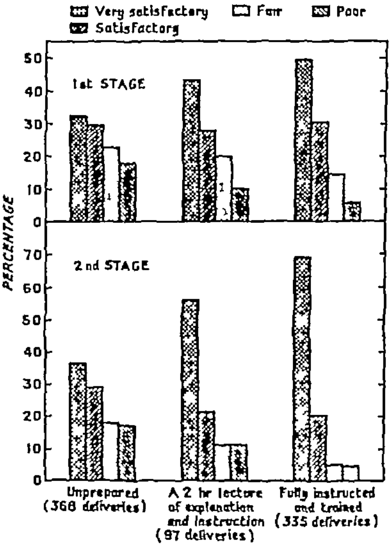
(3) 368 women who had no such psychological prepara on served as controls It should be borne in mind, owever that these women like the others, had the dvantage of psychologically correct treatment during bour If we had taken our controls from a clinic where he newer methods of managing labour had not yet come ito use, the *differences* would probably have been reater

The results are shown in the accompanying figure None f the women of these three groups received any kind of analgesia or anæsthesia. In the first stage the proportion of good' and excellent results was raised by psycho prophylaxis from 60 to 80% and in the *second stage it* was raised from 68 to 90% Taking both stages together, *the proportion of "poor" results fell from 17 to 5%*

Often a woman behaved differently in the first and second stages of labour and this explains the better percentages obtained for the second stage The women themselves thought that they had got most benefit in the second stage

The worst period of labour was defined by 71% as the end of the first stage, by 14% as the second stage, and by 15% as the time of birth

Though the results were better in the prepared group *not only as regards pain but also as regards the duration* of labour the loss of blood and the proportion of ruptures and episiotomies, the slight differences do not allow of any definite conclusions (table II) It remains to be seen whether the very different results published in English speaking countries (Read 1933, Heardman 1948 Goodrich and Thoms 1948 Thoms 1950) are not mainly due to the fact that in the controls anæsthesia was induced during labour Nor could we establish a relationship between the woman's mental behaviour and the length of labour The classification according to behaviour of 90 women who had been in labour more than thirty hours did not show any great displacement toward the fair or 'poor' groups



Results obtained in first and second stages of labour

TABLE I—COMPARISON OF RESULTS IN WOMEN PREPARED AND UNPREPARED FOR LABOUR

	Primiparæ		Multiparæ	
	Prepared	Unprepared	Prepared	Unprepared
[illegible] duration of [illegible]	17	1[illegible]	11[illegible]	[illegible]
Duration of second [illegible]	67	69	20	[illegible]
Duration of third [illegible] (min)	[illegible]2	22	15	[illegible]
Loss of blood (ml)	317	36[illegible]	[illegible]00	60
Rupture and [illegible] [illegible] (%)	[illegible]	[illegible]	2[illegible]	25[illegible]

A visit to Lamaze's clinic [illegible] Paris made me [illegible] with the Russian method of psychoprophylaxis developed and propagated by Welwowski et al (1950) I concluded that although these workers [illegible] Read's theories in justifying the method used [illegible] technique is identical with that of Grantly Dick Read Having witnessed some cases of childbirth at the clinic I compared their criteria with ours and found them almost identical and consequently their classification into "very satisfactory," "satisfactory," "fair," and "poor" may be regarded as equivalent to ours

[illegible] show that the results obtained in several [illegible] agree [illegible], including a failure [illegible] % of cases [illegible] seemed desirable to determine the possible causes of these failures and the extent to which one can establish a prognosis of labour

Personality and Childbirth

Both anthropological studies and clinical experience lead to the conclusion that the response of women to childbirth is primarily determined by psychological factors—personality formed by heredity, environment, and life history To gain a better insight into the relation between personality and response to childbirth I studied, during pregnancy and post partum the emotions and reactions of 50 women during these events and their attitude to pregnancy and labour, and investigated their social and biographical history The women were tested by a psychologist (Rorschach test), and the results of these tests, in conjunction with data from the social and biographical histories, were elaborated into a psychological report During labour these 50 women were carefully observed and their behaviour and utterances were recorded

These 50 women, of whom 34 were primiparæ, were all married, though in 7 conception had taken place before marriage and most of them were keen to have a child In 18 cases pregnancy had not been planned and they were using some form of contraception, but their initially negative or ambivalent attitude to childbirth changed in the later stages of pregnancy except in 7 cases where the objections were chiefly financial

As in the full series, most of these women regarded the end of the first stage as the worst period of labour

TABLE III—RESULTS OBTAINED IN VARIOUS CLINICS

Reference	No of cases	Very satisfactory (%)	Satisfactory (%)	Fair (%)	Poor (%)
Goodrich and Thoms (1948)	156	50 6	30 1	10 3	9 0
Welwowski et al (1950)	562	44 5	38 2	13 2	4 1
Lamaze et al (1954)	1863	40 0	37 3	9 4	4 3
Present series	335	First stage 49 3 Second stage 60 5	30 4 20 3	15 0 5 1	5 3 5 1

In several cases the difference in behaviour [illegible] second stages could be related to th [illegible] The stage of dilatation, requiring a passive presented greater difficulties to the more activ whereas the more passively inclined woman [illegible] the expulsive stage as the more difficult

The breathing and relaxation exercises enabl more actively inclined woman to coöperate during the first stage The direct suggestive effec relaxation and breathing exercises is shown by th ment of several women that, when they had a co of the uterus during labour, the pain was mo [illegible] were in a state of relaxation and the correct method of respiration

Behaviour during labour usually came up to t [illegible] based on the histories and the results psychological tests Our observations before lab [illegible] a satisfactory result in 11 of the 50 [illegible] these had a well balanced and well personality, were able to control a situation, ha [illegible] over themselves, and were capable of de loving surrender and sacrifice They were sta [illegible] devoted, had great powers of resist [illegible] self confident The results were highly sat [illegible] satisfactory in 3

[illegible] women in whom the prognosis seemed view of unstable personality, a neurotic attitude [illegible] to surrender as the result of an egot egocentric attitude the result was poor in 8 [illegible] and satisfactory in 2 In the intermediate results were generally satisfactory or highly sat As may be imagined, psychoprophylaxis was useful in this group The proper atmosphere delivery room which afforded considerable help patients at the crucial moments and caused the [illegible] required to be effective, must also have great importance in these cases

These observations show that the probable be of the woman during labour may be foretold b methods with some accuracy

When the patient's personal history has been and supplemented by psychological tests, it is to decide which is the best method of psychother lecture explaining the normal and physiological of pregnancy and labour will suffice in some cas in most cases more vigorous psychoprophylaxis by method will be indicated The smallest group which the prognosis is poor, requires individual therapy given during pregnancy by a psycholog psychiatrist its results will be doubtful, h unless the intrinsic personality comes up to a level

During labour this last group of patients sh isolated to prevent their behaviour in the deli from adversely affecting the other women in ch They will require more attention and care, and or anæsthesia should be considered It should be however, that both the anæsthesia and the unawareness of the entire process of labour may traumatic effect on the mind, especially in this group

Conclusion

In attempting to relieve the pains of labo advisable to pay attention to instruction and re-e of the expectant mothers, the more so because th pains, owing to their special character, may be es significant to the woman, and because complete sion of the pains, by unconsciousness or total e of peripheral stimuli, deprives the woman of a and important experience

Summary

The behaviour and experiences of 800 wome labour are analysed 335 of them were prep our by the method of Grantly Dick Read (1933) sisting in instruction gymnastics breathing relaxa and bearing down exercises 97 received instruction 368 were neither prepared nor given analgesia or sthesia

y this psychoprophylaxis the number of ' satisfac " and very satisfactory ' results was increased n 60 to 80% in the first stage and from 65 to 90% he second stage. The total number of poor ' results reased from 17 to 5%

special study of 50 women during pregnancy showed t it is usually possible to foretell how a woman will ave during labour The kind of psychoprophylaxis ssary can thus be determined in advance

y thanks are due to Dr G J Kloosterman head of the ining School for Midwives in Amsterdam in whose clinic under whose guidance these investigations were made n the help of a scholarship granted by the government of Dutch Antilles.

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COMPARISON OF RESCINNAMINE AND RESERPINE AS HYPOTENSIVE AGENTS

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THE alkaloid reserpine derived from *Rauwolfia ser tina* has come into very wide use as a hypotensive nt Alone in doses of the order of 0 5–1 0 mg a such as are usually employed it is mildly hypotensive, in most hypertensive patients it does not induce equate falls in blood pressure When reserpine is used combination with pentolinium (pentapyrrolidinium nsolysen ') however a strong potentiation of the ivity of the pentolinium is observed regularly (Smirk l Doyle 1954 Doyle et al 1955 Bain et al 1955) is effect has been of great practical value in that hout detracting from and even improving the degree control over the blood pressure level it allows a bstantial reduction of the dose of pentolinium There n consequence an important diminution in side-effects d also a decrease in the amplitude of the daily ctuations of the blood pressure

Unfortunately about 10% of our patients who received erpine, either alone or in combination with pentolinium ve experienced substantial degrees of mental depression d about 5% have required psychiatric treatment ld degrees of depression are even more frequent me patients on reserpine also complain of lassitude d sleepiness during the day and of disturbed sleep th nightmares at night

The alkaloid rescinnamine has been recently isolated m *R serpentina* (Klohs et al 1954) We have sub tuted rescinnamine for reserpine in 32 patients for riods of from four weeks to four months.

The Patients and the Results

Apart from 2 patients on reserpine alone who had had no side-effects the trial was made on patients who had complained of some unfavourable symptoms resulting from reserpine Of the 32 patients, 6 were males and 26 females At the inception of treatment 3 had grade IV fundal changes (Keith et al 1939), 7 grade III changes and 22 grade-II 8 patients had been treated with reserpine alone and 24 with a combination of reserpine and pentolinium The dose of reserpine varied from 0 5 to 1 5 mg a day

When under otherwise constant conditions, rescinnamine in the same doses was substituted for reserpine, the effects on the blood pressure were substantially the same in 21 patients they appeared to be greater in 3 and less in 8 In some cases rescinnamine could be tolerated in considerably larger doses than reserpine, and in these patients it was possible to maintain significantly lower blood pressure levels with fewer side effects

17 patients who were transferred to rescinnamine had complained of mild or moderate mental depression while on reserpine In 8 of these the depression was relieved in 7 it was unchanged and in 2 it was worse Of 10 patients who had had nightmares on reserpine, 6 had relief when changed to rescinnamine 2 were unchanged, and 2 were worse In general lassitude was much less on rescinnamine the complaint of somnolence was infrequent and in fact a degree of insomnia was complained of by some patients

4 patients complained of anorexia and abdominal discomfort on changing to rescinnamine and 2 of these lost weight rapidly In 1 patient reserpine had been abandoned because of aggravation of fluid retention and recurrence of the manifestations of congestive cardiac failure A similar retention of fluid at once became evident when she was given a trial of rescinnamine

The preference of the patients themselves was as follows 13 patients preferred rescinnamine 12 preferred reserpine and 7 were indifferent Several patients considered themselves dramatically benefited by rescinnamine

Discussion

Rauwolfia alkaloids have an important place in the treatment of hypertension more particularly when used in conjunction with methonium salts Unfortunately whole extracts of *R serpentina* and also the pure alkaloid reserpine may lead to mental depression which is usually mild but sometimes frankly psychotic (Wilkins 1954 Doyle and Smirk 1955)

In experience with 150 patients we have encountered significant depression in about 10% of our patients on reserpine. Milder symptoms such as lassitude drowsiness by day and disturbed sleep with nightmares at night are encountered in some measure in about half of our patients on reserpine In most patients with these milder symptoms the benefits conferred in the shape of improved control of blood pressure, decrease of methonium side effects and lessening of tenseness, far outweigh the disadvantages. It would nevertheless be an important advantage to have available a substance which having a reserpine like effect upon the circulation lacked the disadvantage and potential danger of inducing a psychotic depression

In lower animals the newly isolated alkaloid rescinnamine has been reported to have a hypotensive effect similar to or even greater than reserpine (Cronheim and Toekes 1955) and also to have certain quantitatively different, but otherwise similar, effects on the central nervous system

The present clinical trial with rescinnamine indicates that in some patients there are considerable differences between the subjective effects of the two substances. These preliminary observations suggest that an appreerable number of patients under treatment with reserpine who complain of such side effects as mental depression, sleepiness, diurnal lassitude, and nightmares may be relieved of these symptoms by changing to rescinnamine Some patients, however develop tenseness, anorexia, abdominal discomfort, and loss of weight on rescinnamine and prefer to return to reserpine Such an observation as this is not surprising, for it is a usual experience that the effects of drugs which act upon higher centres of the nervous system depend to an important extent upon the central nervous system characteristics of the recipient

In general the change to rescinnamine has no important effect on the blood-pressure, the hypotensive action being similar to that of reserpine whether it be given alone or in combination with pentolinium

Summary

A clinical trial of rescinnamine, a newly isolated alkaloid of *Rauwolfia serpentina*, has indicated that there is no important difference between the hypotensive effects of rescinnamine and those of reserpine when used in combination with pentolinium or alone

Mental symptoms occurring in patients on reserpine, such as depression, diurnal somnolence, lassitude, nocturnal dreaming and nightmares, often may be relieved by changing to rescinnamine

Some of our patients complained of tenseness, anorexia, and abdominal discomfort on rescinnamine and preferred to return to reserpine

We are indebted to May & Baker Ltd for supplies of pentolinium ('Ansolysen'), to Riker Laboratories Ltd for supplies of rescinnamine, and to Ciba Ltd for supplies of reserpine ('Serpasil') Expenses were defrayed by the Life Insurance Medical Research Fund of Australia and New Zealand

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TREATMENT OF HYPERTENSION

HYPOTENSIVE DRUGS AND MENTAL CHANGES

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THE very encouraging reports of the effect on hypertension of the rauwolfia alkaloids (*British Medical Journal* 1954, Hughes et al 1954), and of a combination of reserpine and pentolinium (Smirk et al 1954), encouraged me to use this form of treatment where possible Until recently I thought that an almost ideal treatment had been achieved, but when the third case of melancholia in a severe hypertensive treated with this combination was observed, I became doubtful of the safety of method

In view of this development and of the ab that time of any reports of depressive mental examined the records of the hypertensive patients I seen as private patients in general practice This re covered two and a half years during which hypotensive agents had been used in this practice

The Series

From August, 1952, to February, 1955, 133 were treated for hypertension and they have into mild, severe, and malignant cases In making classification the blood pressure itself was not co except in distinguishing hypertensive from non tensive Mild cases are those with no evidence of renal, or cerebral damage and in which there has more than the slightest change in the retinæ attri to hypertension Severe cases are those in which changes directly attributable to hypertension have found Malignant cases are those in which papille or gross retinopathy, with evidence of cardiac renal damage were present These patients were admitted to hospital and thoroughly investigated exclude the known curable causes of hypertension. they were carefully stabilised on hypotensive except for 1 patient who discontinued treatment

The object of this classification was to determine form of treatment should be given in a part rather than to assess severity, and it was made soon after the patient's first visit. In group A sedative and vasodilator drugs were usually phenobarbitone and aminophyllin being very c used, though latterly reserpine has been given to extent In group B (severe) an attempt has been to lower the blood pressure with effective hy agents, and in group C the same policy has been out

The results of treatment have been assessed as where there has been a satisfactory fall of blood p and relief of physical signs related to it, as fair some reduction of blood-pressure has taken place, bad where there has been no change In the mild tensives this assessment has been very difficult, for toms have often cleared without any noticeable re of blood pressure as judged from casual recordings, the figures for this group are approximate

Treatment and Results

At the outset all hypertensives were treated routine with phenobarbitone and aminophyllin, and has been a fairly satisfactory treatment in most When, however, a case fell into group B, definite att were made to reduce blood-pressure Oral hexametho was tried at first, and then pentolinium was used better effect For the past twelve months reserpine been given, usually according to the schedule of S et al (1954)

By using a combination of reserpine and pentolin the blood pressure in nearly all cases could be l

RESULTS OF TREATMENT IN 132 CASES OF HYPERTENSION *

Type of treatment	Type of hypertension									Complications attributable to hypertension†	Deaths	Mel or s det
	Mild			Severe			Malignant					
	Good	Fair	Bad	Good	Fair	Bad	Good	Fair	Bad			
Phenobarbitone and aminophyllin	0	29	39	0	0	14	0	0	0	8	8	[illegible]
Ganglion blockers	0	0	0	1	2	1	0	0	0	1	0	1
Reserpine	6	5	1	4	1	1		0	0	1	0	1
Combined reserpine and pentolinium	3	1	0	18	0	0	3	0	0	3	0	1
Parenteral hexamethonium	0	0	0	0	0	0	2	0	0	0	0	[illegible]

* 1 patient with malignant hypertension refused treatment and is not included in this table
† Includes such occurrences as cerebral vascular accidents and coronary occlusion

any desired level Of 25 patients who were treated this way, 23 were well controlled The 2 exceptions l malignant hypertension and could be controlled isfactorily only by parenteral hexamethonium

he presence of a previous coronary occlusion or cere l vascular accident was an indication not to lower the el too far rather than as an absolute contra indication l the success of this approach is borne out by the lack serious complications The only coronary occlusion ing during treatment was in a man of 31 who had orderline malignant hypertension and no previous tory of cardiac ischæmia

he results of combined treatment in the more severe ertensives have been uniformly satisfactory as far lowering the blood pressure and relief of physical signs l symptoms are concerned. It has been very encour ng to see retinal changes recede hypertensive cardiac ure disappear and patients general appearance prove remarkably

Mental Changes

But it is disturbing to record that there were no less n 4 cases of melancholia 1 of severe depression and 1 severe anxiety state arising in this small group of ients, observed for varying periods of up to two and alf years at the longest 3 of these patients have had have electroconvulsive therapy (E C T) and 2 others ded psychiatric treatment Apart from these, there s 1 patient who had had a previous attack of melan-olia and has remained well after a satisfactory response combined therapy 1 patient who has suffered from d depression throughout with no change in mood on erpine therapy 1 patient with a severe anxiety state o has had no change while taking reserpine and 1 ient who has had mild delusions for years without nge on sedative treatment The rest of the patients ve been normal mentally

t may be of interest to give briefly the history of the es of depression

ASE 1 —A woman of 58 with severe hypertension and icular fibrillation. Following a small cerebral thrombosis, t homonymous hemianopia and frequent attacks of ksonian epilepsy always culminating in status epilepticus ll for twelve months with anticonvulsant therapy and oral amethonium Melancholia from the start of therapy ich coincided with the first attack of epilepsy

ASE 2 —A man of 63 with severe hypertension On reser e pentapyrrolidinium he was troubled by diarrhœa and otensive attacks Four months after start of therapy lancholia with delusions necessitating E C.T Had an earlier d depressive episode

ASE 3 —A woman of 59 Neurotic for a long period Hyper sive cardiac failure responded very well to combined rapy but three months after treatment began melancholia h delusions necessitated E.C T

ASE 4 —A woman of 75 with hypertensive cardiac failure sponded to combined therapy but five months after atment began melancholia with delusions necessitated T and has persisted

ASE 5 —A woman of 65 with mild hypertension for many rs, slowly increasing in severity After four months bined therapy a severe depression responded to rest in pital after treatment was abandoned

t is ominous to note that all 5 of these cases were in group of 51 patients treated with either reserpine or glion blockers and that 4 of them had had reserpine us 4 people out of 44 had melancholia within a period twelve months An interesting feature is that these tients were the only ones to complain of depression as tinct from sedation and this deepened to melancholia on treatment was continued As far as could be ertained there were no milder types of depression

Recently Doyle and Smirk (1955) have remarked on depressive effects of reserpine and my own small ies seems to bear out their findings. If larger series show that severe depression is as common as it was in my experience I feel that excellent though the results of therapy with reserpine may be, the risk of melancholia is too great to permit its use in mild hypertension If it is used in severe cases a very careful watch must be kept for this side effect It may be that the mixed rauwolfia alkaloids will be found to be free from this effect in which case they may replace reserpine to give an easy safe and reliable method of treatment

Summary

In 133 patients with hypertension treated as private patients in a general practice over a period of thirty months there was a group of severe hypertensives who benefited considerably from combined oral reserpine and pentolinium

No less than 4 patients out of 44 who received reserpine alone or in combination had severe mental depression amounting in 3 cases to melancholia with delusions

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RESERPINE IN THE TREATMENT OF ANXIOUS AND DEPRESSED PATIENTS

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The history of *Rauwolfia serpentina* in the treatment of mental illness has been reviewed by Kline (1954) in his account of a clinical trial of reserpine an active alkaloid extracted from this plant Kline found this drug to be an effective sedative, and pointed to its possible value in the treatment of patients with anxiety symptoms and obsessive-compulsive drives Noce et al (1954) have also reported favourably We therefore decided on further clinical trials using Serpasil ' a preparation of reserpine

The dosage was determined arbitrarily on the basis of what little is already known Generally speaking higher doses have been recommended for mental patients than for hypertensives (Kline 1954)

Case material and Method

Two groups of patients were treated quite differently

Group A was made up initially of 67 outpatients They consisted of all the suitable cases seen at eleven outpatient clinics (controlled by different doctors) during about six weeks The patients were of either sex able to live at home and work and troubled in the main by anxiety and depression for which they had been referred to hospital They were divided into two subgroups—those receiving the drug (0 5 mg twice daily) and those receiving dummy tablets identical in appearance and almost indistinguishable in taste Sealed envelopes containing the coded index of the substance to be prescribed were chosen by a random method and opened for each case by the pharmacist who alone knew the individual treatment The medical staff did not know which patients were receiving the drug and which the placebo The patients were seen weekly in the out patient department where their mental state was assessed and their pulse rate and blood pressure recorded At the end of the trial period of six weeks (which is above the well known latency period for reserpine acting as a hypo [illegible] both patient and doctor were asked to complete a simple questionnaire. All patients had been told at the commencement of the trial period that they would be receiving a new preparation which it was hoped would help them.

The questionnaire to the doctors was:

A	Do you consider the patient, compared with his/her condition before treatment,					
	in general to be	much better	better	unchanged	worse	much worse
B	in respect of *depression*	much less depressed	less depressed	unchanged	more depressed	much more depressed
C	in respect of *anxiety*	much less anxious	less anxious	unchanged	more anxious	much more anxious
D	in respect of *compulsions/phobias*	much less disturbed	less disturbed	unchanged	more disturbed	much more disturbed
E	in respect of *sleep*	much better	better	unchanged	worse	much worse
F	in respect of *appetite*	much better	better	unchanged	worse	much worse

N.A. = not applicable

Each patient was invited merely to answer the first question (A) at the end of the trial period and also to comment on any reactions he had noticed, whether he attributed them to the substance or not.

Group B consisted of 4 severely disturbed inpatients who were treated with larger doses of the drug. They were middle-aged men (2 of them suicidal) suffering from severe involutional depressive illnesses. All were [illegible] expected to respond to a three-week course of electroconvulsion therapy (E.C.T.). They were given a three-week course of reserpine by mouth, 3 of them receiving 10 mg. daily and 1 of them 15 mg. daily. At the end of the third week they were given no further treatment for the next seven days, and then, commencing in the fifth week after starting treatment, received E.C.T. twice weekly for three weeks. Pulse and blood-pressure were recorded four-hourly while they were on reserpine and weight was recorded each week.

Results

Group A

Of the 67 outpatients who started the trial, 13 fell out. Of the 54 patients who completed the trial, 28 had the drug and 26 the inert substance. Table I displays the ratings on item A of the questionnaire made by doctors and patients at the end of the sixth week.

TABLE I—DOCTOR AND PATIENT RATINGS OF GENERAL PROGRESS (FROM ANSWERS TO ITEM A OF QUESTIONNAIRE)

Treatment and rating	Much better	Better	Unchanged	Worse	Much worse
Reserpine					
Doctor's rating	10	8	9	0	1
Patient's rating	10	10	8	0	0
Placebo					
Doctor's rating	2	7	16	1	0
Patient's rating	3	10	10	3	0

The difference between the groups is significant when doctors' ratings are compared ($\chi^2 = 7.15$, d.f. $= 2$, $p = 0.03$). The difference is in the same direction when the comparison is between patients' ratings, though it just fails to attain significance at the 5% level of confidence. Hence there seems to be a clear distinction between these two randomised groups of patients in favour of those treated with reserpine.

Of the 13 patients who failed to complete the six weeks' trial, 5 were having placebo and 8 reserpine. It is obvious that the statistical difference tabulated above could be obliterated or rendered insignificant if, to take the extreme case, all the patients on placebo were so "much better" that they discontinued treatment, and all the patients on the drug were so "much worse", refused to continue attendance or had to be ad hospital. The reasons why these 13 patients [illegible]tinued treatment were therefore examined.

Of the 5 patients given placebo, 3 reattended the only once; 1 of this trio later admitted that he had taking the tablets because he felt they were worsen condition but no further information was available about other 2 patients. The 4th patient had to be admitted mental hospital after two weeks because of deterioration condition; the 5th was admitted, three days after commencing placebo, to a general hospital in what was [illegible] a comatose state which had been attributed t tablets.

Of the 8 patients having reserpine, 2 discontinued than a week because they declared themselves to be perfectly well and in no need of further treatment. One had to leave the country after a week; another gave up tablets after one day complaining of ocular and nasal gestion; another after two days because she amylobarbitone; another after three days because of ge dissatisfaction with the drug. 2 patients were admitted hospital within two weeks of starting to take the drug.

TABLE II—DOCTORS' RATINGS ON INDIVIDUAL SYMPTOMS ALL PATIENTS

Treatment	Much better	Better	Unchanged	Worse	Much worse
Depression (item B)					
Reserpine	4	14	7	1	0
Placebo	1	6	13	2	0
Anxiety (item C)					
Reserpine	7	12	8	0	1
Placebo	1	6	17	1	0
Compulsions/phobias (item D)					
Reserpine	3	10	6	1	0
Placebo	0	2	14	0	0
Sleep (item E)					
Reserpine	4	5	17	1	0
Placebo	0	8	14	2	0
Appetite (item F)					
Reserpine	4	10	10	2	0
Placebo	1	3	16	1	0

There is no evidence that the reactions of the 13 par patients would have upset the tenor of results in t The study of their protocols does, however, de some of the obstacles in the way of even the controlled study on an ambulant neurotic populatio

Table II presents the doctor-rated scores on the individual items of the scale. A difference in favo the drug-treated patients is apparent for four of the items, the one exception being sleep. The patter

TABLE III—REACTION TYPES OF ALL PATIENTS

Treatment	Anxiety reaction	Depressive reaction	Schizophrenic reaction
Reserpine	17	7	1
Placebo	13	11	2

rovement recorded in the other four is essentially ar, in that a majority of drug treated patients were ded as better whereas the majority of placebo ed patients recorded themselves as unchanged The ence, for each item is highly significant

spite the care taken to randomise the subgroups, ossibility that the drug treated cases had a naturally favourable prognosis had to be eliminated

will be seen from the last column of table II that the ers of patients in both groups disclaiming the listed toms are about equal which indicates that sympto ally the groups were comparable On closer analysis it d equally difficult to distinguish between the subgroup cteristics. The sex distribution was equal The average f the drug treated group was 37 0 ± 1 62 years, that of lacebo treated group 40 1 ± 2 03 Table III allocates wo groups into crude reaction types which are possibly meaningful than formal diagnostic labels

ble IV gives the outstanding symptoms of both sub- ps. Again there is no indication of major difference

TABLE IV—OUTSTANDING SYMPTOMS OF ALL PATIENTS

eatment	Anxiety		Depression		Compulsions and phobias		All other symptoms
	Somatic	Psychological	Somatic	Psychological	Somatic	Psychological	Somatic and psychological
rpine	10	11	7	17	9	7	11
bo	9	11	9	15	6	5	8

n attempt was then made to determine how much psychia help had previously been sought and received by the ents. Indirect evidence bearing on this point is presented ables Va and Vb which show the number of patients previous inpatient and/or outpatient records, along with treatment given

ABLE Va—PREVIOUS PSYCHIATRIC HISTORY AMONG ALL PATIENTS

Treatment	Previously inpatients	Previously outpatients	Previously both inpatient and outpatient
rpine	10	13	5
ebo	14	15	11

BLE Vb—NUMBER AND TYPE OF PREVIOUS TREATMENTS FOR PRESENTING ILLNESS

atment	Psychotherapy	E.C.T	Pharmacotherapy	Social measures	Other forms of treatment
rpine	10	1	11	1	5
ebo	13	7	14	3	0

able VI gives the duration of the outstanding symptoms.

LE VI—DURATION OF OUTSTANDING SYMPTOMS AMONG ALL PATIENTS

atment	< 1 wk.	< 1 mo	< 6 mos	6–11 mos	1–2 yr	2–3 yr	4–5 yr	6–10 yr	10 + yr
erpine	1	3	5	3	4	1	1	4	3
ebo	0	1	2	3	3	6	0	3	2

n the basis of all information available the likely sympto tic responsiveness of each patient before starting treatment rated by one of us (M S) on a three point scale, from 1 icating best prognosis to 3 indicating worst The ratings shown in table VII which suggests only an insignificantly re favourable prognosis for the drug treated patients as a up

TABLE VII—RATINGS OF LIKELY RESPONSIVENESS TO TREATMENT (1 MORE FAVOURABLE THAN 2; 2 MORE FAVOURABLE THAN 3)

Treatment	Rating 1	Rating 2	Rating 3
Reserpine	19	7	2
Placebo	13		6

Our conclusion then, was that in respect of symptoms diagnosis and prognosis, no obvious difference could be demonstrated between those patients receiving the drug and those receiving placebo

A search for distinguishing features among those patients who responded most satisfactorily to the drug proved equally fruitless

Of the 10 patients so rated by the doctors 7 fell into the anxiety reaction type 2 into the depressive reaction type and 1 into neither category The sex distribution was equal The youngest patient was 23 the oldest 54 4 patients had complained of symptoms for less than one year 1 had had symptoms for ten years No one outstanding symptom could be isolated: 6 patients were complaining of obsessional symptoms 7 of anxiety symptoms, and 4 of depressive symptoms, but the overlap was too considerable for any clear distinction No patient had been put into prognostic grade 3 (worst prognosis) but 3 of the 10 were in the intermediate grade 2

Separate mention should be made of the *side effects* among those patients who completed the six week trial These were all attributed by the patients to the substance which they were taking Among the patients on reserpine 3 complained of nasal stuffiness, 4 of what was described as shivering ' and 2 of giddiness and dizziness 1 commented on his large appetite 1 on increased libido and 1 of many somatic anxiety symptoms Of the patients on placebo, 3 complained of fatigue and 1 felt elated for the first day or two the more dramatic side-effects displayed by 1 of the patients who did not continue with his tablets have already been mentioned In no case did the weekly systolic blood pressure readings fall more than 5 points but in the outpatient department readings of blood pressure were taken principally as a precaution and without the care devoted to its recording among the inpatients

No *toxic effects* were observed in this group

Group B

All 4 patients were substantially unchanged at the end of the three weeks during which they received reserpine in high dosage and they remained unchanged until the electroplexy was started. After six convulsions all were much improved as had been predicted precautions against suicide were discontinued and all made an uninterrupted recovery

Though no *toxic effects* were observed we should mention that in 2 patients outside these groups, receiving more than 10 mg of reserpine daily, parkinsonism developed (Stead and Wing 1955)

Discussion

The experience gained with the relatively large doses given to group B is of limited value because only 4 patients were treated but their poor response does suggest that the drug is very unlikely to supersede E C T as the treatment of choice for severe depressive states The two dramatic cases of reversible parkinsonism indicate a problem to be faced when high doses are prescribed it is of potentially great pharmacological interest

In the neurotic outpatients of group A the drug treated group fared better than the placebo treated group over the trial period of six weeks But the design of the trial in obviating many of the criticisms usually levelled against findings of this type allows very little more to be concluded. The improvement was among the drug treated patients as a *group*, and no information was obtained about the response to be expected in particular patients The recent comment of Dodds (Dodds 1955) on the treatment of cancer with hormone preparations, that "it has proved impossible, throughout this work to forecast whether a given patient is likely to benefit by any course of treatment," illustrates the same situation in another field where much more knowledge has been accumulated

Against this background there should be considered the instrument employed for the detection of therapeutic response—namely, the rating scale

Such a scale is valuable when it is necessary to assess subjective responses which are uncorrelated with known and standardised variables While the standardisation and reliability of these scales is vital for many purposes, it is not essential when group differences, not absolute group values are the locus of interest An appreciably large number of doctors contributed to the ratings in both groups, and so increased reliability Parenthetically, there was no indication that individual doctors failed to complete their forms with due care for a wide variation among items was provided by each doctor concerned with 2 or more patients

The validity of this scale cannot be accurately measured But, item A the only item to be tackled by patient and doctor, showed an exact agreement between doctor and patient ratings in 34 out of the 54 cases, only 2 of the remaining 20 pairs showed a discordance of more than one point of the scale Interpretation of the response to treatment in terms of the individual symptoms rated must allow for the "halo effect" of the general improvement in the subjective state of the patient Some independence of symptomatic response is suggested by two internal observations First, improvement in items B–F tended to be rated as "better" in contrast to the "much better" recorded of item A (table I) Secondly the difference between the rated responses to item E (sleep) and those recorded of the other items suggests a more discriminate functioning of the scale

The side effects of the drug have all been previously described The more surprising side effects of the placebo underline the importance of using controls in such trials and illustrate the pharmacological effects of inert substances, discussed by Wolf and Pinsky (1954)

Summary

Of 67 outpatients, whose main symptoms were anxiety and depression, about half were treated with reserpine and the others with placebo

Among the 54 patients completing the trial, those treated with reserpine showed more benefit than the others

Four severely depressed inpatients did not respond to higher doses of the drug, though they later recovered after electroplexy

Thanks are due to Mr A S C Ehrenberg, who advised about the statistical design, and to Messrs. Ciba for supplying the 'Serpasil' and dummy tablets

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"How then are we to achieve smokelessness in the face of the rigid opposition of the kind experienced recently ? This is reminiscent of the fierce unbending criticism which faced those gallant pioneers Simon and Chadwick a hundred years ago when they fought on behalf of the people of this country—including their critics—for clean water and better sanitation The problem of a filthy atmosphere is as great as any of those that faced Simon and Chadwick in their time It must not be left in any doubt but that we shall tackle this problem as energetically as they did"—Dr R W ELLIOTT, medical officer of health for Bolton, in his report for 1954

RETICULOSIS OF THE NERVOUS
SIMULATING ACUTE INFEC
POLYNEURITIS

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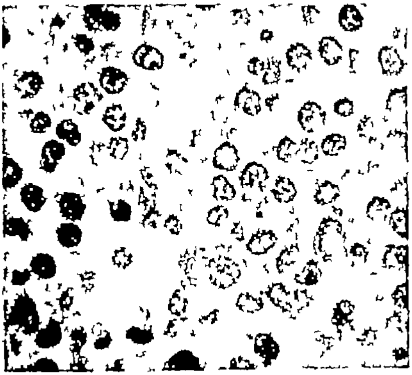
ACUTE infective polyneuritis, with its
pattern of symmetrical peripheral flaccid
extremities, slight sensory loss, and bilat
weakness, was first described by Guillain,
Strohl (1916) and later by Holmes (1917) and
et al (1918) Since then it has received general
tion and, although its ætiology is still unknown,
ally held to be due to a virus infection The cerebro
fluid (C S F) usually shows a characteristic al
cytological dissociation, with a greatly increased
of protein Most patients recover, but death ma
from rapid ascent of paralysis

In the case reported here invasion of the nervous
by a reticulum cell sarcoma caused a similar
picture

Case-report

A housewife, aged 56, had complained for six
increasing weakness in the lower limbs, beginning in
leg There had been no previous illnesses of sign
About a week before admission a squint of the right
facial weakness had appeared, and she had become
that she could neither sit up nor stand

On examination the patient was obese, there was
dence of anæmia or of lymphadenopathy, liver and
were impalpable, the respiratory and cardiovascular
were normal, the urine contained no abnormal const
The mental state was abnormal, although she was al
friendly and recognised that she could not walk, her
was one of total unconcern and indifference She did
spontaneously but understood simple questions and
express herself coherently Attention was hard to
she had difficulty in registration but no gross memory
for past events, and she was correctly oriented in ti
place, and recognised persons She could not, ho
her right side from her left There was no dy
agnosia Her sense of smell and visual acuity were
assess, but her optic discs and fundi were normal
seemed to be no hemianopia or visual inattention T
slight right sided ptosis and paralysis of upward and
movements of her right eye She had no nystagmus
corneal reflexes were brisk, and light touch and pain
over her face Her jaw muscles contracted bu
had bilateral symmetrical facial weakness of
Her other cranial nerves were normal She had little
in her upper limbs She could well maintain the p
her outstretched limbs, and her hand grips were fairly
However, some ataxia and terminal intention t
evident on performing the finger nose test She could
up unaided Her lower limbs were flaccid Except for
toe movements and ineffectual efforts to flex the knees
gravity the paralysis was complete There was no
fasciculation. Her inattention and unconcern made
difficult to interpret, but painful stimuli were
normally, and there did not seem to be any gross
sensibility to light touch She could detect passive mo
of her great toe and finger joints, and deep muscle
normal degree could be elicited by squeezing her cal
her upper limbs the biceps, triceps, and supinator
present The abdominal reflexes could not be obt
the lower limbs the tendon reflexes were lost There
response on stimulating the soles of the feet S
bladder and rectum were unaffected Lumbar pu
produced C S F under normal pressure, and the Quecke



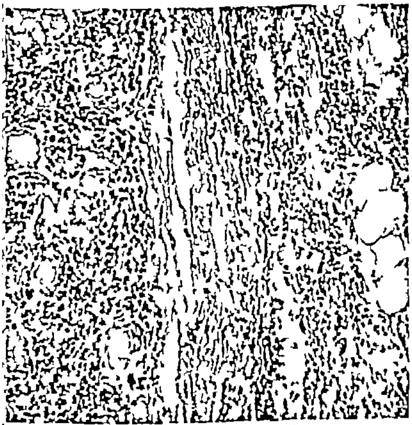
j. 1—Section of lymph-node showing nature of tumour cells.

was normal The C.S.F. contained 14 lymphocytes per and 275 mg of protein per 100 ml with excess of lin The Lange test gave 2335133000 Wassermann ion negative Blood examination normal.

ignosis —The combination of flaccid paralysis of the limbs, retention of sensation and sphincter control, al right external ophthalmoplegia and bilateral facial ness suggested polyneuritis. The dull mental state was ult to explain. Diagnoses considered were acute infective ieuritis acute porphyria myelopathy associated with gnant disease and diffuse infiltration by leukæmic sits.

urse —The mental state further deteriorated in hospital patient became disoriented had visual hallucinations, was incontinent of urine and fæces. Terminally thrombo itis of the left leg developed and she died suddenly a h after admission—ten to twelve weeks after the onset mptoms

cropsy Findings —The deep cervical mediastinal, and minal glands were all enlarged presenting a uniform n fleshy appearance on section Nodules of similar appear were present in the spleen and lungs The brain was en with flattening of the convolutions In the right ral hemisphere was an ill defined mass of friable fleshy



3—Posterior-root ganglion showing infiltration nerve-root and adjacent tissues are also involved.

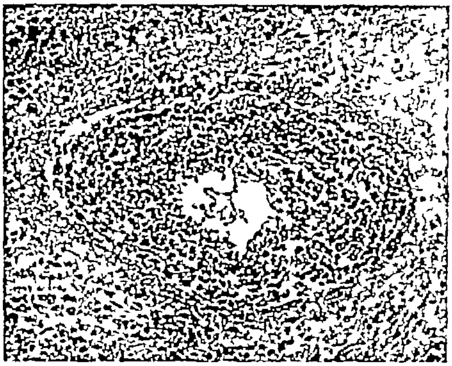


Fig 2—Section of cerebral white matter with a blood-vessel showing spread by subendothelial infiltration

tissue with some small areas of hæmorrhagic necrosis. It was about two inches across, occupied the genu of the right internal capsule and infiltrated the right globus pallidus head of the caudate nucleus and lateral aspect of the thalamus. The third ventricle was displaced to the left and presented as a narrow cleft but the lateral ventricles were of normal dimensions The veins of the left leg had thrombosed as far as the inferior vena cava. Massive embolic thrombi in both pulmonary arteries explained the sudden death No other naked-eye lesions were present in particular there was no invasion of the intervertebral foramina and epidural space from the thorax and the spinal cord, leptomeninges and nerve roots appeared normal.

Histologically the various lesions presented a uniform morphology the condition being a widespread reticulosis. The predominant cell was a large round cell of histiocytic type with a large nucleus (fig 1) Silver staining showed increased density of the reticulin net which in scattered foci showed condensation with production of mature collagen Mitotic figures were numerous, and occasional giant-cells were seen. The tumour corresponded to the dictiocytic type of reticulum cell sarcoma in Robb-Smith s (1938) classification. The cerebral involvement was much more diffuse than was suggested by the naked-eye appearances, microscopic foci of neoplastic cells being found in the perivascular spaces and as lepto-

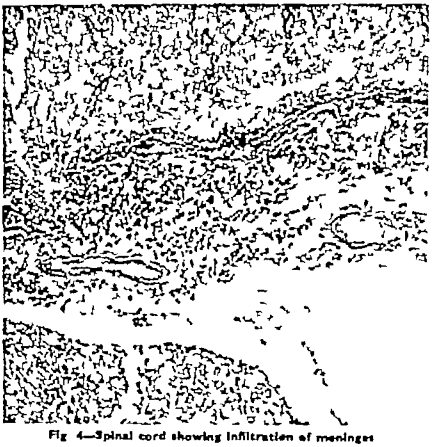


Fig 4—Spinal cord showing infiltration of meninges

meningeal infiltrations in many sections of the cerebral hemispheres at a distance from the main tumour mass The same type of infiltration was seen in the mid brain in the region of the [illegible] nucleus A conspicuous [illegible] of the tumour to [illegible] the cerebellum [illegible] lateral to the [illegible] (fig [illegible]) [illegible] was seen in [illegible] the lumen and probably causing the areas of necrosis and hæmorrhage found some distance from the main growth [illegible] in the centre [illegible] showed [illegible] by tumour cells especially small blood vessels [illegible] of the nerve fibres as far as the posterior root ganglia (fig [illegible]) Similar patchy infiltration was seen in the spinal leptomeninges (fig [illegible]), and the underlying cord showed some oedema There was no demonstrable alteration in myelin sheaths or axis cylinders in the cord

Discussion

In the reticuloses invasion of the spinal meninges by way of the intervertebral foramina is [illegible] infrequent and involvement of the brain is even less common

According to most workers the route of the infiltration of the spinal nerve roots, when these are implicated, [illegible] microscopic evidence of spread of the growth through the intervertebral foramina to the epidural space Critchley and Greenfield (1930) pointed out that the most common mode of invasion of the nervous system is by the leptomeninges and epidural space Browder and de Veer (1939) have also discussed the modes of invasion The epidural space was found to be infiltrated in 32% of the cases of Hodgkin's disease involving the nervous system reviewed by Weil (1931), and in 4% of these cases spinal myelopathy had resulted from local obstruction of the segmental radicular vessels secondary to the infiltration Rapidly ascending myelopathy mimicking virus disease may supervene in such cases and, as Harriman (1949) has shown, may be associated with central necrosis of the cord above the level of the principal lesion In the present case the spinal meninges and nerve roots looked normal to the naked eye, though histologically the thoracic roots, and to a lesser extent the meninges, were infiltrated with tumour It appears probable that the nerve roots became infiltrated with growth via the perineural lymphatics

The question arises whether the clinical signs which resembled polyneuritis were "toxic" or mechanical in origin Polyneuritis occurs with relative frequency in cachectic conditions and in malignant disease, and most of these cases, rightly or wrongly, are regarded as being "toxic" In the present case the malignant changes found outside the nervous system did not involve any organ whose loss of function might have favoured the development of toxic polyneuritis The nerve roots were infiltrated with tumour cells, and it appears probable that the paralysis of the lower limbs and the cranial nerve lesions were purely mechanical effects

A striking feature of this case was the early appearance of mental symptoms, which were conspicuous throughout and later developed into a Korsakow's psychosis It was difficult at the time to correlate these with the rest of the clinical picture From the necropsy findings it seems probable that they were related to the widespread cerebral changes around, and remote from the metastatic brain lesion In published cases of malignant lymphadenopathy involving the brain there is little mention of mental symptoms

Summary

A case of Guillain-Barré syndrome is described which developed rapidly in a woman aged 56 The C S F showed increased protein with conspicuous albuminocytologic dissociation, in addition mental symptoms were conspicuous

Necropsy revealed widespread reticulosis, with a large deposit in the right cerebral hemisphere and diffuse microscopic infiltration of the mid brain, lept and spinal nerve roots

It is suggested that the neurological lesions mechanical rather than a "toxic" cause

Grateful acknowledgment is due to Prof J H P help and criticism, and to Mr D Mehaffey, A.R.P.S., photographs

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α-p-METHOXY-PHENYL α-DI-n-BUTYLAMINO-ACETAMIDE IN DYSMENORRHŒA

A DOUBLE-BLIND TEST

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DIRECTOR, RESEARCH DEPARTMENT, PHARMACEU LABORATORIES DR J C JANSSEN, TURNHOUT,

WE investigated the effectiveness of A 16 in rhœa The chemical and pharmacological of this compound, a musculotropic antisp low toxicity, have been described (Janssen Jongh et al 1954) The material consisted of volunteers, claiming to have suffered for several from severe dysmenorrhœa at every period

Each month they were given labelled tubes in a randomised sequence, either A 16 (50 mg) or tablets Both to patients and physician the of the tablets remained unknown until the end of experiment The patients were asked to take at four tablets daily from two days before the exp date of onset, until the end of the menstrual They were requested to evaluate after each period effect as either "good" or "no good" The are given in the accompanying two-by-two table strikingly high number of placebos gave assumedly results The difference between the placebo series the A 16 series is nevertheless statistically No side effects were observed.

RESULTS OF THE DOUBLE-BLIND TEST WITH A 16 IN DYSMENORRHŒA

—	A 16	Placebo	Totals
Good	93	48	141
No good	42	51	93
Totals	135	99	231

$$\chi^2 = \frac{(93 \times 51 - 42 \times 48)^2\, 231}{135 \times 99 \times 141 \times 93}$$

$$= 9\cdot93 \qquad p = 0\cdot0013$$

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New Inventions

INJECTOR FOR AORTOGRAPHY

RANSLUMBAR aortography is now established as a able diagnostic adjunct in urological and other ders. The most important single factor in obtaining radiographs is the rapid introduction of the opaque ium Within limits the greater the rate of injection greater the concentration of the dye and the greater ntensity of the picture

–20 ml. of dye cannot be introduced by hand tion in less than three to four seconds through a 16 s w g needle or in less than six seconds through 18 s w g needle The use of compressed air nally described by dos Santos et al[1] is not without ter any error of manipulation or technical defect be serious. In addition there is little control and tactile perception—drawbacks that apply also to spring activated syringe described by Melick and [2]

e instrument illustrated here (fig 1) embodies the le principle of vertical lever action and is under plete manual control.

e apparatus is all metal with a heavy base to provide ility The angled supports at one end are transfixed spindle on which the lever is hinged The spring s the lever in the ' up ' position and also provides e tension The vertical rods nearer the centre are aded and support the platform on which rest the lders of the syringe The clips which keep the ge in the true vertical position are hinged and *tened by a butterfly screw The platform is adjustable* the threaded rods and the clips are interchangeable ifferent sizes of syringe may be used—e g a 50 ml ge for *angiocardiography*

hen the tubing and syringe have been filled with the the blind adaptor (1) is applied to the distal end he tubing The syringe is placed on the platform sliding the nozzle through the slot The clips are closed the top one holding the rim of the barrel the lower steadying the syringe Excessive grip the barrel should be avoided since this increases stance

he lever passes through a slot in the vertical metal e which slides on the rods, the cup-shaped attachment on the lower side depressing the plunger of the syringe To prevent the plunger being depressed too far an adjustable metal ring is threaded on the rod extending upwards from the plate This ensures the introduction of a measured quantity of dye To eliminate any error or delay in the coördination between radiographer and operator a simple electrical contact switch connected to the X ray machine is fixed on the top platform This is activated by the screw ' stopper ' so that an immediate exposure is made when a measured quantity has been injected in a known time

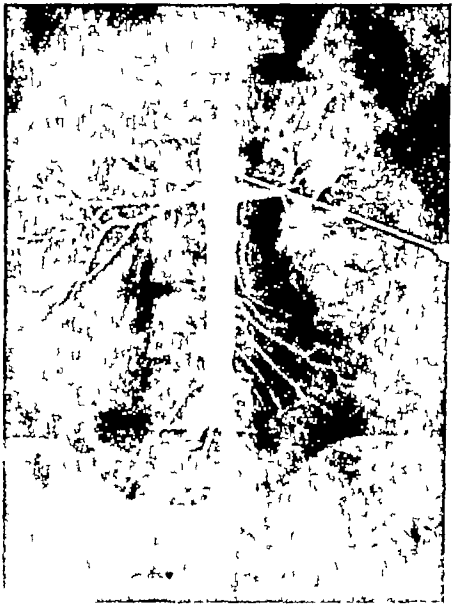

Fig 2—Aortogram in case of bilateral renal calculi

For routine aortography a 20 ml all-glass Luer-Lok syringe has been found satisfactory The pressure tubing has an additional cotton woven sheath The needles 15 cm long are of 16 or 18 s.w g (2) with fitted stilette (3)

In practice 18–20 ml of dye is injected *in not more than a second In the case* of a no 16 s w g needle this requires a pressure of 800 mm Hg This is not excessive when compared with a pressure of 500 mm Hg over three to four seconds when injection is made by hand Excessive pressures—over 2000 mm Hg—produced by some gas air machines are unnecessary and dangerous

This apparatus has now been used in over a hundred cases with excellent results. There has been no morbidity in any patient and no damage to any syringe It is simple and safe in operation.

Fig 2 illustrates the type of picture obtained by the use of this instrument

I wish to thank Mr J Farnol who made the prototype for me The instrument can be obtained from Chas. F Thackray Ltd Park Street Leeds, 1

W Barr Stirling
M.B. Glasg F.R.F.P.S
F R.C.S E.

Urological Department
Glasgow Royal Infirmary

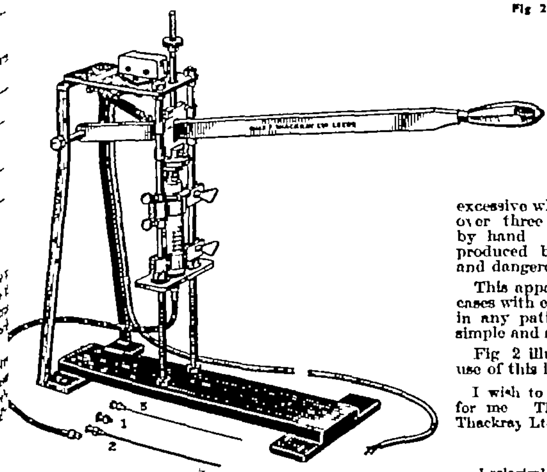

Fig 1—The injector

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[1] s Santos R Lamas A C Caldas J *Med contemp* 1929 47 93

[2] elick, W F Vitt A E *J Urol* 1948 60 321

Reviews of Books

British Obstetric and Gynæcological Practice

Obstetrics Editor Sir EARDLEY HOLLAND M D Lond, F R C P, F R C S, F R C O G, consulting obstetric and gynæcological surgeon, London Hospital Pp 1166 115*s* *Gynæcology* Editor ALECK BOURNE, M A, M B Camb, F R C S, F R C O G, consulting gynæcologist, St Mary's Hospital, London Pp 841 95*s* London Heinemann Medical Books 1955

"The common sense and critical power of British Obstetricians create a strong conservatism and sound judgement of new proposals At the same time they have an open mind for new ideas of real value and always give them a fair trial The importance of a combination of such conscientious and sound judgement in the development of Obstetrics and Gynæcology cannot be overrated and need not be proved"

THESE words of Professor Essen-Moller quoted in the preface to the recent *Historical Review of British Obstetrics and Gynæcology*, are largely vindicated in this new textbook, for Sir Eardley Holland and Mr Aleck Bourne, the editors, in declaring their policy, emphasise the essential conservatism of practice in Britain The book is intended for those training or practising in the specialty, and enough physiology and pathology are included to give the proper background and basis for the clinical approach There are good reasons for objection to textbooks compiled by many contributors, but where the aim is to give a representative picture of the practice of obstetrics and gynæcology in Britain it would be presumptuous for one pen to write everything The editors have succeeded in welding the whole together, and the reader is not left with the impression of a series of essays There are no contradictions and the varying emphasis of the forty-five contributors is helpful on the more controversial questions

Occasionally there seems to be doubt about the status of the intended reader, for example, more than a page is devoted to the method of putting on rubber gloves, else where it is not thought necessary to describe in detail the clinical signs of asphyxia neonatorum As is the way where there are a number of contributors, some notoriously difficult and somewhat ill defined subjects, such as iliac fossa pain and backache, have been left by each contributor to another

The inevitable delay between the writing and the publication of a work of this kind is reflected in the paucity of reference to such subjects as afibrinogenæmia and hyaline membrane In general, however, the volumes give the latest views, and many of the chapters are masterly expositions in particular fields Some readers may feel it a pity that a textbook which will surely become a standard work should not have more about the work of the earlier masters For readers in other countries the organisation of maternity services in Britain, the rôle of the midwife, and the trends towards institutional confinement might have been of interest But the volumes are already large enough

The volumes are well produced on good paper in clear type, and they are commendably free from the minor errors sometimes seen in first editions The illustrations, many of which are new, are of a high standard, and reproduction, except of a few of the radiographs, is good It is understandable that cost has limited the number of coloured illustrations The reader of a book on British obstetric practice, however, does not expect to find the method of palpation of the fœtus in utero illustrated by a drawing borrowed from an American textbook

Despite their size, the volumes are eminently readable, and they together offer an excellent compromise between textbooks and works of reference They have been eagerly awaited for some time, but they more than come up to expectation, and the editors are to be congratulated on blending many notable contributions and presenting a work that truly represents current British obstetrical and gynæcological practice

Animal Agents and Vectors of Human Disease

ERNEST CARROLL FAUST, M.A, PH D, William Vincent professor of tropical diseases and hygiene, the Tulane University of Louisiana, New Orleans London Henry Kimpton 1955 Pp 660 70*s*

Professor Faust is well known for his writings on *Human Helminthology* and, with the late C F Craig, on *Clinical Parasitology* He is also an authority on asis This book amplifies his previous work and siders it from a new angle, but it contains a great material and many illustrations which have already service

It is divided into eight sections dealing with natural and epidemiology in general, protozoan diseases, tapeworms and flukes, arthropods, vertebrate agents of disease, and technical aids Many of the and 9 plates, including 1 in colour, are from Professor own pen or brush, and most are excellent But in malaria parasites stippling cannot be a substitute for and here he has not been so successful In some life history diagrams the humans are dummies pathetically blank expression, supporting with inflated and brobdingnagian insects (fig 99), while some animal reservoirs are unrecognisable to a mammalog 44 and 51) Some of the maps are difficult to read is oddly out of place in parasitology, and dealing over briefly, as in this book, may be dangerous

Diseases of the Liver and Biliary System

SHEILA SHERLOCK, M D Edin, F.R C.P, phy lecturer, department of medicine, Postgraduate School of London Oxford Blackwell Publications. 1955 Pp 720 50*s*

DESPITE the great increase in our knowledge of disease during the last few years new textbooks subject have been surprisingly few A not inc part of this new knowledge stems from the activities of the team at the Postgraduate Medical of London led by Dr Sheila Sherlock, and her be welcomed by her colleagues both in the wards the laboratories

Her averred intention of emphasising the functional morphological changes resulting from hepatic disease, than the diseases themselves, is distinctly successful classification of these changes according to the four components—hepatic cells, vascular system, reticulo endothelial elements—enables her in later to give an unusually clear picture of the individual diseases Most of the illustrations, including many graphs are excellent Minor errors are few taurine, ethanolamine, and glycuronic acid among the acids suggests a biochemical weakness too slight to from the merit of the book as a whole The compre list of references at the end of each section adds to its

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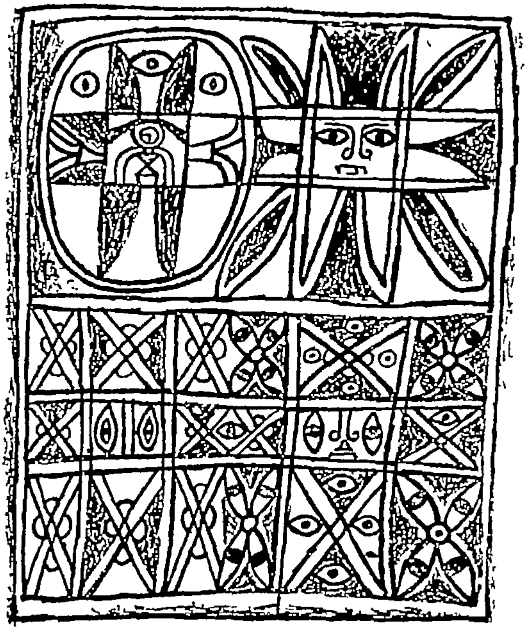
Principles of Medical Statistics (6th ed *The Lancet* 1955 Pp 314 10*s* 6*d*)—To the new statistics in medicine, Professor Bradford Hill's text the best introduction The sixth edition contains an new chapter on clinical trials which summarises recent ence in this vital form of clinical research A convenient is a set of random sampling numbers together with instructions on their use Extensive revision has given rest of the book a gloss of modernity without obscuring clear enunciation of the eternal verities which remain chief merit

English Social Differences (London George Allen Unwin 1955 Pp 318 18*s*)—Prof T H Pear dis the English social scene in the 20th century from the of view of manners, etiquette, speech, clothes and fa sports and games, and the many varieties of school university education He examines the belief that public schools train character rather than intellect, compares current concepts of class, stratum, status gentleman, and aristocrat It is amusing to find him g examples of the upper social stratum people eligible admission to the royal enclosure at Ascot, fellows of the Society, and wealthy men of the kind Lord Duveen persuade that it was their duty not only to buy certain highly priced pictures to which he literally led But later he qualifies this definition and adds that for me of "the upper strata riding per se is a universally reco necessity even if the rider does not hunt or jump" The is provocative, but much of it is a compilation of writers' opinions, and it is not easy to find Professor own views Though the book is in some ways disappoin it will not fail to interest and stimulate social psycholo both lay and professional.



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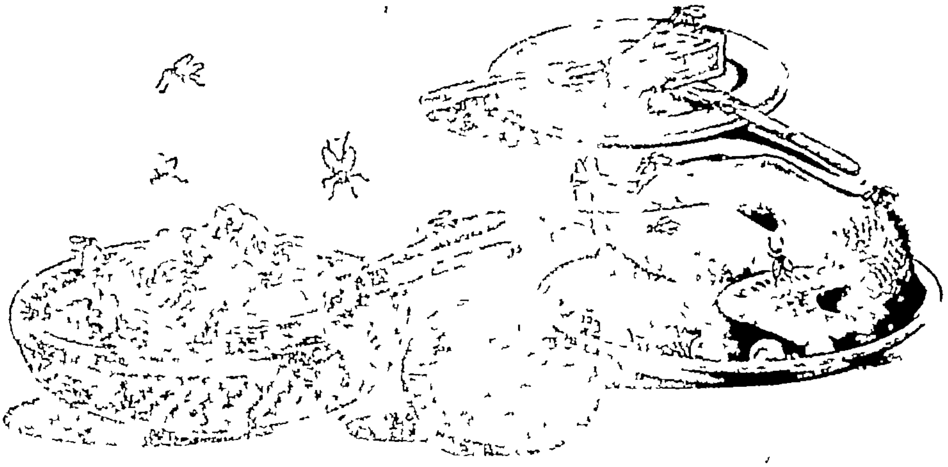

summer hazards

The warmer months of the year provide conditions suitable for the multiplication of bacteria on contaminated food and for the spread of contamination by flies; it is then that epidemics of bacterial food poisoning, bacillary dysentery and summer diarrhœa of infants are most frequent and widespread

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THE LANCET

LONDON SATURDAY JULY 16, 1955

Prevention of Goitre

seems at first self evident that preventable es should be prevented But the more one nes this proposition the more one is inclined to reservations From the scientific standpoint it be established beyond reasonable doubt that the ited prophylaxis will be really effective and t will have no deleterious effects Economically, ust strike at least a rough balance between the of the preventive measure and the cost of the e And finally it is necessary to bear in mind ome people may not wish to have such a measure d to them

1944[1] and again in 1948[2] the goitre subcom e of the Medical Research Council recommended loption of iodised salt in this country as a means venting goitre In 1950 the Government of the emed to be going to fulfil this recommendation[3] o action followed Since the report of 1944 the nce that iodine deficiency is an important cause tre has on the whole been strengthened Much e early evidence was open to criticism for h various surveys seemed to show an inverse on between the incidence of goitre and the content of water soil foodstuffs, and urine l to be admitted that the estimation of small ities of iodine is difficult and the assessment of resence or absence of a goitre notoriously sub e Moreover these surveys were mostly carried before the introduction of modern statistical iques of ' blind analysis The same objection s to the findings in prophylactic trials of iodine ements in goitrous areas, but here an honourable tion is the work of SCRIMSHAW and others[4] in emala in which great care was taken to ensure the clinical observer did not know which children being given the supplements The results, which d a clear reduction in the incidence of goitre g the treated children seem to have impressed GREENWALD[5] who is perhaps the most implac opponent of the iodine-deficiency hypothesis. ner formidable piece of evidence has lately been ded by a team of scientists from both North and America who studied endemic goitre in an e-deficient area of Argentina[6] Armed with the chemical and radio isotopic devices they col l a vast amount of accurate data from which they concluded that "any remaining doubt that iodide deficiency can be a cause of endemic goitre has been erased by the present studies" GREENWALD has long maintained that in experimental work pure iodine deficiency goitre has never been produced and that the highly abnormal diets which have to be used if iodine intake is to be reduced to a minimum may themselves be goitrogenic LEBLOND et al[7] have now refuted this suggestion by removing each constituent of a standard low iodine diet separately In mice thyroid size did not diminish as each constituent was removed, except, surprisingly, in the case of sodium chloride, but even in the absence of this salt the animals' thyroids were larger than normal Moreover in diets free from sodium chloride the critical level of iodine intake was almost exactly what would have been expected from knowledge of the mouse s thyroxine requirements GREENWALD s criticisms[5 6] of the iodine deficiency hypothesis have been valuable in stimulating experimental work and encouraging critical re examination of existing evidence, but now the sole considerable argument that is still unanswered is that derived from his thorough historical studies He seems to have shown that in most countries goitre has appeared only in the last few centuries, and from this he argues that, since iodine supplies can have changed little, some other factor must cause goitre But writers of old may simply not have mentioned goitre

The hypothesis that iodine deficiency is a major factor in the causation of endemic goitre can thus be regarded as firmly established But iodine deficiency is clearly not the only factor Therapeutic drugs, such as thiocyanates, resorcinol *p*-aminosalicylic acid cobalt salts, and phenylbutazone, are occasionally goitrogenic (Fortunately this action can be readily counteracted with thyroxine or thyroid extract) Again, ASTWOOD[9] has shown that powerful goitrogens are present in some foodstuffs, and, though it is unlikely that these would be eaten consistently enough to cause goitre by themselves they might be a deter mining factor at a critical level of iodine intake Possibly more important is the calcium intake The calcium content of water has long been suspected of contributing to the causation of goitre, and its effect on the thyroid gland has been put on a firm basis by the experiments of SELWYN TAYLOR,[10] who showed that in rats the addition of calcium carbonate to a low iodine diet caused further thyroid enlargement A high fluoride content in drinking waters has also been thought to be a factor in the causation of goitre[11] but here the evidence seems less secure And recently HETTCHE[12] in Germany has claimed that a goitrogen which he identified as urochrome is commonly present in polluted water supplies

From much work throughout the world it is fairly evident that the critical level of iodine intake varies a good deal from one environment to another The goitre subcommittee thought that in Scotland (where the water is mainly soft) goitre appeared at a lower level of iodine intake than in the areas of England

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itre Subcommittee Medical Research Council *Lancet* 1944 107

urray M. M. Ryle J A Simpson B W Wilson, D C, yroid Enlargement and Other Changes related to the Mineral ntent of Drinking Water Medical Research Council memo- ndum no 18 H M. Stationery Office 1948 See *Lancet* 48 i 913

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[7] Axelrad A A, Leblond C P Isler H *Endocrinology* 1955 56 387

[8] Greenwald, I *J clin Endocrin* 1946 6 708

[9] Astwood E B *Ann intern Med.* 1949, 30 108

[10] Taylor S. *J clin. Endocrin* 1954 14 1412

[11] Department of Nutrition Endemic Goitre in the Union of South Africa 1955

[12] Hettche H O Atiologie Pathogenese und Prophylaxe der Struma Munich 1954

which were studied (where the water was mainly hard) Besides, it seems reasonable to expect a good deal of individual variation in response to low iodine levels, owing perhaps to inborn factors If these variations in response to iodine deficiency are great, it may be impossible to state precisely the minimum requirements for iodine Fortunately there is a very wide gap between the probable range of human requirements (say, 50–200 µg daily) and the amounts likely to do anyone any harm The goitre subcommittee recommended the addition of about 50 µg of iodine (as potassium iodide) to our daily diet, by iodising table salt at a rate of 1 part per 50,000—assuming an average daily consumption of 3 g of table salt This modest supplement would provide only about a tenth of the extra iodine provided in salt by the United States authorities or about a fifth of the supplement in New Zealand, and the experience of other countries (now extending over twenty to thirty years) with the same or larger doses is good evidence that it can be given with safety We may note, too that for the past ten years pregnant women in this country have been getting about 100 µg of extra iodine daily in their vitamin tablets without any reported harm therefrom

Rationally, therefore, the case for iodisation is a very good one At the same time there exists—perhaps especially in this country—a strong feeling that people should not necessarily be made to eat what is good for them This feeling (originating, no doubt, in the nursery) derives its force from the emotions, and is not to be argued with But it deserves to be respected If iodine is to be added to our salt—and we hope it will be—people who object to the notion should be able to get the salt to which they have been accustomed without anything added The cost of adding iodine to the salt would have to be borne by the State, and the simplest way of ensuring that the bulk of the population gets such salt might be to increase the subsidy a little beyond the bare cost of iodisation The extent of the demand for untreated salt would soon become apparent, it would probably be very small indeed In this way the great majority of the population could be protected, without offence to the sturdy defenders of individual liberty

Renal and Extrarenal Factors in Hypertension

GOLDBLATT's demonstration that hypertension could be induced in animals by constricting the renal artery was followed by the rediscovery of the pressor agent renin It was natural to suspect that overproduction of this normal constituent of the kidney was the cause of the hypertension, and many later studies of the physiological properties of renin have seemed to be in harmony with this view But, though there is evidence of excessive secretion of renin in the early stages of experimental hypertension and in some forms of severe human hypertension, the renin hypothesis has serious limitations It does not easily explain essential hypertension, in which renal damage, when present, is generally attributed to the high blood-pressure Nor can the renoprival hypertension which appears about three days after total nephrectomy (GROLLMAN et al.[1]) be put down to renin Yet these three forms of hypertension have much in common, depend on the presence of the suprarenal are related to electrolyte metabolism M clinical features of essential hypertension closely with those of renal hypertension, both and experimental, that it is clearly wise to unifying hypothesis Is it possible, then the contribution of the kidney is not positive, but in nature? In other words, may not renal tension be the result not of oversecretion of a failure to inactivate or excrete a normal pressor agent?

In his Oliver-Sharpey lectures CLIFFORD W submitted the whole problem to a penetrating and described the earlier results of a series of experiments undertaken in his department by and LEDINGHAM More recently FLOYER described further experiments which extend these earlier findings His main conclu that the kidney seems to maintain a normal pressure by inhibiting an extrarenal pressor mism and that nephrectomy, or constriction renal artery, causes hypertension by interfer this inhibitory function It has been known for years that in animals with chronic hy deriving from a solitary Goldblatt kidney the tension can be promptly and permanently ab by removing the clip from the renal artery (and DODSON[4]), whereas after nephrectomy it or even increases (PICKERING[5]) This residual tension must be caused not by renin but by an renal pressor mechanism, and, since nephrect the normal animal causes hypertension only latent interval of several days, this mechanism already be in operation in chronic hyperten the clip is removed When FLOYER repeated experiments in rats with recent hypertension, similar results, and he deduced from them th extrarenal pressor mechanism operates as 2–6 days after the renal artery is constricted remained possible that renin plays a vital part in the blood-pressure during the first few days, test this possibility FLOYER measured the pressure twice daily after different degrees of striction of the renal artery and compared the with those obtained after total nephrectomy in rats He found that when the constriction was enough to cause serious renal damage the rose steeply in the first day or two—i e, too ear the rise to be attributed to the extrarenal After lesser degrees of constriction, however, pressure rose at the same rate as after nephrec or more slowly From this he infers that, gross renal ischæmia may provoke temporary secretion of a renal pressor factor, both ren renoprival hypertension are caused by an pressor mechanism—a very important co Lastly the manner in which the normal kidney this mechanism was investigated GROLLMAN associates,[1] and more recently, KOLFF, PAGE CORCORAN,[6] have shown that, in the dog, impl of the ureter of a solitary kidney into the je inferior vena cava does not cause hypertension, ting that the process is independent of excretion in succeeded in repeating these experiments in t and confirmed this conclusion The nature extrarenal pressor agent remains uncertain, iere are good reasons for suspecting that it is ed by the suprarenal cortex and regulates arterial y controlling the distribution of electrolytes m all this work there emerges a concept of the nism of hypertension which is at once simple onsistent with all the available evidence, except y the fact that in both man and rat unilateral disease may cause severe chronic hypertension ver this exception it seems necessary to postulate n such cases a secondary functional disturbance voked in the opposite kidney, which is thus ated from inactivating the pressor agent In connection it is noteworthy that evidence of rsible disturbance of this kind was observed in o recently reported by IMBER and CLYMER[7] new concept does not necessarily imply that serves no useful purpose for the extrarenal r mechanism takes several days to become ive, and the function of renin may be to deal more pressing though less enduring circulatory encies

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[1] Grollman A Muirhead E E, Vanatta J *Amer J Physiol* 1949, 157 21

[2] Wilson, C *Lancet*, 1953 ii, 579

[3] Floyer, M A *Clin Sci* 1955, 14, 163

[4] Byrom, F B Dodson, L F *Ibid*, 1949, 8, 1

[5] Pickering G W *Ibid*, 1945 5, 229

[6] Kolff W J, Page, I H, Corcoran, A C *Amer J* 1954 178, 237

Back to Billroth

the past five years surgeons have reverted to Billroth I method of partial gastrectomy[8] This tion, which retains the natural route through the enum, is æsthetically more satisfying than the s method, by which the gastric contents are ted through a gastrojejunostomy, but mainly hange betokens a proper sense of criticism in who treat gastric or duodenal ulcers For once, rtist has been uppermost in the surgical crafts and divine dissatisfaction has demanded a ge, even though the Polya operation was giving inably good results in terms of ulcer control e trouble has lain chiefly in the side-effects[8A] as regurgitation not uncommonly mars early lescence after the Polya operation, usually subsides but occasionally it persists with severity as to call for further operation [9] ascribed this and other symptoms such as prandial distension, sweating, and lassitude bstruction by kinking of the afferent loop, he suggested that they be remedied by entero-omosis WELLS and MACPHEE[10] agreed that nt-loop stasis created a reservoir for pancreatic s and bile which were regurgitated when sud y ejected into the stomach by peristalsis, and to come this they performed jejunoplasty just distal e stoma, after the manner of STEINBERG'S[11] lloon anastomosis Alleviation also follows ersion to a gastroduodenal anastomosis, and is regurgitation is almost entirely avoided if the oth I operation is done at the outset As a result xperiments designed to simulate filling of the ent jejunal loop BUTLER and CAPPER[12] concluded that rapid emptying of the stomach into this area brought on symptoms of the early postprandial syndrome—epigastric fullness, faintness, sweating and palpitations associated sometimes with vomiting or explosive diarrhœa, they regarded drag on the jejunum, weighed down by its sudden load as a major factor in the production of the symptoms and suggested fixing the stomach remnant in order to prevent this sinking feeling" They referred to a series of 102 Billroth I operations with no such unpleasant sequelæ But FISHER et al[13] have noticed this syndrome in 18% of patients after Billroth I (compared with 28% after gastrojejunal anastomosis, and 14% after vagotomy and pyloroplasty) Nevertheless the tendency for symptoms to diminish with time is greatest after Billroth I A further disadvantage of the Polya operation has been recorded by BUTLER et al,[14] who remark that, even years later steatorrhœa may develop together with creatorrhœa, hypoproteinæmia, and iron and riboflavine deficiency They found that conversion to Billroth I anastomosis ended these disturbances even when they had been so severe as to endanger life But steatorrhœa is apparently also correlated with the amount of stomach removed, for œsophagoduodenal anastomosis after total gastrectomy can induce a defect of fat absorption WITTS[15] has pointed out, too that by every technique but the Billroth I the upper jejunum is by passed and thus an important area for iron absorption is excluded

Gastroduodenal anastomosis has one disadvantage in the treatment of duodenal ulcer it is followed by a higher incidence of recurrent ulcer than an anastomosis of gastric remnant to jejunum With the Billroth I technique, competently applied, the amount of stomach that can be resected is no less than with the Polya technique, and the higher rate of recurrence may be due to the fact that the gastrojejunal stoma is more constantly bathed in, and protected by, bile and pancreatic fluid than the gastroduodenal This view seems to be supported by the tendency for anastomotic ulcer to develop after these fluids have been diverted by jejunojejunostomy from a gastrojejunal stoma Perhaps the addition of vagal section to the Billroth I operation will eventually prove of value in averting recurrent ulceration Meanwhile another field for gastrectomy with gastrojejunal anastomosis has been found by WELLS and JOHNSTON,[16] who apply this method to relieve reflux œsophagitis due to hiatus hernia on the ground that the stomach is thus robbed of its contents so rapidly that nothing remains to be regurgitated Post gastrectomy symptoms have been notably absent, but 1 patient out of 12 suffered palpitations after food, which may indicate increase in tension, or distension, of the jejunum A Roux Y anastomosis has been made so biliary regurgitation is hardly likely, and, surprisingly neither anastomotic nor jejunal ulceration has yet been recorded But it may be found that this operation will occasionally be followed by steatorrhœa that is not easily corrected, and if severe this might prove more serious than the original lesion

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[13] Fisher J A, Taylor W Cannon J A Surg Gynec Obstet 1955 100 559
[14] Butler T J Capper W M Naish J M Gastroenterologia Basel 1954 81 104
[15] Witts L J Lancet 1954 ii 1401
[16] Wells, C Johnston J H Ibid 1955 i 937

Annotations

AUTOMATION

It has long seemed that the cultured life of ancient Greece, based on slave labour, might be coming within reach again—with the slaves, of course, humanely replaced by machines Intimations of automation (now in its early childhood) that the clouds of glory it carries [illegible] irony which dogs mankind will doubtless ensure that there is a catch, if not several catches in it [illegible] in time, probably everything will be relatively splendid Meanwhile those who survey the prospect with wide and shining eyes are mainly engineers A push-button factory, doing the whole job under the care of a handful of men, most of them engaged in maintenance, has been described as "technically possible, economically sound and humanly desirable"[1] P E P give facts which suggest that the first of these claims is accurate, the second doubtful, and the third anybody's guess[2] The term "automation" has been defined by R K [illegible] at an American conference as "the accomplishment of a job by an integrated mechanism with a minimum of assistance of any kind" This might of course, merely mean doing the job oneself, but in industry it is taken to refer to the accomplishment of a job by means of various independent mechanical devices—electronic, electromechanical, pneumatic, hydraulic, and others Electronic devices in particular have a respectable future in this field, since they can be constructed

> to plan and control the operation of a machine tool with high precision detect faults in the processed part, and by means of a closed loop circuit (widely known as 'feed back') can communicate the error to the machine and adjust its operation so as to correct the fault, they can integrate the work of individual machines, the more complex of them can choose between alternative decisions or courses of action according to the instructions given them, finally, they extend the possibilities of remote control"

They can thus be used to reduce greatly the amount of routine brainwork done in a factory just as ordinary machines have reduced the amount of routine muscular work

P E P mention some ways in which firms have already introduced the principle of automation

In the £40 million refinery built by the Esso Petroleum Company at Fawley, six men on any one shift operate distillation units processing $5^1/_2$ million gallons of crude oil daily—thus meeting nearly a third of our inland daily consumption of oil products At the catalytic cracking plant, eight men are needed in each shift The new instruments which have made this possible have paid for themselves rapidly—those that control tank temperature in 6 months and the automatic apparatus for laboratory distillation in 6 weeks

The Ford Motor Company, in America, was a pioneer of automation, having installed the world's first car assembly line in 1914 Automatic transfer machines now move parts from one machine to another for the next stage of the process (cylinder heads, for instance, are produced by what amounts to no touch technique) The Austin Motor Company has adopted the same principles, and has gone further transferring parts by overhead trolleys to the final assembly line, at the right time and in the right order This unusual achievement in human affairs is the work of an electronic control unit, receiving its instruction from punched cards

Another prospect is the automatic office, where all calculations and manipulations of facts are made by instruments and machines

Messrs J Lyons & Co have "Leo," an electronic office which works out the weekly wage packets of more than 7000 of their London employees, analyses daily the trad orders in Lyons teashops, and for a consideration time [illegible] to outside bodies At the Fawley computer "Hec" helps to select a production pla the changing requirements of the market, and does mathematical work entailed in a mass spectrometer of refinery gases

Computer salesmen, however, like travellers in [illegible] have at present to be content with only [illegible] As P E P say, "it is easier to sell ment for clearly defined and labour saving like wage calculation, than for a new and [illegible] purpose like planning production" [illegible] however, the air line "reservisor" York, which, when a button is pressed in [illegible] directly books or cancels passenger La Guardia airport, but even this only because New York is such a busy centre travel Enthusiasts for automation are vexed [illegible] manner in which many manufac succumbing to its charms This is an opportun for working out the basic principles of office organisation afresh The manufacturer [illegible] probably right to be cautious for [illegible] had an automatic office to deal with their bill, and built an automatic factory controlled by [illegible] well find that their new wage-bill worked out by one little girl on a slate

At present as P E P remark, automation creates as many problems as it solves Where, for is the capital outlay to come from? Would help us to balance our overseas payments or not our power resources equal to the probable Will management be flexible enough to mak necessary drastic changes, and make them Will automation mean serious unemployment what will be the effect on the community? Some are already attempting to answer these The Institution of Production Engineers held ference at Margate in June on "The Automatic what does it mean?" The Department of and Industrial Research is collecting infor assessing trends, and its joint committee (w Medical Research Council) on human relations in has sponsored a pilot research project at into "some human and social aspects of automatic control techniques in industry" The Physical Laboratory is looking into the techn bility of mechanising clerical work at the Min Pensions and National Insurance—a [illegible] project On the subject of unemployment P E P tentatively reassuring our labour force will gro from 23 million in 1954 to 24 million in 1970 standard of living must depend on higher pro and thanks to automation this could be achieved shorter working hours Our passages to ancient (with no return tickets for Erewhon) seem to be It remains to be seen whether we use our greater —when it comes—to equally good purpose

DETERGENT TREATMENT OF CONSTIPA

Purgatives that are efficacious and safe, and selves cause no troublesome symptoms, are few After twelve years' observation Wilson and son,[1] of Ann Arbor, claim this combination of for a wetting agent—dioctyl sodium sulp ('Aerosol T')—which acts by promoting the pen into hard fæces of water or mineral oil

Previous experimental work had yielded no of toxicity[2], and Wilson and Dickinson have

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[1] Lilley S *Discovery* April, 1955 p 147

[2] Towards the Automatic Factory *Planning*, 1955, 21, no 380 Published by Political and Economic Planning 16, Queen Anne s Gate, London S W 1 2s 6d

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[1] Wilson, J L, Dickinson, D G *J Amer med Ass* 1955,

[2] Benaglia, A E Robinson, E J, Utley, E, Cleverd *J industr Hyg* 1943, 25, 175

the detergent in doses far exceeding those needed rgation without evoking toxic signs Investigation effects on absorption of food gave equivocal results seemed clear that the detergent neither greatly nor grossly inhibited absorption The Ann Arbor rs have *administered dioctyl sodium sulphosuc* in 1% aqueous solution to four types of patients with impacted fæces infants with hard lumpy often after anal fissure had developed infants ostoperative anal atresia ; and patients with polio is or other immobilising illness The detergent roved most dramatically successful in the first of groups—and notably in children with megacolon *ew of these cases where other measures had failed* ymptoms of obstruction were appearing adminis n of the detergent saved the patient from laparo

In patients with megacolon 2 ml of a 1% solution iven thrice daily by mouth together with enemas oz of mineral oil in less severe cases of constipa he detergent was effective in smaller doses, by itself n and Dickinson conclude that it can safely be *nistered repeatedly without loss of efficacy or risk* patient

STAFFING THE TRANSFUSION SERVICE

ERAL laboratories of the National Blood Trans Service are having serious difficulties in finding ical staff There are two reasons the prospects romotion in blood transfusion centres are not raging when compared with similar posts in ral laboratories and the salaries are generally less tive than those offered by commercial and industrial ms and by other Government departments main g laboratories.

re is no national policy for training and retaining tory technicians in the transfusion service. Pro n depends on the individual s ability to pass the inations of the Institute of Medical Laboratory iology but unfortunately the work of a blood fusion laboratory bears little relation to the syllabus he institute s examinations with the result that icians naturally transfer as soon as they can from specialised units to hospital laboratories where the is of wider scope and of more relevance to their mation questions During August and September *l leavers fill the vacancies for junior technical staff* dical laboratories throughout the country Further ncies during winter and spring are likely to be filled plicants transferring from more specialised units, as the blood transfusion laboratories, which are in left with seriously depleted staff For example, heffield laboratory is at present struggling to main services with a technical staff of 17 Allowing for and sickness, this means that 15 pairs of hands are g to do the work of a total establishment of 34 over some of those remaining on the staff are com ively inexperienced Standards of work have had lowered and mistakes must be more likely when the is grossly overworked Similar conditions exist at centres In view of the staff difficulties in the ield region the senior administrative medical officer e regional hospital board has asked hospitals to the use of blood to urgent cases.

ich more thought must be given to supplying the fusion service with senior technical staff Qualified iates and fellows of the institute are not anxious to this specialised field while there are good opportun for extremely rapid promotion in general laboratories y should decide to enter the transfusion service it d be exceptional if much of their previous experience ppropriate to the work of a *senior technician in that* ke and many more months of training will be sary The most experienced and reliable workers any of the regional transfusion laboratories are without academic qualification and have been graded on "age and experience alone There is no-one in sight at the moment to take their place If a vital service is not to be dangerously cramped by recurrent staff difficulties pay and promotion prospects must be improved *Yet at a Whitley Council meeting last* week *the manage*ment side apparently had no recommendations to make concerning the salary of student and junior technicians

CANCER RESEARCH

MANY occupational cancers are now detectable and preventable because the carcinogen that causes them has been identified Similarly if tobacco smoking and air pollution prove to be direct causes of cancer with their own particular carcinogens it will be possible to curb the mounting death rate from carcinoma of the lung The annual report of the British Empire Cancer Campaign which appears this week tells how examination of the products of cigarette smoking is proceeding in six research centres and inquiries into atmospheric pollution in four Benzpyrene and other carcinogenic chemicals are being sought Benzpyrene has been found as 100 parts per million of soot, but not all investigators have found it in tobacco tar It is however uncertain whether benzpyrene itself is carcinogenic in man Tests of benzpyrene and of tobacco tar are being made by I Lasnitzki using the method of organ culture in vitro on human fœtal lung Early stages of carcinoma of mouse prostate induced with methylcholanthrene were reproduced in this way It is hoped that the same method will give information about the susceptibility of human lungs

The quest for curative cytotoxic agents is being pursued in many laboratories The report refers to tests on grafted animal tumours with one of the newer synthetic chemicals Unfortunately none of these substances discriminate sufficiently between tumour cells and all normal host cells normal blood forming cells are equally liable to damage and whereas tumour cells may become resistant to these drugs normal blood cells do not Two naturally occurring enzymes, xanthine oxidase and ribonuclease have been found by F Bergel and his collaborators to restrain a variety of animal tumours Intravenous 'Synkavit and X irradiation combined with oxygen administration are being tested clinically by J S Mitchell and his collaborators in the treatment of bronchial carcinoma. F S Dainton and T J Hardwick suggest a possible reason for greater efficacy of X irradiation when combined with the giving of oxygen

Efforts to discover an essential difference between normal and tumour cells include work on normal nucleic acids—an essential step in an attack on the abnormal New comparisons are being made on the ability of hepatoma cells to produce albumin and on their content of trace elements. Although in some respects the results of biochemical investigations of hepatoma are not regarded as typical of cancer cells in general[1] these malignant cells and their normal homologues offer many advantages for comparisons of this kind Morphological studies by electron microscopy which have been finely illustrated and described by Howatson and Ham[2] are in accord with the biochemist s conclusion that hepatoma and fœtal liver are similar metabolically and in enzyme activity Early embryonic cells resembled neoplastic ones more closely than did normal adult cells By means of phase and ultraviolet microscopy of various living tumour cells and their normal counterparts combined with the examination of fixed specimens R J Ludford concludes that none of the pathological changes in tumour-cell nuclei are specific features peculiar to

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1 Greenstein J I Biochemistry of Cancer New York 1954

2. Howatson A F Ham A W *Cancer Res* 1955 15 62

malignant cells The same retrogressive changes are to be found in embryonic cells, but they are less obvious It appears that all these crucial chemical and morphological comparisons have been made on long grafted tumours, which probably means that there has been considerable selection from the original tumour cell population, with the result that the most rapidly growing elements have predominated It might be valuable to know how the cells of primary malignant tumours compare with those that are conditional or dependent on the one hand, and with both normal embryonic and adult cells on the other G C Easty and E J Ambrose have made a start, and they find that the methionine content of œstrogen induced, dependent kidney tumours of hamsters is considerably less than that of normal kidney

VITAMIN C AND HEALING

Bourne[1] has suggested that the formation of collagen in healing wounds is unlikely to be influenced by supplements of vitamin C if the diet is already adequate The failure of local applications of the vitamin to increase the rate of healing in well nourished laboratory animals accords with this view[2,3] Since contrary findings have been reported—by Saitta,[4] for example—the problem has been reinvestigated

In order to vary the local concentration of the vitamin in healing wounds, Boyd[5] has made use of the considerable reduction in the ascorbic-acid content of the aqueous humour that follows extraction of the lens[6] In a trial series of 10 guineapigs he found that the mean concentration of ascorbic acid in the aqueous humour fell from 22 16 mg per 100 ml to 11 60 mg per 100 ml —a highly significant difference For his main experiment he used 20 guineapigs in which the lens had been removed from the left eye, and the right eye had been subjected to a similar but sham operation Ten days later a standard injury of each cornea was produced by an electrically heated wire loop Healing of this injury was then assessed by watching the gradual disappearance of fluorescence from the injured site when it was viewed in ultraviolet light after the local application of fluorescein Owing to the frequent relapses, especially on the aphakic side, healing was not regarded as complete until fluorescence was absent on four consecutive occasions The mean of the healing time so determined was 17 3 days for the aphakic eyes and 10 8 days for the sham-operated controls The ascorbic acid in the cornea and in the aqueous humour one week after completion of healing was significantly less in the aphakic than in the control eyes

Boyd rightly emphasises that even in the aphakic eyes the mean corneal ascorbic acid level of 32 09 mg per 100 g was many times higher than in normal connective tissue, yet healing was delayed compared with the control eyes, which had a mean corneal ascorbic acid content of 47 29 mg per 100 g It is, however, questionable whether the difference in the rate of healing was in fact due to this difference in the local concentration of the vitamin The amount of trauma suffered by the control eye was indubitably less, and probably much less, than that suffered by the eye undergoing extraction of the lens The observed difference in the ascorbic acid levels of aqueous humour and cornea of the two eyes was most probably the result of different degrees of injury The fall in ascorbic acid content of the aqueous humour of inflamed eyes was presumably caused by dilution with exudate from the relatively vitamin poor plasma The aqueous humour of non-inflamed aphak indeed the same vitamin-C content as that eyes[7,8] The reduced levels found in Boyd's may therefore be no more than an indicati inflammation resulting from the lens extracti persistent than that resulting from the sham It is at least as justifiable to attribute the delay in healing to the persistent inflammatio difference in ascorbic acid levels That is to in healing and reduction in the vitamin con not necessarily causally related, as Boyd both may be the result of the greater degree of tion induced by the true as compared with operation

CEREBRAL ANGIOMATA

Our knowledge of cerebral vascular pathologically incomplete Potter[9] has brok ground in his study of angiomatous lesions than neoplasms Perhaps his most important is that in all of these the essential abnormali arteriovenous communication, the tortuous and vessels around this, which form the spectac the visible lesion, are not the cause of the are they associated congenital defects of they are the consequences of the fistula wherever there is such a fistula Holman[10] too, from his work on experimental arteriovenous that, whenever there was a significant leak and deviation of blood, the veins and the arter tortuous and dilated, but the reason for this Holman further showed that the vascular was not permanent but disappeared if the controlled, whereas excision of redundant vessels control of the leak was followed by dilatation veins So in surgical treatment the is to interrupt the anastomosis—not to excise the or block entering vessels

Potter's clinical observations are perhaps of immediate importance With cerebral risk of serious cerebral injury is always present figures suggest that complications come early or all, that hæmorrhage, though very common (out of 5) occurs at a younger age than does rhage from berry aneurysms, and is much more and that the risk of serious epilepsy or mental slight About 1 in 10 of the patients show ment, sometimes as premature ageing Finally useful contribution draws attention to the p of radiotherapy

THE USSR RETURNS TO WHO

On July 8 Mr Kumykin announced in Gen his government now proposes to take an active the work of the World Health Organisation, to membership of the International Bureau of Edu and to contribute 2 million roubles to the United children's fund in the form of services and e maternity and child centres

This decision will be warmly welcomed by regretted the withdrawal of the Soviet Union W H O in 1949[11]

Dr F H K Green, principal medical officer headquarters staff of the Medical Research Coun 1949, has been appointed scientific secretary trustees of the will of the late Sir Henry Well Wellcome Trust) from Oct 1

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[1] Bourne, G H *Lancet* 1942 ii 661

[2] Proto M *Ann ital Chir* 1936 15, 31

[3] Galloway N M, Garry, R C, Hitchin, A D *Brit J Nutr* 1948 2 228

[4] Saitta S *Sci biol Castaldi* 1929, 4, 301

[5] Boyd T A S *Brit J Ophthal* 1955, 39 204

[6] Muller, H K, Buschke, W *Arch Augenheilk* 1934, 108, 368

[7] Kinsey V E *Amer J Ophthal* 1950, 33, 257

[8] Purcell E F, Lerner, L H, Kinsey, V E *Arch* *Chicago*, 1954, 51, 1

[9] Potter J M *Ann R Coll Surg Engl* 1955, 16, 227

[10] Holman, E Arteriovenous Aneurysms New York,

[11] See *Lancet* 1949, i, 355

NUCLEAR WAR

An Appeal to Scientists and the Public

following statement was issued in London last y by Lord Russell on behalf of his seven co signa ncluding the late Professor Einstein

he tragic situation which confronts humanity that scientists should assemble in conference uise the perils that have arisen as a result of the ment of weapons of mass destruction and to a resolution in the spirit of the appended draft speaking on this occasion not as members of that nation continent or creed but as human members of the species Man whose continued ce is in doubt.

world is full of conflicts and overshadowing ior conflicts the titanic struggle between Com n and anti Communism Almost everybody who ically conscious has strong feelings about one or f these issues and we want you if you can to de such feelings and consider yourselves only as rs of a biological species which has had a remark story, and whose disappearance none of us can We shall try to say no single word which should to one group rather than to another All equally peril, and if the peril is understood, there is hope ey may collectively avert it

have to learn to think in a new way We have to o ask ourselves, not what steps can be taken to give y victory to whatever group we prefer for there longer such steps the question we have to ask es is what steps can be taken to prevent a y contest of which the issue must be disastrous parties ?

general public and even many men in position hority have not realised what would be involved ar with nuclear bombs The general public still in terms of the obliteration of cities It is under hat the new bombs are more powerful than the old at, while one A bomb could obliterate Hiroshima, bomb could obliterate the largest cities such as n New York and Moscow

doubt in an H bomb war great cities would be ated. But this is one of the minor disasters that have to be faced If everybody in London New and Moscow were exterminated the world might course of a few centuries recover from the blow e now know especially since the Bikini test that r bombs can gradually spread destruction over a uch wider area than had been supposed.

stated on very good authority that a bomb can e manufactured which will be 2500 times as power that which destroyed Hiroshima. Such a bomb loded near the ground or under water sends radio particles into the upper air They sink gradually ach the surface of the earth in the form of a deadly r rain It was this dust which infected the Japanese nen and their catch of fish

one knows how widely such lethal radioactive les might be diffused but the best authorities are mous in saying that a war with H bombs might possibly put an end to the human race It is feared f many H bombs are used there will be universal —sudden only for the minority but for the ity a slow torture of disease and disintegration

ny warnings have been uttered by eminent men nce and by authorities in military strategy None em will say that the worst results are certain they do say is that these results are possible, and no-one can be sure that they will not be realised We have not yet found that the views of experts on this question depend in any degree upon their politics or prejudices They depend only so far as our researches have revealed upon the extent of the particular expert s knowledge We have found that the men who know most are the most gloomy

Here, then is the problem which we present to you, stark and dreadful, and inescapable shall we put an end to the human race or shall mankind renounce war ? People will not face this alternative because it is so difficult to abolish war

The abolition of war will demand distasteful limitations of national sovereignty But what perhaps impedes understanding of the situation more than anything else is that the term mankind" feels vague and abstract. People scarcely realise in imagination that the danger is to themselves and their children and their grandchildren, and not only to a dimly apprehended humanity They *can scarcely bring themselves to grasp that they* individually and those whom they love are in imminent danger of perishing agonisingly And so they hope that perhaps war may be allowed to continue provided modern weapons are prohibited

This hope is illusory Whatever agreements not to use H bombs had been reached in time of peace they would no longer be considered binding in time of war, and both sides would set to work to manufacture H bombs as soon as war broke out , for if one side manufactured the bombs and the other did not, the side that manufactured them would inevitably be victorious

Although an agreement to renounce nuclear weapons as part of a general reduction of armaments * would not afford an ultimate solution it would serve certain important purposes First any agreement between East and West is to the good in so far as it tends to diminish tension Second the abolition of thermo nuclear weapons if each side believed that the other had carried it out sincerely, would lessen the fear of a sudden attack in the style of Pearl Harbour, which at present keeps both sides in a state of nervous apprehension We should therefore welcome such an agreement, though only as a first step

Most of us are not neutral in feeling but, as human beings, we have to remember that if the issues between East and West are to be decided in any manner that can give any possible satisfaction to anybody, whether Communist or anti Communist whether Asian or European or American whether White or Black, then these issues must not be decided by war We should wish this to be understood, both in the East and in the West.

There lies before us if we choose, continual progress in happiness, knowledge and wisdom. Shall we, instead, choose death because we cannot forget our quarrels ? We appeal as human beings to human beings Remember your humanity, and forget the rest If you can do so the way lies open to a new paradise if you cannot, there lies before you the risk of universal death

We invite this congress, and through it the scientists of the world and the general public to subscribe the following resolution

> In view of the fact that in any future world war nuclear weapons will certainly be employed [illegible] such weapons threaten the continu"

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* Professor Muller makes the reservation [illegible] mean "a concomitant balanced [illegible]

mankind, we urge the Governments of the world to realise, and to acknowledge publicly, that their purposes cannot be furthered by a world war and we urge them, consequently, to find peaceful means for the settlement of all matters of dispute between them

P W BRIDGMAN
Professor, Harvard University Nobel prize for physics

ALBERT EINSTEIN

L INFELD
Professor University of Warsaw

H J MULLER
Professor University of Indiana Nobel prize in physiology and medicine for discovery of the production of mutations with the help of X rays

C F POWELL
Professor University of Bristol, Nobel prize for physics

J ROTBLAT
Professor of physics, University of London

BERTRAND RUSSELL

HIDEKI YUKAWA
Professor Kyoto University, Nobel prize for physics

Medical Education

THE CURRICULUM

Views of the Royal College of Physicians *

FROM time to time the General Medical Council publish *Recommendations as to the Medical Curriculum*, which "indicate in what subjects, in what sequence, and for how long students should be instructed in order to reach a standard of proficiency which the Council will for the time being regard as sufficient" At their May meeting the General Medical Council are to consider whether the current *Recommendations*, adopted in 1947, require revision, and they have meanwhile invited observations and suggestions from licensing bodies, examining boards, and medical schools

Changes

A decision by the General Medical Council to revise the *Recommendations* would be welcome, because recent years have seen so many changes in medical education and medical practice that will need to be taken into account if future curricula are to be as well suited to their purpose as those of the past These changes include

(1) *Changes in the Entrants to Medicine* —Support of students from public funds has widened the field of candidates for medicine but has helped to narrow the actual entry to those who specialise early and already put examinations first Compared with their forerunners, many students now start medicine with less cultivated minds, and those who develop late or specialise late may be unable to start at all

(2) *Changes in Medical Schools* —In the teaching hospitals the clinical staff, though more numerous than of old, are generally more limited in their interests they devote themselves more and more to the development of their specialties, and the students attached to them may not get the kind of experience formerly obtained by apprenticeship to a physician or surgeon Some teaching hospitals, moreover, deal less than formerly with the treatment of common diseases, and with emergencies, and, though they may be important consultative centres, they have insufficient contact with the community and its social problems The growth of "clinical science" has incidentally increased the difficulty of staffing purely preclinical departments, for some of the men wishing to undertake fundamental research now prefer to do this in clinical departments, where their opportunities may be as good or even better

(3) *Change in Registration* —Qualification no longer entitles the doctor to practise medicine, surgery, and midwifery wherever he wishes and without supervision Instead, it may be said only to entitle him to enter upon the final year of his training—receiving, by registration, the responsibilities and powers stage of his instruction

(4) *Changes in Practice* —Though the doctor includes some practical experience principal branches of medicine, such exp make him, on qualification, a physician, surgeon, trician, anæsthetist, or psychiatrist, in the sense in which these terms are now understood remains in this country he will in fact be practising these branches at anything above tary level until postgraduate training has given competence nowadays expected of anybody undertake such work

(5) *Changes in Disease* —The needs which to meet are being continuously modified by in the social environment, and also by the drugs Many diseases are growing rarer, but obtrusive There are more old people, and more is given to mental disorder

In the past, changes in medical practice have led to demands that the student should be subjects and new techniques, and these have to his curriculum without equivalent deductions the growth of knowledge, he has increasingly been more than he can digest, and all too often his has been to form a habit of amassing facts absorbing them—preparing for his examinati than for work as a doctor

The harm thus done to medical education will and increase until curricula are deliberately to provide a *basic* rather than a *comprehensive* medicine

Whereas on former occasions the General Council have been able to exert their usefully by pointing to deficiencies in the which had to be made good, they may conclude present circumstances their rôle should be Whatever immediate advantages might be adding to their *Recommendations*, greater ultimate could be expected from recasting these in broader At this juncture, in fact, no detailed guidance General Medical Council could do so much relaxation of their "control by prescription" would encourage—even oblige—teaching auth consider their curricula afresh

Some Reasons for Reconsideration of C

The mass of medical knowledge has become dering that there is more need than ever for the doctor to start with a grasp of essentials he learning less but understanding more But now many clinical teachers are specialists, and specialists, the traditional system of learning apprenticeship to consultants is a less firm for such understanding, and the need for pre complementary instruction is correspondingly In fact, what was once almost wholly a training will have to be transformed into a educational process, in which the curriculum is as a consecutive whole from its premedical to registration stages (including both) As they present, these stages have been planned separate consequently remain mostly separate in the min of teacher and student

For exemption from the *premedical* medical faculties demand a standard which excessive specialisation in the later school years, detriment of general education Whether taken or at university, the premedical course includ information than is necessary as a basis for study, and the premedical examination plays too part in the selection of future doctors Preclinical likewise goes into too much detail, and it is insuff connected with the clinical subjects which he ben barrier of the preclinical examination In pre student with more and more knowledge, both pr echnical training too often fail to develop those es of thought and judgment that should be their ducational objective

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* A report from the college's Medical Teaching Committee, accepted by comitia on April 28, 1955

inical work the expansion of knowledge has been reater yet the changes in the student's clinical g are being determined less by his educational han by the new departmental organisation of the ing hospitals His apprenticeship to a general ian or surgeon is being gradually replaced by le appointments in special departments and his more numerous teachers now provide him with ter fund of information over a wider range his dge is less coherent and less firmly rooted in nce.

se tendencies are aggravated by the arrangement ntent of the final examination which have remained dly the same At all stages of medical education nations now exercise an unhealthy dominance over udent's work and thought but this is perhaps lamaging in the clinical years Since the scope of rriculum appears unlimited the student is apt to that the best way to cope with his task is to concentrate on memorising facts which may be required of and the examiner then rightly rejects him because not really well trained In turn low pass rates further anxiety and promote more cramming in brary at a time when the student ought to be ng from experience in the wards and outpatient ments With a curriculum which was no longer aded, and with reasonable examinations the entious student properly selected could expect to and would therefore avoid having his values ted and his programme of study disturbed by having pare repeatedly for some mental marathon

compartmental arrangement which too sharply s the different stages of the medical course is also it inside the clinical stage By laying down periods dy and by separating the parts of the final exam n the *Recommendations* seek to ensure that the it shall have vocational experience in each of the clinical branches—medicine surgery and mid But in present day practice the distinction en these branches is far less conspicuous than it to be and much of the teaching in them should ip because it deals with principles common to all m This is another change that ought to be reflected in the examinations and in the curriculum for it is table that subjects which logically and in practice losely integrated should be taught as separate plines

Experiment and Control

General Medical Council have always shown elves most desirous that every medical school shall its individuality, its freedom and its responsibility vided only that a minimum curriculum of a stan which is for the time being reasonable is everywhere tained ' Their policy they state, was well expressed e Medical Acts Commission of 1881–82 as follows

> certain matters of general importance such as the ion of study and the age at which a student should be tted to practise common regulations ought we think laid down but we wish to record our opinion that ng should be done to weaken the individuality of the rsities and Corporations, or to check emulation between aching institutions of the country

vertheless the General Medical Council's *Recom ations* have come to have the force of regulations urriculum of every school is governed by the rigid nation system ; and there is very little room for euvre in a programme which if properly fulfilled nues beyond the time when the final examination be taken In the course of years the General Medical cil's restriction on the diversity freedom, and nsibility of medical schools has in fact gone far beyond "matters of general importance such as the duration of study and the age at which the student should be permitted to practise and there is now strong reason for wishing to see this restriction lessened by a reduction in the scope and precision of their instructions

An American observer lately said that in the past ten years no country has produced so many wise reports on the improvement of medical education as Great Britain and no country has done so little about it One reason for this lack of action is the belief that any substantial change in the curriculum would have to be made in all medical schools together it must be for all or none Clearly there would be little prospect of persuading every school simultaneously to adopt a scheme which had not yet been tried in any of them , and it is unlikely that the General Medical Council would themselves wish to impose an untried curriculum on schools that were reluctant to receive it Hence there appears to be no present possibility of important progress in medical education in this country and the impasse will remain until a change is made by which schools will feel themselves free to experiment individually—and radically

The opportunity for experiment is particularly favourable because the United Kingdom has many smallish schools, serving diverse populations in which variations in the curriculum could be tested in a responsible way, possibly with aid from one of the Foundations An example of the lines on which a school might wish to compose its curriculum is given in the Appendix

A condition of such experiment must of course be that it shall not hinder the General Medical Council in performing their statutory duty to ensure that registration implies possession of the knowledge and skill requisite for the efficient practice of Medicine, Surgery, and Midwifery and the question will arise whether this condition could still be fulfilled if a teaching authority, in reconstructing its curriculum wanted for example to substitute some system of progressive assessment for the examinations now recommended and recognised by the General Medical Council Clearly this question may be difficult to answer immediately On the other hand dissatisfaction with the effects of the existing examination system is so widespread that such alternatives ought to be explored and the General Medical Council may care to consider whether they could not in fact maintain effective control as required by statute, in a way rather different from the present The powers of inspection conferred on them by the Medical Act 1950 would allow them if they wished, to relax the control they exercise by prescription (or recommendation ') and substitute control by inspection—on the model perhaps, of the Ministry of Education's detailed periodic inspection of schools If this enabled them to preserve minimum standards everywhere without issuing general instructions, much might be gained for instructions that are entirely suitable for the majority of schools may easily stifle initiative at the schools that are capable of innovation

Conclusions

1 Changes in medical practice have made it less necessary to give the student a comprehensive training in all branches of medicine The enormous growth of factual knowledge has made it impossible to do so

2 So long as medical schools are attempting to provide a comprehensive training their curricula will continue to be overloaded—increasingly The overburdened student will acquire facts rather than understanding

3 But overloading of the curriculum though now taken for granted is a confession of educational failure and one which has grave consequences both for doctor and patient

4 Conceived as a whole a curriculum should be a progressive educational process within the student's compass and designed to give him a sound basis both for future practice and for further training

5 There should be less separation of the stages of the curriculum, and also less separation of the subjects taught in each stage In particular, the customary distinction between medicine, surgery, and midwifery is largely obsolescent and should not be artificially maintained by regulations

6 The reforms needed to effect these changes can be determined only by experiment in medical schools, for which the current *Recommendations* of the General Medical Council allow little scope If the council saw fit to substitute for these detailed recommendations a broad statement of educational objectives they could give a valuable lead to the schools, which would be encouraged to study their problems afresh

7 It is suggested that extended use of the General Medical Council's powers of inspection, both of medical schools and of examinations, would enable them to meet their statutory obligations without issuing instructions except on matters of "general importance" as defined by the Medical Acts Commission of 1881

Appendix

BASIS FOR A CURRICULUM

Teaching authorities could profitably review for each stage of their curriculum (1) the educational objective, (2) the organisation needed to attain it and (3) the means by which the student's progress should be assessed Such a review would have different results in different places, but the following is an example of the kind of general conclusions that might be reached

The premedical period —The amount of specialised knowledge required in the basic subjects of physics, chemistry, and biology should be restricted so as to make possible a broader general and cultural education To be exempted from the present premedical examination the student needs to take the examination for the General Certificate of Education in three (in London four) subjects at advanced level These requirements should be reduced

The preclinical period —To lessen the separation between preclinical and clinical training the existing examination in anatomy and physiology requires modification If this barrier were lowered, the preclinical period could provide general knowledge of normal structure and function, with consideration of factors maintaining health and an introduction to factors leading to ill health. In the early terms the teaching of the basic sciences should continue, with a vocational emphasis, leading to a general introduction to the subjects of anatomy, physiology, and biochemistry In the later terms elementary psychology, sociology, and general pathology should be introduced

The clinical period may be regarded as having three stages (1) A stage of learning the technique of clinical observation (say six months) (2) A stage devoted to the study of disease processes (inpatient clinical clerking, clinical pathology, morbid anatomy, social pathology) (say 12 months) Special anatomy, physiology, and biochemistry could be taught mainly during this part of the curriculum (3) A stage of practice under supervision, when experience would be gained in general and special departments (over a period of 12 months) Throughout the clinical period the aim should be to emphasise the unity of medicine, and rigid subdivision of time between departments should be avoided

Examinations and assessment —Assessment of the student's progress at various stages should be integrated with teaching, and this is easier if examinations at all stages are carried out internally The student's progress should be assessed at the end of the first 18 months of clinical training, and again at the end of the clinical period, when an examination in the general principles of medicine would give him his qualification and admit him to the preregistration year For the more specialised subjects—including midwifery, surgery, psychiatry, and pædiatrics—assessment should be departmental, being undertaken either in the course of the student's work or by a group test

If these conclusions were translated into practice the result would be a curriculum very different from those now in force That all schools should make such big changes simultaneously would clearly be undesirable But the General Medical Council's *Recommendations* ought to be such as will induce all the schools to "think" and also allow some of them to "try the experiment"

Conferences and Congresses

INTERNATIONAL DIABETES FED

THE second International Congress of the Inte Diabetes Federation was held in Cambridge on J

Banting Lecture

DR **ELLIOTT P JOSLIN** (Boston) delivered the lecture of the British Diabetic Association, on for the Diabetics He reviewed some of the since he started treating diabetics in 1897—tw years before the advent of insulin Since that his collected data on the longevity of diabetics their causes of death Despite vast improve the outlook for the diabetic he has never been and enthusiastically preaches the gospel of strict control in order to prevent or delay Figures from his clinic certainly drive home the He touched also on the social implications of the which is estimated to involve some 2 million p the U S A and about 20 million in the world Having established the value of diabetic children's he has more recently been developing a model teaching clinic for ambulatory diabetics He this may prove of great value in forestalling ills and is an amenity badly required in many the world

Outstanding Problems

Prof **C H BEST**, F.R.S (Toronto), briefly recent work on the structure of insulin and on the of its action, and referred to work done in the Best Institute He told of G A Wrenshall's tive study of glucagon and of the hyperglycæmic liberated by growth hormone (G H) even in creatised animals Unlike glucagon this m blocked in its action on the blood sugar by ergotamine He cited Wrenshall's work on the pathways of C^{14} glucose and finally describ G H -like activity of insulin acting in associati glucose in hypophysectomised animals It is, he conceivable that insulin deficiency is a hitherto nised limiting factor to growth in certain human such as panhypopituitarism

Experimental Diabetes

The scientific sessions were opened by Prof **YOUNG**, F R S (Cambridge), who dealt particular his own studies of the diabetogenic action of hormone He declared that transient hypersecr G H may possibly produce permanent (metahypop diabetes in man, as it does in dogs and cats, subsequently the subject may show no trace original causal mechanism

Insulin Molecule

A paper from Professor Young's department **F SANGER** and Dr **L F SMITH**, showed how the chemistry of the insulin molecule has been unr so that a suggested full formula of molecular weig under 6000 is now available It is unlikely present techniques the disulphide bridges in the can be synthesised, but synthesis of most of the the amino acid chain might be feasible

Insulin zinc Suspensions

The good clinical results obtainable with the zinc suspensions were presented by Dr **J SCHLIC** and Dr **M JERSILD** (Copenhagen), and a more appraisal was voiced by Prof **R E TUNBRIDGE** He and his colleagues have noted some difficulty the rapid sedimentation of the insulin zinc partic to occasional instances of apparent inaction and tive action of I Z S They do not recommend its ble diabetics A study of the interaction between and zinc in the islets of Langerhans was described H MASKE (Munich)

hanges

R E HAIST (Toronto) described the effects of e insulin, and other hormones on the pancreatic Intravenous glucose in rats can cause islot plasia, but only if the pituitary is intact Changes α cells of the islets in hypophysectomised rats the influence of prolonged administration of G H, discussed by Dr M G GOLDNER (Brooklyn) pparently first stimulates and then inhibits α cell tion in both normal and hypophysectomised rats ithout any evident effect on their carbohydrate olism

on

iewhat heretical views on the action of glucagon expressed by Dr G E ANDERSON (New York) ncluded that intravenous glucagon accentuated the *ty existing rapid spontaneous fluctuations in blood* both by potentiating the hypoglycæmic action of n and by its own independent hyperglycæmic effect

nce of Dimercaprol

other interesting modification of the action of insulin escribed by Dr W J H BUTTERFIELD and his gues (London) Dimercaprol (BAL) was found to ce a distinct increase in insulin sensitivity in two n resistant diabetics, possibly by a direct effect on enzymes concerned with carbohydrate metabolism

Lesions

d advice on the treatment of lesions of the feet in ics was offered in papers by Dr W G OAKLEY C F CATTERALL, and Dr E DOWNIE Con tive management with minimal degrees of amputa was recommended and attention was drawn to the tance of recognising the mainly neuropathic lesions will heal without surgery

s

re were two papers on diabetic ketosis: the first r F B PECK sen and Dr F B PECK jun bed frequently repetitive instances apparently itated by stress and social conditions which the nt found intolerable and the second by Dr N NABARRO (London) and his colleagues dealt its treatment using fructose Metabolic data show much of the fructose is converted to glucose, and possible theoretical advantages of fructose over se are not fully realised Somewhat similar studies e use of intravenous glucose 1 phosphate were ted by Dr J A ROBERTSON and Dr M J H t (London)

culosis

pers by Dr G R W N LUNTZ (Birmingham) and G PALEY (Leeds) dealt with the special features berculosis in diabetics and its treatment.

glycæmia

ontaneous hypoglycæmia was reviewed by Dr F N N (Boston) and its surgical treatment described by I D BREIDAHL (Melbourne)

a-insulin

eat interest was aroused by several papers concerning a insulin studies by Dr J J GROEN (Amsterdam), VALLANCE OWEN (London) and Dr P J RANDLE bridge) There were only minor differences in ique using the glucose uptake of the rat diaphragm; bsolute results in terms of milli units of insulin per plasma varied widely There is no doubt that the od measures insulin action although Dr Randle's show that it is affected by at least one other constituent of the plasma Dr Vallance-Owen has found higher than normal fasting plasma insulin values in obese diabetics not taking insulin, whereas thin ketosis prone diabetics have no detectable fasting plasma insulin activity, whether taking insulin or not, unless the blood sugar is within the normal range Dr Randle on the other hand, *has found normal plasma insulin activity in* young, ketosis prone diabetics unless they were actually ketotic at the time Dr Vallance Owen has detected plasma insulin inhibitors in young thin diabetics although these have not been noted by Dr Groen Dr Randle has found that the low plasma insulin activity of meta hypophyseal and alloxan diabetic animals can be increased by repeated freezing and thawing which might be expected to break down lipoproteins Prof R A MCCANCE, F.R.S (Cambridge) has found no plasma insulin activity in the blood from the umbilical vein of newborn infants although the maternal blood had an activity in the normal range.

Intermediary Carbohydrate Metabolism

Studies on intermediary carbohydrate metabolism with measurement of urinary citric acid (Dr J MÖLLERSTRÖM Stockholm) using intravenous pyruvate (Dr H BENARD, Paris) and oral xylose (Dr M LOOS Hamburg), contributed to our so far primitive understanding of this aspect of diabetes.

Hypophysectomy

Two excellent papers on hypophysectomy for severe diabetes with progressive vascular complications were presented by Dr L W KINSELL and his group (Oakland California) and by Dr R LUFT (Stockholm) They limit this treatment to otherwise hopeless cases with brittle diabetes and predominant retinopathy Advanced nephropathy is a contra-indication After hypophysectomy these cases had a much reduced insulin requirement and a more stable diabetes. Some showed no further progress of the complications, and in some there was even some reversion

Eye Changes

Changes in the eyes in diabetes were considered in another group of papers. Dr J W PATTERSON (Cleveland) has studied cataract formation in diabetic rats. It appeared at first that the speed of development of cataracts was related to the degree of hyperglycæmia, but he later showed that cataracts could be prevented in the presence of a high blood-sugar He now considers that lack of sufficient available nutrient for the lens is the most important factor Dr D VEREL (London) showed how the red reflex of the eye dims with rise in blood sugar and brightens as it falls. The cause he said is a reversible opacification of the anterior surface of the lens, and he considers that cataract formation in a diabetic may result from failure of resolution of a normal process Dr J C GARBINO (Montevideo) reported symptomatic improvement in diabetic retinopathy after local application of a solution containing pituitary melanophore principle to the eye.

Pregnancy in Diabetes

A full session was devoted to the problems of pregnant diabetics and of their infants The combined stillbirth and neonatal mortality rates have been reduced to about 10% at best and this without hormone therapy of the mother or glucose administration to the infant Dr J PEDERSEN (Copenhagen) stressed the importance of strict diabetic control by frequent blood sugar estimations in achieving this low mortality Most of the speakers agreed with Dr H DOLGER (New York) that such pregnancies should be terminated before term, usually in the 36th to 37th week and by cæsarean section unless the patient has previously had easy normal deliveries Dr J PIRART (Brussels) presented a thorough study of prediabetic pregnancies, and concluded that foetal gigantism is attributable mainly to direct inheritance of this feature but also to maternal obesity, diabetic heredity, and the prediabetic state of the mother Prof J P HOET (Louvain) drew attention to the high proportion of congenital anomalies in the infants of diabetic and prediabetic mothers but thought that these could be largely prevented by strict control of the mother's diabetes He has found higher protein levels in the amniotic fluid of the infants of prediabetic mothers than in normals, and also corticoids which were not demonstrable in the amniotic fluid of normal controls He did not regard most glycosurias of pregnancy as benign but rather as a warning to treat the condition of the mother before irreversible diabetes supervened Dr B S CARDELL (London) described the lesions of infants of diabetic mothers Before the 28th week of foetal existence they are not overweight Pulmonary hyaline membrane disease is the main cause of death

* *

The congress was attended by over 500 doctors and laymen from many parts of the world It was unfortunate that the large number of papers required the simultaneous use of two lecture theatres but an efficient earphone interpreting service between French and English which [illegible] amenity Dr Joslin was presented with a bound album of the signatures of all the doctors attending the congress as a tribute to the 'grand old man' of diabetes, and Dr R D Lawrence and his committee were warmly thanked at the end of the final session

CMA–BMA

The Toronto Meeting

FROM A CORRESPONDENT

Toronto was quite an experience Though the Canadians say that their conferences are small fry compared with those of the American Medical Association, I have certainly never attended anything planned on so vast a scale There were well over 3000 doctors there, to say nothing of their wives, and of medical students, nurses, pharmacists, and exhibitors And the whole meeting (except for a few of the sectional clinical talks and demonstrations held in local hospitals) took place within the *precincts* of one enormous hotel—the Royal York Hotel Here they staged simultaneously the trade exhibition a scientific exhibition, a display of photography, and a display of paintings by medical men, and held lectures in rooms holding from 50 to 1500 or more (many of these halls being filled to capacity) Between whiles the hotel served lunch and dinner for delegates (including a banquet at which 1100 people sat down together) and managed to fulfil its responsibilities to the hundreds of guests not part of the conference who were also staying there I can think of no place in England that could (or would) attempt to cater similarly for a gathering even half this size Possibly, however, this is not to be regretted for the magnitude of the Canadian gathering did inevitably make it rather impersonal Though we had managed, by devious means, to get about three hundred doctors out from Britain, and though our lapel labels were of a distinctive colour, it was difficult to find one's friends, or to know just who had arrived and who had not (I learned afterwards that, of all the doctors and their wives who had planned to come, fewer than twenty were put off by the failure of their original travel plans all the others found alternative ways to come, and came) The only time it was easy to find the British guests was on the final official day when we all forgathered for an excursion to Niagara Falls I met several friends that day whom I had heard were in Toronto but had not chanced upon before

The standard of the meetings to which I I thought, very high, and the keenness of the doctors was remarkable, considering how they were expected to listen to such a variety A typical day would begin with a selection round table conferences These went on simultaneously in different halls, and delegates subject that most appealed to them On the were a chairman and some four or five experts subject to be discussed, each with his own before him The chairman would beforehand [illegible] an ordered list of questions arising subject, and one by one he would introduce main headings and ask one or other of his experts on it If any of the other speakers wanted to or to disagree with, anything the opener had came in when he had said his piece In this discussion of the main features of the subject without flagging, usually for some fifty minutes [illegible] many written questions had been from the floor and then were passed by the one or other of his team for answering and with [illegible] there and then I had not seen this used before in a scientific meeting, but I am one of considerable value and I hope the B M A persuaded to give it a trial at meetings at home

The round table conferences over, on most there came a plenary session, with three or four speakers delivering different papers, sometimes tributing to a symposium on a single subject I one in which Sir Henry Dale was our chief speaker As usual he spoke delightfully His was clear and apt and full of a rich experience Henry Cohen should have spoken too at this sym but he could not come to Canada, and it was odd his paper—full of his characteristic sonorities, and discursions—read in a matter of fact way strong Canadian accent by one of the Toronto

The afternoon would be given up to sections, each discussing subjects in their own field section of general practice did well, with from British practitioners and two from that were much of the type and standard that come to expect at the meetings of the G P section Royal Society of Medicine in London

Our Canadian hosts were kind enough to say, of main meetings the sectional ones, and the conferences, that it was the presence of so many doctors of repute—so willing to participate in the and discussion of papers—that made this memorable one for them

We had a session on our health service, at which of us said something in turn and then coped with of pertinent questions from our hosts It is obvi they expect, and to some considerable extent there may soon be an extension of the health and service provisions made by the Federal govern Canada Indeed at one of the daily luncheons of honour and speaker for that morning was the of national health and welfare, the Hon Paul He made it clear that the government think advantages that modern medicine can bring be denied to any Canadian He skated very round the question of how this could be promised the doctors the fullest opportunity for tation before any steps are taken to promote leg In the course of his speech he made, as I thought distinction between "*socialised medicine*" and " sound medicine"

* * *

Since the conference I have been moving directions Going across Quebec province the liked best was one we found up in the hills near the country home of Mr Mackenzie King It said *pique nique.*

Public Health

SURVIVAL OF
ONELLA PARATYPHI B IN SEWERS
GNIFICANCE IN THE INVESTIGATION OF PARATYPHOID OUTBREAKS

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finding of *Salmonella paratyphi B* in a sewer is regarded as an indication that an excretor n the neighbourhood. The possibility that the m may persist long after the infected person t the district, or become negative, does not seem ve been sufficiently considered. Some recent gations in Cardiff have shown that this may be iderable importance.

Technique

over a year samples of Cardiff sewage, taken by wer swab technique (Moore 1948), have been ied to find unidentified sources of infection and de some problems of technique. The technique adopted was as follows:

swabs were covered with single-strength selenite F Leifson 1936, Hobbs and Allison 1945) and incubated in a water bath (Harvey and Thomson 1953). Sub- s were made after 24, 48, 72, and 96 hours' incubation whole plates of brilliant green MacConkey medium and Darling 1918) and de Loureiro's (1942) modification on and Blair's medium. This particular modification on and Blair's medium was considered to be more o and less variable in its behaviour than Tabet's nodification. The brilliant green plates were read after incubation and the de Loureiro plates after 24 hours' hours' incubation. The four times of subculture lenite were found to be an integral part of the recovery numbers of *S. paratyphi B* from sewage. Subcultures earlier than 24 hours were found to be relatively s, confirming a similar observation by Williams 1952) working with human and animal fæces artificially ted with small numbers of different salmonellæ.

Results

o investigations revealed eleven separate foci atyphoid B in the city. Six of these foci yielded ins of phage type 1, two phage type 3a, and h of types 3a 1 var 1, 3a 1 var 2, and Taunton ively. The predominant type 1 shown by the survey is reflected in the figures for the distribution ies isolated from patients suffering from para- d B during the last 14 years in Cardiff. Of 214 among people living in the city 202 were due to 3 to type Taunton, 3 to type 2, 2 to type 3a o type 3b; 3 strains were untypable.

ing an outbreak of paratyphoid fever spread by cakes and due to a strain of phage-type 1, speci- of sewage from the affected bakery gave disturbing for the samples remained positive long after known excreters in the bakery had been removed.

outbreak began in the first week of March, 1954 March 6, 10 cases had been bacteriologically ied. In succeeding weeks many more cases were ed in the city, as can be seen in the accompanying

ll, 92 cases were identified in Cardiff and all of the nary cases ate cream cakes made by the bakery on 1954. There was no evidence that patients were d from the bakery after this date. On March 6 the bakehouse was visited and inspected. Samples of blood were taken from the staff and 2 girls who decorated cakes were found to have weakly positive Widal reactions. The first showed agglutination at 1/25 with both BH and BO suspensions. The second showed agglutination at 1/25 with the BO suspension only. Both girls were excluded from work for further investigation. Samples of fæces were submitted by all members of the staff, including these 2 girls. The girl whose Widal was positive 1/25 BO and 1/25 BH was found to be excreting *S. paratyphi B*, (phage-type 1). This girl remained positive for a further period of 6 weeks, and a repeat Widal test 10 days after the first was strongly positive —1/500 BH, 1/50 BO. This evidence favoured the view that she was much more likely to have been a victim of the outbreak than the cause of it.

On April 6, in the sixth week of the outbreak, when the incident was all but closed, it was decided to sample the sewage from the bakery to eliminate the possibility of undiscovered excreters. We were surprised to find that this sewage was positive for *S. paratyphi B* (phage-type 1). The staff were re-examined, but with negative results, and further specimens of sewage continued to show the presence of *S. paratyphi B*. It appeared possible that in this case we might be recovering organisms that had been passed some weeks previously and which had survived on the sides of the drain. Accordingly it was decided to follow back the bakery sewer. By this means several positive isolations were obtained from the drains from the female-staff lavatories. The drains from the male-staff lavatories were consistently negative. Each subsequent specimen of sewage was found positive with increasing difficulty and it was surmised that the source of the organisms, inanimate or otherwise, was gradually being eliminated. The sewer serving the female-staff lavatories remained positive for 10 weeks (70 days) after the removal from work of the only excretor identified in the outbreak.

OUTBREAK OF PARATYPHOID B, MARCH–APRIL, 1954

Week	1	2	3	4	5	6	7
Week ending	March 6	March 13	March 20	March 27	April 3	April 10	April 17
Proven new cases	10	52	19	7	4	—	—

The discovery of *S. paratyphi B* in the sewer of a large bakery and its continued presence for a period of ten weeks after the removal of all known infected persons raised administrative problems of some magnitude. The question of survival of *S. paratyphi B* in sewage had now to be decided. By pure chance we were able to obtain guidance on this matter from another source.

In Cardiff only 2 cases of infection by *S. paratyphi B* (phage-type 3a) have been identified in the past 14 years and both were in the dock area. During the course of the sewage-swab survey of Cardiff we had identified a source of *S. paratyphi B* (phage-type 3a) in a single house remote from the docks. This source had been traced back, without difficulty, in a very leisurely fashion over a period of 10 months, from the sewage outfall on the coast. Specimens of blood and fæces were obtained from all members of the family with one exception. The specimens were negative and it was suspected that the member who refused to submit fæcal samples was the excreter. This man worked as a ship's chandler in the docks—the only area of Cardiff where cases of phage-type 3a were known to have occurred. The family then moved to an entirely different district in Cardiff. Sewage draining from this new locality had been sampled on two occasions in the original survey and *S. paratyphi B* (phage-type 3a) had not been isolated. When the family had settled down in the new house the sewage of the house drain was again sampled and *S. paratyphi B* (phage-type 3a) was obtained from the individual house drain. Several houses, including the suspected house, drained into a branch sewer. This branch drain after a short course terminated in the sewer running down the main street. The sewage from the other houses served by the branch drain, which were not suspected of harbouring an excreter, was examined on one occasion with negative results. Soon after we had obtained our first positive sample from the sewer of the new district, the suspected excreter died. This gave us an opportunity to confirm the identity of the source of the infection, and, at the same time, to determine the duration of survival of *S. paratyphi B* on the drain surface after it had left the human intestine. Had we been aware of the possibility of *S. paratyphi B* surviving in sewers at the time that the family left their previous house, we could have used the move to determine the duration of survival in the sewer of the old house. The problem of survival, however, was not considered until the family had been 4 months in their new house. We had, therefore, to use the death of the suspected excreter to give us evidence of *S. paratyphi B* surviving in the sewer of the new house. The sewage was, therefore, sampled frequently at three points. The first point was the individual house drain of the suspected excreter; the second the main sewer above the entry of the branch drain serving the suspect's house and other adjacent houses; the third was the main sewer at the first man-hole below the entry of this branch drain.

The drain serving only the suspected house remained positive for *S. paratyphi B* (phage-type 3a) for 49 days after the death of the suspected excreter. Thereafter, results were negative. The main sewer immediately above the entry of the branch drain was consistently negative on all occasions. The manhole below the entry of the branch drain remained positive for *S. paratyphi B* (phage-type 3a) for 72 days after the suspect's death.

As a precaution the sole remaining occupant of the house was investigated once more serologically and by examination of fæces. The results were again negative.

Further information on the survival of *S. paratyphi B* in sewers was obtained from an isolation hospital. The hospital admitted a case of paratyphoid fever (phage-type Taunton) and this hospital had not harboured a patient infected with this type for 3 years. The drains serving only the hospital were examined, and *S. paratyphi B* (phage-type Taunton) was isolated for 14 days after the patient's fæces were negative. This result was surprising in view of the fact that the patient's stools were treated with 1/20 carbolic acid for 4 hours before disposal into the water closet.

Discussion

Some evidence of the persistence of enteric organisms in sewers and in sewage is available from other sources. Wormald (1950) has demonstrated that *S. paratyphi B* can survive on the surface of a post-mortem room drain for 8 days after necropsy of a case of the disease, despite very energetic antiseptic precautions. Conflicting reports on the survival of *S. paratyphi B* in laboratory stored sewage are available. Gray (1929) could obtain no evidence of any appreciable survival, but Wilson and Blair (1931) demonstrated survival up to 21 days. Snell (1943) believed that the viability of *S. paratyphi B* in mixed excreta depended on the seasonal temperature. He considered that a survival of 2 weeks was to be expected at 20–22°C in summer, and of 8–10 weeks at 8–10°C in winter. It must be pointed out, however, that the conditions governing the viability of *S. paratyphi B* in stored sewage and on the surface of a drain in contact with fresh sewage cannot necessarily be regarded as the same.

The three incidents described here suggest that *S. paratyphi B* can survive for a long time in sewers. The implications of this are interesting. Firstly, the finding of enteric organisms in a particular sewer does not establish that the source of the organisms is still in the area. Secondly, when the methods of detection of salmonellæ in sewage are sufficiently delicate, it is not absolutely necessary to leave swabs in the sewer for long periods, for the surviving organisms present on the sides of the drain can readily be isolated. This refers mainly to the smaller sewers near the origin of the infection. We have successfully used a technique in such cases in which the swab is merely wiped along the drain surface and cultured immediately instead of in situ for 48 hours. (Swabs left in the drains used to control the results obtained with the " swabs.) In a small comparative trial the " swabs gave cultures of *S. paratyphi B* of much purity than the swabs left in the sewer for 4 Such a result is by no means surprising as a small of contaminated material in selenite broth often an almost pure growth of salmonellæ on subc 24 hours, whereas a large inoculum takes a in the enrichment medium to attain the same d purity. This point was implied by Leifson (his original description of selenite broth as an medium. It was considered that the wipe swab of sewer sampling was a useful complementary to the swab which was left in the sewage for 48 Administratively it had the advantage that pro more rapid when attempts were being made to trail leading to an excreter. This could be of when tracing a temporary excreter who was an epidemiological link in a paratyphoid B It was also considered possible that where the tion in the sewer was not of very recent origin swab might give a more satisfactory sample swab left in the sewage for a longer period. Fu on the comparative value of both sampling being attempted. Thirdly, in the case of the ba were able to demonstrate retrospectively the portion of the bakery that had been affected. It administratively comforting to be able to the ultimate clearing of the bakery sewer of although we believe that we were, in this merely measuring the duration of survival of *S. typhi B* on the sides of the drain.

With reference to the search for foci of paraty in a community, we would tentatively sugg where a sewer produces a rich growth (i.e., which is almost exclusively *S. paratyphi B*) after 24 hours in selenite F medium, such a finding start a trail that has a reasonable chance of end discovery of an excreter. Where, with the same only a few colonies of *S. paratyphi B* can be obta difficulty, the possibility should be considered organisms are survivors of those passed up to previously. Trails depending for their clue the isolation of long-surviving organisms are difficult to follow to a source than those which rest demonstration of fairly freshly passed pathogens.

In studying outbreaks of paratyphoid B over all parts of the country, a large proportion infections are related to bakery products. This been the experience locally, as in the 1952 epi South Wales (Culley 1953, Thomson 1953).

As a practical conclusion from the findings in it was decided to make regular bacteriological tions of the drains from the large bakeries through city. In order to do this, the managerial staff of were consulted and they readily agreed to allow swabs to be placed on their premises. This ex is now carried out weekly from March to Sep and during the rest of the year at monthly We feel that this procedure should provide a chance of isolating either freshly passed org those which are surviving after contamination the interval between the placing of the swab this means it is hoped to identify as soon as poss excreters who may be employed in bakeries. results would lead to immediate detailed of the staff, and it is hoped in this way to outbreaks of paratyphoid from this source.

Summary

Evidence is presented to support the hypo *S. paratyphi B* may survive for periods of ten

rs in the absence of a source maintaining the
amination

he finding of salmonella in a sewer does not necessarily ly that the contamination from a human source is tinuing

he use of a swab wiped along the side of the sewer cultured immediately is suggested as a method of age-sampling complementary to the swab which is several days in the flowing sewage The wipe b has certain administrative advantages over the left n swab when it is important to find an excreter kly *It is possible that the wipe swab may provide ore satisfactory sample when surviving organisms being searched for*

egular examination of sewage from large bakeries ow in progress in Cardiff with a view to detecting soon as possible infected excreters on the staff It onsidered that the sampling method devised will give easonable chance of isolating either freshly passed anisms or those which survive from contamination urring during the interval between the placing of swabs.

e should like to extend our thanks to Dr G S Wilson ector of the Public Health Laboratory Service and to Scott Thomson director of the Public Health Laboratory diff, for advice in the preparation of this paper to E. S Anderson of the Central Enteric Reference Labora for phage typing the strains of *S paratyphi B*; to S Mellings the epidemiological officer of the city of diff for much work involved in the investigation of the break to Mr E J Bevan sanitary inspector for the ting and collection of the sewer swabs and to Mr J gan of the Public Health Laboratory Cardiff for the iculous technical assistance required in their examination

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Back to the Boroughs?

exercise of its functions under part III *of the* Health Service Act, 1946 the London County up nine divisional areas each with its health its own medical and administrative staff health committee and the county medical lth exercised over all control leaving day tion to the divisions but it was that there would be a good deal of freedom from unnecessary supervision. similar to that in the counties generally, at the unique local government Metropolis

gement has had many advantages services have been unified and closely health service and with domiciliary meant that the 28 metropolitan bor linquished their duties in connection child welfare and not surprisingly lly regarded by the boroughs as whisperings of dissent of seven y grown and promises about ared in municipal and parlia Now (*after long discussion* y) the L C C has formulated to the boroughs most of the connection with it, the day nurseries vaccinat immunisation of preschool children only and po engage home helps (but the L C C will conti provide a home help service as well)

These proposals have raised a storm It is arg the one hand that central administration is too ex and impersonal, with insufficient regard for local int on the other that decentralisation will open up t in which the cement of 1948 is hardly dry and th will once again be administrative and medical dupl

Since 1948 the outlook and field of work of the visitor have altered beyond recognition The fa a unit has assumed more and more importance an the leadership of the family doctor the health has begun to take her place as a member of the domiciliary team Relationships with general tioners have improved (although slowly) and before has the link with the hospitals (includi teaching hospitals) been so close Her potential prevention of mental ill health and in the supe of problem families is at last being recognised problems of the aged are occupying more and n her time and in association with the geriatric u the practitioner some real progress is being made health visitor and the school nursing services are gr merging complete fusion awaiting only the time w the school nursing sisters possess the health v certificate The home help service has also exp and it has become an essential feature in pre work in connection with problem families and w aged The L C C proposals which must resul division of health visitors and home helps into se sections, can hardly be expected to foster coöp and facilitate progress

The L C C is aware that liaison arrangements w to be efficient and that overlapping must be pre That there are some misgivings on the subject is o for it is agreed that the council will consider wit concerned the framing of legislation to enable resume responsibility in any borough in whi highest standard of service is not maintained A who favours the return of these services to the bo believes that it would result in greater coördi (more detailed and intimate) with practitione hospitals. The London local medical committee other hand is opposed to the scheme which it co will destroy the present integration between the and maternity and child welfare services an increase the number of local authorities with wh practitioner has to deal Pertinent comments are also on the proposed changes in responsibilit diphtheria immunisation

Objections that since 1948 there has not been *domestic influence in the management of the* p health services may not be without foundation the divisional health committees are representat local and professional interests (they include b nominees) it has been questioned whether the given to these committees are wide enough and w control from the centre is not too rigid. It has suggested also that the administrative mach County Hall takes too little account of local c stances, and that it tends to suppress initiative periphery

There is no doubt that during the seven years reorganisation took place the personal health serv London have reached a high standard of efficienc further progress seems assured Clearly there m disadvantages in a centrally controlled unit of magnitude as that in London but it does not that the best *alternative is to reduce it once ag* 29 separate organisations Probably this would b be a retrograde step Most of the objections man-power, would be met if greater power were vested in the divisions The implication in the council's scheme —that decentralisation should be tried on an experimental basis—is dangerous, because continued uncertainty and further chopping and changing must be harmful The whole question is closely connected with the equally difficult problem of the reorganisation of local government boundaries in London, and drastic changes in the health service are inadvisable until this is tackled

Whatever decision is made should be based solely on the needs of the public, and a desire to improve the medical services available to them At the present time decentralisation does not seem to supply the answer in London

Poliomyelitis

In the week ended July 2 there were 73 notifications of poliomyelitis (paralytic and non-paralytic) in England and Wales The figures for the preceding three weeks were 44, 29, and 55 (June 25) A considerable proportion of these cases were in the Barnsley area of Yorkshire On July 10 there were 39 confirmed cases in the Kendray Isolation Hospital, Barnsley [1]

In an analysis [2] *of poliomyelitis statistics* in England and Wales in the years 1950–54, Mr W J Martin, D SC, of the Medical Research Council's statistical research unit, has shown that for the country as a whole the highest attack-rate was at ages under five, but the age-distribution of attacks in some regions departed from the general trend The largest proportion of paralytic cases was recorded in the first quarter of the year and the smallest in the third quarter The figures of deaths per 100 notifications show that the chance of surviving an attack of poliomyelitis decreased with increasing age after childhood From the age of 25 onwards the death-rate per 100 notifications was 20 in males and 14 in females For all ages the corresponding rates were 9 and 8 The sex ratio of the attack-rate at all ages was 4 males to 3 females for both the paralytic and non-paralytic forms The male/female ratio was largest in childhood, decreasing into adult life

Paratyphoid B

Two cases of paratyphoid-B fever were reported during the week ended July 2 in tourists who had been taken ill in Italy It is probable but not certain that they acquired their infection in Italy, possibly in Cadenabbia or in Venice

World Statistics

The World Health Organisation has issued the fifth yearbook in its series of statistical annuals This one [3] is for 1952 It includes 73 statistical tables giving a wide picture of the demographic and health situation for 1952 in various countries of the world To meet the needs of numerous different specialists, some subjects have been treated in great detail—for example, the various localisations of cancer and tuberculosis by sex at different ages, and certain diseases particularly affecting young children Specific rates of mortality from the 15 principal causes of death are shown by sex and by age, so that useful analyses and comparisons can be made For the first time in this series, a detailed table has been introduced demonstrating the proportion of deaths, at various ages and in each sex, concerning which no medical diagnosis was possible

New Duties for Ministry of Health

The Transfer of Functions (Food and Drugs) Order, 1955, providing for the transfer of certain food-hygiene functions from the Minister of Agriculture, Fisheries, and Food to the Minister of Health, was laid before Parliament [illegible] July 5 Under this Order the Ministry of Health [illegible] from July 6, the central department responsible in [illegible]and and Wales for general food-hygiene work The [illegible]try of Agriculture, Fisheries, and Food will, however, [illegible]in the central department responsible for the hygiene of milk production and distribution, and of meat and products while in a slaughterhouse or in the course o portation, as well as for the composition and labelli food The Ministry of Health will still be responsib medical advice on all food matters and for me for the control of milk-borne disease Respons welfare foods, including welfare milk, in England Wales will also be *transferred to the Ministry* of H as from Oct 1, 1955 There will be no change existing arrangements for the local distribution of foods The tokens used under the welfare foods s will continue to be issued to beneficiaries from the offices of the Ministry of Pensions and National Insur The welfare foods will continue to be distributed by local health authorities, and the arrangements wi suppliers of liquid milk will be unchanged

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Times, July 11, 1955

Med Offr, 1955 94, 19

Annual Epidemiological and Vital Statistics 1952 World Health Organisation Geneva Pp 543 £2 10s Obtainable from H M. Stationery Office, P O Box 569, London, S E 1

Parliament

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Medical Testimony in Road Traffic Cases

IN moving the second reading of the Road Traf in the House of Commons on July 4, Mr HUGH parliamentary secretary to the Ministry of Transp Civil Aviation, said that recent decisions by the *had stated the law relating to being drunk* in charge in a way which had been generally regarded as un able A person no longer fit to drive a car was en *to* try to drive it home, instead of stopping sti sleeping until he had gained a more sober state Government felt that this was an unsatisfactory and, during the committee stage of the Bill, they put down a new clause which would distinguish driving under the influence of drink and being charge of a vehicle

In the course of the debate, Mr CHUTER EDE that the medical profession when dealing with class motor-car drivers did not understand that a could be drunk He hoped that the problem of a vehicle while sufficiently under the influence of or drugs to be incapable of having proper contro would receive serious consideration from the lead the medical profession The way in which evidence was given in the Courts reflected no cre the medical profession and could only confuse ins help intelligent jurymen. *He did not believe in* tests, because one man could take a quantity of which would make another man incapable and reasonably under control

N H S Supplementary Estimate

The civil supplementary estimates for £36 presented to the House of Commons on July 6 in £3,560,000 for the National Health Service to m cost of restoring, as from May 1, 1955, the 10% the dentists' remuneration

QUESTION TIME

Handicapped Children

In reply to a question, Mr D F. VOSPER, parli secretary to the Ministry of Education, said th December, 1954, local education authorities were pro special educational treatment for 55,907 pupils accomm in special schools (other than hospital schools), homes, or independent schools and were *seeking* place further 18,836 They were also educating 2138 handi pupils at home and about 8000 in hospital All these included pupils both over and under the compulsory schoo

Replying to a question, Mr JAMES STUART said that were 23 centres for backward children in Scotland, incl 10 in Glasgow

Poliomyelitis Vaccine

Replying to a question, Mr IAIN MACLEOD said the understood that the vaccine so far *manufactured* in country contained virus strains of each of the three types in roughly equal proportions The strain of virus which had hitherto been used had been the Mah strain None of this vaccine had been used here exce laboratory purposes The Medical Research Council advised that no vaccine containing the Mahoney strain be used in the immunisation of children, and investig were proceeding with a view to replacing the Mahoney

In England Now

unning Commentary by Peripatetic Correspondents

phobia is unusual, for it centres on a London which most would find inoffensive or even ;ive

n I first visited it, some twelve years ago, I found unpleasant The well kept gardens were flanked imposing façades of three well known hospitals, and the back of a turkish bath But my first isits prejudiced me a little and those which ed, eighteen months later were no more enter- By now I had come to dislike the place but forted myself with the thought that it would be years before I trod the hated ground again and with any luck only about half a dozen times lculations proved correct which was just as well ad reached the shuddering stage; and henceforth ded the place as I would the plague In fact my g was such that I would make a detour rather o within a mile of the awful acre On such negative ent my phobia gradually subsided; but the ashes nouldered

en, some years later I pondered whether I would ve myself, one of the main causes of my indecision hat the process would entail yet another visit to uare, and, consequently more psychic trauma. ion prevailed but this time my calculations were Not once, but many times did I have to tortur f Finally came the great day when there was not motest possibility of my having to go there ever How I rejoiced that my vegetative nervous could tick over sweetly without recurrent attacks king Slowly I forgot my horror except for the onal nightmares which gradually faded I was my l self again

n when I least expected it, the thing happened. avoid a gossip of hospital sisters who visit my ccasionally, I took myself to the local cinema. ed in the darkness I chortled as my memories stirred by *Doctor in the House* Then suddenly my node accelerated to treble figures, my salivary seized up; my stomach ptosed, my sweat oozed; and my colon creaked into spasm

lism is all very well but did they have to show an nation hall, *the* Examination Hall, and at Queen e?

* * *

live in a married quarter on a Service housing We chose to because it had been designed with mod. con ever recommended by the powers-that-be near a brand new school offering every opportunity healthy development of the growing child But again. All those mod cons will be the death The place is like a goldfish bowl and a doctor ning around inside is too much of a temptation to ighbours The last rushed into the kitchen the other without knocking bared her midriff and demanded ow if she had measles

v the child shall go to boarding school and I am g for a cottage, if necessary without mod con r from the madding crowd

* * *

School Medical Officer
X County Council

Sir,

XAX *Hospital*

nk you for your letter regarding the sending of cases the Audiometer Clinic to this Hospital for the X ray uses and mastoids.

Regional Board has no objection to these children sent to this Hospital on the understanding that the ation supplied is in no way connected with the pro m of disease which as you will be aware is not the nsibility of the Hospital Management Committee

Yours faithfully
Secretary

* * *

ne day I hope to analyse statistically with tables, s, and examples, the careers of medical students fail to qualify Pending a scientific survey I can only cite my own experience Since I left my medical school I have kept a foothold in medicine I first spent a year as a medical representative in tropical Africa where I held sway over a thousand square miles of territory, and was often to be found, with all expenses paid, in remote settlements where no commercial traveller had ever been seen before. In the last four years, I have *managed to carve a little niche for myself as a medical* copywriter As a result, though unqualified, I am up to date with the latest advances the current number of *The Lancet* is always on my desk; and I can sometimes tell doctors a thing or two I can pose as an advertising *expert in the medical world and as a medical expert in* the advertising world It may be that I am neither but my wife and one-year-old son, at least, think I m wonderful; I must be one of the few Londoners who really enjoy commuting between the office and Hertford shire, *and I have attained a happiness and peace of* mind that, perhaps, I would never have extracted from the life of a suburban G P, medical officer of health, or struggling registrar

* * *

The dermatologist and I were sharing a double room, and while I was quickly in bed, he pottered When he did get into bed he was chagrined to find the only light switch was the other side of the room, and then began an unusual and hazardous journey

From his bed to mine, to the nearby chest of drawers was fairly easy, but the next step was getting to the old fashioned wash stand This was achieved—just at the cost of a broken tooth brush holder Now he was four inches short of the switch, but by holding his tooth brush in outstretched hand he managed to put it off How he got back I couldn t see, but he did and only then did I dare ask the reason why He told me he d not long cured himself of athlete s foot, and jolly well wasn t going to get it again

All this was years ago it was very diverting at the time, but it has cost me dear Ever since I've been frightened to put foot to the floor I, too have mountaineered in bedrooms, and in the last resort have made my dear wife put the light out. I always hope she s immune to foot-rot, and anyway she would put up with it better Ah well, at least I ve escaped it so far

* * *

I sat, elbow on the back of my chair, chin in hand, staring gloomily out of the window

There is nothing drab or uncomfortable about my doctor s waiting room It is tastefully decorated The carpet would not look out of place in any lounge. The fireplace gleams behind the warm glow of the electric fire The magazines are varied and up to date I looked round at the other people Some were pretending to read but mostly they were gazing vacantly into space All looked as miserable as I felt.

The young woman on my right caught my eye Miserable place—a waiting room isn t it? ' she said *smiling bleakly Somehow makes you feel worse just* sitting here I agreed wholeheartedly I had only called to have a form filled in, but already I was beginning to feel far from well.

* * *

He won t eat doctor said mamma omitting the comma. As she prattled on I sat smiling slightly as if attending while my brain tried to cope with the implications. Was it a general anorexia for apothecaries, I wondered or more specific for some I could imagine that there might be an aversion to pickled pathologist, reeking of formalin and stale tobacco smoke Gaunt gynæcologist with bony fingers is far from tempt but a nice slice of succulent surgeon or a piece of pl pædiatrician—surely most acceptable

He just pecks at his food ' Ah a here. Perhaps it s thrush ' Lives something ornithological.

I was wrong however and the laugh. He was suffering from

* * *

My blood pressure stayed up af and it was still up when I came examination.

Letters to the Editor

CLINICAL TESTS OF PASSIVE JOINT SENSE

Sɪʀ,—In their paper last week Dr Lee and Mr Browne state that in practice the great toe "is usually moved quickly up or down several times and left in a position which the patient is asked to identify" This method is quite different from that with which I am familiar The test, as properly, and I believe usually, carried out, is as follows

The patient is informed that the examiner will move the toe up or down and is instructed to say "up" or "down" immediately he detects any movement—of course with his eyes shut The examiner then gripping the dorsal and plantar surfaces of the great toe, as the authors recommend, and taking care that there is no friction between the skin of the great and second toes, performs the passive movement In doing so he takes account not only of the angle through which the movement is carried but the rate of movement—a factor disregarded by the authors of the paper This is as important as the angle in determining the threshold of response, a rapid movement being more easily detected than a slow one Care must be taken, as Dr Lee and Mr Browne point out, that the patient does not make use of active movements of the toe during the test and so defeat its object Some persons are slow to appreciate the purpose of the test and may at first answer at random This difficulty may be overcome if the patient is asked first to look at the toe while it is moved and to say "up" or "down" when he sees the movement He is then asked to close his eyes and continue to respond

The test, when performed in this way, is in my experience reliable, and an indispensable part of the examination of the nervous system

London W 1 C P Sʏᴍᴏɴᴅs

Sɪʀ,—In their article Dr Lee and Mr Browne state, as a result of their experiments in moving the big toe by an electric motor, that "testing passive joint sense gives no reliable evidence of neurological changes" Such a statement will greatly surprise the many clinicians who get excellent results with this form of test, though admittedly without an electric motor

Clinically, the test we find useful is different in principle and performance Commonly the interphalangeal joint is used, and the rate and range of movement is about 15 degrees in half a second The rate of change thus may be 30 to 60 times as great as in their experiment The nervous system detects rate of change, rather than steady movement, and it is this fact that we employ in clinical testing This point has been quite ignored in the experiment, where the steady speed of rotation of 1 and 2 degrees per sec is given It is to be expected that subjects vary in their responses to this subclinical stimulation

It would be a pity if this useful clinical test, so much more complex than it seems, suffered from a misleading "scientific" analysis, which is comparable with testing the knee jerk with cotton wool or the pupils by moonlight

London, W C 1 Wɪʟʟɪᴀᴍ Gᴏᴏᴅᴅʏ

TEACHING DEAF CHILDREN

Sɪʀ,—As the mother of a partially deaf child of $4^1/_2$ may I comment on Mrs Ingall's argument (July 2) that full-[illegible]me attendance at a nursery school for deaf children is [illegible]ll cases more effective than the system adopted by [illegible] T clinics

I have for some 18 months made a long journey with my daughter once a week to hospital for a $^1/_2$-hour lesson For 6 months this has been supplemented by 4 half day attendances at a normal hearing school She is making good progress and in particular appear and contented I think the influence of home and life can be greatly underestimated The E N T educates not only the child but also the parent, of vital importance

I suggest that in attendance at a special nurser there is a definite loss to be set against the gai Ingall claims for it I feel that if my daughter ha to such a school, it could have divided her ver from brother and sister, greatly increased her oc tendency to regard herself as being in a class a weakened the bond between her and her paren would also have taught me much less than I have from the E N T clinic, about how to handle my in speech-training and general conduct

It seems to me that the E N T clinics are holding that wherever there is a reasonable cha partially deaf child being able to make the gra normal school and in a normal environment, it s to send him or her to a special school

Reigate B Bir

POSTURAL PROTEINURIA

Sɪʀ,—The cause of postural proteinuria has been a matter of dispute, as is clearly demonstr your annotations of May 7 and June 4 I have set out[1] evidence for a new explanation of proteinuria—namely, a postrenal mechanism wh protein is added to the urine distal to the tubul renal lymphatic system has been neglected, and matter of fact the qualitative and the qua nature of the urinary protein can be logically ex only by the derivation from *lymph* The electrop patterns in benign proteinuria are similar to th a case of chyluria, another form of postrenal as I hope to demonstrate in a future paper

Karolinska Sjukhuset,
Stockholm, Sweden Eʀɪᴋ Lᴏᴡ

DANGEROUS COTS

Sɪʀ,—My attention has been drawn to your of June 18, and to Dr Herzog's letter in the week's issue *You seem to be puzzled by* believe to be the manufacturers' attitude and to the value of any further inquiry

The manufacturers have suggested an inquiry *reasons only* *The first is their hope that* an of view may be reached with the Ministry—at sadly lacking The second is to end the an created in the minds of parents by the public disagreement between the Ministry and manuf on this important safety issue If the manufa have endeavoured to sustain that sense of pro which is such a noticeable feature of Dr Herzog *that does not mean that they* "wish to wait child dies in this way" before they change their

I should like to put two questions which are and which need answering before it can be said— comments seem to imply—that the Ministry right and the manufacturers wrong

First, why are the manufacturers taking they do? The simple answer, of course, is the claim to be no less concerned with safety than Ministry and that in their view the conclusions wh Ministry has drawn from the Elliott Hammond are invalid as applied to domestic wooden cots in conformity with the existing British Safety St (which standard, incidentally, was promoted b manufacturers themselves)

If there are any of your readers who find it d to believe that manufacturers can be influenced consideration other than the profit motive, let us lower the question to that level Is it really su the manufacturers are stupidly determined, although re is no insuperable production problem in altering specifications, that rather than alter these specifica s they will not only be accessory to fatal accidents also contrive to commit commercial suicide?

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[1] Löwgren, E *Acta med scand* 1955, suppl 30

econd what are the facts about the three deaths? the Ministry state the whole of the relevant facts ut the three cases on which they rely What are the rise specifications of the cots concerned? Were they ty? What were the relevant measurements of the ams? What clothes were they wearing? For how y were they left unattended? And so on

he manufacturers have neither desire nor interest to rrel with the Ministry or with anyone else They e yet to be persuaded that the stand they are taking ther than in the best interests of the safety of the dren of Britain

Association of
lding Furniture Makers
London E.C.

R C STAPLES
Secretary

LEWIS ANTIBODIES

IR —In their article of June 25, Dr Mollison and s Cutbush have shown that Lewis antibodies are gerous antibodies and they describe many of the racteristic reactions of these antibodies Their paper mpts me to record some of my experiences with Lewis ibodies—mainly difficulties during the performance he cross matching test

ewis antibodies may occur in patients who have ived no previous transfusions and have never been gnant Nevertheless, these antibodies are found to ctive at body temperature and to have very character reactions which sometimes make them difficult to ct It has been suggested that a simplified form ross-matching test only is necessary in males or in iparous females who have had no previous trans ns but experience with Lewis antibodies suggests a complete cross matching test is desirable.

e hæmolytic activity of Lewis antibodies is largely of ostic value and if lysis of the test cells or donors cells s owing to the presence of atypical antibodies then one d at once suspect that these are of Lewis specificity Leᵃ antibodies commonly show hæmolytic activity but Leᵇ rarely do I have encountered only one case in h anti Leᵇ antibodies strongly lysed normal red cells hæmolytic activity is more readily detected using inised red cells and, for example anti Leᵇ antibodies, ing no hæmolysis when tested with normal *Le(b +)* red may lyse papainised ones

other curious reaction which may be associated with s antibodies is the phenomenon of immediate agglutina followed by reversal—i e by dispersion of the agglutinated cells. This phenomenon is similar to the one described Rosenthal and Schwartz [1] between trypsinised red cells normal serum.

the anti globulin test Dr Mollison and Miss Cutbush drawn attention to the need for using special anti ulin reagents I have observed cases also in which cells itised with incomplete Lewis antibodies appear to be rentially agglutinated by anti globulin reagents contain fractions akin to fraction II (Renton's nomenclature [2]) h fraction reacts strongly with cells sensitised by the incomplete antibody described by Dacie.[3]

stly to get optimum results and to detect Lewis anti es most readily freshly taken serum must be tested out delay

any of the patients in whom these antibodies occur are d to be of *genotype Le(a–b–)* and it may superficially ar that only anti Leᵃ (or more rarely anti Leᵇ) is present he patient's serum because of the difficulties of detecting or the other but in reality both are present If this is he serum from the patient will react with approximately of unselected donors cells

When persons who have Lewis antibodies in their sera require transfusing it is necessary therefore, when performing the cross matching test to use a fresh sample of serum and to be aware of the curious reactions which these antibodies may give Until a case has been fully investigated it is as well to start cross matching with blood of type Le(a–b–) It will be appreciated that quantities of compatible blood for patients whose sera contain these antibodies will not be obtained easily

Regional Blood Transfusion Service
Manchester 1

F STRATTON

GLANDULAR-FEVER SYNDROME

SIR,—There have been many reports [1–10] now on the hypersensitivity reactions to *p* aminosalicylic acid (P.A.S.) and allied drugs which have been characterised by the "glandular fever syndrome" Two such cases both in young people, are reported here because of the severity of the symptoms

CASE 1 —A girl of 14 with an eight months history was admitted to hospital for treatment of a tuberculous hip She was started on streptomycin (1 g daily) P.A.S. (2 5 g six times daily) and isoniazid (50 mg four times daily) Five weeks later she began to have intermittent pyrexia followed in the sixth week by sore throat enlargement of lymph glands spleen, and liver generalised eczematous dermatitis, and jaundice All chemotherapy was discontinued. At the height of her clinical manifestations the white count was 8000 per c.mm (polymorphs 31% mononuclears 55% and eosinophils 14%) The mononuclears showed the changes usually seen in glandular fever The Paul Bunnell test done three times at monthly intervals, was consistently negative

After a further six weeks her clinical condition had improved considerably and a test dose of streptomycin was given which was followed by a generalised skin rash. Penicillin given for a subsequent streptococcal throat infection was well tolerated

CASE 2 —A boy of 16 with seven years history of a tuberculous spine was readmitted for treatment of a paravertebral abscess and mild paraplegia. He started with the same chemotherapy as in case 1 but after one month it was discontinued when he suddenly developed pyrexia to 104°F meningeal symptoms and flaccid paralysis.

Dr P H Sandifer neurologist reported This boy has developed a polyneuritis against a background of spastic paraparesis. The features of the polyneuritis (particularly the high cerebrospinal fluid protein) suggest a Guillain Barré syndrome The C.S.F. protein at this time was 2 5 g per 100 ml. and two weeks later had risen to 4 5 g per 100 ml with approximately 600 red cells per c mm and no white cells. The white blood cells were 9000 per c.mm (polymorphs 53%, eosinophils 11% mononuclears 36% with abnormal cells of the glandular-fever type predominating) The Paul Bunnell test was negative in this case also Sensitivity to streptomycin alone has not developed in this boy and his polyneuritis is slowly improving

In this hospital routine white counts and differentials are made at regular intervals on all patients undergoing combined anti tuberculous therapy Abnormal mononuclear cells of the glandular fever type can generally be demonstrated in films from those who have received four to six weeks or more of treatment These cells are usually scanty in number and the hæmatological picture has been one of a difference of degree only between those who tolerate the chemotherapy and these two cases

These findings would seem to lend support to the views put forward by Barnes and Barnes,[11] who suggest drugs containing primary aromatic amines (of which P.A.S. is one) may produce the glandular fever syndrome. Hill [12]

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osenthal M, Schwartz, L. *Proc Soc exp Biol*, N Y 1951 76, 635
enton I H *Nature Lond* 1952 169 320
acie J V *Ibid* 1950 166 36

1 Cuthbert J *Lancet* 1950 ii 209
2 Mann B *Tubercle* 1953 34 43
3 McKendrick G D W *Lancet* 1951 ii 668
4 Steel, S J *Brit med J* 1952, i 415
5 Klovstad, O *Tidsskr norske Lægeforen* 1951 71 53
6 Marsh, K. *Lancet* 1953, ii 606
7 Mellette S J Ayres H *Amer Rev Tuberc* 1954 69 891
8 Warring F C, Howlett K S *Ibid* 1952 65 235
9 Lichtenstein, M. R., Cannemeyer W *J Amer med Ass* 1953 152 606
10 Bailey K G *Amer Rev Tuberc* 1954 69 453
11 Barnes J Barnes, E *Lancet* 1955 i 155
12 Hill, A B *Ibid* p 617

in an interesting comment on this, points out the importance of the "concept that the clinical manifestations termed 'glandular fever' may represent a common end pathway syndrome activated by an allergic mechanism"

I wish to thank Mr J A Cholmeley, F R C S, for permission to record these cases

Institute of Orthopædics, Royal
National Orthopædic Hospital,
Stanmore

A G TOWERS

E S R IN HYPOTHYROIDISM

SIR,—Dr McAlpine's paper (July 9) on an increased sedimentation rate in hypothyroidism is of considerable interest as was that of Wilson [1] on a similar finding in Simmonds's disease The relationship of the increased E S R to the relative increase of serum globulin was pointed out by Dr McAlpine In a paper on the basis of the sedimentation rate, Hardwick and Squire,[2] while recognising the importance of elevated plasma fibrinogen, specially emphasised the importance of raised α_2- and γ-globulin

It is recognised that cortisone affects protein metabolism and γ-globulin,[3] and I have previously drawn attention to changes in E S R in some cases of Cushing's syndrome and of Addison's disease and to the effects of adrenalectomy and of cortisone [4] These findings were inconstant, and sometimes paradoxical, but nevertheless I regarded them as significant and opening up a new field for an appreciation of the influence of hormones on the E S R, and the need to consider the possibility of endocrine disease when the E S R was found to be raised Since myxœdema may be associated with involution and atrophy of the adrenal cortex,[5 6] the influence of secondary abnormal adrenal function on the E S R in myxœdema, as well as in Simmonds's disease, becomes relevant Although thyroid may have a more direct and significant influence, one must also remember that thyroid can favourably influence decreased adrenal function in myxœdema The potential effect of testosterone may also come into consideration It now seems unlikely that occult infection can be the sole explanation of a raised sedimentation rate in endocrine disease The paths opened out warrant further exploration

London, W 1

S LEONARD SIMPSON

TREACLE FOR CONSTIPATION

SIR,—Galen's treacle or theriac contained the entrails of vipers boiled in aniseed and the Exalted or Celestial Treacle of later German pharmacists ran to over 100 ingredients Nevertheless, despite such precedents, the suggestion by Mr Lang Stevenson (July 2) that the uncrystallised residue from the refining of sugar contains acetylcholine is arresting, particularly in view of the instability of the substance at the high temperatures of the process McCance and Widdowson's *Chemical Composition of Foods* and Martin and Cooke's *Organic Industrial Chemistry* make no mention of acetylcholine in treacle, and it would be interesting to know where the statement occurs

Although Molle in the 17th century decries "these Mountebanks, Triacle Carriers and such other Dog leaches," More refers to "the tryacle of holye scripture" No doubt, then, Mr Lang Stevenson's method is "the sovran treacle of sound doctrine" (Milton) but its efficacy may have more to do with the laxative hydrophily of concentrated sugar solutions than with its ylcholine content

ipps Cross Hospital
London E 11

FRANK A ALLEN
Chief Pharmacist

Wilson L A *Lancet*, 1953, i, 203
Hardwick, J Squire J R *Clin Sci* 1952 11 335
Long, D A *Int Arch Allergy* N I 1955, 6 337
Proc R Soc Med 1953 46 39 566
Berkheiser, S W *J clin Endocrin* 1955 15 44
Kingsbury, J W Emery S L Adams A E *Endocrinology* 1955 56, 299

THE MECHANICAL INJECTOR

SIR,—Preliminary reports on the use of the p mechanical injector have already appeared [1] seems that the instrument has a place in medical res Injections, by their very nature, evoke a psycho reaction on the part of the patient,[2] and the const in the quality of this stimulus is often an factor in the efficacy of treatment [3] It has been for example, that the variation in response to dif doctors administering injections is often *greater* th difference in response to an experimental drug placebo control [4] Statistically significant diff are thus often masked, and final data may be contrary to what is actually the case

A number of modifications for purposes of research hav made in this department on the commercial pattern of injector gun One which has universal application engraving and calibration of a scale on the skin shield indicating the depth of penetration in millimetres enables a variety of penetration depths to be used m without the necessity of remeasuring the needle length fired position on each occasion, and this will be ticularly useful on the no 2 model with its preset of 0–50 mm The manufacturers are at present cons the embodiment of this modification in future models.

Meanwhile, the instrument is almost essential in controlled medical investigation involving injections, high needle speed and controlled penetration depth to produce an efficient, acceptable, and non varying inj

Winterton Hospital,
Stockton-on Tees

L R C HAWA

LUNG CANCER AND SMOKING

SIR,—May a layman venture to add to the raised by Mr Mims in his letter of June 4 ?

Has anyone investigated the possible asso between the virus of tobacco mosaic disease and cancer, particularly in the circumstances of tobacco fragments ? It has been claimed that the can be transmitted with great ease to other merely by the agency of the infected fingers and tools of tobacco users

London, S W 3

G GOOM

A BARBITURATE ANTAGONIST

SIR,—I find myself in agreement with nearly points which Dr. Wright has raised in his let June 25 Especially interesting is his use of chromatography, I feel sure that the use of important technique will yield further results conc the barbiturate enigma

I am glad that Dr Wright agrees that ββ ethyl glutarimide ('Megimide') and 2 4-diamino 5 thiazole (D A P T) have antagonistic (analeptic) towards the short-acting barbiturates I also agree him when he says that our results with phenobarb have not been as successful I do not know wheth ascribe this relative lack of response to decreased ism or to the fact that the coma due to phenobarb is different from that brought about by the med acting barbiturates

I disagree with him only when he says that our state" is "a state bordering on convulsions" Cer in our earliest cases the patient did convulse but that we have learned to appreciate the signs of dosage this does not occur Incidentally the conv appeared to be harmless Almost all drugs in therap when used to excess produce undesirable effects. mide is no exception, but I do not agree that w use it correctly we produce a condition such as Dr W describes

1 Haward, L R C *Chem & I* 1955, 174 4,6
World Lond 82, 58
2 Haward L 53, 79 126
3 Jennison 11, 1245
4 Shapiro,

he patient is brought to the 'safe state' at 12 hourly rvals Between these periods his coma is much ghter than if he had never been treated The rovement is shown by the raised blood pressure per respiration and the presence of some reflexes annot understand how this state could be regarded armful

fter all one does not abandon the use of digitalis ause its employment results in a state bordering rrhythmia'

epartment of Pharmacology
University of Melbourne

F H SHAW

FLUOROACETATE POISONING

ir —Attention has been called to an error in my er of Jan 15 on this subject in which the LD_{50} of roacetamide $(CH_2F\,CONH_2)$ to laboratory rats by oral route was given as 4 mg per kg body weight is should have read 14 mg per kg body weight which very close to the figure given by Gitter et al [1]—namely mg per kg for the same animal by subcutaneous ection

The same authors [2] also point to the fact that adminis tion of acetamide prior to or simultaneously with yl fluoroacetate and certain other fluoroacetic acid ivatives (but not however fluoroacetamide) has a rked protective effect against the toxicity administra n after the fluorine compound had no curative action wever

Work is now proceeding on the search for protective stances of the C_2 class against toxicity caused by oroacetamide fluoroacetanilide &c My letter of n 15 emphasised the differences between the death mptoms caused by sodium fluoroacetate (tonic con lsions) and those caused by the amide (unconsciousness lowed by death in coma) and the general conclusions that letter remain unchanged It is interesting to note t Saunders and Stacey [3] found the same type of der toxicity with o fluoroacetyl salicylic acid the rine analogue of aspirin the LD_{50} for mice was found be 15 mg per kg

omford Essex

M A PHILLIPS
Consulting Chemist

OPATHIC INTUSSUSCEPTION IN AN ADULT

IR —In a recent article Hanley [4] states that it is ost axiomatic that intussusception in the adult has ays a local predisposing cause He reviews some blished series of adult intussusceptions and confirmed it in contradistinction to infants there is practically ays a local cause present

In view of the apparent rarity of an idiopathic intus ception in an adult I should like to record such a case

A man of 55 was admitted to Hackney Hospital on March 18 15 with a three-day history of severe generalised abdominal with vomiting of all intake for the forty-eight hours or to admission His bowels had not been open since the et of the pain. He had been in hospital with chronic nchitis and possible angioneurotic skin lesions during 1954 He was cachectic with dry inelastic skin and a dry brown gue There was generalised distension and tenderness of abdomen. X ray examination showed small bowel fluid els. No ballooning and no blood was found on rectal mination

After suitable intravenous rehydration laparotomy was ertaken on the night of admission and a gangrenous ileo intussusception was resected some 3 ft from the ileo l valve Continuity was restored by end to-end anasto

specimen of ileum resected was approximately 3 ft nd showed about 18 in. of gangrenous gut No cause be found for the intussusception.

After a stormy convalescence the patient was eventually discharged on April 27 and when last seen at surgical out patients he was quite well

Hackney Hospital
London E.8

R F READ

A TRANSPORTING FLUID FOR BLOOD SPECIMENS

SIR —Those of your readers who send blood specimens through the post for blood group antigen and antibody studies may find some use for the fluid described below

The fluid is whole blood Alsever's solution equal parts penicillin and streptomycin to a final concentration of about 30 units and 0 005 mg per ml respectively A sterile technique is used and the blood is drawn directly into the Alsever's solution The antibiotic is added promptly and the mixture sealed with a rubber bung for best results

Since November 1952 this fluid has been used to prepare a diagnostic panel of red cells ("Panocell") which is shipped throughout the United States every two weeks via air mail unrefrigerated Recently some 450 different blood specimens were air mailed unrefrigerated from New York to London for blood group studies All of them were reported to have arrived in excellent condition It has been suggested that this fluid has made this possible

Knickerbocker Foundation Inc
New York

AMOS CAHAN
Director

ESTIMATION OF SERUM MUCOPROTEINS

SIR —It is well established that there is an incomplete recovery of serum mucoproteins (about 65–85% in normal sera) by modifications of Winzler's original technique owing to co precipitation losses [1 3] but no detailed study of this phenomenon has been reported

Following the development of a technique of zone electrophoresis for isolating two mucoprotein fractions M-1 and M-2 [2] we tested the individual recovery of these fractions in the presence of serum proteins using Anderson's and Maclagan's modification of Winzler's technique [1] The mucoproteins were isolated from the sera of patients with acute rheumatoid arthritis showing elevated levels of both fractions Mucoprotein determinations were carried out on normal serum before and after the addition of solutions of known concentration of each mucoprotein Mucoprotein was estimated as tyrosine after precipitation with phosphotungstic acid The results are shown in the following table where the relative concentrations of the fractions added are those found in each serum (quantities are in arbitrary units)

		Amount added	Amount recovered	Percentage recovery
Serum 1	M-1	19	19	100
	M-2	308	93	30
Serum 2	M-1	34	3	110
	M-2	186	120	61
Serum 3	M-1	20	21	101
	M-2	94	30	41

The recovery of fraction M-1 was complete while that of M-2 varied from 30 to 60% in the three analyses. The same normal serum was used in all cases and the isolated mucoproteins are from three different sera

Fraction M-2 has the mobility of α_1 globulin when subjected to electrophoresis at pH 8 6 and its loss by co precipitation—possibly more complete in normal serum—may account for the reported presence of only one mucoprotein with α_1 mobility (i e, M-1) in sulphosalicylic and perchloric acid filtrates.[1]

Winzler has stated [4] that if mucoprotein recoveries are to be reproducible the conditions of precipitation of the other serum proteins must be rigorously standardised. The fact that co precipitation is selective appears to be worth reporting

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n I D et al Koninkl Nederl Akad van Wetenschap Pr roc ser C 1953 56 4 7

O Stacey G J J chem Soc 1948 p 1776

Brit J Surg 1955 42 35

[1] Anderson A J Maclagan N F Biochem J 1955 59 1

[2] Winzler R J Devor A W Mehl J W Smith I M J clin Invest 1948 27 609

[3] Markham R L Ann rheum Dis 1955 14 21

[4] Winzler R J In Methods of Biochemical Analysis New York 1955 vol II

since some importance is now attached to the ratio of carbohydrate to protein in the mixture of these fractions isolated by Winzler's technique[4 5] and the value of this ratio will be altered by changes in their relative concentrations

This co precipitation of M-2 was also found to occur in the presence of serum albumin alone, but with low concentrations of albumin no precipitate formed, a stable turbidity being produced instead

The Royal Free Hospital,
North Western Branch,
London, N W 3

R L MARKHAM

Medicine and the Law

Accident after Taking Methylpentynol

AT the Kent Assizes at Maidstone on July 5, Mr Justice Byrne expressed the hope that methylpentynol would be placed on the Dangerous Drugs list[6] Before the court was an 18 year-old youth who pleaded guilty to a charge of dangerous driving According to the prosecution this youth and a companion bought 25 capsules of 'Oblivon' The normal dose was one or two capsules, but each took three or four in order to pluck up "Dutch courage" to break into a house at Ramsgate They left Ramsgate on a motor-bicycle and met with an accident in which one of them was killed After the accident the surviving youth was very excitable and made some odd remarks Sentence was postponed

Judge's Sympathy for Doctors

Giving judgment in a civil action for negligence at Bristol Assizes,[7] Mr Justice Pilcher suggested that in certain cases it might be advisable for hospital management committees to make a small payment to plaintiffs, without any admission as to liability, rather than to take the risk of an experienced doctor or surgeon being dragged through the courts

The plaintiff, a man aged 35 and weighing 22 stone, was thrown from his motor-bicycle and was taken to Savernake Hospital by ambulance with his left leg in considerable pain He had in fact suffered two fractures of the left knee and a fracture of the left wrist At the hospital he complained of pain in both knees but did not invite the surgeon to look at one more than the other He was asked to walk about and had some difficulty, but the surgeon thought that this was due to his bulk He was discharged and told that he could continue his journey

The plaintiff was unable to continue by motor bicycle because of pain, and he obtained a lift by car to Reading, intending to catch a train from there to his home in Cornwall At Reading, however, the driver of the car made arrangements to have him admitted to the Royal Berkshire Hospital There he was examined radiographically and the fractures were discovered He was detained for several days and was later transferred to hospital in Cornwall

Mr Justice Pilcher said that the only conclusion at which he could arrive, with great reluctance, was that the surgeon at the Savernake Hospital did fail to examine the plaintiff's leg in the proper fashion His Lordship, however, considered that the case was a very trivial one, and he awarded the plaintiff £20 damages with costs against the Swindon and District Management Committee His Lordship also said

> "Many claims made by patients these days against surgeons are completely unjustified But occasionally medical professional standards fall just a little short of what is expected In such cases it may be better for hospital management committees to make a small payment, without admitting liability, rather than take the risk of doctors and surgeons being dragged through the courts"

Obituary

CHARLES DONALD

O B E , Ch M Aberd , F R C S

Mr Charles Donald, surgeon to the London Ho died on July 8 at the age of 59

He was born in 1896, the son of John Donald Aberdeen, and was educated at Robert Gord College and at the University of Aberdeen In the f world war he enlisted in the Gordon Highlanders, later transferred to the Royal Flying Corps, and be a flight-commander and was mentioned in despat In 1922 he graduated M B , and after holding resi posts at Aberdeen Royal Infirmary he came to Lon to take up the post of house-surgeon at the Hospital Sick Children, Great Ormond Street In 1925 he obtained the F R C S and in 1926 he became surgical registrar at the London Hospital For the next three years he worked for Sir Hugh Lett and the late Mr Perrin, and during this period he gave valuable help in the anatomy department of the medical college Later he became interested in cerebral surgery and gained useful experience working with the late Sir Hugh Cairns

In 1933 he was appointed assistant surgeon to the London Hospital At that time the junior surgeon was in charge of the Septic Block, which consisted of some forty beds, and Donald published some sound shrewd papers on the conservative treatment of septic conditions, especially osteomyelitis, infected and carbuncles, based on his experience in this uni 1935 he joined the staff of Great Ormond Street, and appointment enabled him to give a considerable am of time and energy to the problems of child surgery especially to developmental errors of the neck sacrococcygeal region

In the second world war, Donald served with di tion He was commissioned as lieut -colonel- R A.M C in 1940, and rose to the rank of brigad 1942 He took part in the evacuation of C afterwards was consulting surgeon to the in the Mediterranean area In 1944 he ret England as consultant to the Southern Comm same year he was appointed O B E , and later he from the Army with the honorary rank of colonel

In 1945, after his return to civilian practice, he b surgeon to the Royal Masonic Hospital—an a which he appreciated, for he had always been a Freemason He also took up again his great thyroid surgery, to which he had first been in at the L C C thyroid clinic before the war Th was a general surgeon, he managed by hard wo perseverance to build up an outstanding reputat his thyroid work, of which both he and the Hospital were justly proud, and he took p pleasure in training his registrars in this field of Unfortunately the war years had taken their tol strength, and two years ago he had at last to g but all through his long illness he remained cheer full of hope that he would be able to return hospitals he loved so much

E C B B writes "Charles Donald will remembered by the students of the London Ho they were a great interest to him and he spared n to help them in every way he could They, appreciated his help, and both in the operating and in the wards relished his rich Scotch humour, was to them an unfailing source of delight if som of apprehension He carried on, to a great exte tradition of service to the Clubs Union which ha so well exemplified by the late Mr Russell H For many years he was treasurer of the Students

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[5] Shetlar M. R Payne R W , Bullock, J A Patrick D R Hellbaum A A Ishmael W K *J clin Invest* 1953, 32, 1208
[6] *Times*, July 6 1955
[7] *Ibid* July 2 1955 *Western Daily Press* June 30, July 1, 1955 *Scottish Daily Mail* July 2, 1955

d he was president and stout supporter of the rugby otball and golf clubs All through the football season and Dr W W Woods could be seen every Saturday ternoon, encouraging the hospital XV by their presence, d it must have been a great satisfaction to Donald that was able to be present at this year s Inter Hospital ıp Final when The London were victorious after so any years I know the students felt that their victory as in no small way due to his enthusiasm and encourage ent over the past years

He was a first-class after-dinner speaker and his fund stories was inexhaustible At any social function he as a favourite for his ready wit made an excellent ending a convivial evening Golf was his favourite recreation r many years he was a member of Sandy Lodge, but his vourite course was at Burnham on Sea in Somerset d whenever he could Charles would escape for a short ne to get some relaxation on those lovely links which erlook the Bristol Channel and hills of Somerset

W R B writes That Charles Donald was a haracter was delineated on his pale, thin handsome ce with the humorous eyes overshadowed by a lock of rk hair The character originated in a Scottish ancestry which an Aberdonian upbringing added independence mind wide reading and a life-long enjoyment not only books, but also of words He was both humorous and tty and, having no illusions about human nature joyed deflating pretension and puncturing what he ld to be incompetence with his verbal shafts He was master of the debunking aside His experience of rgery was wide and his good clinical judgment was pecially valuable in dealing with thyroid diseases A arter of his working life was absorbed by two world rs in which he served with distinction It is a sad ony that one who looked at life with so ironical an eye ould have been robbed by persistent ill health of the ll measure of success he deserved

In 1927 Mr Donald married Amy Stewart Walker o survives him with a son and a daughter

HORATIO GEORGE ADAMSON

M D Lond F R C P

Dr H G Adamson consulting physician for diseases the skin to St Bartholomew s Hospital, died at his me at Bourne End on July 6 at the age of 89

Lafayette

He was born in London the son of Horace John lamson, and was educated at University College hool In 1883 he began his medical studies at St. rtholomew s Hospital with an entrance scholarship in science He qualified in 1888 and after a few years in general practice he decided to study dermatology He was fortunate to come under the tuition of Dr Colcott Fox and Dr Pringle by whom he was taught that meticulous care for detail in clinical study which afterwards characterised his whole work. His first appointments were at two children s hospitals, Paddington Green and the North Eastern Hospital for Children (now Queen Elizabeth s Hospital), and it was in this field that much of his earlier work was done His papers on napkin eruptions, pemphigus neonat um, ecthyma vacciniforme and others are examples of e thoroughness with which he studied his cases. In 07 he first published his *Skin Affections in Childhood* a ok small in size but amazingly comprehensive, which s never really been equalled

During these years he assisted Dr Colcott Fox at the etropolitan Asylums Board s ringworm schools at itham and Sutton, and it was in connection with this rk that in 1895 he published his classical paper on the rasites of ringworm and anatomical relation of para es to hair His description of the way in which the crosporon fungus terminates in the hair is still known the name of " Adamson's fringe Later, in 1909 he called attention to a new method of treating scalp ringworm by X rays, an improvement on a method first used by Kienbock, and which proved so successful that the Adamson Kienbock method has been used almost universally ever since

About this time he was appointed to take charge of the skin department at his old school, St. Bartholomew s Hospital the first dermatologist to be appointed to the post In 1911 he was elected F R C.P and his Goulstonian lectures (1912) on the significance of skin eruptions were a complete survey of contemporary dermatological knowledge. They ended with a subject which always interested him greatly— the significance of the patterns and distributions of skin eruptions

His writings which were numerous, cover a wide field of dermatology and he was constantly demonstrating cases, both at the old Dermatological Society of London of which few members remain and also at the Royal Society of Medicine All his cases were carefully worked out before being shown He was president of the dermatological section of the R S M from 1921 to 1923 and of the British Association of Dermatology in 1924 and treasurer from 1925 to 1934 He was also an honorary member of many foreign dermatological societies among them the New York Dermatological Society the oldest dermatological society and one of the most exclusive an honour of which he was justly proud.

In many of his papers he deliberately raised controversial points such as that which dealt with the relation of keratodermia blennorrhagica to psoriasis, and he was always a strong advocate of the identity of idiopathic eczema and its differentiation from dermatitis venenata. He was also an authority on the development of dermatology in the 19th century and was familiar with the works of all dermatological authors from the days of Willan onwards Even in his retirement he wrote a vigorous letter defending Tilbury Fox from some aspersions which had been cast on the value of his work

Adamson was a retiring person and worked steadily away without attempting to attract attention though his work was so outstanding that it could not escape notice He went out of his way to help those who sought his advice, and was a most inspiring teacher He was beloved by his patients and by his colleagues. It is impossible to imagine him making an enemy He was a skilled artist and after his retirement spent much of his time gardening

Dr Adamson married Miss Mabel Draper, who survives him.

A M H. G

Appointments

BRANDON R. E L.R.C.P.I D.P.M. senior asst. psychiatrist Pastures Hospital Mickleover near Derby

CALDERWOOD, R. W L F.R.C.S whole time asst orthopædic surgeon (S.H.M.O) Pontefract and Castleford group

MACMICHAEL, NEIL, M D Edin. F.R.C.P.E physician (consultant) Longmore Hospital

MANN C J H., M.B Lond : asst M O Cowdenbeath area, Fife.

SHAW ARNOLD, M.B Durh : school M O Birmingham

SUTHERLAND I B M.B. Edin D.P.H deputy M.O H., Inverness county and town councils.

THOMAS J W M B. Wales, F F.A R.C.S D.A consultant anæsthetist Newport and East Monmouthshire H.M.C. based at Royal Gwent Hospital Newport

Manchester Regional Hospital Board:

BAUEROVA OLGA, M.D Bratislava D.M.R. whole time consultant radiologist Bury and Rossendale and Rochdale and district hospitals

COTHILL, J M. M B. Glasg., D.P.M : asst. psychiatrist (S.H.M.O) Whittingham Hospital near Preston

JONES P H. M.V.O F R.C.S. : consultant thoracic surgeon with main duties at Baguley Hospital Manchester and Park Hospital Davyhulme

POINTON R C S. M.B. Camb F F R. D.M.R.T asst. radiotherapist (S.H.M.O) Christie Hospital and Holt Radium Institute Manchester

WILLIAMS, R. G M.B. Lond. whole time medical director of two mass miniature radiography units based on Salford and Rochdale

The Hospital for Sick Children Great Ormond Street, London:

ABBEY D M. M.B. N.Z. D.C.H : asst. resident M.O Tadworth Court.

BARCLAY JUNE M D N.Z. D.C.H house-physician to the neurological and neurosurgical departments

DALLIWALL, KENNETH F.R C.S. part time senior surgical registrar

HALL, PETER, M.B N.Z. F F.A R.C.S junior resident anæsthetist

MASON SEYMOUR, M.D Lond D C.H : house physician

MORGAN ANN M.R.C.S. : house physician

O'SHAUGHNESSY, D J M.B Melb. house-surgeon

WALKER, C H M., M D Edin., M.R.C.P D.C.H : medical registrar and pathologist

Notes and News

ACCIDENT SERVICE AT STANMORE

AN accident service has been organised at the country branch of the Royal National Orthopædic Hospital at Brockley Hill, Stanmore A double ward of twenty six beds, close to the main operating theatre, has been set aside for inpatients Regular outpatient fracture clinics are to be held, Mr J N Wilson, director of the service will conduct two clinics every week for orthopædic cases referred by general practitioners

On July 8 the new department was inspected by general practitioners and others interested Mr H J Seddon, the director of clinical studies, explained the need for experience in traumatic work, not only for registrars and housemen in training but also for the nursing staff The hospital, he said, had acquired a wide reputation for the treatment of "cold" orthopædic cases, but had always been somewhat remote from practice in the immediate neighbourhood He hoped that it would now acquire a local reputation He wanted the local doctors to regard it as their hospital Questions and criticisms were then invited and a lively discussion followed in which those taking part included Mr L W Plowes, Dr J N Deacon, and Dr H M C Macaulay Asked about the acceptance of everyday conditions such as multiple contusions, septic fingers, rheumatoid arthritis, and so on, Mr Seddon replied in the affirmative The lack of outpatient facilities, he said, was bound to produce some temporary confusion, but the appropriate building programme was being given high priority

HEROIN

THE Home Secretary, the Minister of Health, and the joint parliamentary under secretary of State for Scotland received on July 11 a deputation from the council of the British Medical Association and heard representations against the decision to cease authorising the manufacture of heroin at the end of this year except in respect of small quantities necessary for scientific purposes or the manufacture of nalorphine[1]

The deputation, which consisted of Dr E A Gregg, chairman of the association's council, Mr A Lawrence Abel, Dr A H Douthwaite, and Dr R Hale White, referred to three resolutions adopted last month at the annual representative meeting These protested against the Home Secretary's decision to cease authorising the manufacture of heroin and asked that the decision be reversed, or at any rate modified, to permit manufacture of the drug in this country for use by medical practitioners, even if its export were prohibited The annual representative meeting had approved the resolutions by a large majority They felt strongly that medical practitioners should not be prevented from prescribing a drug which many of them thought indispensable in certain types of case, and they gave detailed evidence in support of the view that the retention of heroin was necessary They further asserted that the Government could not claim to have ascertained the views of the medical profession before arriving at its decision, since they had not consulted the association, which was the only body representing the whole profession

In reply the Home Secretary recalled the circumstances leading up to his decision So far from acting hastily or without proper consultation, the Government had taken over four years to consider the matter and had consulted bodies representative of the medical profession The association had had ample opportunity to make its views known It was no secret that the prohibition of heroin was under consideration Indeed in July, 1953, the association's journal had published an article which clearly contemplated that prohibition might be imposed It had evoked one solitary letter of protest When therefore, he announced his decision in February 1955, he had no ground for thinking that it would be unacceptable to the association, their resolution of the previous November had not at that date been communicated to the Government The Home Secretary thought that there had been some misunderstanding as to the reasons for the proposal to prohibit the lawful manufacture of heroin It was related not to the domestic problem, but to the need for an international effort to mitigate the heroin problem To permit manufacture of heroin in this country but to prohibit export would not comply with the Economic and Social Council's resolution Moreover, if the manufacture of heroin were to be permitted in this country on the ground tha use was indispensable, in the relief of suffering (which contrary to the advice the Government had received) it w be difficult to prohibit the export of the drug—e g, to Colonies

The Minister of Health deprecated the attacks that had made on Ministers They had taken on more than occasion the best advice available to them The sta medical advisory committees included in their member the most eminent and responsible leaders of the profes

The joint parliamentary under secretary of State Scotland said that consultation in Scotland had procee parallel with that in England Expert opinion had that there was insufficient reason to stand out from national action of the kind proposed No complaints been received in Scotland

Before giving a final reply to the deputation the H Secretary is to consider the representations most care in consultation with the Minister of Health and the Secre of State for Scotland

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[1] See *Lancet*, 1955 i 1311

BRITISH EMPIRE SOCIETY FOR THE BLIND

A SURVEY made by the Colonial Office and the R National Institute for the Blind in 1946 showed that t are over a million blind people within the Colonial Em It was decided to tackle the problem on a voluntary b with official backing, and five years ago the British Em Society was set up, with the support of the Colonial Office Colonial governments and the Royal National Institut the Blind In its fifth annual report the society re the advances made by "this fruitful partnership betw government and philanthropy"

In a score of Colonial territories the foundations of pe nent systems of blind welfare have been laid, the numb blind children at school has been doubled, and the n of blind adults in training multiplied by ten In the me field the society has largely concentrated its work in Africa, where an ophthalmic team under Dr F C Ro is working in the Northern Gold Coast, Northern Nigeria the Cameroons An entomological team, under Dr Geo Crisp, is investigating the simulium fly This scientific has already cost £40,000 and the society would wel further help in its work Donations should be sent t director, 121, Victoria Street, London, S W 1

OVER-THE-COUNTER SPECTACLES

AT a conference of the North Regional Association fo Blind (*Times*, July 1, 1955) it was resolved to dra Minister of Health's attention to the serious effec the indiscriminate sale of glasses and to urge that they s not be sold without a medical prescription and tha National Health Service should make no charge Dr C Kay Sharp, a member of the ophthalmic services comm of the Leeds executive council, said that when N H S s tacles were free these over the counter sales had ceased. £1 charge had been described as a contribution, but the lenses and frames cost less than 20s He thought t charge should be cut to 5s

Another side of the problem was raised in the Ho Commons last month (*Lancet*, July 9, p 96), when the Mi of Health was asked to prepare a Bill for the stat registration of opticians

RABELAIS RETRANSLATED

MEDICINE can claim one figure among the giants of li ture, but Dr Rabelais has suffered in English eyes bec of weaknesses in translation

Urquhart started the trouble, his version, completed Motteux, is most widely known and has always been accla as a masterpiece—a transmutation rather than transla But a mutation took place, for Urquhart laid emphas the humour and its saltiness, the satirical exposure of m priests, and religious abuses tended to be obscured. infrequently, moreover, the original became expanded, Urquhart was a sensualist for words, where Rabelais one, he could not resist two or three more to roll his ton This does not make for ease of consecutive reading, and we dip into some sections and disregard others These fa and a failure in recent centuries to understand the backgr of the times of both Rabelais and Urquhart, has led to special connotation inherent in the word Rabelaisian

At the end of the last century W F Smith tried his h but without success The times were prim, and Sm igs and pen recoiled from translating five chapters whose er was repugnant to him the account of Gargantua's o of the finest torchecul or wipe breech, came under his Again consecutive reading is frustrated—in this edition tylised English and though the translator's annota are valuable one sometimes suspects that Rabelais did ntend his classical allusions to be taken so seriously for as often mocking the learned The edition was limited 0 copies and so is little known

1948 Rabelais began to revive under the loving care of Powys whose translation of selected passages left ing to be desired except that he should complete the work. through the enterprise of Penguin Classics and the urs of J M. Cohen Dr Rabelais has at last received his two years after the quadricentenary of his death. This t translation[1] achieves the seemingly impossible of nting the histories of Gargantua and Pantagruel in a ner which all may read with ease and if blessed with the cence of vulgarity, with delight For us Rabelais's works especial value for they are written with medical know e and the satire will not be lost on those who are aware e vanities in academies of medicine and the priesthoods sychiatry J M Cohen has made it possible to pick up work at the end of a tiring day and read with enjoyment the translation is into simple direct English which our ration may understand

versity of Cambridge

n June 29 1955 the degree of B CHIR was conferred on following:

M. Ackery Eva D Alberman, Elaine M Allen R. G Anderson Ashby N K. Ashurst D H Ball, C N Barnes, J W Bennett, Bevan, R. K Birch, V R. Blatch, D J Blomley A H omley Monica M Brain E C Bramwell Anne Bromley L G M Brookes John Brothwood Katharine M Burkill Childs, J O T Church, J R. Cobbett R. H L Cole J B e E W G Davies, M. J R. Dawkins, Patricia A Dinkel bus Dominian, C J Drouet D A Earnshaw Gillian J shaw J A. Eddington, David Emerson T H English, R. E er M. G P Fisher P C Gautier-Smith P M. S Gillam Goldman J V Gosling, A J Haines, Alan Haworth, D C C F Herridge W M Hollyhock O G Hyder, Jack Insley John, R. D Jones W R. Keatinge, J H Kelsey Mary G J P Knowles Wilfred Leach D E Longden, D J gan W J L. McKee W S S Maclay F B Mann Veronica r J R MacG Millar A B Miller Richard Moulton R. E. Eva M. I Nobel W B Obank, J L O Sullivan D J, r F A Perera J H L Playfair, A W Prentice Samuel man David Read, Mark Ridley I V Rycroft, M. E. R n, I H. Scott Stanley Sheldon A J Shaw G W T Smith Smith Martin Spiro D A Strong J L. Struthers, Frank ers J M Tellwright, M W Tisdall John Vinnicombe een M. Wilson J E Woodyard M T C Wright, Clara C.

ersity of Liverpool

recent examinations the following were successful

D—E T Downham C H Jones R B McConnell R. H ew J Larkhouse Patricia M Russell

B Ch.B—Gwendoline M Clayton (with first-class honours) a S. Strelitz (with second-class honours) Sheila I Angles, W Anthony, J E Barclay A V Basil R. F Blair B K er J B Cardwell, W J Carter W H Cookson, J L Crane Crosbie J A. Culshaw, E E Cureton, Pamela A Deane Edwards, O Edwards, G H Evans G P Evans, Mary D Wendy A B Fairhurst P W Ferguson A Fowden eth A Gilberry, Patricia M. Hastie J I Hawe F Horshon M. Hillary, A L Hodgson J D Jones, M V Jones, ollner, Emily M. Kerr Barbara J Ledson Nancy G Lord aret H Macaulay D H Macleod, Sheila G Maddock, e G R. Mahabir M D Manson Sheelagh I Marsh C. ell, J Meecham, Alison V Milles J G Morris Patricia A Shirley P K Morris D S Orr, J P O'Shea, T Owen Quayle D R Raw Pamela A Roberton D V Roberts, Roberts, N O Roberts, Muriel G Robinson, Mary M. Scott Simpson, D J Smyth, B E. Stober, Margaret M Summers ine E M. Topping, G H Ungar, I D B Wallice P Watson, Wild C. W L Williams, K Wilson, Elizabeth A Witham, C Wood

I.R D—A Bhattacharyya, Constance M Davis H E Jones, Murray I P Smyth

I.R.T—B B Roy

H—Jessie I Anderson S M Bieber Sheila C Blackburn ra Briggs R. D Choudhury Diana Daniel Phyllis J Disley Evans R. G Hendry Irene Lynch C A McKeagney, R S T O'Shea, F Seymour J M. Sword J C Taylor A. H Wilde

ersity of Leeds

degree of M.D has been conferred on A S Woodcock he degrees of M B CH B on Margaret Gatecliff

University of Durham

At congregations on July 1 and 2 the following degrees and diploma were conferred

M D—Stanley Bell J P Birkett, B M. Herbertson A R. Horler E G Knox S G Owen G E Paget K V Robinson

M.B ,B.S— Anne Allison D O Asekun, Audrey M. Ashworth Patricia Atkinson Vivienne Bartram, J R. Bell D A Black, William Bowman Frederick Clark, D M Conning Sheila M. Duffie H P Engel Joan Errington, K. B Forster M J Fry J S Garwood O B Gibson Patricia M. Hickey J D S *Hodgson J E Hume J M Hunter G D Harrell* Mary A M Irwin E T F Kent, Barbara J Larard N H Lawrence Raymund Layton G F Lewis, C C McGregor Ian MacLeod Peter Morgan P C Murray N N Nelson, Harry Neubauer G O Ogunmekan G T Perks Newton Potter R. C Richards Vivien A Ropner Margaret Saint G S Semb J H T Shaw A. R Smith A H Smith, D R. Smith, R N Spencer-Gregson T I Stewart Brenda J Stockman J L Thomas R. S Thomson Wanda Trousdale J C Wallace M. Y Walls Jeffrey Westwood John Williams Maidie E. Wilson, Sheila L Wilson Arnold Worlock, John Wright Raymond Ziesler

D I M—Gertrude Latner

* In absentia

University of Manchester

At recent examinations the following were successful

Ch.M—R. T Grime.

M D—F L Firth Kenneth Harrison Ronald Hinchcliffe James Sharp (with commendation), J P Smith (with commendation)

M B Ch.B—Harold Fox, I B Houston, Donald Mayor (honours) Howard Allison J O Bell Wendy Bellhouse A. J Benson Michael Bourke R. M. Briggs D H Bunting A. D Calderbank, Gerald Caplan, L. M. Carter M. A Casson C B Cohen E I Copp G A Davenport, B B Done Jean Dubberley, Peter Dutton I J Ellis, Frank Fletcher Beryl M Foley Peter Garner A O Griffiths, Antony Hargreaves Geoffrey Hartley G M. Hunter J P Lawson, S G Leech, J S McGrail, N D Royle Arthur Rushton P F Schofield John Southern T W Stewart T B Stretton Teresa M Swift M. R. Thompson, F J Unsworth, Ernest Unwin M. J Viney Mary R. Walker Kathleen Whale Lois R. Whyatt Freda Young

University of Sheffield

Dr V R Pickles has been appointed senior lecturer in physiology and Dr J B Coakley honorary demonstrator in anatomy Dr H F West has been appointed to the Nuffield research fellowship in rheumatic diseases He will continue his active directorship of the Sheffield centre for the investigation and treatment of rheumatic diseases and will hold the fellowship on a part-time basis.

University of Bristol

Mr J Angell James has been appointed head of the department of laryngology rhinology and otology on the retirement of Mr E Watson Williams on Sept 18 Dr J H. Middlemiss has been appointed lecturer in-charge of the newly established department of radiodiagnosis, and Dr R C Tudway lecturer in charge of the new department of radiotherapy

University of Glasgow

On July 9 the following degrees were conferred:

M D—J B Clark, G H Collins R. I S Dunn (with honours); W McL. Gregor J S. McMillan (with commendation)

Ch.M—K. C. Wybar (with high commendation)

M.B Ch B—John Bain, W W Baird, William Bargh, A S Barr J D Barrie, Joan A. S Blair D W Blake Isabel F Bowyer S E Brill D W A Brown Sheila M. MacN Brownlie I J Burns, D J C. Cameron, A. G M. Campbell, H P. Camrass L G Capaldi (with commendation), I A. Carr A C Chalmers, B I Chazan C E. Coley, F E Colon Ramos R. H Cox, J W Crawford W A Crosbie, Anne F Cullen Isobel Cunningham, E T Cusick, Fiona M. Davidson S I Davidson J I Deans W H Dickson Elizabeth L R. Douglas Sheila M. Driver George Duncan (with commendation), Sheila L B Duncan (with commendation) M. G Dunnigan J A Evitt, D J M. Ferguson J G M Ferguson Hugh Forrest, H J Freedman Sheila C Gardiner (with commendation) D A M Gobbie Iris L J M Gibson Margaret G Gillan J S Graham, P B McN Gray J A Hamilton, Elizabeth A. Hardie, J C Hay, Alexander Henderson Catherine C. Henderson, J G Hill, J A. Hynes L W Jamieson, Flora M. Judd, David Kennedy G E Kennedy W W Kennedy, A. H Laing Patricia Laird William Lang Saul Levenson Sidney Levine, Jane B Lindsay J L Lindsay V S Livingston I G Livingstone, William Logan, W C Love, Henry MacAnespie J V McBride L J McCarroll, W M. McCrae, C J McCrone, J McD McCulloch A P Macdonald H D MacEwan I R McFadyen, James McGeachie K L. McGeoch Janie M. McIntyre N F McLellan W McL. McLenachan, Arthur McQuaid W M. McQuillan A M. Matthews J S Millar R. G Milne Shams ud Deen Bhanji Mohamed (with commendation) J G McL. Mortimer, Margaret H Murray A J B Neil William Neilson, Sheila C C Nisbet Graham Noble I B O Halloran Anne O'Neill, R. C. Paterson Andrew Patrick Alexander Pringle (with commendation), Gwyneth J Reid, H C Reid, J M. Reid W H. Reid A. D Revels, Nirmal Singh Rihal Elizabeth R J Ritchie Margaret E. G Ritchie F L. Russell A McA Scott, A C. Scott jun (with commendation) D J S Shaw, R. W G Smart, A J Smellie Anne M. S. Smith M. A F Smith, J S K. Stevenson R. S Stevenson (with commendation) A. T Stewart J T Stewart, J F W Sutherland Edna Thomson J N S Thomson, A K Walker C J White

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rgantua and Pantagruel By FRANCOIS RABELAIS, M.D Physician Montpellier and Lyons. Translated by J M COHEN London: Penguin Classics. 1955 Pp 712 3s

University of St Andrews

On July 5 the following degrees were conferred

M.D—J R Anderson (highest honours and university gold medal), Katerina Rhodes (commendation and a Rutherford silver medal), E S Meek, Alexander Inglis

At the final examinations for the degrees of M B, CH B in June the following were successful

P J Dennis, N B Scrimgeour, Thomas Duncan, D W Eason, N B Rewcastle (with commendation), K M Armit, F C Armstrong, P R Baker, G G W Bennett Joy D Bowman, H M Brodie, J A Carne G D Chisholm, K G Cook J A Cooper, Margaret M R Daly, G C A Denholm, A R R Eason, T A English, W G Fairchild R A Forrester H C Fowlie, A W Gillon, J C Griffiths, Elizabeth Heathcote, W P Hendry, K I M. Hogg William Kerr J A. Kirkland Andrew Leeming, I J MacBean, Duncan Macintyre, Robert McLaren, R B Malcolm W G Mathews, Francis Mills, J D Muir, Muriel K Nicoll, D M Norrie, Millicent B O'Meara, Elma E Rankine, David Redstone, C R Rizza H R Seddall, June M B Spain A F Taylor Ann J Temple Raston Joyce E Thicknesse, W J Thomson, J S Wallace, D J Ward, Margaret H Watson J P L Welch, Edith J Wilson, I D Wilson, K W Wilson, W M Yeaman, Joyce A Yorex

University of Aberdeen

On July 8 the honorary degree of LL D was conferred on Prof John Cruickshank

The following degrees have also been conferred

M D—I R Innes, A A Shivas (honours), K O Watson (commendation), W H P Minto

M.B Ch.B—R G Lascelles, Violet McA Wyllie (honours), K D Sargison, Valerie M M Kay, Janet Wynne Edwards, J A Wood, R C Campbell, George Cowie (commendation), Nancy Badenoch, Margaret E Beveridge, R G Bruce A W Clubb, Isla Craig, C S Crockett, Patricia M Cumming, Margaret I Davidson, R. M. Davidson, T L Fallowfield, J A Findlay, G L Forral, Alexander Geddes, Doris M Geddes, H R. Gibson, J M D Gill, D G Gray Ronald Gray, David Hall, J E Holliday, W A Irvine, Elizabeth D Jamie, Sheila Jones, Margaret E Keay, L G Laing, A N Laird, G J B Leslie, A I Littlejohn, F P Lynch, Elizabeth M McConachie, J B MacDonald Daniel McLeman, W D Masson, Elizabeth W Michie, A M. Milne, D D Milne, Ivy R Moody H D R Munro, Campbell Murray, Mary A B Murray, W D Ogston, T W Patey, Dorothy M. Porter, Anna I Robertson, C F Roe, D I Ross, Ian Ross, G B Scott, Alistair Sinclair, William Strachan, Ian Stuart, S S Sutherland, J M. Taylor, C D Thomson J McN Thomson, Moira M. Wilson

University of Dublin

On July 5 at the school of physic, Trinity College, the following degrees were conferred

M.D—H G Nelson, A. T F ffrench O Carroll, R. J Weir

M Ch—J W Jackson

M.B, B Ch B.A O—B E Barrett Aileen E F Benson Anne H Bristow, Dorothy M Broomfield Gillian L Browne, Shirley D Campbell J J Cockburn, Patricia M Conroy, K J Cowen, Patricia J Dockery, F O Doseckun J H N Ferris, W T J Gogan M K Hay Patricia C Hodson, Janet Hogan, Barbara Holmes M G D Hurly, Dorothy I Jones, R C Keays J J Kevany, E F Labelle, A D McGugan, Laura Maslin Kathleen M. Muirhead C C C O'Morchoe, C J B Orr, J D Page, Walter Pollard, Patricia J Richardson, H W P Rooke J A Scott, A W C Stewart, I J Temperley, G A Weaver, C D Whitfield, Jean Williamson, T J Woods, Leonard Zimich

Queen's University, Belfast

On July 7, the honorary degree of LL.D was conferred on Sir Russell Brain, P.R C P, and on Sir Harry Platt, P.R C S

Royal College of Surgeons of England

On July 7, Mr A Lawrence Abel was re elected and Mr Harold Edwards and Mr R H O B Robinson were elected members of the council The result of the poll was as follows

	Votes
ARTHUR LAWRENCE ABEL (Princess Beatrice Hospital)	911
HAROLD CLIFFORD EDWARDS (King's College Hospital)	864
RONALD HENRY OTTYWELL BETHAM ROBINSON (St Thomas's Hospital)	836
J B Oldham (Royal Liverpool United Hospital)	821
Rodney Maingot (Royal Free Hospital)	719
Henry Osmond-Clarke (The London Hospital)	685
Norman Capener (Royal Devon and Exeter Hospital)	609
H P Winsbury-White (St Peter s St Paul's and St Philip's Hospitals)	307

In all 2118 fellows voted, and in addition 20 votes were found to be invalid

On Tuesday, July 19, at 5 P M, at the college, Lincoln's Inn Fields, London, W C 2, Dr Frederick Coller (Ann Arbor) will give the Moynihan lecture, on *Indications for and Results of Splenectomy*

British Association of Urological Surgeons

The following officers have been elected for 1955-56

President, Mr R H O B Robinson, immediate past president Mr Terence Millin, vice president, Mr Arthur Jacobs, hon treasurer, Mr J G Yates Bell, hon secretary Mr Howard G Hanley, hon editorial secretary, Mr David Band, other members of council, Mr A W Badenoch, Mr T L Chapman, Mr J D Fergusson Mr Ashton Miller, Mr T W Mimpriss, Mr E W Riches, Mr J Cosbie Ross, and Mr J Swinney

Faculty of Radiologists

The following have been elected officers for 1955-56

President, Dr Whately Davidson, vice presidents, Dr E Davies, Dr W Roy Ward, hon treasurer, Prof D W Sm hon secretary, Dr R A. Kemp Harper, hon editor, Dr T

Royal Faculty of Physicians and Surgeons

At a meeting of the faculty on July 4, with Prof Sir Alstead, the visitor, in the chair, Thomas Gibson and H Hutchison were admitted to the fellowship

Order of St John of Jerusalem

The Queen has sanctioned the following promotions in, appointments to, this order

As Bailiffs Grand Cross—Lord Webb Johnson, G.C.V.O, D.S O, F R.C.S, Sir James Elliott, V.D, F R.A C.S, Sir Hugh M V O, F R A C.S

As Knights—F W Law, F.R C S, Colonel C P Gaboury, M D

As Commanders—Ivy MacKenzie, M D, Colonel T B C B E, M C, F R C P E, G E Sawdon, M B, C P Cragg, J A E M Hadley, F R C S Major G R H Wrangham, N A. Rymer, M B, L W Hefferman F.R.C S, C Cameron, M D, Surgeon Rear Admiral S G Rainsford C.B., Q H P, Air Vice Marshal J C Neely O B.E, M R C.S, J Farlane, O B E, F R C.S, Lady Duke-Elder M B

As Officers—J C P Bayley L.M S S A, P B Wood, M.B., General E P N Creagh, C B, M R C.P, Q.H.P, Major-G Richard Murphy C B., C.B E., M.B Q H.S, Colonel C K D T.D, M B, W H Shilvock M B, Robert Rutherford, T.D E I Puddy, M B, N R Rawson, O B E, M B, Surgeon C S G Weldon, O B E, M B R.N, Squadron Leader T A. M B, Colonel R G W Olleranshaw, T D, B M, J B. B M B, Prof W A E Karunaratne, C.M G, O B.E, M.D, J B B.M, D B McVittie, M B, Colonel G E Wight, O B.E., M.D.

Society for the Study of Addiction

This society will hold a meeting at 11, Chandos S London, W 1, on Tuesday, July 19, at 8 P M Dr W R will give the presidential address, on Medical Societie International Understanding, and afterwards there will international symposium on *problems of alcoholism* and addiction in different parts of the world

R.A M C Consultants' Dinner

The annual reunion dinner of honorary consultants Royal Army Medical Corps was held at the head officers' mess, Millbank, S W 1, on July 7 Lieut.-G Sir Frederick Harris, director general, Army Medical Se who was in the chair, proposed the toast of The Cons to which Brigadier Ralph Marnham replied

National Insurance Benefits Payable Overseas

By regulations, which came into force on July 11, insurance retirement pensions and widows' pensions future be payable anywhere in the world Until no benefits have only been payable in the Commonwealth countries with which reciprocal agreements have bee Any pensioner overseas who is not in touch with the should write at once to the Ministry of Pensions and Insurance, Overseas Group, Newcastle upon Tyne

National Register of Medical Auxiliary Services

The Board of Registration of Medical Auxiliaries 19 years ago introduced a system of voluntary reg for medical auxiliaries, has published its register thu the following six sections chiropodists, dispensing operating theatre technicians, orthoptists, speech th and radiographers Free copies of any, or all, sections had from the registrar of the board, B.M.A House, T Square, London, W C 1

New School for Deaf Boys

A new residential school, to be known as Burwoo School, is to be opened near Walton on Thames in Sep to provide secondary education with a technical or for deaf boys It will be the first school of its type country

The school will take about 30 deaf boys over the age of have achieved some command of language and have learn speech as their normal means of communication The sel pupils will be the responsibility of the school governors. T will be under voluntary management and will be recognised Ministry of Education The premises have been provided Patricia Lennox-Boyd and her father, the Earl of Iveagh.

CORRIGENDA *Maize and Pellagra*—In the pre communication by Dr R Braude and his colleagues (A p 898) the fifth column of the table should have been "Food intake (lb per day)"

Volume of Body-fluids—In our account last week of the Renal Association's meeting, we reported Mr as saying that *tubular* function must be modified by He was referring to *glomerular* function

NORADRENALINE
HYPOTENSIVE STATES AND SHOCK*
PHYSIOLOGICAL ASPECTS

U S VON EULER
M.D Stockholm
ROFESSOR OF PHYSIOLOGY UNIVERSITY OF STOCKHOLM

ORADRENALINE does not seem to have been used as a edy before 1948, in spite of the fact that it was thesised already in 1904 by Stolz and recommended therapeutic use by Biberfeld in 1906 Stolz pointed that the drug had strong pressor actions and that it arently was less toxic than adrenaline This was her emphasised by Biberfeld and apart from the gested use as a pressor drug he proposed its use as a oconstrictor in local and spinal anæsthesia.

n attempting to obtain a background for the under ding of the therapeutic actions of noradrenaline and idea of its possibilities in this respect it would clearly helpful to consider its physiological properties and ions as well as the conditions under which it is released hough the picture is by no means complete it appears ifiable to state that we now have a fairly clear idea he physiology of noradrenaline

Occurrence and Distribution

s adrenergic nerve transmitter noradrenaline is a ular constituent of the postganglionic sympathetic renergic) nerves and occurs for this reason in all ans supplied with such nerves (Euler 1946 1951) er degeneration of these nerves noradrenaline largely ppears in the corresponding organ showing that no er source of importance is present On regeneration the nerves noradrenaline reappears in the organ odall 1951) From the amounts present in an organ as the spleen and its nerve trunk we have reasons sume that the actual content in the nerve endings is er high Moreover resynthesis must occur at a rapid since even during prolonged stimulation of these es the transmitter is released at an undiminished and the organ maintains its content

he adrenergic nerve-supply is chiefly directed to the ular bed; consequently the vascular wall is relatively in noradrenaline (Schmiterlöw 1948) There are large rences in the relative nerve-supply to the vessels in rent regions as reflected by the noradrenaline content arious organs Thus the organ content may indicate number of noradrenaline producing fibres to the esponding organ There also seems to be a certain tionship between the supply of adrenergic fibres, as ged by the noradrenaline content, and the sensitivity he vascular bed to the drug in different organs While vessels of the spleen the skin certain glands, the rt and the kidneys are relatively rich in constrictor es and respond vigorously to noradrenaline other ns such as the lungs, the brain the liver, and volun muscle contain a smaller number of vasoconstrictor es and also give a weaker response to noradrenaline.

oradrenaline is also a regular constituent of the enal medulla (Holtz et al 1947) The relative amounts drenaline and noradrenaline vary widely, however ween different species. In adrenal glands from man ut 16% of the catechol amines are noradrenaline total amount of noradrenaline in both adrenal glands man is 1–2 mg which is considerably less than the ount present in other organs

Actions

he circulatory actions of noradrenaline are th[illegible] spicuous ones and also form the most importa[illegible] for the therapeutic application of the drug Important contributions as to its circulatory effects have been made by several research groups It was shown by Goldenberg et al (1948) that noradrenaline raises the systolic and the diastolic blood pressure without increasing the cardiac output. This is in contrast to adrenaline, which in physiological doses augments the cardiac output causing only a slight increase in mean pressure It can be concluded from these observations that noradrenaline raises the peripheral vascular resistance whereas adrenaline actually lowers the total resistance—i e causes vasodilatation as a net effect The explanation of this somewhat unexpected fact is that adrenaline lowers the resistance in certain large vascular areas of the body Through the important research of Barcroft Edholm, Greenfield, and their co workers (see Barcroft and Swan 1953 Whelan 1954) it has been revealed that adrenaline causes vasodilatation of the vascular bed of the skeletal muscle, which owing to its size, largely determines the over all effect Noradrenaline, on the other hand, usually causes vasoconstriction in this area In the liver a similar difference in action is noted (Bearn et al. 1951)

The vasoconstrictor effect of adrenaline on the skin is even more pronounced than that of noradrenaline On the kidneys the increase in resistance is about equally large from equal doses of adrenaline and noradrenaline but considering that the mean pressure is raised considerably more by noradrenaline it follows that the renal blood flow may be less impaired by this drug than by adrenaline

The effect of the two drugs on the heart is of particular interest When tested on an isolated perfused heart both compounds have a similar action, consisting in an increase in frequency and augmented force of the beat In the living organism the positive chronotropic action of noradrenaline is often masked by a reflex bradycardia A study of the response of the coronary vessels has shown that both drugs cause vasodilatation in moderate doses while noradrenaline dilates even in high doses (Smith 1954) The tendency to produce arrhythmia and ectopic excitation is rather less for noradrenaline than for adrenaline There is good reason to assume that the so-called wasteful O_2 consumption caused by adrenaline is not caused to a similar extent by noradrenaline

It has not been possible to analyse and compare the effects of adrenaline noradrenaline and vasomotor stimulation for each organ but there is good evidence that noradrenaline, like vasomotor stimulation, causes general vasoconstriction and rise in blood pressure while the circulatory effects of adrenaline show a widely varying pattern

The differences in action of noradrenaline and adrenaline on the vascular system have a counterpart in the [illegible] nora differences in their metabolic actions Thus can [illegible] of au *for example in the total oxygen consumption* [illegible] ue hence raised [illegible] by adrenaline but [illegible] ought i unchanged by noradrenaline A similar [illegible] active [illegible] noted [illegible] and lactic acid [illegible] essure In metabolic [illegible] The effect on the [illegible] effectively also [illegible] with adrenaline [illegible] ocardium adrenaline The same is true for the trans[illegible] is a therap [illegible] skeletal muscle [illegible] lso serves a [illegible] in psychic effects [illegible] e heart and [illegible] a feeling of anx[illegible] al 1953) [illegible] by noradrena[illegible] [illegible] question of the [illegible] sympathetic syst[illegible] [illegible] prevailing for [illegible] worked simultan[illegible] [illegible] evidence has [illegible] on the [illegible] [illegible] functions [illegible] of the adr[illegible] various conditions, and on the production of adrenaline and noradrenaline in the body estimated by means of the urinary excretion

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* o Mitchell lecture delivered at the University of [illegible] on April 13 1955

Release of Medullary Hormones

Analysis of suprarenal venous blood in the cat has shown that when general blood-pressure homœostatic reflexes are elicited—for instance, by carotid occlusion—the adrenal medullary secretion chiefly consists of noradrenaline Under other conditions such as afferent-nerve stimulation of the sciatic nerve or brachial plexus a larger proportion of adrenaline is secreted Hypothalamic stimulation causes prevalence of either adrenaline or noradrenaline in the secretion, depending on the site of stimulation (Folkow and Euler 1954) (see fig 1) Furthermore, insulin hypoglycæmia causes a great increase of adrenaline, while hyperglycæmia after injection of glucose selectively depresses adrenaline secretion (Dunér 1953) leaving the noradrenaline secretion almost unaltered These results indicate that adrenaline and noradrenaline are released separately—which is not surprising in view of their different actions The implication is obviously that adrenaline and noradrenaline are released from different cells and that these cells have to be differentially innervated In fact, recent studies by Hillarp and Hokfelt (1953) and by Eränko (1955) have revealed two different kinds of cells in the adrenal medulla, one presumably producing adrenaline and the other noradrenaline

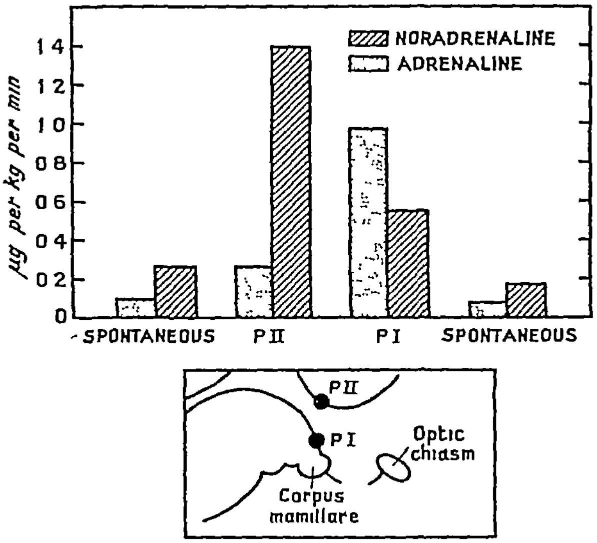

Fig 1—Effect of hypothalamic stimulation on secretion of adrenaline and noradrenaline from one suprarenal gland in the cat. P I and P II, points of stimulation (Folkow and Euler 1954)

Excretion of Adrenaline and Noradrenaline in the Urine

The adrenal medullary secretion, unfortunately, cannot be analysed except under rare conditions, and it has therefore become desirable to obtain some other way of estimating the total production of catechol amines in the organism The estimation of noradrenaline and adrenaline in peripheral blood still presents great difficulties and can hardly be used for systematic studies as yet However, it is possible to analyse the urinary content of noradrenaline and adrenaline, which gives a relative measure of the amounts released during a certain length of time Of administered adrenaline and noradrenaline a fairly fixed proportion—about 2–3%—is excreted in the urine A study of the diurnal variations of the catecholamine excretion has shown that during bed rest the figures are low—2–4 *mμg* adrenaline and 8–15 *mμg*

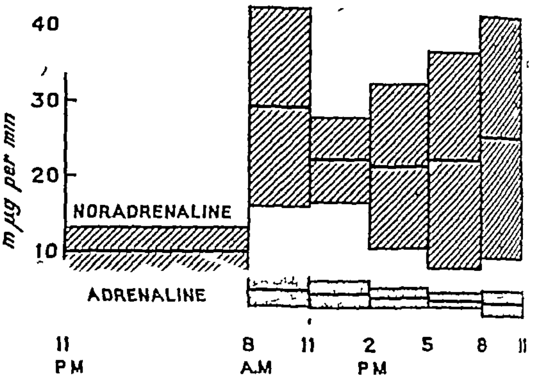

Fig 2—Diurnal variations of adrenaline and noradrenaline urine in 9 healthy subjects (Euler and Hellner-Björkman 1

noradrenaline per minute (in free form)—while ordinary daily activities the excretion is about tw high (Euler and Hellner Bjorkman 1955) (fig Normally the excretion of noradrenaline is far gr than that of adrenaline Urine analysis has shown after adrenalectomy most of the adrenaline has appeared while the noradrenaline is practic It can therefore be concluded that the urinary adren is derived from the suprarenals The noradrenaline then originate from extra-adrenal sources and presum from the adrenergic nerves

Particularly illuminating are the results of pressure homœostatic reflex activity When a sub placed on a tilting table and the position is changed recumbent to head up at 75° the excretion of nor aline is increased considerably more than that of a aline (Euler et al 1955) In the rare cases of p hypotension the noradrenaline excretion is ver (Luft and Euler 1953)

Strenuous muscular work represents a form of which is accompanied by a distinct increase in excretion of both adrenaline and noradrenaline—tenfold Wada et al (1935) found that the in medullary secretion is more closely correlated with degree of fatigue or stress than with the actual of work performed The increase in noradren excretion during muscular work may be correlated the compensatory homœostatic reactions directed a the vasodilatation in skeletal muscle If a hyperte patient is subjected to a brief period of muscular after treatment with a ganglion-blocking agent, hexamethonium, he may display a serious fall in b pressure and collapse symptoms

Purely mental stress seems to be accompanied by increased excretion of adrenaline only

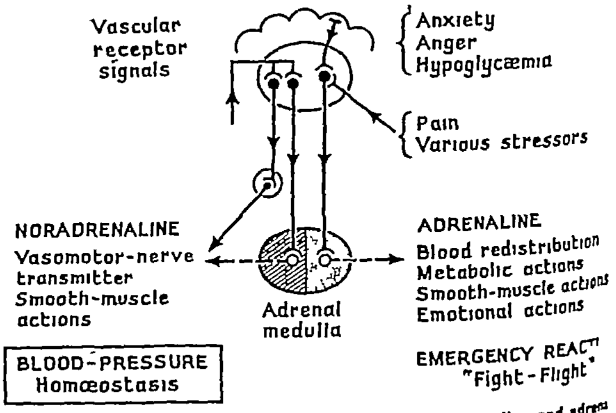

Fig 3—Actions and mechanism of release of noradrenaline and adren

Functional Differentiation in the Sympatho adrenal System

If a theory of the functions of the two physiologically curring catechol amines is based (1) on their physio gical actions and (2) on the conditions of release in the dy the evidence can be summed up as follows

Adrenaline causes a redistribution of the blood from e skin and the splanchnic region towards the skeletal uscle and the liver with little rise in the mean blood essure In addition it causes a variety of smooth uscle actions stimulates several metabolic processes d elicits characteristic emotional alterations all serving at has been termed by Cannon emergency functions e actions of adrenaline are not specially directed wards safeguarding the systemic blood pressure

Noradrenaline on the other hand primarily stimulates e heart and constricts all vascular beds except the ronary vessels which are dilated Other actions are less conspicuous and seem to be of less importance seems to have a selective effect towards raising the ood pressure and maintaining blood pressure homœo asis. In other words noradrenaline appears to be the ysiological pressor hormone and adrenaline the fight ght flight emergency hormone

Noradrenaline is reflexly released from the suprarenal dulla as well as from the vasoconstrictor nerve endings en blood pressure homœostatic reflexes are elicited by fall in pressure Adrenaline on the other hand is ectively released during various forms of stress ysical and mental and during hypoglycæmia (fig 3)

We may therefore regard the two hormones as two tinct tools serving entirely different functions The t that both stimulate the heart dilate the coronary ssels and constrict skin and splanchnic vessels must be taken as signs of similarity in general function but y only represent instances in which the functional terns overlap

Release from Chromaffin cell Tumours

t was first demonstrated by Holton (1949) that chrom n-cell tumours contain noradrenaline either alone or ther with adrenaline The release of large quantities hese compounds into the blood stream is reflected in increased excretion in urine (Engel and Euler 1950) excretion may be increased up to a hundredfold ch has become the basis of what appears to be the st specific method of diagnosis of phæochromocytoma. much as 9000 µg has been found in the urine per nty four hours, probably corresponding to a release the circulation of about 200 mg per twenty four urs

part from its diagnostic value this finding also nonstrates that large amounts of noradrenaline may continuously released into the circulation without sing grave injury

n cases of phæochromocytoma where the release of adrenaline maintains the blood pressure at 200 mm or more there are often very few other symptoms is the basal metabolic rate and the blood sugar level y be normal or only slightly elevated.

Noradrenaline in Hypotensive States

he rôle of noradrenaline as physiological vasocon ctor and pressor hormone suggests that it should be value in the treatment of hypotensive states and in ain conditions of shock The use of noradrenaline in field was inaugurated by Goldenberg et al (1949) and subsequently been developed in various directions ourable results have been réported in a variety of otensive states but in other conditions the response been less impressive It is obviously of interest to out when refractoriness to noradrenaline occurs and reasons for this.

n the first phases of hæmorrhagic shock the blood ssure homœostatic mechanisms are maximally engaged, and it is hardly to be expected that administration of noradrenaline would essentially improve the condition even if it reinforced the effects of endogenously released noradrenaline Compensation for the fluid loss is often enough to restore the normal circulation in the first phase of hæmorrhagic shock Unfortunately the condition is not a static one but gradually deteriorates *into the irreversible* phase, owing to progressive damage to tissues and vessels partly caused by oxygen lack Concomitantly the reactivity (Page and McCubbin 1954) of the vessels gradually decreases, manifesting itself in a decreasing sensitivity to noradrenaline and other pressor drugs The time-factor therefore becomes highly important in the problem of restitution After a certain time noradrenaline—from the vascular nerve endings, the adrenal medulla, or the injection syringe—becomes more or less ineffective If the condition has reached this stage the treatment must follow other lines

The absolute refractoriness against noradrenaline is however preceded by a period of relative refractoriness *during which the endogenously released noradrenaline* is not sufficient to bring the blood pressure back to normal During this stage noradrenaline may be efficient in restoring the pressure It follows that in conditions of fluid-compensated shock the active pressor therapy must be instituted at an early stage as emphasised by several workers (Shirley Smith and Guz 1953)

Similar conditions may result from toxic influence on the vessels during infections

It is sometimes argued that the vessels are maximally constricted during shock even after compensation for *fluid loss In such cases* the vasoconstriction may largely be apparent only since the low arterial pressure offers only slight resistance even to a weak vasoconstrictor tone whatever its cause may be As Burton (1951) showed, the critical closing pressure of small vessels may be considerably above zero

Under these conditions a large proportion of the blood is pooled in dilated venules or veins and functionally excluded from the circulation Evidence for this view has been produced by Nylin and Pannier (1947) who found that the mixing time after administration of labelled erythrocytes may be greatly prolonged in shock

The vascular responsiveness is usually good in other hypotensive states such as cardiogenic shock reflex vasomotor collapse, intoxication with centrally acting narcotics, after administration of certain drugs (such as choline esters and ganglion blocking agents) and after removal of chromaffin cell tumours Although the condition may often appear alarming the chances of restoring the blood pressure and satisfactory blood circulation with noradrenaline are generally good (Churchill Davidson 1951)

Especially in cardiogenic shock the use of noradrenaline has been recommended by several groups of authors (e g., Miller et al 1953) The mechanism of the beneficial action of noradrenaline is probably to be sought in the improved coronary circulation caused by active vaso dilatation and by the raised aortic pressure In this way new collaterals may develop more effectively and contribute to better irrigation of the myocardium

In the evaluation of noradrenaline as a therapeutic agent it is not always realised that it also serves as the chief adrenergic neurotransmitter of the heart and is a potent stimulator of the heart (Gazes et al 1953)

Noradrenaline constitutes substitutional therapy in all conditions in which the natural transmitter release is inhibited (vasomotor centre blockade ganglionic blockade spinal anæsthesia neurogenic shock sympathectomy postural hypotension) Similarly the hypotension after removal of chromaffin-cell tumours develops as a result of removal of the excess of noradrenaline.

As pointed out above good vascular reactivity is a prerequisite for the efficacy of noradrenaline Since the vessels tend to lose gradually their responsiveness to physiologically released or exogenously added nor adrenaline during prolonged low blood-pressure it is obviously of the greatest importance to institute active therapy without delay

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THE TREATMENT OF PULMONARY TUBERCULOSIS *

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III

In my first lecture, I touched upon certain trends in mortality and morbidity, and discussed in broad outline those features of the morbid anatomy of pulmonary tuberculosis which are relevant to its treatment In the second, I dealt mainly with antibacterial treatment All these problems can, at least in principle, be studied in a precise scientific manner, epidemiologically, in the laboratory or in organised therapeutic trials

In this lecture I shall discuss medical and surgical collapse therapy and lung resection, which are required only to deal with those cases in which the mechanical factors discussed in the first lecture are interfering, or are thought likely to interfere, with the stable healing of the disease In other words, these additional methods are applicable only to selected cases of pulmonary tuberculosis—those in which the disease is or has become more or less localised, has not healed or is judged to be unlikely to heal as a result of more conservative measures, and is anatomically and pathologically suitable for the therapeutic measure proposed About none of these methods is statistically based information concerning efficacy available Indeed it is doubtful whether in practice such information could be obtained, in view of the great variety of anatomical distribution and pathological type of lesions in pulmonary tuberculosis Many combinations of different procedures may be called for in dealing with individual patients It is clearly impossible to hope for statistical appraisal of all of these combinations of procedures , and, especially in a disease so in its manifestations and natural course, judgme the choice of therapeutic methods must be based only upon whatever statistical information is a concerning single methods of treatment of spe defined types of disease, but also upon clinical experie The published results of those who have applied o more of these specialised methods to a large numbe patients are valuable and informative , but since i impossible to give the reader complete informa about the original state of the patients treated, since, for the reasons I have already stated, are in practice usually not available, these results be of the same value to an experienced physicia the study of his personal cases

I hope therefore that I shall not be thought t inconsistent in having referred extensively to the of large scale controlled trials in my second dealing with antibacterial treatment, a meth universal application , while in this lecture, dealin methods applicable only to selected cases, I shall mainly to my own experience of a relatively small of cases The number of cases to which I shall is indeed much smaller than those in published but the figures may have some special validity in they are based upon the results obtained by chosen individually for each case by one ph and nearly all the patients have been followed personally up to the present day

Artificial Pneumothorax

I shall first discuss artificial pneumothorax, wh at present a subject of some controversy The freq with which this measure has been used has dec remarkably in the past ten years In some cent use appears to have been entirely abandoned I already indicated that I consider such an extrem mistaken There can be no question that in th excellent results were obtained with artificial pn thorax The results which could be obtained ar illustrated by the careful statistical report on the results of artificial pneumothorax in patients t at the Brompton Hospital Sanatorium, Frimley (Carter et al 1952) This report is based on the 1153 patients discharged from the sanatorium be 1937 and 1942 All of them were followed for at eight years, only 1% being lost from observation. series was selected in that it consisted of patien were treated at the sanatorium, which normally acc only those who had reached the stage of being for several hours daily

Of the 457 patients with cavities treated with unil pneumothorax, 69% survived eight years It was that the most important factor in prognosis was or not cavities had been closed , the presence of adhesions made no difference provided the pn thorax was effective in closing cavities 79% of patients with cavity closure and no adhesions, and of those with cavity closure in the presence of ad survived for eight years , but only 36% of tho adhesions and persistent cavitation Comparison patients treated with pneumothorax with those disease of similar extent but receiving no collapse showed that a pneumothorax, with or without adh which resulted in closure of the cavity led to a expectation of survival than no collapse but an artificial pneumothorax which failed to cl cavity worsened the prognosis

The patients who were the subject of this study treated before antibacterial treatment was ava The results therefore illustrate the possibiliti pneumothorax treatment alone, and indicate th combination with antibacterial treatment, ar pneumothorax still merits serious consideration

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* The Lettsomian lectures for 1955, delivered at the Medical Society of London on April 18, 25, and 27 Lecture II appeared last week

BLE I—PLEURAL COMPLICATIONS OF ARTIFICIAL PNEUMO THORAX, WITH AND WITHOUT ANTIBACTERIAL TREATMENT

—	Without antibacterial treatment (1946–50)	With antibacterial treatment (1950–53)
of patients	36	29
of A.P.s	41	34
ulent effusions	3	0
purulent effusions :		
above diaphragm	7	0
mall	6	3
lteration of A P	6	5
of A.P.s terminated	37	18
pleural thickening	23	17
ural thickening	11	1
idual encysted effusion	3	0

An important point which seems often to be forgotten hat the advent of antibacterial drugs has led to the ting of more ambitious objectives in treatment fore the days of antibacterial treatment the patient o had acute mainly unilateral pulmonary tuber osis would be regarded as having attained a good ult if at the end of five years he was clinically well hout signs of active tuberculosis, but with fibrosis l contraction of the affected lung under a thickened ura Such results often followed a successful artificial umothorax Since the advent of antibacterial drugs, has been possible to hope for better functional end ults in such cases The principal cause of loss of ction after pneumothorax was the pleural thickening sequent upon effusion which was generally said to ur at some time in half the patients treated in this This proportion can certainly be greatly reduced antibacterial treatment

My own experience of the complication rate of artificial umothorax with and without antibacterial treat nt is given in table I In 41 artificial pneumothoraces uced in 36 patients since 1946 without the use of anti terial drugs 10 large and 6 small effusions developed of 37 artificial pneumothoraces terminated 14 were wed by some restriction of lung function by pleural nges On the other hand of 34 artificial pneumo aces induced in 29 patients with antibacterial treat t only 3 developed transient small effusions 5 literated gradually without effusion 4 of them without dual pleural thickening Of the 18 artificial pneumothoraces terminated only 1 shows slight residual pleural kening This indicates that the wise use of artificial umothorax in selected cases treated with antibacterial s need not be expected to lead to a high incidence leural complications and consequent loss of function he treated lung

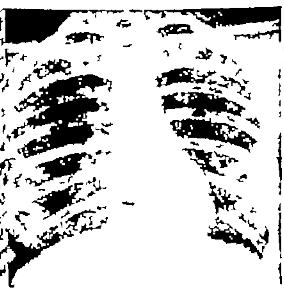

Fig 4

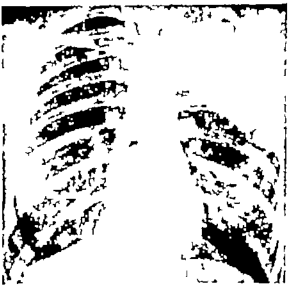

Fig 5

4—Case 2 : Radiograph Feb 2, 1950 showing recent cavitated tuberculosis of similar tent in both upper lobes.

5—Case 2 : Radiograph Jan 20 1955 after treatment by antibacterial drugs with tificial pneumothorax on the right side extraperiosteofascial apicolysis with plombage the left side.

The availability of alternative methods of treatment has certainly diminished the indications for artificial pneumothorax, but I think that there are still circumstances in which this method of treatment is a good one The cases in which I at present use artificial pneumothorax can be divided into two groups. The first is that of patients with disease involving the upper parts of the lungs, including the apical segment of the lower lobe, of predominantly pneumonic type, with or without cavities, in whom I judge that while considerable resolution is likely on conservative measures, there is a danger of residual and persistent cavitation In such cases the use of artificial pneumothorax, after the activity of the disease has been controlled by preliminary rest and antibacterial treatment, may result in healing with a small fibrous scar instead of persistent cavitation which will need surgical measures

Case 2—A woman aged 21 was first seen in February 1950 when she gave a history of four months cough and loss of weight She had evidence of pulmonary tuberculosis of apparently recent origin mainly pneumonic but with cavities in the upper parts of both lungs (fig 4) The sputum contained many tubercle bacilli, the temperature was swinging up to 100 F and the sedimentation rate was 50 mm (Westergren) I decided to treat her with antibacterial drugs and then attempt bilateral artificial pneumothorax She was accordingly started on streptomycin 1 g and sodium P.A.S 20 g daily and after six weeks an artificial pneumothorax was successfully induced on the right side and subsequently improved by thoracoscopic division of adhesions Unfortunately artificial pneumothorax could not be induced on the left because of adhesions An unsuccessful attempt was made *to close the left-sided cavity by temporary phrenic paralysis* and pneumoperitoneum ; and when it was clear that this cavity was persistent, it was collapsed by extraperiosteofascial apicolysis and plombage The right artificial pneumothorax was maintained for three years and re-expanded without complications. After re-expansion, all that could be seen at the site of the original cavity was an insignificant linear scar (fig 5) The patient remains well.

There is little doubt that if pleural adhesions had not interfered with the original intention of treating both lungs with artificial pneumothorax an even more satisfactory result would have been obtained, for the original disease was of almost exactly the same extent and type in both lungs.

The second group is a rather heterogeneous one of odd problems for which artificial pneumothorax seems to be the only reasonable solution These are mainly in patients with extensive disease, many of whom will have received treatment of various other sorts in the past The common feature is that they have an awkwardly placed area of cavitation which has developed in pneumonic disease of fairly recent onset In such cases an artificial pneumothorax in conjunction with antibacterial treatment will often result in healing of the cavity into a fibrous scar with or without a small encapsulated caseous residue The only alternative that can be offered to the patient in this type of case is conservative treatment continued for a very long time, with antibacterial drugs which is unlikely unaided to cause safe closure of the cavity

The results obtained in the patients whom I have treated since 1945 with artificial pneumothorax are [illegible] ised in tables II and [illegible] Table II shows the results in [illegible] patients of whom 5 had bilateral artificial pneumothorax [illegible] antibacterial drugs were [illegible] Of [illegible] patients who have died, one [illegible] progressive pulmonary [illegible] [illegible] antibacterial [illegible] [illegible]

TABLE II—RESULTS OF ARTIFICAL PNEUMOTHORAX WITHOUT ANTIBACTERIAL TREATMENT, 1946–50.

No of patients		36
(with bilateral A P	5)	
Deaths		2
Pulmonary tuberculosis	1	
Pulmonary tuberculosis with bronchitis and asthma	1	
Further treatment later	11	
Surgical collapse on same side	1	
„ „ on opposite side	1	
A P on opposite side with antibacterial treatment	2	
Antibacterial treatment for spread of disease	7	
Present condition of 31 surviving patients		
Fit for full work (1 still has A P)		20
Fit for light work (1 still has A P)		3
Unfit for work		2

as the result principally of severe chronic bronchitis and asthma, although the tuberculosis had become active again and was not responding to antibacterial treatment 9 of the patients have later had antibacterial treatment for various reasons, 2 have later had surgical collapse treatment, and 2 have had artificial pneumothorax on the opposite side The results are, I think, satisfactory in relation to the type of disease treated, and to the general prognosis at the time they came under treatment Table III shows the results obtained in the 29 patients treated with initial administration of antibacterial drugs It will be seen that the results are, up to the present, extremely satisfactory, especially as 5 of the patients had bilateral artificial pneumothoraces, and 7 more of them were of the complicated type which constitutes my second group of indications for artificial pneumothorax Only 1 has required any additional form of treatment but of course they have been under observation for a relatively short period, ranging from one to five years

Phrenic Paralysis and Pneumoperitoneum

Pneumoperitoneum, with or without phrenic paralysis, has been used for about twenty years One of the most striking features of its history is the very great variation in the frequency with which it has been used in different centres, and the equally striking difference in policy between different physicians in relation to its combination with temporary phrenic paralysis My own opinion in this matter is that it is only by accident that pneumoperitoneum alone can produce a useful mechanical result If it happens that the changed disposition of the thoracic contents produced by elevation of both sides of the diaphragm results in kinking and blockage of a bronchus leading to a cavity, cavity closure may result This, however, is a very chancy matter, and I d
believe that it happens very often On the other
the combination of phrenic paralysis with pne
peritoneum does result in some degree of sele
relaxation of one lung, and this relaxation is en
principally on the lower half of the lung, especiall
posterior part I agree entirely with my colle
Dr Livingstone, who has recently (1955) stated th
has never used pneumoperitoneum without ph
paralysis

The complications of pneumoperitoneum are
Phrenic paralysis, however, even of the type prod
by crushing the phrenic nerve and intended t
temporary, suffers from the disadvantage that par
or paresis may prove to be permanent, especi
cases in which a considerable rise of the diaphra
been maintained with a large pneumoperitoneum
may be of little disadvantage when the treatme
been applied for disease affecting the lower lobes o
lungs, but where the disease has affected the u
lobes the presence of permanent diaphragmatic pa
or weakness may be a considerable disadvantage i
gical treatment eventually becomes necessary A
ingly, my current indication for the use of ph
paralysis and pneumoperitoneum is as an adju
antibacterial treatment in patients with disease o
distribution that surgical collapse therapy or re
involving the upper lobe is unlikely to be required
future These patients fall into two main group
first is composed of those with acute disease in
the lower lobes In them, the relaxation produced i
sufficient to enable acute pneumonic disease to
without the formation of cavities, leading to ef
clinical cure, and even if, eventually, lower lobe
is required, the diaphragmatic paralysis which m
present is not disadvantageous

TABLE III—RESULTS OF ARTIFICAL PNEUMOTHORAX
ANTIBACTERIAL TREATMENT 1950–53

No of patients	
(with bilateral A P	5)
Deaths	
A P previously induced on opposite side without antibacterial treatment	
A P used in conjunction with surgical collapse on opposite side	4
Further treatment required later (lobectomy for unclosed cavity)	1
Present condition of patients	
Fit for full work (14 still have A P)	
Fit for light work (1 still has A P)	

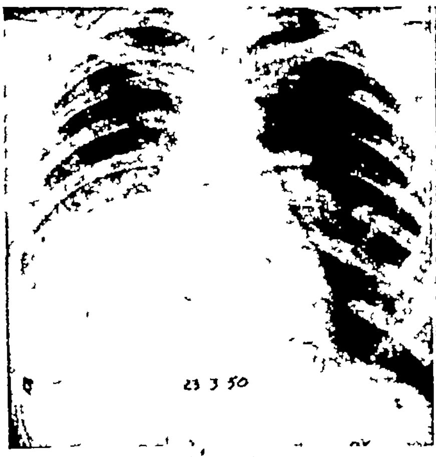

Fig 6—Case 3 Radiograph, March 23, 1950

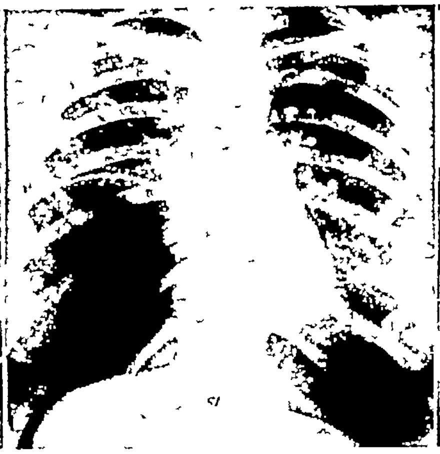

Fig 7—Case 3 Radiograph, April 5, 1951, after antibacterial treatment, phrenic paralysis, and pneumoperitoneum

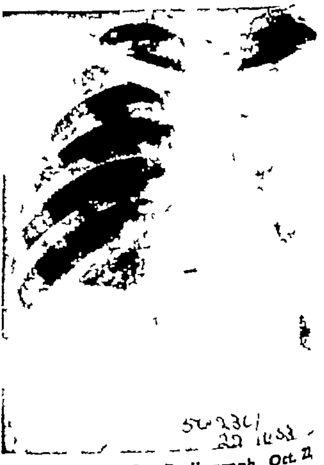

Fig 8—Case 3 : Radiograph, Oct 2
Pneumoperitoneum absorbed

E IV—RESULTS OF PHRENIC PARALYSIS AND PNEUMO PERITONEUM INDUCED 1946–53 ALL CASES

—		Present state		
		Fit for work	Fit for light work	Under treatment for relapse
l no. of patients itial antibacterial treat ment 30)	42	33	4	3
lications berculous peritonitis	1		1	
ment intended to be itive Completed	34	26	3	3
Pneumoperitoneum maintained	3	3		
tment used as preparation A.P.	2	2		
tment used with A.P. and gery	2	2		

This group is analysed further in table V

ase 3.—As an example I will quote the case of a girl aged 1950 when she was first seen with a history of fever everal weeks, cough and pain in the right side of the chest was found to have consolidation of the right lower lobe 6) tubercle bacilli in the sputum, and fever ranging up 01–102°F. She was treated with streptomycin 1 g. with um P.A.S. 20 g. daily; the right phrenic nerve was crushed a pneumoperitoneum was induced. The temperature ually returned to normal over a period of six weeks. She went through the routine sanatorium course at Frimley a year from the beginning of treatment it was clear that aberculous pneumonia had substantially resolved (fig. 7) pneumoperitoneum was maintained for a total of three s, and the patient, in spite of following a régime of which I should regard as inadvisable for anybody ective of the condition of the lungs remains very well 8)

e second group of cases in which I use phrenic ysis and pneumoperitoneum is composed of those re the disease is rather generalised throughout the and predominantly unilateral. In these the teral selective relaxation of the lung produced by nic paralysis and pneumoperitoneum may be of derable service in assisting antibacterial treatment he healing of the disease without the development rsistent cavitation.

esentation of the results obtained with this form of ment is exceptionally difficult, since it is so frequently used in combination with other methods in plex cases. Table IV gives some indication of the nt state of the 42 patients whom I treated in this from 1946 to 1953. The complications are few patients, I have had 1 who developed tuberculous onitis, possibly unrelated to the pneumoperitoneum mbolism may occur as with artificial pneumothorax I have been fortunate in that none of my patients experienced this accident. Before antibacterial ment was available I used phrenic paralysis and moperitoneum in a few cases as a preparation for cial pneumothorax. Although there has been less sion to use it for this purpose more recently it proves necessary to adopt further measures later atients treated primarily by phrenic paralysis and moperitoneum. Table V shows the present state e 34 patients in whom I used this method with the d possibility of its proving definitive and in which pneumoperitoneum has now been discontinued. fewer than 12 have subsequently required some er form of treatment. Nevertheless, the end results been satisfactory considering the type of case ed. It is noteworthy that none of the patients ed in this way has died.

Surgical Treatment

Major surgical procedures for the treatment of pulmonary tuberculosis can be divided into two groups collapse procedures and resection.

Surgical Collapse Therapy

I do not propose, nor indeed would I be competent, to consider technical details of surgical collapse procedures, but I should like to express my personal view about the relative indications for thoracoplasty and the newer plombage procedures, such as that developed by my colleague, Mr W. P. Cleland (Lucas and Cleland 1950). These latter differ in two respects from previous attempts to secure collapse at the apex of the lung by plombage. First, the plombe is composed of a non-irritant synthetic plastic material, and secondly, the preliminary apicolysis is performed in an extraperiosteo fascial plane so that a substantial thickness of well vascularised healthy tissue lies between the plombe and the diseased lung. For these reasons, complications due to the plombe are very much less frequent than with previous plombage procedures.

Both thoracoplasty and plombage are for anatomical reasons best adapted to deal with disease which is localised in the upper parts of the lung. To some extent, they can be regarded as in principle alternative, but plombage will not deal satisfactorily with cavitating disease extending below the upper third of the lung field, so that for this more extensive disease thoracoplasty is preferable, and on the other hand, more limited disease at the extreme apex can be dealt with very satisfactorily by plombage, whereas the small thoracoplasty which would be appropriate for such a limited lesion may lead to mechanical difficulties between the scapula and the last remaining intact rib. Thoracoplasty has the advantage, which is overwhelming in the eyes of some surgeons, that it does not leave any foreign substance in the patient's tissues. On the other hand, it leads inevitably to some external deformity. The plombage procedures lead to little external deformity, but the risks associated with the insertion of a foreign body into the tissues must clearly be considered carefully. In my own experience these are small. Up to July, 1954, I had had this operation performed for 38 patients, in 6 of them bilaterally. The only complications encountered with these 44 plombes have been infections of the operative space in 2 of them, arising within a few weeks of the operation. These were dealt with by re-operating, removing the plastic balls which had been inserted, and performing thoracoplasty. Both these patients did well, eventually being left with a thoracoplasty which had been performed in two stages; if this operation had been attempted primarily it would of

TABLE V—RESULTS OF PHRENIC PARALYSIS AND PNEUMOPERITONEUM INDUCED 1946–53 AND INTENDED TO BE DEFINITIVE: PNEUMOPERITONEUM NOW TERMINATED

—	Total	Fit for work	Fit for light work	Under treatment now
No. of patients	34	26	3	3
No. of deaths	0			
Initial antibacterial treatment	22			
No further treatment	19	19		
Further treatment				
Artificial pneumothorax	2	1	1	
Surgical collapse	3	3		
Resection	3	2		1
Antibacterial	4	1	1	2
Refused surgical treatment	1		1	
No recent information	2			

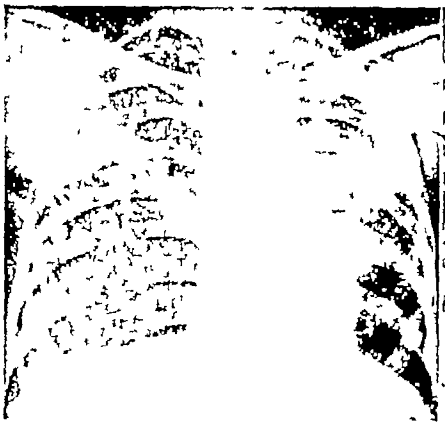

Fig 9—Case 4: Radiograph, Jan 14, 1953

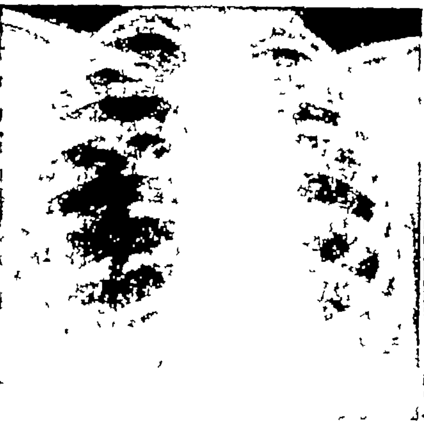

Fig 10—Case 4 Radiograph, Aug 7, 1953, after 7 months' antibacterial treatment.

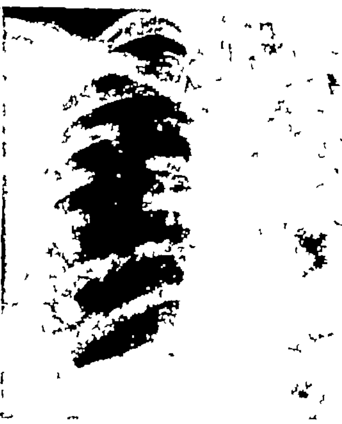

Fig 11—Case 4 Radiograph, July 15 after extraperiosteofascial apicolysis plombage

course have been done in any case in two stages The credit for this low rate of complications must go to the skilful and meticulous technique of my surgical colleagues who have performed these operations

Since becoming familiar with the advantages of this technique, I have selected it for those of my patients in whom I thought that surgical collapse therapy was required to close a tuberculous cavity situated actually at the apex of the lung, the number of cases in which I have had a formal thoracoplasty performed has diminished very considerably, so that in the six years covered by the series of plombage cases which I have already mentioned, I have had only 10 formal thoracoplasties performed, not including the 2 which were converted from plombages

TABLE VI—INDICATIONS FOR SURGICAL COLLAPSE THERAPY IN PATIENTS TREATED 1946–53

—	Extraperiosteo fascial apicolysis with plombage (1949–53)	Thoracoplasty (1946–53)	Total
Primary	5	13 (1)	18 (1)
After prolonged medical treatment	17	2	20
—bilateral operations	4 (1)		4 (1)
After medical collapse treatment on same side	3	4	7
After bilateral A P	1	2	3
Collapse on opposite side: A P present or later	4		4
Collapse on opposite side: A P old	1	1	2
Collapse on opposite side: Extra pleural pneumothorax	1		1
Collapse on opposite side: Phrenic plus pneumoperitoneum	1		1
For tuberculous empyema		2 (1)	2 (1)
Thoracoplasty converted from plombage		2	
Totals	36 (1)	24 (2)	60 (3)

Numbers of deaths in parentheses

I consider that much confusion has been occasioned by attempts to compare the results obtained by surgical collapse therapy and by resection In my view the indications for the two types of treatment are distinct, although there are some cases in which they can be regarded as equally applicable Surgical collapse therapy is more appropriate for patients whose disease is not strictly confined to one or more bronchopulmonary segments, and particularly for those in whom extensive disease has been treated with initial success by conservative measures, leaving apical cavitation The type of case which I consider to be suited for surgical collapse but unsuitable for resection may be illustrated by an example

Case 4 —A woman, aged 26, had felt tired and lo weight since the birth of her first child a year befor admission to hospital in November, 1952 She was ill, with fever swinging up to 103°F, and evidence of extensive tuberculosis in both lungs, with large cavities left side (fig 9) The sputum contained many tubercle Antibacterial treatment was started but response to delayed, at the end of four months treatment, the te ture had only just settled, and the radiographic showed little improvement However, treatment wa tinued, and by July her general condition was improved to warrant consideration of measures to clo left apical cavities, (fig 10) Tomography establishe absence of detectable cavitation on the right side, August, 1953, extraperiosteofascial apicolysis with ball plombage was performed by Mr Cleland This in closure of the cavities and disappearance of tubercl from the sputum She went through the routine co Frimley and has remained in excellent health since (fig

In my cases the results of surgical collapse proce like those of phrenic paralysis and pneumoper are difficult to present, because, especially in the c plombage, they have been used so frequently in tion with other methods, as shown in table VI. present condition of those treated up to the end of is shown in table VII There was 1 operative death the patients treated with plombage This patient desperately ill on admission with very extensive

TABLE VII—RESULTS OF SURGICAL COLLAPSE THERA PATIENTS TREATED BETWEEN 1946 AND 195

—	Extraperiosteo fascial apicolysis with plombage (1949–53)	Thoracoplasty (1946–53)
No of patients	35	24
Deaths		
Operative	1	1
Later, tuberculous		1
Further treatment required		
Completed	3	2
Still under treatment	3	0
Present state		
Fit for work	28	19
Fit for light work	1	3
Well, receiving antibacterial treatment	2	
Convalescent from plombage on opposite side	1	
No recent information—well at last report	1	
Disease active at last report	1	

1 plombage converted to thoracoplasty is counted "thoracoplasty" 1 patient with plombage on one si plombage converted to thoracoplasty on the other is include both, but only once in the total

berculosis and enormous cavities in both upper lobes made a very slow response to antibacterial treat nt withstood plombage on one side well, but cumbed shortly after a similar operation on the other e The 1 operative death after thoracoplasty was also t of a patient presenting a desperate risk, treated fore antibacterial drugs were available, the late death r thoracoplasty was that of a patient with extensive lmonary tuberculosis and tuberculous empyema plicated by amyloid disease Taking into considera n the extent and acute character of the disease many of the patients when they first came under atment, the results must be considered extremely isfactory

ection

The types of case in which lung resection is especially icated can be divided into several groups

irst there is the group of strictly localised disease s may be either of the bronchial cold abscess type or residue of localised tuberculous pneumonia The t group in particular is best treated by resection l, as I showed in the first lecture it is frequently sible by critical radiographic and tomographic dies, to detect the presence of this sort of disease h a fair degree of certainty

ase 5.—An example is the case of a man who in 1942 had ft pleural effusion followed by the appearance of localised dowing at the apex of the left lung in 1945 In 1949 this wed evidence of extension The tomograms showed two nents in this—a peripheral area probably of tuberculous umonia, and another nearer the mediastinum suggestive lesion of bronchial type This latter a few months later

Fig 12

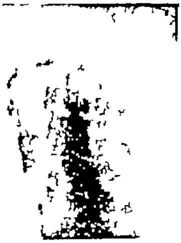
Fig 13

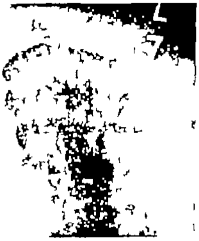
Fig 14

12—Case 5: Tomograph in a plane 7 cm. from the back of upper part of left lung, Aug 12, 49 showing a distended cavity of "bronchial cold abscess type near the mediastinum and ease of pneumonic type peripherally

13—Case 5: Tomograph at same level June 20 1950 showing much resolution of the eumonic disease, and diminution in size of bronchial cold abscess."

14—Case 5: Tomograph at same level *March 13 1951 showing enlargement of* bronchial ld abscess.

nded into an obvious cavity (fig 12) A period of nearly ar of rest antibacterial treatment and sanatorium régime lted in substantial resolution of the tuberculous pneu ia, but the appearance suggestive of localised bronchial ase remained (fig 13) About a year later still, the bronchial abscess distended again (fig 14) and the apico posterior nent of the upper lobe was resected (fig 15)

his behaviour is typical of the bronchial cold abscess. patient has subsequently developed a spread of disease e apical segment of the left lower lobe; this has responded to prompt antibacterial and sanatorium treatment

he localised tuberculous pneumonia which leaves an ortant caseous residue especially with evidence of tral cavitation is also appropriately treated by ction The desirability of resection for such residual itating caseous lesions is even greater where the disease ituated in a part of the lung which is unfavourably ed for collapse therapy—for example the apical nent of the lower lobe

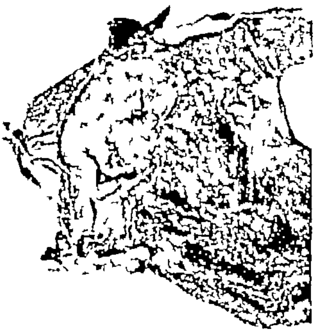
Fig 15—Case 5: Resected apico-posterior segment, showing the bronchial cold abscess and the small well-demarcated caseous residues of the more peripheral tuberculous pneumonia.

Tuberculosis affecting the whole of one lobe, and confined to that lobe, is logically treated by resection if effective resolution appears unlikely with even a long period of conservative treatment It is often a difficult matter requiring careful study of tomograms *in two planes*, to decide whether the disease is in fact confined to one lobe and even if it is, a modified thoracoplasty is usually advisable with resection of an upper lobe

More rarely strictly unilateral disease extending throughout one lung may best be dealt with by pneumonectomy though here the patient's probable ventilatory reserve after operation should be brought into careful consideration

Secondly in some cases in which the disease has been originally extensive but a long period of observation has established the stability of all but a localised cavitating focus resection may reasonably be undertaken but I would regard resection as the treatment of election only where the residual cavity is awkwardly placed for collapse therapy when it may indeed be the only available procedure. If the cavity is apical although the disease may be successfully treated by resection thoracoplasty or plombage is equally applicable

Thirdly although I do not propose to deal with the treatment of tuberculous empyemata it is appropriate here to mention that the combination of pleurectomy with resection of the diseased parts of the underlying lung has revolutionised the treatment of this condition Tuberculous empyema is much rarer than it used to be partly because of the introduction of antibacterial drugs and partly because of the much diminished and more judicious use of artificial pneumothorax Where usually as a result of spontaneous pneumothorax occurring in a person with active pulmonary tuberculosis, or as a result of injudicious use of artificial pneumothorax a tuberculous empyema develops, pleurectomy combined with resection of lung provides a very satisfactory answer to what used to be an extremely difficult therapeutic problem

Fourthly, tuberculous changes in the larger bronchi are a strong indication for resection where the disease is so situated that this procedure is feasible Most commonly there is a stenosis of a lobar or main bronchus In these cases provided the rest of the lung is free from active disease, resection offers the only chance of giving the patient continued good health

TABLE VIII—INDICATIONS FOR LUNG RESECTION IN PATIENTS TREATED BETWEEN 1949 AND 1953

Indication	Extent of resection			Total
	Segment(s)	Lobe	Lung	
Localised disease				
No previous treatment	14	5	(1)	20
With previous treatment	1	3	1	5
Residua of previous treatment	1	8	3	12
With pleurectomy				
Acute disease			2	2
Chronic disease	1	3		4
Tuberculous bronchiectasis		2		2
Total	17	21	7	45
Mortality				
Immediate	0	0	0	0
Remote { tuberculous	0	0	1	1
Remote { non tuberculous	0	1	1	2
Spread				
Immediate	0	0	(1)	(1)
Remote	1	3	0	4

The case indicated in parentheses is one in which resection was performed on the mistaken diagnosis of carcinoma, the diagnosis of pulmonary tuberculosis being made only postoperatively

The less common group of extensive bronchial disease which calls for resection is a generalised tuberculous bronchiectasis, involving a lobe Such cases are rare, but present a remarkable clinicopathological picture Clinically and bronchographically there may be little to distinguish them from non-tuberculous bronchiectasis, but tubercle bacilli are present in the sputum, and widespread tuberculous changes are found in the affected bronchi

The indications for which I have recommended resection in 45 patients so treated up to the end of the year 1953 are summarised in table VIII The present state of the patients treated in this way is summarised in table IX It is noteworthy that of the 5 patients who have required further treatment, only 1 was in the group of those with strictly localised disease

Combinations of Procedures

Much of the foregoing discussion will serve to emphasise the point that pulmonary tuberculosis is so variable in its distribution and behaviour that the physician's approach to treatment must be open-minded In nearly every case it is advisable to begin by a period of conservative treatment with rest and antibacterial drugs, though, as I have already indicated, there are exceptions even to this rule The persistence of cavitation after more than three months of antibacterial treatment should lead to careful study of the possibility of dealing with this condition either by collapse therapy or by resection There are two good reasons for considering this without undue de The first is that prompt action to deal with such persis cavities may accelerate the patient's return to no activities, and, while time spent in securing th cure of pulmonary tuberculosis must be regarded as wise investment for the future, the physician should alert to every possibility of securing that stability as short a time as possible The second is that ca favour the early emergence of resistant bacilli dur antibacterial treatment In patients with extensive disease, and in those in whom, during su vision after a successful initial period of treatm fresh foci of disease appear, many combinations of of treatment may be applicable, and it is only by k in mind possible combinations of all available meth that the physician will be able to devise the best of treatment for the individual patient The s economic, and psychological factors to which I re at the end of the first lecture also have to be weig decisions about treatment In the ability to justly all these diverse factors lies whatever claim physician may have to skill in his art

TABLE IX—RESULTS OF LUNG RESECTION FOR PULMONARY TUBERCULOSIS, 1949–53

No of patients		45
Years elapsed since operation		
5–6	4	
4–5	7	
3–4	10	
2–3	11	
1–2	13	
Deaths		
Operative		1
Later both non tuberculous		2
Further treatment required		
Completed	2	
Still under treatment	3	
Present state		
Fit for work		37
Fit for light work		2
Receiving antibacterial treatment		
Fit for light work		2
Not yet fit		1

Sanatorium Treatment

The whole concept of sanatorium treatment recently come under strong criticism The older con of the function of sanatoria were formulated at a when prime reliance had to be placed upon the pat own reparative powers, aided by such help as cou obtained by general hygienic measures Though concepts must now be modified, I believe that a wel sanatorium has an important part to play in the t ment of pulmonary tuberculosis In particular I it is a great pity that the treatment of patients active pulmonary tuberculosis in their own homes, was forced upon physicians by the post war shorta hospital and sanatorium beds, and was then a right proper policy, has now come to be regarded in quarters as a procedure of choice The active stage treatment of pulmonary tuberculosis—the sta bed rest, assessment, and decision about thera policy—should be conducted in a suitably eq institution, be it town hospital or well equipped sanatorium When the stage of active treatm completed, my observation of those of my patient have undergone a period of sanatorium treatme Frimley, as compared with those who have, for one or another, not undergone this salutary discipline convinced me of the great value of the graduated supervised return to full activities, under the best hy and environmental conditions, which is one of principal functions of a good sanatorium

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EMATURE INDUCTION OF LABOUR IN THE TREATMENT OF HÆMOLYTIC DISEASE OF THE NEWBORN

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As a result of controlled therapeutic trials in 477 es of hæmolytic disease of the newborn Mollison l Walker (1952) concluded that (1) exchange trans ion was followed by a significantly higher survival e than was simple transfusion and (2) the premature uction of labour at 3–5 weeks before term was followed a lower survival rate than if the pregnancies had minated spontaneously but the difference was not tistically significant

A further analysis of this trial confirmed the previous lings and added the finding from the follow up t after premature induction of labour the infants were re liable to kernicterus and mental or motor defect than se born spontaneously (Armitage and Mollison 3)

Vaughan et al (1950) had previously stated a similar eral finding, and the same conclusions, expressed with commendable caution, have found their way into a current textbook (Bourne and Williams 1953)

Walker and Murray (1954) publish the results of management of 451 cases of hæmolytic disease of the newborn and claim a very low mortality They appear to have ignored stillbirths in reaching their conclusion and have discounted 'non viable' cases without defining their criteria of viability They also repeat the claim of Mollison and Walker (1952) that the premature induction of labour has no routine place in the management of hæmolytic disease of the newborn Finally the view condemning premature induction has received official sanction by the Medical Research Council (1952) We therefore conclude that the condemnation of premature induction of labour in hæmolytic disease has now virtually eliminated it from most obstetric hospitals in England and possibly in the United States

Watson et al (1954) however describe the survival of two prematurely delivered infants in two pregnancies of a mother whose previous five pregnancies had produced one abortion and four stillbirths. Anti rhesus antibodies were found early in the fifth pregnancy

Comparison of English and Australian Results

In this hospital exchange transfusion has been used almost as a routine since 1945 our conviction that it is superior to simple transfusion being quite definite from the earliest days. We have also practised the controlled premature induction of labour whenever possible our constant aim being to reduce the over all mortality rather than to write off the stillbirths while making a serious effort to save only those born alive Unfortunately in the confusion of the early post war years accurate and planned records were not kept From 1950 onwards however, this has been remedied and we can now compare our figures for the past four years with those published by the English workers

In making any comparisons it must be pointed out that we were at the time of starting our work unaware of the rules laid down for the trial reported by Mollison and Walker (1952) and that we have therefore been unable to apply those rules to our cases Direct comparison of the two series is therefore hardly valid There are several differences

(1) In the English trial two forms of treatment—spontaneous labour and premature induction—were applied in the same hospital, the treatment being decided by opening a sealed envelope before the completion of 36 weeks of gestation. In our cases labour was induced prematurely whenever possible and wherever indicated spontaneous labour being restricted to cases where circumstances beyond our control precluded premature induction. Our cases, in fact selected themselves Although this method of selection is not so satisfactory as the envelope method the two categories have divided themselves into approximately equal numbers Furthermore there is no reason to suppose that the English and Australian populations differ as regards their reaction to hæmolytic disease of the newborn in fact the results of spontaneous delivery in both series are homogeneous (table III)

(2) In the English series premature induction was restricted to 35–18 days before the estimated date of delivery whereas we have included all induced and spontaneous deliveries after 28 weeks gestation

(3) The English series excluded all cases of exchange transfusion in which less than 50 ml of blood per lb of body weight was used We laid down no minimum but usually gave 150–250 ml per lb of body weight according to serological and clinical indications

(4) In the English series the rules called for the exchange transfusions to be given within nine hours of birth We included all exchange transfusion the longest elapsed time

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being 4 days, but most of them were given within 9 hours of delivery

(5) In the English series twins and the infants of diabetics and of Wassermann positive mothers were excluded Our series has included one or both twins if incompatible, but there were no diabetic or syphilitic mothers Mollison and Walker (1952) excluded live infants which died before treatment could be given, we have included them In our series the death of any incompatible infant* born alive has been counted as a neonatal death whatever the cause, provided death took place within 28 days of delivery

Table I analyses 246 consecutive incompatible pregnancies in mothers whose serum contained abnormal rhesus antibodies against their infants All losses, both stillbirths and neonatal deaths, have been included despite other apparent causes of death—e g, hydrocephalus (1 case), staphylococcal pneumonia, toxæmia of pregnancy, tentorial tears, prolapsed cord, and obvious prematurity at about 28 weeks (3 cases) The table shows the period of gestation at delivery, estimated by the attending obstetrician, and the cases are divided into spontaneous delivery and induced delivery, and subdivided into stillbirths, neonatal deaths, and survivals It becomes apparent that the total wastage in the induced category is not so severe as in the spontaneously delivered cases

It might be argued that, in the spontaneous cases, the occurrence of 17 stillbirths before 35 weeks unfairly weights the mortality-rate, because practically all the stillbirths between 28 and 34 weeks will be spontaneous But, since we are considering the treatment of these cases from 35 weeks or later, and to make the series "comparable" with that of Mollison and Walker (1952), we must exclude all cases delivered before 35 weeks Table I therefore becomes converted to table II, which shows that the stillbirths in the spontaneous series are still high at 19, but all have now occurred in that period where they might have been prevented by premature induction of labour and exchange transfusion In the induced cases, although the neonatal deaths were more numerous than in the spontaneous ones, stillbirths were virtually eliminated, the only stillbirth being a case of prolapsed cord and death taking place about half an hour before delivery Several of the spontaneous deliveries were postmature, but when the cases under our control reached 40 weeks' gestation labour was induced if antibodies were present in the maternal serum, no matter how high the titre

TABLE I—MORTALITY RATES FOR SPONTANEOUS AND INDUCED LABOURS FOR 246 VIABLE INFANTS

Result	Weeks' gestation at delivery								Total		Total wastage
	28–33	34	35	36	37	38	39	40			
Induced labour											
Stillbirths	1*	1					1†		3	116	15 (*12 9%*)
Neonatal deaths	1		2	4	3	1	1		12		
Survived	1*		1	33	32	14	10	10	101		
Spontaneous labour											
Stillbirths	13	4	3	5	1	6	1	3	36	130	45 (*34 6%*)
Neonatal deaths	2		1		2	2	1	1	9		
Survived			1	6	10	7	6	55	85		

* Toxæmia of pregnancy
† Prolapsed cord

Table III sets out the results reported by Mollison and Walker (1952) beside those in the present series The mortality-rate in the two series of spontaneously delivered cases is about 24%, whereas the mortality-rates of the induced cases are much at variance opposite directions, one being much worse, and the much better, than that of the spontaneously de cases It therefore seems that the management premature infant with erythroblastosis gives results than that of the English workers

TABLE II—MORTALITY RATES FOR SPONTANEOUS AND LABOURS AFTER 34 WEEKS' GESTATION IN 223 INC PREGNANCIES $(\chi^2_{(1)} = 6\ 39 \quad 02 > p > 01)$

Result	Weeks' gestation at delivery						Total		
	35	36	37	38	39	40			
Induced labour									
Stillbirths					1		1	112	12(
Neonatal deaths	2	4	3	1	1		11		
Survived	1	33	32	14	10	10	100		
Spontaneous labour									
Stillbirths	3	5	1	6	1	3	19	111	[illegible]
Neonatal deaths	1		2	2	1	1	7		
Survived	1	6	10	7	6	55	85		

Method of Handling Premature Erythroblastic

Time of Induction of Labour

The time of induction of labour was planned optimal moment by very carefully standardised repeated antenatal titrations of the maternal se the antiglobulin method of Coombs (Kelsall and 1952, 1955) Our aim was to leave the fœtus in ute as long as possible consistent with a harmless ant titre We are firmly convinced that, provided laboratory staff are prepared to take the necessary and trouble with their anti-globulin titrations, a working formula can be obtained to guide the the choice of the best time to induce labour If is any doubt, it is better to induce at any time 36 weeks' gestation than to allow the pre proceed to a spontaneous termination Pr induction must be followed by adequate and exchange transfusion, and attention must be other important details

Blood Used in Exchange Transfusion

We have previously drawn attention to the accruing from the use of citrated blood for transfusion (Kelsall and Vos 1952), and et al (1954) and Ames et al (1950) have that massive transfusion of citrated blood is da and often fatal (see also *Lancet* 1954) It seems premature infant cannot tolerate the perfusion of free from calcium ions, as would be found in ci blood, and that such a suspension arrests the

TABLE III—TOTAL MORTALITY RATES OF MOLLISON WALKER'S SERIES COMPARED WITH PRESENT SERIES INCOMPATIBLE BIRTHS AFTER COMPLETION OF 34 W GESTATION FOR INDUCED AND SPONTANEOUS LABOUR

Labour	Mollison and Walker (1952)						Present ser				
	No of cases	Survived	Died				No of cases	Survived	Died		
			Neonatal deaths	Stillbirths	Total	Mortality %			Neonatal deaths	Stillbirths	Total
Induced	77	39	22	6	28	36 4	112	100	11	1	[illegible]
Spontaneous	108	82	12	14	26	24 1	111	85	7	19	[illegible]

A heterogeneity test between Mollison's and the present of spontaneous cases shows no heterogeneicity of proportions survived neonatals and stillbirths io cardiac inhibitory effect of calcium lack is accentu ed by the rise in the plasma potassium level, since ored banked blood may contain extremely toxic nounts of potassium Observations have shown that e perfusion of cold, stored citrated blood is responsible the increased venous pressure and irregular cardiac tion in exchange transfusion and that such effects no longer found if freshly collected warm heparinised od is used By such means tetany and its precursors ivation and irritability, are eliminated Before the sent series we lost several infants by using citrated od but no infant in the present series has been lost ring exchange transfusion since heparin has been stituted for citrate

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* "Incompatible infant is one whose mother's serum contains antibodies specifically antagonistic to that infant's erythrocytes, and whose cells give a positive direct Coombs test

It cannot be emphasised too strongly that tetany d cardiac inhibition are in our opinion the causes death in many infants transfused with citrated blood a counter measure some prefer the use of calcium conate but it is usually given too little and too e, and the primary indications for its use—salivation d irritability—are not recognised in time The use calcium gluconate does not obviate the risk of tassium poisoning or the toxicity of citrate per se stored blood (*Lancet* 1954) We prefer heparin and the nination of storage Some workers are reluctant to heparin because they fear that it may lead to uncon llable hæmorrhage Although we have an ampoule protamine sulphate in readiness as an antidote during l after every exchange transfusion we have never had use it.

rnicterus

Kernicterus has become so rare in the induced cases as le practically never seen Of some possible significance the fact that we have tried to exchange at least -250 ml of rhesus negative blood per lb of body ght in every exchange transfusion and thereby the essity for repeated transfusion has been minimised have aimed at the prevention rather than the cure jaundice because we have never seen kernicterus ccompanied by jaundice at some stage In fact ndice is seldom seen in our induced infants, they born and transfused before it has had time to develop very severe cases only does mild jaundice appear a few days in spite of exchange transfusion Wiener al. (1948) advocated the use of large volumes of d in exchange transfusions as an important part of treatment of erythroblastosis, and Turner (1954) emphasised the value of repeated exchange trans ons to supply an adequate wash through of anti les in the relief of kernicterus. *It seems more logical* exchange a larger volume of blood at the initial nsfusion than to resort to repetition later

of Blood

hroughout this work we have deliberately used e donor blood wherever possible for exchange trans ons In very rare instances were we forced to use n one female donor and one male but when that pened the female blood was used first so that male d was left in the infant. No attempt was made to all male blood to some infants as controls and all ale blood to others nor was any attempt made to elate the sex of the blood-donor with the death of the infants. No conclusion is therefore drawn on point of male versus female blood though our own viction should be apparent We feel that it is irrational ut the donor pool in half by eliminating males on the onfirmed evidence of one team of workers who eved that male donor blood was responsible for more natal deaths than was female blood In all our ent cases only about 7% of the blood used was wn from a female source, and it is scattered at dom among the cases as they arose the division being approximately equal in spontaneous and induced cases

Discussion

We are perhaps fortunate in that we have been encouraged in this work by an actively coöperative department of public health, which has assisted in every way in our antenatal grouping and search for antibodies by an enlightened general public aware of the dangers of hæmolytic disease of the newborn and by a very large number of our practising colleagues who have placed their material at our disposal. The success or failure to save the infant of a mother who has been immunised depends very largely on being forewarned of her state early in the pregnancy Although this has meant that countless tests for antibodies have been made, we have been warned in many of the cases that incompatibility was present by the initial appearance of antibodies or by their undoubted rise in titre The warning given by such investigations is of incalculable value to the clinician but many still strenuously deny the value of antenatal titrations in prognosis We can only say that in our hands they give reliable results if adequate care and trouble are taken with every step in the titration (Kelsall and Vos 1952 1955) Although we are investigating other antenatal serological tests we find that, for general purposes the indirect anti globulin titration (Coombs) provides the measure of the antibody which is responsible for the manifestations of the disease. At least in our laboratory, other methods of titration do not give comparable results to those of the Coombs method

The over all mortality rates given in table II indicate the value of inducing premature labour as opposed to allowing pregnancy to proceed to a spontaneous termination For a closely comparable number of cases in each category the number of deaths in the induced cases was not only less than half that in the spontaneous deliveries but also was considerably less than the number of stillbirths suggesting that some stillbirths might have been prevented by premature induction of labour We also feel that the 3 neonatal deaths in the labours induced at 37 weeks and the other neonatal deaths at 38 and 39 weeks might have been prevented by earlier induction of labour

Although 37 cases were induced at 36 weeks these must be regarded as the poorest risks since both pre maturity and a high antibody titre were to be con sidered: only 4 of the 37 were lost, and at 37 weeks only 3 of 35 were lost. We would be the first to admit, however, that the percentage losses in the induced cases decreased as full term was more nearly approached

The question therefore resolves itself, not into the choice between induction at 36 weeks and spontaneous delivery at term but between controlled induction at any time in the last five weeks of pregnancy and spon taneous delivery at any time—a comparison which is hardly the same as that planned by Mollison and Walker (1952) The essence of the matter is that our cases were induced at a chosen time indicated by serological tests as opposed to the policy of allowing the pregnancy to proceed blindly to term Statistically the figures leave little doubt that controlled induction is preferable to the other method ($\chi^2_{(1)} = 6\ 30\ \cdot02 > p > \ 01$) a finding which is very different from the conclusions of both the English and the American workers

During the course of this work it was found that we were missing many of our stillbirths The serum of a referred pregnant woman would be found to contain potent antibodies but her records would often be filed and forgotten Perhaps she would not appear at the hospital at any subsequent time and it was only after we had made inquiries that it would be found that she had been delivered elsewhere of a stillborn macerated fœtus Had a follow up of the mother not been done, such stillbirths would have been omitted from our records, and the ravages of hæmolytic disease of the newborn would have been unjustly minimised

The fact that in the past infants have been lost as stillbirths which might have been saved by more active and realistic management is unfortunate All too often the damaging antibodies appear for the first time in the last four weeks of pregnancy In any case, it is the last trimester of pregnancy in which the impact of hæmolytic disease of the newborn is greatest, before that time the losses are not statistically greater than in rhesus positive women (Kelsall and Vos 1955) As is well known, the earlier the premature birth the greater is the mortality-rate of normal infants, the mortality being especially great at 35 weeks' gestation and earlier Under modern methods of treatment the losses from prematurity alone between 36 weeks and term are few, and, if the effects of incompatibility in the erythroblastotic infant can be effectively minimised, the losses need not be unduly high It seems that by far the greatest damage is often done in the last 4 weeks of pregnancy, when the infant might be saved

A report will be published in due course of the follow-up of these infants when they are at least 10 months old

Summary

We have sought to show that in hæmolytic disease of the newborn the over all mortality-rate can be lowered by the premature induction of labour at the optimal time after 35 weeks' gestation, followed where necessary by exchange transfusion

Of importance is the avoidance of citrated blood for exchange transfusion, a large volume (1 litre) of freshly collected warm heparinised blood being substituted

The mortality rate for spontaneously delivered infants (23 4%) is compared with that of infants born after premature induction (10 7%) at a time indicated by consideration of the antenatal antibody titre of the mother's serum Statistically these figures indicate a significant preference for controlled induction

Controlled induction of labour and subsequent treatment have virtually eliminated stillbirths after 35 weeks' gestation and have not been associated with an undue increase in neonatal deaths

We wish to acknowledge our indebtedness to the Commissioner of Public Health for his continued interest and help in this long, and at times tedious, investigation, to Mr R L Kirk and Mr J Shield, of the department of zoology, University of Western Australia, for their many statistical analyses and conclusions, to the matron and nursing staff of the King Edward Memorial Hospital, to those members of the laboratory staff who have so often gone out of their way to help us with innumerable tests and investigations, and finally to the Red Cross for its ever willing coöperation in providing blood

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THE ANTI-THYROID EFFECT OF PHENYLBUTAZONE

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Phenylbutazone (' Butazolidin ') inhibits the up of radio-iodine by the thyroid, both in man (G et al 1953) and in the rat (Scott et al 1953) We r here a case in which it caused a clinically obvious go and offer some observations on its mode of action

Case-report

A woman, aged 60, had had pain and swelling of the joints since 1939 In that year she attended the p therapy department of University College Hospital, wh diagnosis of rheumatoid arthritis was made In July, 1 *treatment with phenylbutazone was started in a d* 200 mg b d This was continued without interr until she was seen by us in December, 1954 The pains were relieved but in September, 1954 (after 14 treatment), *she noticed a swelling in the neck At this she also started to feel the cold more than formerly* B of the last two symptoms Dr H A Burt referred her for investigation

When we first saw her (after 17 months treatment phenylbutazone) she had *a firm diffuse goitre estimated* two to three times as large as a normal thyroid No bruit was audible over it, and an X ray film of the showed no distortion of the trachea Her facial was somewhat suggestive of myxœdema, but the *of the skin was normal The plasma* cholesterol was 3 per 100 ml.

After an initial radio iodine test (described later) butazone was stopped A month *later the goitre* disappeared

Phenylbutazone was then restarted in the same d (200 mg b d) A month later the goitre had reap and was about the same size as originally

Phenylbutazone was again stopped, and within 2 the goitre had disappeared Phenylbutazone was then again, because the patient's pain had increased, wi addition of sodium L thyroxine 0 2 mg daily, and a month the thyroid was still impalpable The p cholesterol *did not vary significantly* during the pe observation

Investigations

This patient, and several others, were given tracer doses of radioactive iodine, followed ab hour later by 400 mg of potassium *perchlorate* If an appreciable proportion of the radio iodine thyroid is in the *form of inorganic* iodide the perch will cause it to be discharged from the gland, and thyroid counting rate will fall (Stanbury and Wyngar 1952) When this happens, it provides good ev *that the organic* binding of iodide by the thyroid been prevented or slowed down Thiouracil int the binding of iodine, and hence the method can be *to show whether or not a drug* has an action resem that of thiouracil The technique used in the instance was the same as that used to investig goitrogenic action of *p* aminosalicylate (Edwards 1954)

The results obtained in the case described abov shown in fig 1*a* 400 mg of potassium perchlora given 80 minutes after a tracer dose of radio-i The thyroid counting-rate has been expressed *percentage of the counting rate* immediately befor perchlorate was given Curve A was obtained the patient had had no phenylbutazone for 2 weeks counting rate did not fall, therefore no appre quantity of iodide had accumulated within the th Curve B was obtained 2 hours after a single dose of 2

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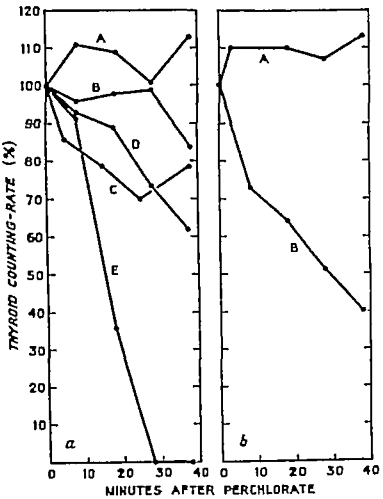
* In receipt of a grant from the Sir-Halley Stewart Tr



le—Results of administering 400 mg of potassium perchlorate, 80 minutes after a tracer dose of radio-iodine.

he counting rate in the thyroid has been expressed as a ontage of the figure obtained immediately before the hlorate A: no treatment for 2 weeks B: after a single (200 mg) of phenylbutazone C: after phenylbutazone mg b d for 2 weeks. D after phenylbutazone 200 mg for 2 months E after phenylbutazone 200 mg b d 17 months.

Fig 1b—Thyroid counting-rate in a second patient.

: after phenylbutazone had been withheld for 24 hours. after taking phenylbutazone 200 mg t d.s. for 18 months.

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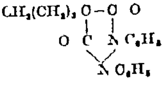
henylbutazone. There was only a doubtful fall in iting rate Curves C and D were obtained 2 weeks 2 months respectively after restarting phenyl tzone in a dose of 200 mg b d They show a definite incomplete, fall in counting rate Curve E was ined when the patient was first seen after she had m phenylbutazone continuously for 17 months hows an apparently complete discharge of radio ne from the thyroid indicating that it was virtually n the form of inorganic iodide

similar test in another patient who had taken ylbutazone continuously for 18 months (200 mg), also showed that a considerable proportion of thyroid s content of radio iodine could be dis ged by potassium perchlorate After phenylbutazone been withheld for 24 hours no discharge occurred the administration of potassium perchlorate 1b) In one patient who had taken phenylbutazone mg b d for 3 months and in another who had n 200 mg once daily for 22 months the thyroid ating rate did not change after the perchlorate was n In three other subjects a single dose of 200 mg henylbutazone was given 1–2 hours before the radio ne Potassium perchlorate given subsequently did affect the counting rate

Discussion

henylbutazone is 4 butyl 1 2 diphenyl pyrazolidine dione:



$$\begin{array}{l} CH_3(CH_2)_3\,C-C\;\;O \\ \quad\quad\quad\quad\; O\;\; C\;\; N\,C_6H_5 \\ \quad\quad\quad\quad\quad\quad\; N\,C_6H_5 \end{array}$$

It is not related chemically to any other known anti thyroid substance Scott et al (1953) described some chromatographic experiments which appeared to show that phenylbutazone could combine chemically with iodide they suggested that this reaction might explain the drug s anti thyroid effect Their observations are open to the criticism that since the solvent used was water the iodide might have been partially oxidised to iodine In our two subjects an iodine-containing compound could be discharged from the thyroid by perchlorate It is most improbable that any compound other than iodide would behave in this way Therefore free iodide was present in the thyroid at the time and it becomes difficult to postulate that phenylbutazone acts by combining with iodide In fact this hypothesis would be tenable only if there were reason to believe that a phenylbutazone iodide complex could be discharged from the thyroid by perchlorate, which is unlikely It seems more probable that phenylbutazone acts like thiouracil and other known anti thyroid agents by either poisoning or competing with the enzyme system responsible for the oxidation of iodide

We were unable to demonstrate any effect on iodine binding with single doses of 200 mg; or in two patients who had been taking less than 400 mg daily Green et al (1953) used very much larger doses (1 gramme daily by intramuscular injection for 2 or 3 days) to demonstrate inhibition of radio iodine uptake in man Evidently the dose levels in common therapeutic use are only occasionally sufficient to affect thyroid function In our first patient, whose dose was kept constant at 400 mg daily, there appeared to be a relation to the length of time she had been taking the drug (see fig 1a) The degree of inhibition of iodine-binding increased progressively when she had been taking it for 2 weeks 2 months and 17 months. This observation suggests that the level of phenylbutazone in the body tended to build up progressively and did not affect the thyroid until a certain level had been reached On the other hand in the second patient the block to iodine binding disappeared after she had stopped taking the drug for only 24 hours it may be that she was able to excrete it more rapidly

Scott et al (1953) found that rats were sensitive to single doses but failed to show inhibition of radio iodine uptake after continued dosage for 10 days or more So far there does not seem to be any evidence to suggest that the human thyroid can become resistant to phenylbutazone after long-continued treatment Evidently there is a species difference in the response of the thyroid to this drug or in the method by which it is eliminated from the body

Summary

A patient developed a goitre after taking phenylbutazone for 15 months. The goitre disappeared after stopping the drug, and returned within a month after restarting The drug was stopped a second time and again the goitre disappeared

Radio iodine tests showed that in this and another patient there was a well marked block in the synthesis of organic iodine compounds within the thyroid. No such block was found in two patients who were taking less than 400 mg of phenylbutazone daily, and none occurred in 3 subjects given single doses of 200 mg Observations on the original case suggested that the block became more complete the longer the patient had been taking the drug

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EXCRETORY FUNCTION OF THE LIVER

A RE-ASSESSMENT

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MOST cases of jaundice may be correctly diagnosed by laboratory tests, especially when combined with clinical history (Higgins et al 1944, Watson and Hoffbauer 1946, 1947, Snell 1947, Maclagan 1947, Shay and Siplet 1948, Capps et al 1947, Popper and Steigmann 1948, and many others) In a small proportion of cases, however, the jaundice is diagnosed by laboratory methods as obstructive, yet the biliary tract is patent This type of jaundice is known by many names, including intrahepatic primary cholestasis (Popper and Schaffner 1952), hepatocanalicular (Ducci 1947), cholangiolar (Watson and Hoffbauer 1947), and intrahepatic obstructive (Robinson and Moyer 1947, Steigmann and Popper 1943)

Classifications of jaundice are based on the accepted theory of biliary excretion, none of which is completely satisfactory The presence of bilirubin (giving the direct van den Bergh reaction) has been accounted for in blood by postulating that bile is regurgitated back into the blood—a concept which forms the basis of more recent classifications (Rich 1930, Eppinger 1937, Ducci 1947, Popper and Schaffner 1952)

In this paper it is suggested that at least some of the major constituents of bile are secreted by the bile-duct epithelium

The terms hæmobilirubin and cholebilirubin (Harrison 1947) will be used to denote bilirubin which gives the indirect and the direct van den Bergh reactions respectively The two substances appear to be chemically different

Classical Theory of Bile Secretion

Hæmoglobin is broken down in the liver and in other parts of the body by reticulo endothelial cells and converted into hæmobilirubin (McNee 1923) Hepatic parenchymal cells change the hæmobilirubin to cholebilirubin, which is excreted into bile canaliculi, together with phosphatase, cholesterol, bile-salts, and other substances

Evidence in favour of the classical theory is mostly indirect, and depends primarily on the presence of the biliary canalicular system, and on the presence within the canals of various substances including bile pigment

The canalicular system has been investigated by many workers—notably Elias (1949), Chrzonszczewsky (1866), and McIndoe (1928) It is described as a system of channels with rigid walls of submicroscopical thickness which lies in grooves between adjacent faces of parenchymal cells, occasionally running near a blood-vessel Some observers have managed to fill the canaliculi by injection from the bile duct (Elias 1949, Eberth 1867), while others have failed (Grafflin and Bagley 1952) The canaliculi may be outlined by several methods, including parenteral injection of sodium indigo carmminate (Chrzonszczewsky 1866, Elias 1949), tryptaflavine (Hirt et al 1939), fluorescein (Grafflin and Bagley 1952) or differential staining for alkaline phosphatase (Cleveland et al 1950)

Accumulations of bile pigment may be found in canaliculi in both obstructive and hepatocellular jaundice similar accumulations are also seen in Kupffer cells

Since the work of Bollman and Mann (1932) there is little doubt that hæmobilirubin is converted to cholebilirubin by the liver, although Roberts (1933) suggested on theoretical grounds that the conversion may take place elsewhere, and Robinson and Moyer (1947) believed that bile salts may assist extrahepatic conversion But there are several histological and experimental findings [illegible] with the classical theory unless further assumptions, virtually unsupported experimental evidence, are made These findings considered below

The Biliary System

The embryology of the biliary system has not yet clearly defined, and therefore cannot give definite sup to either the classical or the new hypotheses of secretion Geraudel (1905) believed that the hepat raises from two anlages one endodermal, hav normal arterial circulation , and the other mesoder having a portal blood supply Hammar (1926) Meyenburg (1918) also believed that the liver arises two anlages, while Bloom (1926) stated “the liv its ducts arise from repeated dichotomous branch the distal end of the hepatic duct” Theoretica Bloom is correct, congenital absence of intrah bile ducts should not occur, yet several such cases been reported (Ahrens et al 1951) It would appear, that the bile ducts may be separated functionally the parenchyma

The finest biliary ducts within the portal canals cholangioles, which are supposedly connected canaliculi by the canals of Hering They are lin thin epithelium, the cells of which have large Larger ducts are lined by cubical epithelium becomes more columnar as the size of the duct inc The epithelium of the second order of bile duc mitochondria both at the base and at the free edge cell (Maximow and Bloom 1936), and contains fat lets and crystals of cholesterol. The bile duc surrounded by a dense network of blood vessels.

At a conservative estimate there are twice a bile ducts as lobules, and in man each lobule diameter of about 1 mm At least 2 m of bile-du therefore present in 1 c cm of liver tissue , and, al for the presence of large vessels, an adult huma will contain over 2 km of bile duct, which considerable surface area

The bile canaliculi do not retain their regular in all circumstances, but may become a series connected vacuoles of different sizes, especially conditions which lead to watery vacuolation parenchymal cells (Hirt et al 1939, Grafflin and 1952, Trowell 1946) This does not support the thesis that they are rigid tubes which may withstan procedures as maceration (MacGillavry 1865) Mo the fact that they may be injected from the b does not prove conclusively that they are nor connected to the biliary system It is possible to intracellular canals in the liver by injecting the vein at low pressure with coloured gelatin (Sh Shafer 1920), but such canals are now thought artefacts It is perhaps significant that can distended by injection under pressure do not collapse after the pressure is released (Elias 1949, 1867) Another system of intracellular capillar also been described (Williamson and Pearce 192 has not been generally accepted

It is certain that some “canalicular” structure in the liver, but its excretory function is not proven. structure is possibly concerned with storage, fo pigment accumulates in it under the same cond which produce accumulation within the Kupffer c

Hepatocanalicular Jaundice

Jaundice with the biochemical features of duct ob tion, but with a patent biliary system, may arise in conditions, notably in infective hepatitis (Watso Hoffbauer 1947) and after administration of ar amine (Hanger and Gutman 1940) or sulphona (Ducci and Echenique 1946) This type of jaund supposed to arise from regurgitation of formed bi the circulation, somewhere in the region of the canals or the cholangioles (Aschoff 1932, Eppinger atson and Hoffbauer 1947) secondarily to an increase permeability in cholangiolar epithelium

There does not appear to be good evidence supporting e hypothesis that cholangiolar epithelium becomes ore permeable especially since the permeability in tain cases is apparently complete enough to preclude e arriving in the duodenum when the biliary tract is tent (Watson and Hoffbauer 1947 case 4) When bile cts are tied experimentally distension is common and ilar distension has been reported in man which ggests that regurgitation does not readily take place oreover secretion of bile continues against pressures of) mm water or more (Best and Taylor 1939)—a fact ich underlines the impermeability of the biliary thelium Rupture of bile ducts with parenchymal crosis may occur in man (Popper and Schaffner 1952) crosis of the peripheral zone of the lobule is not cribed in canalicular jaundice although regurgitation uld lead to a concentration of bile in the portal tracts ual to that after obstruction

n hepatocanalicular jaundice the parenchyma may w little change except accumulation of bile pigment ich is usually more pronounced towards the centri ular zone Such accumulations of pigment have been en to be evidence of bile stasis (Popper and Schaffner 52) but the concept of stasis does not agree with that regurgitation nor does it explain the presence of ment in Kupffer cells Although the parenchyma may ear normal in hepatocanalicular jaundice there is ally some change in the portal tracts varying from ht lymphocytic infiltration to inflammatory reaction e pathological process presumably occurs within the tal tracts.

igation of the bile ducts may produce an immediate ease of cholebilirubin in lymph from the liver (Cain l. 1947 Gonzalez Oddone 1946) Twenty four hours r the lymph does not contain more cholebilirubin n does the plasma yet the bilirubin which accumulates lasma gives the direct van den Bergh reaction It is cult to reconcile the theory of increased permeability urring a short time after bile duct ligation) with the of lymphatic cholebilirubin at a later stage when neability should be increased and conversion of obilirubin to cholebilirubin is taking place

raction of Bromsulphalein by the Liver

he fall of concentration of bromsulphalein (B.S.P.) eripheral blood depends on several factors in addition excretion into bile There is some extrahepatic oval (Cohn et al 1947 1948) and possibly intra atic storage (Eberhard and Grafe 1953 Shore and ermit 1954) Some reabsorption from the duodenum occur delaying decrease in concentration in pheral blood (Lorber and Shay 1950)

overtheless it has proved possible to obtain reliable lts on B.S.P abstraction in man and to supplement e results by observations on isolated perfused livers.

he liver has been found to remove a definite pro ion of the B.S.P presented to it (Myers 1949 Cassel and Rappaport 1954) Thus increasing either the entration or the rate of blood flow will increase the ount of B.S.P abstracted by the liver

hese observations apply only in certain circumstances nan the blood flow may be increased with no change ven with a concomitant fall of B.S.P extraction by means as injection of adrenaline or concentrated m albumin (Bradley et al 1952) and pyrogenic tions (Bradley and Conan 1947) The total blood may decrease as on standing up after lying down yet the efficiency of the liver in B.S.P removal be eased (Culbertson et al 1951) Similar divergence veen blood flow and B.S.P abstraction has been shown ogs (Heinman et al 1952)

Alteration of the circulatory dynamics of the liver therefore affects B.S.P abstraction and the ratio between blood flow and abstraction is not simple There are two apparently contradictory findings—namely that the liver abstracts a definite proportion of the B.S.P presented to it and that the blood flow may change without concomitant change in B.S.P abstraction The findings may be reconciled if it is assumed that the portal venous and hepatic arterial blood supply different areas of the liver and that all areas are not equally efficient in the removal of B.S.P from blood

In man a far greater proportion of hepatic blood was cleared of B.S.P after surgical formation of portocaval shunts than before (Bradley et al 1951) In perfusion experiments on canine livers it was noted that hepatic arterial blood was cleared far more effectively than portal venous at equal rates of flow and equal degrees of oxygenation (Andrews et al to be published)

The controlling factor in regulation of B.S.P abstraction appears to be the artery, but the distribution of blood in the arterial bed is of great importance

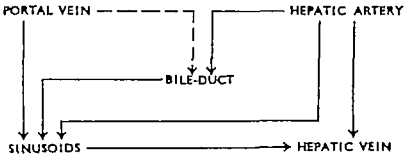
In perfused canine livers injection of adrenaline in small amounts (e g 1 µg per minute) depressed profoundly the ability of the liver to extract B.S.P from plasma even if the flow rate of both hepatic artery and portal vein remained unchanged Injection of the adrenaline directly into the portal vein (instead of into the blood reservoir) had little effect on B.S.P extraction whereas injection into the hepatic artery inhibited extraction almost completely (Andrews et al. 1955)

There does not seem to be any interpretation of the results cited above other than that a large part of the hepatic arterial bed is concerned with the abstraction of B.S.P whereas only a small portion of the portal venous is so concerned Since B.S.P and bilirubin may be excreted by the same mechanism (Canterow et al 1948) the conclusion may well apply also to bilirubin

Blood supply of the Liver

The function of any organ depends basically on its blood supply and as has been shown the terminal distribution of hepatic arterial and portal venous blood appears to be related to hepatic function

The hepatic blood flow can be represented diagrammatically as follows (Andrews et al 1949 Andrews and Maegraith 1951)



Wakim and Mann (1953) describe arterioportal venous connections, which I too have observed

Wakim and Mann (1942) in transillumination studies found that at any given moment some sinusoids were supplied by mainly arterial and some by mainly portal venous blood but this pattern has not been observed in injection studies Anatomically the whole of the periphery of the lobule receives an arterial supply (Olds and Stafford 1930 Andrews et al. 1949) Elias (1949) described arterial vessels which supply the centre of the lobule but many workers have not seen these vessels and even if they carry a high proportion of arterial blood (which is unlikely) the central zone of the lobule would still receive more portal venous than arterial blood The portal tracts are the only part of the liver which receive a predominantly arterial blood supply and it therefore appears probable that B.S.P is removed from the blood supplying the bile ducts.

New Hypothesis of Bile Secretion

I suggest that published observations on the excretory function of liver support the hypothesis that the biliary tract secretes most, if not all, of the constituents of bile This hypothesis entails a different concept of the functions of the parenchymal and biliary cells, but not of the reticuloendothelium

The only modification required of the accepted theory is that the parenchymal cells do not excrete the substances found in bile although they *may form* them The cells convert hæmobilirubin to cholebilirubin, which is then returned to the circulation for excretion by the biliary epithelium When failure of biliary excretion takes place pigment accumulates within the cells Other substances which interfere with bilirubin excretion, such as B S P, may possibly be stored Alkaline phosphatase is largely elaborated by parenchymal cells, for the serum concentration falls in severe parenchymal damage, some phosphatase passes from the parenchyma to the blood, and it is suggested that the plasma phosphatase is excreted by biliary epithelium

There is insufficient evidence to determine the function of the canalicular system No connection has been shown between the lymphatic system and parenchymal cells, yet hepatic lymph contains a high concentration of protein, some of which apparently has been newly formed (Cain et al 1947) The canaliculi may connect the parenchyma to the lymphatics, and rupture of cholangioles, together with distension of the bile duct, would account for filling when the bile duct is injected under pressure

The biliary epithelium appears to excrete the substances found in bile As the main blood supply to the epithelium is arterial, variations in arterial flow affect the formation of bile, and in perfused livers removal of B S P is inhibited by adding 1 μg noradrenaline per minute to the arterial flow Biliary function would therefore appear to be analogous to renal function in that acholeresis may correspond to anuria (Maegraith et al 1945), both being primarily due to rearrangements of the circulation

In the profusion of disconnected observations on hepatic function are certain data which do not accord with the classical hypothesis of bile excretion, but are readily explicable by the new hypothesis Amongst these observations are

1 The presence of bile thrombi when the bile ducts are patent
2 The occurrence of *hepatocanalicular jaundice*
3 The presence of cholebilirubin in hepatic lymph soon after duct ligation but not twenty four hours later
4 The polymorphism, under some conditions, of bile canaliculi
5 The greater importance of the arterial than of the portal venous circulation in B S P removals
6 The presence of bile in rudimentary extrahepatic bile ducts and gall bladder in the absence of intrahepatic ducts (Ahrens et al. 1951)
7 The occasional great disparity between degree of jaundice and parenchymal damage (Welin 1952, Norcross et al 1952)
8 The proliferation of bile ducts but not parenchyma when the bile duct is obstructed

Three observations, however, must be mentioned as not immediately complying with the new hypothesis

1 The bile ducts contain but little phosphatase, as shown by histological techniques
2 Bile duct tumours do not contain bile
3 In obstructive jaundice biliary cells do not contain stored bile

None of these observations is necessarily antagonistic Only small amounts of phosphatase need be present in cells at any given moment even during rapid excretion and we have no evidence that excretion is rapid Storage of bile need not necessarily take place, though admittedly it would be expected Ligated bile-ducts do not, after a time, contain bile pigment and the bile duct tum possibly behave in a similar fashion to ligated duct

Discussion

While it is admitted that the new hypothes prove to be wrong in several respects it does acc known data, and it does explain simply and further assumptions many phenomena which are fectly understood

Classifications of jaundice have become more and complex during the past twenty years, new know has come to light and has been fitted, at times strain, into the existing hypothesis There is, for ex scant, if any, real evidence that “ regurgitation jaund exists, and unless further experimental support is coming the term should be discarded as having o its usefulness as a concept for pathological classifica

A simple scheme for classification of jaundice is below

Prehepatic jaundice —(*a*) Familial acholuric (*b*) Hæm

Parenchymal jaundice —Due to damage of parench viruses or toxic agents There is accumulation of bilirubin in the blood

Biliary jaundice —(*a*) Obstructive (*b*) Due to biliary epithelium (for example, by viruses) (*c*) D rearrangements of the circulation which divert blood the biliary epithelium

There is accumulation of cholebilirubin in the blood.

Mixed van den Bergh reactions are common in jau especially in viral jaundice, and it appears that rea ments of the hepatic circulation may lead to re of cholebilirubin whenever the hepatic parench damaged

Congestion occurs in the liver after such procedu ligation of the bile duct or hepatic artery, injecti carbon tetrachloride, and production of infarcts (Ca and Oakley 1932, Cameron and Mayes 1930, T et al 1950, Cameron and Karunaratne 1936, And Maegraith 1949, Winternitz 1911) In fact it difficult, if not impossible, to produce damage t part of the liver without producing circulatory and these changes may lead to disturbances in t function For example, simple procedures for creation of a biliary fistula may lead to retention of and phosphatase (Thannhauser et al 1937, Drill 1945), retention of phosphatase also occurs in after cholecystectomy (Tanturi et al 1950)

Changes in the circulation in organs other th liver may also lead to biliary dysfunction Blumber Schloss (1947) commented on the circulatory factor excretion of B S P and found that in cardiac failur retention of B S P was proportional to the de decompensation Because of circulatory factors fore, some degree of cholebilirubinæmia is to be exp whenever the parenchyma is damaged or in such ditions as cardiac failure The hepatic circulation changed in various conditions such as shock (Mac et al 1947, Wiggers et al 1946), and it has been sug by many workers that the liver is of great import regulating the return of blood to the heart The lation of hepatic blood flow appears to be extr labile, and minor degrees of retention of B S P are fore to be expected in many clinical conditions indeed the case

It is almost axiomatic (according to the new thesis) that although biliary and parenchymal jau may exist independently, it is far more probal biliary jaundice to exist alone than for parench Obstructive biliary jaundice seldom gives rise to culties of diagnosis, whilst parenchymal jaundice a functional element of biliary jaundice, may well

Kiernan (1833) suggested that the main function hepatic artery was to supply the bile ducts, and would (on the basis of the new hypothesis) appear correct Various workers (Barcroft and Shore pper et al 1954) suggested that the main function of artery was to supply oxygen to the parenchyma arkowitz (1949) took this a stage further and suggested t the primary purpose was to maintain an oxygen ision high enough to prevent development of gas igrene organisms Ezo (1952) however, pointed out t temporary protection with penicillin is sufficient to olong life indefinitely and it has not been proved that ierobic organisms are of importance in causing death ier than in the dog after hepatic arterial ligation om the diagram it will be seen that in complete absence tarterial supply the bile ducts still receive a portal upply

t has been assumed for centuries that parenchymal s secrete bile and the assumption appears to have ained unchallenged—and unproven The classical ory may yet be shown to be correct in several impor t aspects, but it will have to undergo virtual meta rphosis before it can be accepted It may be that tain areas only of the lobule receive an arterial supply d that these areas alone secrete bile all present dence is however against this assumption The ree of oxygenation is not the important factor for the erence in extraction of B.S P persists even when artery vein are equally well oxygenated It appears that classical theory of bile formation is no longer fully able and the new hypothesis seems to be the most onable alternative

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STUDIES ON THE ANTI-TUMOUR ACTIVITY OF *p*-DI-(2-CHLOROETHYL) AMINOPHENYLALANINE (SARCOLYSINE)

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BASED on the suggestion advanced by one of us[6] about the possible anti tumour activity of the substituted amino acids that can act in the body as antimetabolites a number of derivatives of lysine[7] were synthesised some years ago Some of them appeared to possess a low anti tumour activity Amino acids as a basis for anti-tumour compounds have attracted the attention of other investigators[3 4 12]

On the other hand the study of chloroethylamines carried out for many years both in the U S.S R[6] and abroad[9–11] showed that this group of compounds undoubtedly had therapeutic effects upon malignant diseases of the hæmopoietic system (chronic leukæmia Hodgkin s disease) and to a slight extent upon some malignant tumours (lymphosarcoma bronchogenic carcinoma) Accordingly it was thought desirable to obtain amino-acids with chloroethylamino groups as their substituents. It seemed reasonable to carry out this work on the basis of essential amino acids. Derivatives of phenylalanine were selected as the first object

In 1953 DL *p* di (2 chloroethyl)aminophenylalanine (named sarcolysine) was synthesised and in the early months of 1954 this compound was tested biologically The very first experiments showed its great activity against certain tumours of animals, particularly against sarcomas The findings were reported at a conference in Kiev on June 24–26 1954

In July 1954 the *Journal of the Chemical Society* in London published the work of F Bergel and J A. Stock on the synthesis of the same compound and on its preliminary biological tests carried out by A. Haddow[1]

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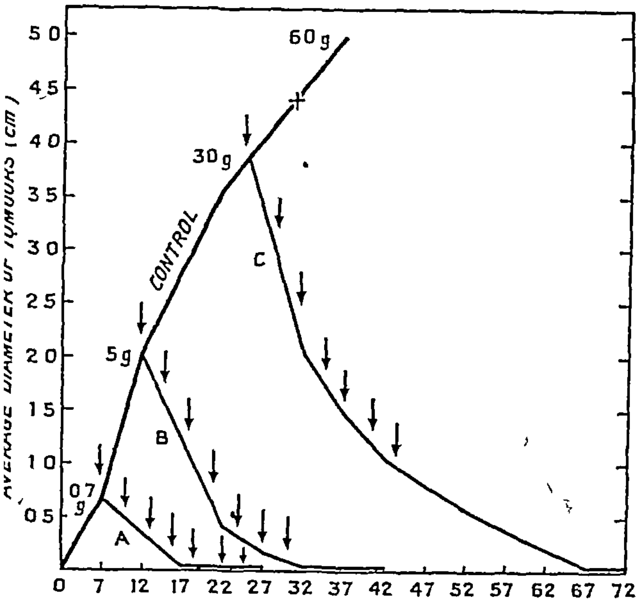

Fig 1—Curves showing changes in the average diameter of rat tumours treated with sarcolysine and in that of controls A, B, and C are curves of experiments with the beginning of treatment on the 7th, 12th, and 25th days after inoculation The cross shows the beginning of deaths among untreated animals The arrows indicate injections of the drug

The latter found a complete inhibition of growth of Walker rat carcinoma 256

In connection with this communication we considered it necessary to publish a short report about our findings

Methods of Synthesis of the Compounds

The synthesis of DL p di-(2-chloroethyl)aminophenylalanine (sarcolysine) was carried out by us as follows

Acetamido p nitrobenzylmalonic ester [2] was reduced by hydrogen in the presence of Raney nickel catalyst to acetamido-p aminobenzylmalonic ester (m p 130–131°C, from benzene), the reaction was conducted in 95% alcohol at 50–60° for 40 minutes, yield 90% The obtained compound was condensed in an aqueous alcoholic medium with ethylene oxide (the latter substance being taken in fivefold excess) in sealed tubes at 85–90°, acetamido-p di (2 hydroxyethyl)amino benzylmalonic ester (m p 116–117° from amylacetate) was obtained with a yield of 80–90% This compound, when interacted with thionyl chloride in a chloroform solution at 45° for 1 5 hours, gave acetamido p di (2 chloroethyl)amino benzylmalonic ester (m p 120–121°, from alcohol), yield 60% The obtained substance was converted into DL-p di (2 chloroethyl)aminophenylalanine hydrochloride by prolonged heating under reflux with concentrated hydrochloric acid

After reprecipitation from an alcohol diethyl ether m the compound melted at 175–178° (with decomposit a copper block (rate 6° per minute) The introduced at 100° After recrystallisation from 95% al the salt melts at 182–185°

The *free amino-acid* was *precipitated by* mean diethylamine from an alcohol solution of its h chloride After recrystallisation from aqueous al it melts at 167–170° (with decomp) The yield of acid from acetamido-p di (2 chloroethyl)aminob malonic ester is 80% For the experiments de below DL p di-(2 chloroethyl)aminophenylalanine h chloride dissolved in saline solution was used

We have synthesised some analogues of sarco

DL p di (2 bromoethyl)aminophenylalanine was from acetamido p di-(2-hydroxyethyl)aminob ester, the latter by interaction with thionyl brom chloroform solution gives acetamido p di (2 brom aminobenzylmalonic ester hydrobromide (m p 16 which when heated with concentrated hydrobromic ac subjected to subsequent treatment with diethylamin converted into DL-p di (2 bromoethyl)aminophenyl (m p 126–128° with decomp)

DL p dimethylaminophenylalanine and DL p diethyl phenylalanine are mentioned in the literature [4] but their method of production nor their constants hav described These substances we obtained by the az method The azlactones (2 phenyl 4 dimethylam oxazolone with m p 214–215° and 2 phenyl 4 diethyl benzal 5 oxazolone with m p 123–124°) were obtained interaction of hippuric acid with p dimet dehyde and p diethylaminobenzaldehyde, respectively presence of acetic anhydride and sodium acetate [*] D methylaminophenylalanine (m p 253–255° with decomp DL-p diethylaminophenylalanine (m p 194–196° with

ILLUSTRATIVE EXPERIMENT

No of test	No of animals	Dose in mg per kg	No of injections	Interval between injections (hours)	Day on which treatment began	Average tumour weight before treatment (g)	Results of treatment	B
N9 a	10	5	5	72	7	0 5	Complete regression of tumours	110
b	10	5	3	72	7	0 8		1[illegible]
c	8	15	1	—	7	0 5		11[illegible]

respectively were obtained by heating these oxazolone hydriodic acid in the presence of red phosphorus subsequent precipitation with ammonia

Biological Tests

The activity of sarcolysine agai transplantable rat sarcoma 45 was by us in detail

It is the strain of spindle cell sa which developed from a tumour in by 9,10 dimethyl 1,2-benzanthracene strain is characterised by 100% plantability, by rapid and rather growth in separate animals, and absence of spontaneous regression tumours The animals usually d the 30th–35th day after inoculatio average weight of tumours reaching and more by this time

To characterise the sensitivity of th to chemotherapeutic agents we shall no daily intraperitoneal injections of di-(2-

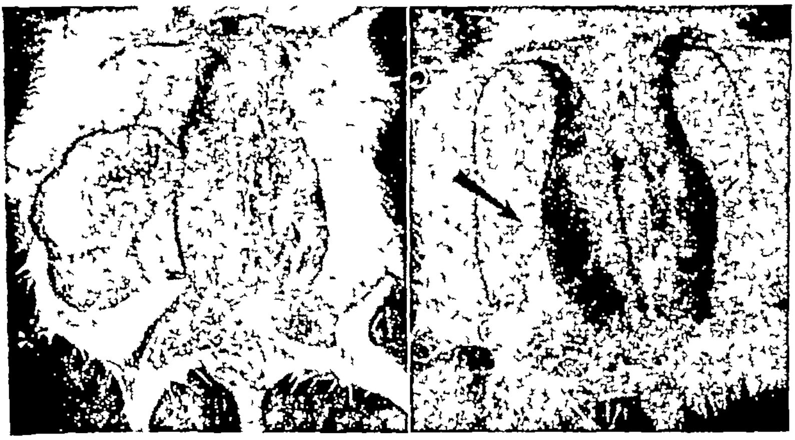

Fig 2—Left control rat tumour on the 25th day after inoculation Right : the rat killed within after treatment , arrow shows the place of treated tumour

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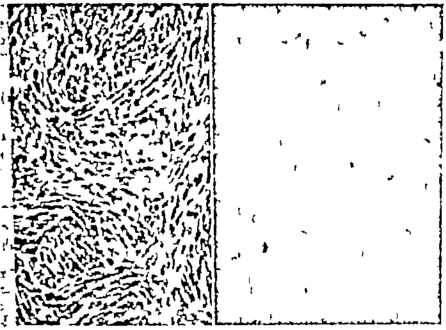
[*] These azlactones we understand, have pared by F W Schueler and S C (*J Amer chem Soc* 1950, 72,



—Left: section of untreated rat sarcoma 45 (Hæmatoxylin and in. × 200) Right: section of small nodule remained after ression of tumour treated with sarcolysine. Connective-tissue oma of tumour is seen but no tumour cells. (Hæmatoxylin and in × 200)

l)methylamine hydrochloride (designated in the U S S R mbichin) in a dose of 0 2 mg per kg body weight daily t but a very slight influence upon it even at the beginning ne treatment on the 7th day after transplantation (the ange per cent of inhibition is 10) †

n the basis of the data obtained in our laboratory (V P oplov) N,N—di (2-chloroethyl) aniline hydrochloride ministered orally in daily doses of 10 mg per kg body ht gives more significant inhibition of sarcoma 45 growth average per cent of inhibition is 75) but never leads to its plete regression

ie study of the activity of sarcolysine against oma 45 was carried out on 240 rats As a rule the tance was repeatedly injected intraperitoneally e saline (up to 7 times) with intervals of 72 hours rst we began the treatment of the animals on the day after inoculation when the tumour weight es 0·5–1·0 g (average—0 7 g)

e very first tests showed that sarcolysine injected or four times in doses of 10 mg per kg body at with intervals of 72 hours between injections lly leads to complete regression of tumours in all animals (fig 1 curve A) This was not observed any other substances investigated by us before

uring subsequent tests the complete regression of all ours (the dose being 10 mg per kg body weight) rred at the later commencement of the treatment—on the 12th day after inoculation when the average our weight reaches 5 g (fig 1 curve B) Moreover, plete regression of the tumour was obtained even atment was started on the 25th day after inoculation at is only 7–10 days before the death of the untreated als, when the average tumour weight reaches 30 g 1 curve C fig 2)

owever when the drug was injected repeatedly dose of 10 mg per kg body weight (with intervals 2 hours) some manifestations of its toxicity were rved the total body weight decreased and in some rimental series a few animals died Consequently experiments were carried out in which either the ber of the injections decreased or the dose was ed to 5–3 mg per kg body weight or both in to find conditions in which the toxic effects of lysine would be absent or insignificant

e results of one of the experimental series are pre d in the accompanying table from which it will be seen that three injections of 5 mg per kg doses at intervals of 72 hours or a single injection of a 15 mg per kg dose, are sufficient for the complete regression of all the tumours In all these tests the toxic effect of the substance was not definitely observed At the end of the experiment (on the 28th day) the average tumour weight in the control group was 40 g

The microscopic examination of the regressing tumours revealed the disappearance of tumour cells by the end of the treatment only a small nodule remained which contained no sarcoma cells at all and consisted merely of the connective tissue stroma of the tumour (fig 3) The "recovery" was stable and no relapses followed (The follow up was for 3 months)

Preliminary data have been obtained on the activity of sarcolysine against some other transplantable tumours —namely another rat spindle-cell sarcoma (strain M1) and mammary adenocarcinoma in mice (strain RSM) With these tumours under treatment with sarcolysine complete regression was not observed, but their growth was considerably inhibited (55–80%) The activity of sarcolysine against these tumours was also stronger than that of di (2-chloroethyl)methylamine and N,N—di (2 chloroethyl) aniline

Together with its anti tumour activity sarcolysine possesses an inhibiting action on the hæmopoietic system (particularly on the bone marrow hæmopoiesis) This activity resembles that of di (2-chloroethyl)methyl amine But in order to obtain the same effect the doses must be about five times greater In the doses in which sarcolysine effects the experimental rat tumours its influence upon the hæmopoietic system of these animals does not exceed the activity of therapeutic doses of the above mentioned compound This enabled us to start clinical trials of sarcolysine in neoplastic diseases.

The entire study described above demonstrates the great interest presented by the research of anti tumour compounds among chloroethylamino derivatives of essential amino acids

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† per cent of inhibition was calculated according to he formula:

verage tumour weight of control animals minus average our weight of treated animals multiplied by 100 and divided the average weight of the control animals

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The person who presents himself to a physician does so in the final analysis, because of anxiety He has symptoms which he suspects are caused by something but the cause and the remedy are beyond his capacity This makes him anxious and forces him to seek help Whether the chief complaint in motivating his decision is a productive cough double vision, or pain, behind it lies anxiety In most instances this anxiety is well within the patient's tolerance and for that reason it is neither apparent nor mentioned He merely alludes to it in an indirect way by asking to be told what to do and how to do it In turn the physician's prescription or the regimen he recommends indirectly treats this anxiety in that in effect it promises improvement if not actual cure of the complaint These basic feelings underlie every clinician's relations with his patients. However little if any of this is ever spelled out openly these are the nonverbal exchanges which the skilled physician grasps intuitively —HOWARD P ROME *Collected Papers of the Mayo Clinic and the Mayo Foundation* Philadelphia and London, 1955; vol. XLVI, p 733

STREPTOCOCCUS PYOGENES INFECTIONS IN A HOSPITAL

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Many surgeons and bacteriologists have the impression that, since the introduction of penicillin, cross infection of surgical wounds with *Streptococcus pyogenes* has become rare Evidence supporting this impression was collected at the Royal Prince Alfred Hospital, during the eleven months ended May, 1951 (Rountree 1951), when only 6 cases of probable hospital infection occurred But in the succeeding three years to the end of June, 1954, there was an increasing incidence of streptococcal cross-infection

TABLE I—INCIDENCE OF INFECTIONS WITH *Strep pyogenes* IN PATIENTS FROM JULY, 1950, to JUNE, 1954

Condition	Year			
	1950–51	1951–52	1952–53	1953–54
Infected on admission				
Pyogenic lesions	61	55	52	73
Infected in hospital				
Surgical wounds	4	11	28	32
Bedsores	1	1	1	
Possibly infected in hospital				
Burns	5	4	3	3
Wounds			4	2
Histories not available		3	5	5
Total	71	74	93	115

Incidence

The incidence was ascertained by examining the case histories of patients from whom hæmolytic streptococci of group A had been isolated in our routine laboratory Streptococci isolated from sputa, urine, and throat swabs were not included An assessment was made as to whether each patient was infected before or after admission

Table I shows the incidence of infection for the four yearly periods from July, 1950, to June, 1954 The figures for 1950–51 are those previously published (Rountree 1951) with the addition of cases occurring in June, 1951

From 1950 to 1953 the annual number of admissions with pyogenic lesions due to *Strep pyogenes* remained constant, but there was an increase in the number of infected surgical wounds from 4 in 1950 to 28 in 1952–53 In the following twelve months the number of infected wounds rose to 32, and there was also an increase in the number of patients admitted with infections

Association of Streptococci with other Bacteria

In some cases the streptococci were the only pathogens isolated from lesions, but commonly other bacteria were also present Table II shows the number of lesions containing only *Strep pyogenes* and the number in which other organisms were also present Infections of uncertain origin have been omitted from the table, " the inf in hospital " cases include the 3 bedsores

Of the 180 patients infected on admission 70 (38 had *Strep pyogenes* alone , of the remainder 90 (5 had also *Staphylococcus aureus* in their lesions App mately half (51 out of 96) of these staphylococc penicillin-resistant A small number of lesions *Escherichia coli*, *Pseudomonas pyocyanea*, or pr mixed infections with one of these bacteria and *S aureus* occurring occasionally

Of the 73 patients infected in hospital, 21 (28 8% streptococci alone, while 46 (63 0%) had *Staph* as well The majority (82 6%) of these sta were penicillin-resistant, and many were also res to streptomycin, oxytetracycline, and aureomyc has already been shown (Rountree and Thomson that, in 1952, 64 7% of the strains of *Staph* isolated from inpatients in this hospital were pen resistant , and unpublished observations in the succ years indicate that this incidence has been The association of these antibiotic resistant staph with *Strep pyogenes* infections acquired in hospital therefore surprising

Sources of Cross-infecting Streptococci

The association of many infections with the strains of *Staph aureus* suggests that their sour the flora of the respiratory tract of the hospital p or the infected wounds of other patients in t ward Throat swabs for *Strep pyogenes* are tak the nursing staff on various routine occasions, if they are suffering from sore throats or tonsill

TABLE III—QUARTERLY INCIDENCE OF *Strep pyo* PATIENTS' LESIONS AND IN THROAT SWABS FROM STAFF, INPATIENTS ON ADMISSION, AND CASUALTY

Period	No of patients infected		Positive th swabs (	
	On admission	In hospital	Staff	In patients
July–Sept , 1951	16	2	8 8	5 3
Oct –Dec 1951	15	3	8 3	7 7
Jan –March, 1952	13	1	9 0	3 3
April–June, 1952	11	5	13 2	9 0
July–Sept , 1952	18	7	6 3	5 1
Oct –Dec , 1952	7	7	16 4	11·0
Jan –March, 1953	14	8	5 8	13 7
April–June, 1953	13	10	5 0	1 5
July–Sept , 1953	21	15	22 2	8 8
Oct –Dec 1953	25	6	14 8	
Jan –March, 1954	16	7	12 7	6 4
April–June, 1954	11	6	11 8	

increased incidence of streptococcal throat in in the nursing staff which might constitute a s wound infection should therefore be apparent routine laboratory records

Routine throat swabs are also taken from admission and from adult patients admitted clinical research ward The incidence of hæ streptococci in these swabs should reflect the carr in the general community Throat swabs are tak casualty patients presenting themselves with sore

TABLE II—ASSOCIATION OF OTHER BACTERIA WITH *Strep pybgenes* IN PYOGENIC LESIONS

Where infected	Year	Total no	*Strep pyogenes* alone	Plus *Staph aureus*		Plus *Esch coli*	Plus *Ps pyocyanea*
				Penicillin-sensitive	Penicillin resistant		
On admission	1951–52	55	18	14	23	4	1
	1952–53	52	17	18	10	4	3
	1953–54	73	35	13	18	7	2
Total		180	70 (*38 9*%)	45 (*25*%)	51 (*28 3*%)	15 (*8 3*%)	6
In hospital	1951–52	12	5		6		1
	1952–53	29	4	3	19		4
	1953–54	32	12	5	13	1	
Total		73	21 (*28 8*%)	8 (*11*%)	38 (*52*%)	1	5

tonsillitis, and the incidence of streptococci in these abs should give an index of the amount of clinical eptococcal infection in the community

The percentages of positive throat swabs obtained from se three groups of people in quarterly periods from ly, 1951, to June, 1954 are given in table III together h the incidence of streptococcal wound infection and infections on admission during the same periods

ompared with the nine months from July, 1951 to rch 1952 there was an increased incidence of hæmo ic streptococci in the throats of staff during the iods April–June 1952 October–December 1952 y–September 1953 and October–December 1953 e first period of increased incidence in the staff corre nds to the occurrence of 5 cross infected wounds

he highest incidence in wounds—namely 15 cases in y–September 1953—also corresponds to the period en there was the highest incidence in the staff In all the quarters do the figures agree so well for mple, in the second quarter of 1953 there were 10 es of wound infection while the incidence of positive oat swabs in the staff was only 5% However 5 of se 10 cases occurred in one particular ward and in o of these cases there was evidence of spread from ient to patient

here was an increased incidence of hæmolytic strepto cal throat infections in casualty patients throughout 2 The incidence declined during the first six months 1953 but was again high from July 1953 onwards main peaks of incidence in the casualty patients respond to those in the nursing staff and both are lently related to outbreaks of streptococcal sore oats and tonsillitis No correlation can be seen ween the incidence in casualty and in patients admitted pyogenic lesions Similarly there seems to be little elation between the incidence of streptococcal throat iers among patients on admission and the incidence asualty patients Taken as a whole, the figures in e III suggest that the increased incidence of strepto al wound infection could be associated with an ease in the number of nurses suffering from strepto al throat infection Similarly the periods of highest lence of positive throat swabs in the staff correspond peaks in the casualty patients suggesting that reaks of clinical streptococcal tonsillitis and sore ats occurred at these times

Discussion

recent years attention has been focused on anti lo-resistant staphylococci as the chief cause of wound *tion in hospitals*, and it seems to have been assumed control of the hæmolytic streptococcus no longer ents any problem A search of published work reveals recent reports of streptococcal *infection of surgical* nds. However Gibson and Calman (1953) described harp outbreak of puerperal infection at Queen rlotte's Hospital London This began in November 2, and 25 cases had occurred by February, 1953 *Lancet* (1953) remarked that this outbreak was a inder that 'the hæmolytic streptococcus has not its sting

ur experience in Sydney shows that while in 1950–53 e was no increase in the numbers of patients admitted ospital with pyogenic lesions caused by streptococci e was a steady increase in the numbers acquiring nd infections while in hospital Many of these tions were associated with penicillin resistant staphy cci and were in patients whose operations had been ied out under a penicillin cover Experience at the ical Research Council Burns Unit at Birmingham kson et al 1951) has shown that prophylactic cillin cream is valuable in preventing colonisation of s with *Strep pyogenes* When however the strepto us is implanted into a surgical wound along with an antibiotic resistant staphylococcus that is a potent penicillinase producer, it would seem that parenteral penicillin cannot be relied on to prevent streptococcal colonisation of the wound All our strains of *Strep pyogenes* have been penicillin sensitive

No patient in this series had a generalised streptococcal illness consequent to his wound infection Nevertheless, the results of this investigation suggest that complacency regarding the hæmolytic streptococcus is inadvisable

Summary

During the four years from July 1950 to June 1954 there was an increasing incidence of hæmolytic streptococcal infection of surgical wounds in a hospital in Sydney Many of these infections were associated with penicillinase producing staphylococci.

The increased incidence of wound infection was partly correlated with an increased number of streptococcal throat infections in the staff

This work was supported in part by the Australian National Health and Medical Research Council I am indebted to members of the honorary staff for permission to use their case records, and to Miss O Spurway and the staff of the medical records department for their assistance with the case histories An inquiry from Dr Leonard Colebrook F.R.S prompted this investigation

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CHLORPROMAZINE AS AN AID TO COOLING IN A THYROID CRISIS

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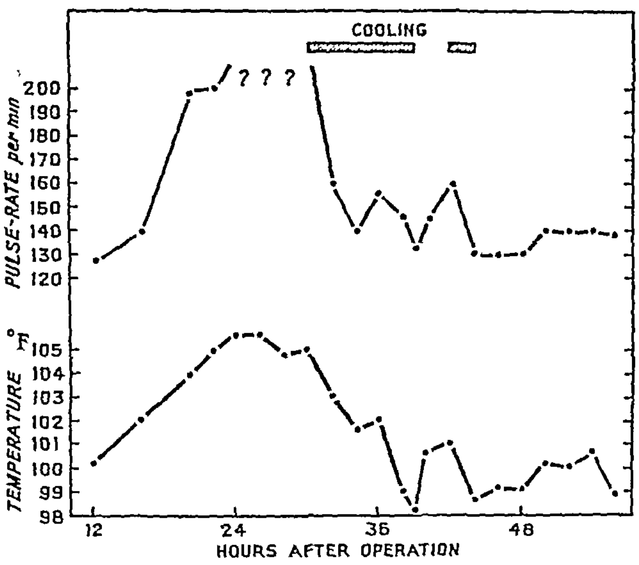
CRISES after operation for exophthalmic goitre are now rare Pre treatment with thiouracil and the pre operative administration of iodine have reduced the risks of surgery in this condition to vanishing point There is still however no really reliable method of assessing the severity of the metabolic disturbance produced by hyperthyroidism There are numerous fallacies in determinations of the basal metabolic rate, especially in apprehensive patients and even the use of radioactive iodine when it is available, does not always give conclusive results. Thus the differential diagnosis of anxiety neurosis from hyperthyroidism is still sometimes difficult and occasionally a patient with true hyperthyroidism slips through and reaches the operating table with the double diagnosis of thyrotoxicosis and anxiety state, not as fully prepared as is desirable The following case indicates what may *happen*

Case-record

A married woman, aged 37 was admitted to hospital on March 21 1955 complaining of nerves, tremor and loss of weight. She had slight exophthalmos, a diffuse soft enlargement of the thyroid gland and tachycardia After treatment for three weeks with phenobarbitone and Lugol's iodine her sleeping pulse-rate had fallen to 80 per minute although her waking pulse was extremely unstable It was, however felt that this was due more to an anxiety state than to hyperthyroidism, and operation was undertaken.

Operation —The patient was premedicated with Omnopon gr $^1/_3$ and scopolamine gr $^1/_{150}$ Anæsthesia was induced with 0·25 g thiopentone and maintained with nitrous oxide and oxygen During operation a further 0 3 g of thiopentone was administered together with 75 mg pethidine 30 mg suxamethonium was given to facilitate intubation and the trachea was anæsthetised by spraying with 3 ml. of 2% amethocaine delivered from a Macintosh spray The patient's pulse rate



Pulse-rate and temperature after operation

shortly after induction was 114, and it rose steadily during operation until fifty minutes later it was 140 It remained at about this level for the remainder of the operation, which was a subtotal thyroidectomy and lasted seventy minutes On return to bed the pulse rate was 120 per minute, respiratory rate 24 per minute, and temperature 100 2°F

Progress—During the succeeding day the temperature rose steadily to 105°F, and the pulse rate to 200, and thereafter the pulse became completely uncountable, and auricular fibrillation developed Despite treatment with digoxin and intravenous iodine and sedation with phenobarbitone, the patient's condition deteriorated steadily until, some thirty hours after operation, her respiration was rapid (rate 42 per minute) and gasping, her pulse was completely uncountable, and she was semiconscious though she would speak when roused, her heart sounds had become more or less equal in quality, and it was felt that she was unlikely to survive for longer than twelve hours

When, twenty-four hours after operation, it had become apparent that a thyroid crisis was developing the patient was given by mouth a test dose of chlorpromazine 25 mg., followed by 50 mg four hours later A further 50 mg was given every eight hours during the subsequent seventy two hours. The blankets were at once removed from the bed When, thirty hours after operation, her condition had deteriorated despite gentle cooling, 100 mg of pethidine was cautiously injected intravenously over ten minutes The patient was packed round with ice bags in her axillæ and groins and on her abdomen, and placed in an oxygen tent The nursing staff were instructed to take the mouth-temperature half-hourly, and to remove the ice if this fell below 98°F Two hours after the initial application of ice the patient became restless, presumably because of discomfort, an additional 50 mg of pethidine was given intramuscularly, and this dose was repeated four hourly for the next forty-eight hours

Her temperature fell steadily after the application of ice, and next morning her pulse rate was 136, respiratory rate 20, and temperature 98°F The ice bags were removed Five hours later, when the temperature had again reached 101°F and the pulse-rate 160, they were reapplied for a further two hours, after which her temperature again fell to 98 6°F Subsequently her condition improved steadily, but administration of pethidine and chlorpromazine was continued so that cooling could be begun again without difficulty should the need arise Her pulse rate became regular some twelve hours after the application of ice, and her condition improved further over the subsequent three days Her convalescence was uneventful, and she was discharged from hospital well on the fifteenth postoperative day

Discussion

The essential problem in thyroid crises is to reduce the excessive metabolic rate In the past there has been no completely effective method of doing this, and the condition has carried a very considerable mortality Dundee et al (1953) showed that cooling, combined the administration of chlorpromazine to prevent sh ing, effectively reduced the normal metabolic ra subnormal levels Gray (1955) has suggested that method should be used to reduce abnormally high m bolic rates, but I am not aware that hitherto it has applied for this purpose

In the present case the combination of cooling prevention of shivering by administration of c promazine and pethidine seemed to be responsible the patient's recovery It is, of course, impossible be certain of this, but the steady fall in temperatur reduction in pulse-rate which twice followed co at least indicate that the method is worth patients with this most grave complication F this method does not involve the heavy demands staff involved in full scale "artificial hibernati and it can be applied where there are facilities on the routine surgical nursing care of patients

Summary

In a hyperthyroid patient subtotal thyroid was followed by acute hyperthyroidism, and seemed unlikely Recovery followed cooling facil by the administration of chlorpromazine and peth

I am indebted to the junior medical and surgical of Stepping Hill Hospital, Stockport, for their help in this patient, and to Mr N W Bolton for permission to this account of the case

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ARGENTAFFINOMA (CARCINOID TUM WITH CYANOSIS

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THE interesting syndrome of argentaffinoma with metastases and associated cyanosis, pulmonary and diarrhœa was first described in 1952 and h several references recently As the condition is rare one and not fully understood, the clinical of a further typical case are perhaps worth record

Case-record

A bank manager, aged 61, was first seen on Dec 2 His previous health had been normal except since the war he had had unexplained attacks of diarrhœa. Fir prior to 1952 he had had a full investigation with barium barium enema, sigmoidoscopy, and laboratory examin the fæces, all with negative results No treatment recommended

Since 1918 he had always had 2 motions per day, but worry he might have to go 5 times He was referred for examination in 1952 because occasional blood was seen stools and for the first time he was having pain He good colour and his weight was normal His motions occasionally, he said, like tomato sauce, and the pa localised in the right iliac fossa and the right groin

There was a mass the size of a closed fist in the cæcal and a provisional diagnosis of carcinoma—with the alter of hypertrophic tuberculosis or Crohn's disease—was Barium meal and enema confirmed an irregular filling in the region of the ileo cæcal valve

At operation on Jan 15, 1953, a hard mass was involving the cæcal wall and the ileo cæcal valve, dilatation of the terminal ileum There were a few gl the ileo-cæcal angle, and in the liver about a dozen sec deposits—none larger than a small marble The nak diagnosis was adenocarcinoma A right hemicolectom performed 'he *histological report* (Prof J H Biggart) was In the ion of the ileo cæcal valve the mucosa shows several sessile lules about 4 to 8 mm in size Histologically these nodules sent the structures of a carcinoid tumour which is spreading ply through the muscle coat In general these tumours do metastasise but in this instance there is rather more erplasia of the tumour cells and less uniformity in the icture than usual so that the prognosis is uncertain

Iay 26—He was very well with no trouble except rhœa. An exceptionally high colour was noted

eb 22, 1954—The high colour had changed somewhat a bright red to a slightly purplish colour Weight 9 st 7 lb change He was eating poorly His bowels were now moving nes a day and he was almost afraid to go out of the house rhœa was considerably worse and more constant but rtunately with a history of diarrhœa since 1918 and a large tional element part of this was discounted

Iarch 10 1954—His condition had so much deteriorated a further laparotomy was carried out The entire gut normal and the anastomosis satisfactory The liver ndaries had enlarged in size and increased in number but greatly perhaps 50% in all as compared with the findings he operation fourteen months previously There was iderable œdema of the legs and scrotum and difficulty in ling the legs. The hands were cold and blue His colour now a deep plum colour He kept his head high for thing but had no difficulty with inspiration He had a appetite and difficulty in swallowing

ily 8 1954—He was finally readmitted—moribund—on unt of diarrhœa weakness œdema of the legs, and ency of micturition Ascites was now present His tongue moist and coated His temperature was normal Pulse 80-120 per min erythrocyte sedimentation rate 12 mm he hour packed-cell volume 50% plasma specific gravity Treatment was symptomatic and the patient died uly 19

Discussion

nfortunately throughout it was not recognised that was a case of Björck Thorson syndrome It is now y years since it was originally suggested that the noid was possibly a hormone producing tumour but in the past two or three years has the syndrome been gnised in its various complexities by the piecing her of apparently unrelated symptoms

though the syndrome of metastasing carcinoid with onary stenosis and cyanosis is looked on as the features of the syndrome I would suggest that hœa be added for it is known that serotonin has a g peristaltic action and in this case as in others hœa was an outstanding symptom and yet at tion the entire alimentary canal failed to show any tive lesion

ge et al (1955) have lately discussed the next step in liagnosis.

e syndrome is caused by the release of serotonin droxytryptamine) produced by the tumour or its stases They were able to prove their thesis by vering a raised level of serotonin in the blood and he presence in the urine of excess of 5 hydroxy e-acetic acid (5 H.I.A.A.), which is the terminal stage e breakdown of serotonin as excreted in the urine. lected test patients were given intravenous injections rotonin and the urinary output level was found to the proportion of the serotonin which was excreted H.I.A.A.

3 cases of malignant carcinoid the daily urinary ut of 5 H.I.A.A. was found to be 65 850 142 mg ad of the normal 5–10 mg per 24 hours.

is possible in time that the urinary output of I.A.A. will be as valuable a laboratory test for the nant carcinoid as the acid phosphatase estimation r the malignant prostate, or adrenaline for phæo-nocytoma or gonadotropin for chorionepithelioma at the connection is between the syndrome and the l serotonin level is not yet clear for in these patients have had the level of serotonin raised artificially the rome did not appear Moreover even in some cases typical carcinoid with liver metastases the other res of the syndrome are not necessarily present.

Summary

A case of malignant carcinoid with liver metastases and the features of pulmonary stenosis cyanosis diarrhœa, and œdema adds another example to the small number of instances of Björck Thorson syndrome already published

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IRRADIATION NEPHRITIS

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Irradiation nephritis is a grave and insufficiently recognised complication of radiotherapy Published necropsy reports are so few that it may be instructive to record the following case.

Case record

A 3 year old boy was admitted to the Royal Aberdeen Hospital for Sick Children on July 6 1954 with left-sided abdominal pain and vomiting which had persisted for two days. He was thin and pale and had a large hard smooth mass in the left kidney region. The urine was normal. Blood examination revealed a normochromic anæmia (hæmoglobin 10 0 g per 100 ml) leucocytosis (17 400 per c.mm with 88% neutrophils) and normal platelets. X ray examination showed a left sided soft tissue mass extending from the 11th thoracic vertebra to the iliac crest On intravenous pyelography no dye was secreted by the left kidney which at laparotomy on July 9 was found to be largely replaced by a neoplasm Nephrectomy proved difficult and there was uncertainty regarding the completeness of extirpation of tumour tissue Histologically the neoplasm was a nephroblastoma (Wilms tumour) In the unaffected part of kidney the glomeruli were normal

Radiotherapy was started on July 14 using initially an anterior field only for eight days the daily incident dose was 100r On July 26 treatment was changed to anterior and posterior 15 × 20 cm fields, the daily dose to each field increasing gradually from 50r to 100r over four weeks. The latter dosage was continued until Sept. 17 making a total incident dose of 3300r over 46 days The X ray machine was a Westinghouse deep X ray model working at 230 kV and

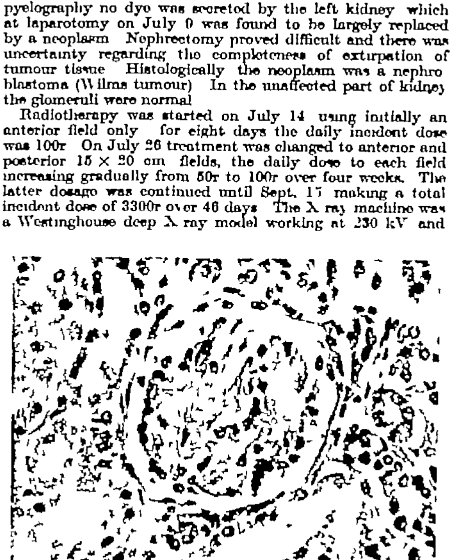

Fig 1—Hyalinised and shrunken glomerulus from the irradiated kidney (H & E, × 320.)

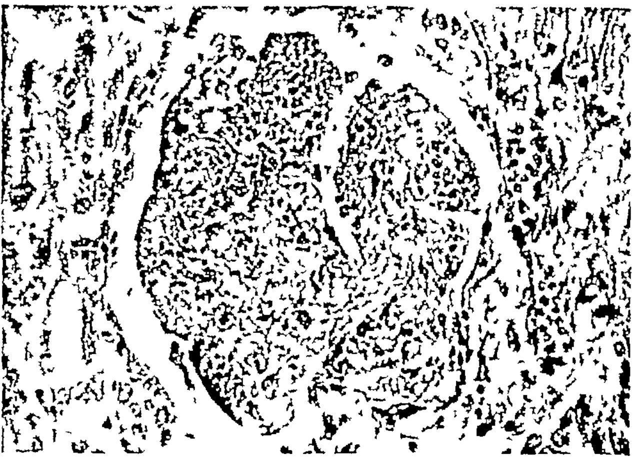

Fig 2—Hyalinised but swollen glomerulus from irradiated kidney Some of the glomerular loops are engorged with blood, probably due to stasis (H & E, × 320)

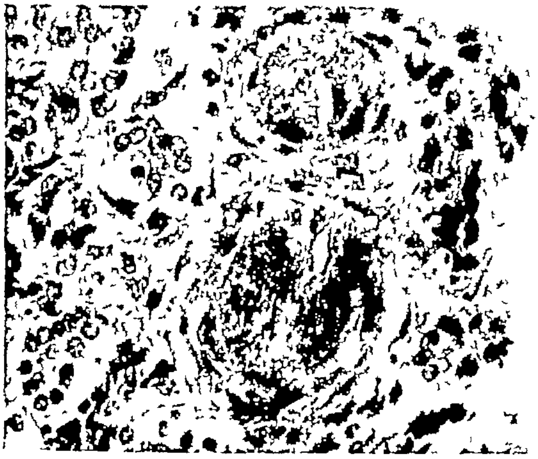

Fig 3—Marked fibrinoid change in an afferent arteriole, sect two planes (H & E., × 320)

15 mA, with a single Thoraeus filter to give a half value layer of 2 5 mm copper

The patient returned home on Sept 18 and looked well one month later On Nov 4 almost four months from the start of radiotherapy, he was readmitted because he had had œdema of face and hands for 2 days The urine was said to be dark and small in volume There was no history of infection On examination, the face, hands, and feet were moderately œdematous the blood-pressure was 130/95 mm Hg, and the liver was enlarged two inches below the right costal margin The urine contained much albumin and small numbers of erythrocytes, with hyaline and granular casts The blood urea was 61 mg per 100 ml and hæmoglobin 5 9 g per 100 ml Leucocytes and platelets were normal

Despite a low protein intake with fluid restriction, œdema persisted and vomiting became frequent On Nov 14 the blood urea was 147 mg per 100 ml, pulmonary congestion and gallop rhythm were present, neck veins were distended, and the liver was considerably enlarged and tender Digitaline, penicillin, and a very slow blood transfusion (640 ml) produced only temporary improvement and he died on Nov 20 Bloody diarrhœa and hæmatemesis occurred shortly before death

Necropsy Findings

Necropsy was performed 39 hours after death Body length was 1 02 m (3 ft 4 in) and body-weight 13 7 kg

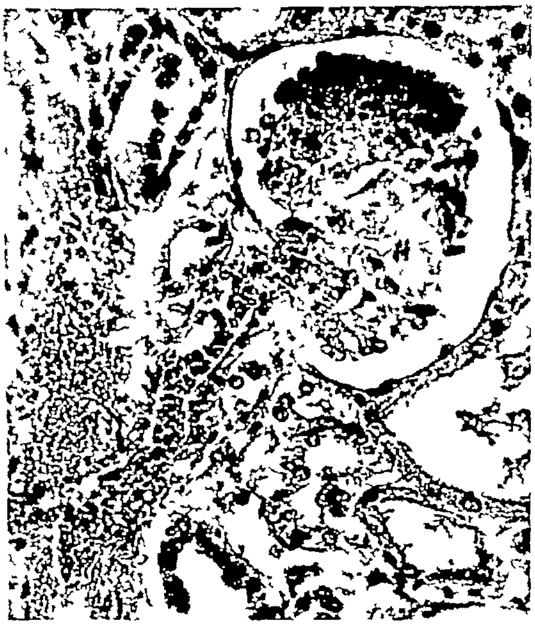

Fig 4—Irradiated kidney showing fibrinoid change in intralobular artery; wall of afferent arteriole normal but lumen filled with red blood corpuscles probably due to stasis Glomerular changes same as in fig 2. (H & E, × 320)

(30 lb) There was marked cutaneous pallor and pitting œdema of extremities Small serous effusio present in peritoneal, pleural, and pericardial sacs. lungs there were a few small, scattered metastases, collapse, œdema with intra alveolar hyaline " and slight bronchopneumonia No tumour tissue was elsewhere The heart showed myocardial pallor, d of all chambers, and ante mortem thrombus in the of the right atrium The brain (1400 g) was œdemat there was chronic venous congestion of the liver Hæmorrhagic erosions were seen in the gastric There was lymphoid atrophy in upper abdominal and spleen (40 g) Pancreatic islets showed slight h

The right kidney (70 g) was normal in size and sha thin capsule was easily stripped from the outer surfac was smooth The parenchyma was of normal pattern and firm Paraffin sections of formalin fixed blo stained routinely with hæmatoxylin and eosin, sections, including serial ones, were stained with M trichrome stain, Mallory's phosphotungstic acid and by the periodic acid Schiff method Most g were damaged, the most notable feature being eosinophilic hyaline change, with obstruction or ob of capillary loops In some of these glomeruli loops were much congested with blood and presented also a deeply eosinophilic, "fibrinoid" —features like those described in renal cortical (Shaw Dunn and Montgomery 1941) Many glomer normal in size, others were enlarged or shrunken were slightly fibrosed but capsular adhesion was rare in the collecting part, the tubular epithelium was deg or atrophic Hyaline or granular casts, and sometim erythrocytes, were seen in a few tubules Some arterioles and occasional intralobular arteries had gone fibrinoid change, often with considerable the lumen This change did not always co exist with change and vice versa There was mild interstitial fibr no leucocytosis Some of the microscopic featur illustrated in figs 1 to 4

Discussion

In the past, renal damage following radi been dismissed as an unlikely possibility The were regarded as relatively radio resistant Har et al (1926), however, demonstrated that the synd of acute and chronic nephritis could occur in dogs irradiation of their kidneys Incidentally, this bloodless technique might prove a satisfactory meth producing hypertension in experimental animals.

Dean and Abels (1944) described the occurr persistent hypertension in a 20-year old girl seven after radiotherapy for alleged abdominal Hod disease Hypertension subsided after removal of t kidney, the lower pole of which was markedly scl

Zuelzer et al (1950) in America described " acute glomerulonephritis " following irradiation in children, two of whom had had nephrectomy for ne blastoma while the third had a retroperitoneal astoma All developed symptoms of acute nephritis thin six months of the start of radiotherapy and died of nal failure within four weeks The total incident dosage s relatively high 5200r to 6850r in four months

In a notable publication Luxton (1953) described ious and alarming renal damage in 27 adults irradiated seminoma at the Christie Hospital and Holt Radium stitute Manchester 13 patients developed features of ute nephritis six to twelve months from the start of diation and 5 died within a few months, while the ers developed chronic nephritis Autopsy showed ney changes similar to those in our own case and to ose described by Zuelzer et al (1950) in children and Hartman et al (1926) in dogs Death was attributable renal damage and in no case was there tumour tastasis The total central dosage varied from 2000r 3250r over an average of thirty six days Notable ical features in the 13 acute cases were severe uminuria hypertension refractory normochromic emia, and raised blood urea concentration 12 other ients developed features of chronic nephritis and the aining 2 presented with fulminating malignant pertension

Summary

ollowing abdominal irradiation for nephroblastoma hild of 3 had fatal renal damage Attention is drawn the possibility of this serious complication of radio rapy and the necessity for careful regulation of dosage experimental pathology it is suggested that irradiation the kidneys might prove a useful method of producing pertension in animals

e are indebted to Prof John Craig and to Mr S G vidson for allowing us to publish clinical details to E F Ridley for considerable assistance with radio erapeutic data to Prof J S Young for valuable suggestions to Mr R Drummond for the photographs.

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Medical Societies

HEBERDEN SOCIETY

CLINICAL meeting of the Heberden Society was held the Sheffield Centre for the Investigation and Treat nt of Rheumatic Diseases on July 1 and 2, under presidency of Prof R E TUNBRIDGE

Reablement of Arthritic Patients

r G R NEWNS (Sheffield) reviewed changes in functional us of 238 patients with rheumatoid arthritis first seen ing a period of twelve months with particular attention the results of treatment in 28 patients who required rection of deformity in weight bearing joints In 73% such cases some improvement was maintained three to r years later

n the discussion the importance of supervising the con uation of treatment by active exercises in the home was sidered and the expense of employing trained physio rapists for this purpose was noted

Mucoproteins

r E. LOCKEY and Dr A J ANDERSON (London) discussed results of estimating urine and serum mucoproteins rheumatic diseases. In rheumatoid arthritis the level of um mucoprotein was usually higher than normal the el was about the same as in other types of inflammatory ease but below that in cancer There was no obvious erence between the results in rheumatoid arthritis and kylosing spondylitis. Information about urine muco tein levels was scanty but some correlation with serum els was found There was a very rough correlation between um mucoprotein values and the erythrocyte sedimentation rate; and a definite one absent in other diseases betwee serum mucoprotein values and the results of flocculatio tests Evidence was presented that mucoprotein is no responsible for the agglutination phenomenon which form the basis of the Waaler Rose test.

In the discussion speakers emphasised the difficulty o correlating abnormalities which are themselves not specifi for a single disease

Rheumatoid Arthritis in Psychotics

Dr T L. PILKINGTON (Sheffield) described preliminar findings indicating a low incidence (less than 0·7%) of rheumatoid arthritis in schizophrenia—contrasting with a norma incidence in mental deficiency and in epilepsy

In the discussion it was suggested that a study of th sort might usefully include a comprehensive radiographi survey and that prolonged inactivity might contribute t the low incidence in schizophrenics

Meticorten

Dr H F WEST (Sheffield) described his recent experience with a new synthetic steroid Meticorten. In 3 cases change from hydrocortisone (systemic) or corticotrophin to meticorten a reduction in blood pressure and a loss of retaine water was observed but in 2 of the patients severe epigastri pain developed

In the discussion a fourfold enhancement of anti inflammatory activity by meticorten, compared with cortisone wa described An unexpectedly favourable response in a case o rheumatoid arthritis with advanced amyloid nephrosis wa mentioned, and the reduction in blood pressure and œdem on changing from cortisone to meticorten was confirmed.

Lumbar Vertebræ

Prof D H COLLINS (Sheffield) described the pathological conditions revealed by routine examination of the lumbar vertebræ in 100 consecutive unselected necropsies. Metastatic carcinomatous deposits were found in 11 cases, osteoporosis in 9 Paget's disease in 3 leukæmic deposits in 2 and myeloma in 1 The frequency of osteoporosis rose from 7% in the seventh decade to 21% in the eighth, and 63% in the ninth

Adverse Effects of Cortisone

Dr WEST surveyed the fatalities and adverse reactions in 52 cases of rheumatoid arthritis treated with cortisone for one to five years. Of 6 patients who died during treatment, amyloid disease was found in 2 and polyarteritis nodosa in a 3rd. Since both these conditions can occur in association with rheumatoid arthritis their relation to cortisone therapy is difficult to appraise 1 patient was found at necropsy to have had severe myocardial fibrosis and 2 others died (1 suddenly) of pneumonia. The non fatal adverse reactions included psychotic disturbances in 3 cases. Injections of corticotrophin occasionally produced anaphylaxis.

In the discussion Dr OSWALD SAVAGE commented on 6 fatalities among 90 patients treated for long periods with cortisone

Gout

Dr R. SOUGIN MIBASHAN said that in South Africa gout occurs with about the same frequency in the White and Coloured populations of Cape Town, but is almost unknown in Negroes 50 cases were treated with probenecid; untoward reactions were confined to occasional slight epigastric discomfort in 4 The clinical effects included disappearance of pain and stiffness (after four to eight weeks) reduction in the size of tophi and a return of movement in fixed big toe joints (after six to nine months) and sometimes radiographic improvement Colchicine was given during the early stages of treatment with probenecid, to prevent the acute attacks which tend to occur at this time

Occupational Factors in Joint Disease

Dr J S LAWRENCE of the Walkden Miners Clinic discussed the results of a survey of occupational factors in degenerative joint disease Miners and dock workers had a high incidence of disc degeneration in the lower dorsal and lumbar spine and also of osteo arthritis in the knees. Degenerative changes in the cervical spine however showed no predilection for miners Heavy manual work especially in the stooping position was a factor in the development of disc degeneration in the lumbar region Damp working conditions were associated with an increased frequency of symptoms but not of radiographic changes. The survey showed forcibly the heavy toll in terms of disability taken by degenerative joint disease in miners.

Reviews of Books

Medical Problems of Old Age

A N EXTON SMITH, M A, M D Camb, M.R C P, physician, Whittington Hospital, London Bristol John Wright & Sons 1955 Pp 344 30s

Dr Exton-Smith has produced a good book He keeps closely to his avowed purpose of providing a textbook dealing with the medical problems of the elderly patient, yet he takes a wide view of the subject in a commendably small compass

He starts with the aspects most likely to interest the general practitioner and health visitor or social worker, and he deals first with the old person at home—the opportunities there for the early recognition of morbidity and diagnosis of disease, for the maintenance of health, and for the application of practical measures to prevent accidents He gives a whole chapter to the general principles of reablement after illness, with proper emphasis on the importance of assessing the patient from the physical, psychological, and social aspects, enlisting the relatives' help from an early stage, and the special influences, opportunities, and limitations of reablement in hospital The reablement of the hemiplegic patient is considered more fully than in many larger works, but even so it is doubtful whether the student who has not worked with hemiplegic patients in physical reablement departments or in an active geriatric unit will learn much of practical value The sections on the psychological and social aspects of reablement of the hemiplegic contain suggestions that are likely to be more helpful Reablement of the arthritic patient is only briefly mentioned, but Dr Exton Smith does not overlook the value of occupational therapy and of exercises to improve personal independence The chapters on medical and nursing care should also prove helpful, especially the section on restlessness

It is increasingly recognised that age need not be a contra indication to surgery, but Dr Exton Smith wisely indicates the special risks of surgery and the postoperative state for the elderly, and clearly presents the general principles determining immediate or delayed surgical intervention

Throughout the book Dr Exton-Smith shows a clear appreciation of the essential variations of disease in the elderly, compared with younger patients He is especially helpful in assessing which, of a number of coexistent pathological conditions, is likely to call for preferential treatment

Doctor against Witchdoctor

E W DOELL London Christopher Johnson 1955 Pp 216 15s

THIS book contains a number of stories based on the intense belief held by most Africans that disease is caused, not by the agents accepted by modern Western societies, but by malevolent persons using witchcraft Dr Doell obviously knows his subject, and indeed he has been faced with tragic examples of interference by witchdoctors which can at once be recognised as authentic by those who have practised in Africa

The book does not leave a cheerful or optimistic impression Traditional beliefs work strongly to prevent the application of modern methods of treatment, and still more of prevention, the idea of service to the sick in hospital is hard to instil in the nurses and hospital assistants, who may take up these professions for reasons far removed from the ideals we have painfully evolved It seems at times impossible ever to lift this dead hand of fear which grips the Africans so closely from infancy onwards Yet some of them have taken this frightening step towards a more rational conception of Nature, in face of the terrible threats inherent in the beliefs of witchcraft It is surely early to expect more than a tentative acceptance of Western ideas, linked as they are in the African mind with an alien community The premises which the African accepts from his tribal teaching lead him by valid logical processes to tragic, but not from his point of view criminal, activities We can hope to change his outlook by persuasion and example, not by scorn and premature legal action This book is a vivid and sincere contribution to a difficult subject.

Tubercle Bacillus in the Pulmonary Lesion of Man

GEORGES CANETTI, M D, director of laboratory, P Institute, Paris New York Springer London In science Publishers 1955 Pp 226 64s

Dr René J Dubos and Dr Walsh McDermott h done a valuable service in translating into Engl enlarged and revised edition of Dr Canetti's or *Le bacille de Koch* The most important part of book correlates the histology of different stages of monary tuberculous lesions with the number of b present in each type of lesion

To accomplish this, Dr Canetti has divided the lesions into a large number of types, but he is fully jus in doing so by the differing occurrence of bacilli in these At the same time, he recognises the difficulties of type lesions and of timing the incidence of each type this combined histological and bacteriological investig he goes on to discuss the pathogenesis of the lesions, a consider the problems of hypersensitivity and He appositely quotes much of the older Continental now so often overlooked, and he examines therapeutic me —rest, collapse, chemotherapy—in the light of hi studies

Enough time has not yet elapsed since the introdu of chemotherapy for a full histobacteriological of pulmonary lesions under different treatment comparing the changes with those before chemoth but Dr Canetti provides for future compariso invaluable picture of the pulmonary lesions b chemotherapy His book is no aid to the rule-of- worker for treating individual cases, but it will be thought-provoking and helpful to all doctors wh interested in the possible lines of progress of the tu culous lesions in their patients, and the mod of those lesions under therapy

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Textbook of Physiology (17th ed Philadelphia London W B Saunders 1955 Pp 1275 94s 6d)— reliable and useful summary of present-day knowled physiology, originally known as *Howell's Textbook of Ph logy*, now appears under the editorship of Prof J F F who has himself written most of the chapters on the nervous system These are particularly good and up to but, rather surprisingly, recent observations on neurose in the hypothalamus are not mentioned The chapte blood are good as are also those on metabolism and mu The section on the circulation varies in quality, but useful to find discussion of the characteristics of bloo in a larger number of special regions than usual, inc voluntary muscle and uterus The chapters on the succeed in being both good and compact where it is on easy to be diffuse The book as a whole is readable and merely a close packed mass of facts, but it deserves a index The type is clear and agreeable, and, except for ductions of some of the kymograph tracings, the diagram well printed

Diseases Transmitted from Animals to Man (4th Springfield, Ill Charles C Thomas Oxford Black Scientific Publications 1955 Pp 717 90s)—The edition, by Mr Thomas G Hull, PH D, of this valuable book contains a mass of information on all the diseas one (foot and mouth disease) dealt with in previous edi as well as seven new chapters describing such dise vibrio abortion, vesicular stomatitis, and Newcastle d It is enlivened by 104 illustrations, mostly of good qu and a large number of diagrams and tables This great has been carried out by 25 authors, all well acquainted their subjects, but we cannot help regretting that Dr has not directed attention to some of the fascinating prob presented by infections affecting both animals and man as the extraordinary differences in the effects produced by same pathogen in different species, the effect of age, sex, nutrition on resistance to infection, the tendency of cer pathogens to produce permanent parasitism, and the cha in "virulence" of many pathogens after they have bee established in any country With such questions in forefront of their minds, general readers, of whom hope there will be many, might well find this book gateway into a strange, largely unexplored, and fascin world

THE LANCET

LONDON SATURDAY JULY 23, 1955

Design of Hospitals

AT the dawn of a new era of hospital building in s country, the publication of so important a book *Studies in the Functions and Design of Hospitals*[1] well timed, for it is an addition of great worth to r native—but meagre—literature on hospital planig This report is not intended to be a general guide the planning of hospitals, for its scope is limited to investigation of certain services in the acute neral hospital—the ward the outpatient service d the operating theatre suite—and of physical tors appertaining to them, such as light colour rmth, ventilation, and the control of noise Three ther chapters deal with protection against fire matter which has been rather overlooked in the spitals of this country) with general considerations ich may affect design, and with planning to meet mand treated as a statistical problem On the ictical side of the investigation, experimental ildings are being or will be erected at Larkfield spital, Greenock, and at Musgrave Park Hospital lfast, comprising two ward units a twin operation te, a central sterile supply, and an X ray departnt If it is to be of value all new hospital building uld be esentially experimental and this report ngs to us new and experimental methods of deter ning the data on which the buildings should be nned No reader can fail to be impressed by the mense amount of careful research which the ffield team has done, and the report represents first major attempt in this country to put the d for hospitals and their design on a factual and tistical basis From the results of the time and tion studies made, structural plans have been olved resulting in buildings which are more npact and which should be more economical in oital and in maintenance costs, than those with ich we are familiar This is perhaps the main theme the report but there is also a great deal of varied ormation which will repay study by those who have spitals to plan.

In any hospital, the psychological and physical eds of the patient are continuously in hidden—or netimes open—conflict with the requirements of icient administration and somehow a reasonable lance has to be struck between the two There is lay a trend of thought which may well lead to ying the nurse—because of her scarcity value— ecedence over the patient and to evasion of the tient's deeper needs for the sake of administrative liness and convenience The experimental ward its described in chapter 1 of the report are based imarily on time-and motion studies of nursing duties d from them structural designs have been evolved ease the nursing burden and to reduce the capital d maintenance costs but the time has not of urse, arrived when the questions Do the patients o them? Do the staff like them?' can be answered

In these ward units, the siting of the service rooms between the two halves of the bed area is unusual It may be open to criticism on account of noise for however carefully sound-control is planned the human element remains, and in hot weather doors may be left open and the washers up may sing and whistle at their work as they have done from time immemorial A second point of criticism especially of the Larkfield Hospital unit may be the exposure of the patients in one half of the bed area to the traffic which must pass between the entrance of the unit and the service rooms In the Musgrave Park Hospital unit this point seems to have been considered, for the patients are partially screened by cupboards and sanitary units. But the w.c.s are small and have no wash basins and if the patient wants to wash after using them—and he is given little encouragement to do so—he is likely to soil two doors on his way

The factual basis of the design for the outpatient service—to some extent materialised in the Nuffield Diagnostic Centre at Corby—is founded on time and motion studies of the work of the doctors and of the movement of the patients in the clinics combined with an investigation into the efficiency of appointments systems The major finding of interest was that the work of the clinic moved more smoothly when the examination rooms were restricted to one per consultant instead of two or more Since delay in the outpatient department is still a notable blot on the hospital service this chapter should be read attentively It would be interesting to know whether, in fact a whole time or a part-time medical staff gives the smoother service, for the part time staff seem often to be delayed by outside commitments, and frequently too many consultants wish to hold their clinics on the same day and are unwilling to change because of outside engagements This leads either to overcrowding and overwork on that day, or else to the provision of accommodation which is under used at other times In the chapter on the operating theatre suite, special attention should be paid to the paragraphs on recovery rooms and the central sterile supply department. These are almost new introductions to this country, though abroad, and especially in America, there has been much experience of their use Both seem to decrease risks to the patient appreciably, as well as giving some economy by the performance centrally with trained teams, of procedures hitherto performed diffusely through the hospital by persons of no specialised skill

In the search for exactness and reason in hospital planning it is easy to forget that facts and figures are relatively inflexible and apply accurately only to the present or the past, until more is known, one should perhaps avoid taking them too literally in planning new hospitals which are to last for fifty or more of the years yet to come The big difficulty of hospital planning is the unpredictable—the changing pattern of sickness, changes of policy in dealing with the sick the rapid changes in medical and nursing techniques, the one deriving from the wealth of new discovery, the other from the poverty of personnel and the movements of populations naturally or *en masse* as the overspill of urban districts And there is the changing attitude of the patient himself towards the service which the hospital provides, for as the standard of living the level of wages the degree of education and the sense of individuality progressively increase, so he will become more critical and more demanding, even as the patient of today expects far more than the patient of fifty years ago To plan for today is perhaps not too difficult, but the real problem is to allow for the need of tomorrow It may be that in the chapter on planning to meet demand there lies a germ of risk lest the content of new hospitals be based too rigidly on an ad-hoc survey of the statistical need at the time, whereas an additional examination of the records over a period longer than a year might indicate better the trends of need for the various hospital services in a particular area We may add that, as most of the studies carried out by the investigation took place in the larger type of hospital, the results obtained from them are probably most appropriate to hospitals of similar type Both here and abroad, a very large part of the total hospital work is done in hospitals of 200 beds or less, and in most of these the facilities are poor and working conditions—especially in outpatient departments—may be very bad These smaller hospitals have problems of function and design peculiar to themselves, but, though in any symposium about hospitals it is almost always the large institution which gets prominence, it should not be impossible to apply the principles of this investigation to them, provided the scope of the services they are to offer has first been clearly defined

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[1] Studies in the Functions and *Design of Hospitals* Nuffield Provincial Hospitals Trust London: Oxford University Press 1955 Pp 192. 63s. (in U K only)

Perhaps the chief merit of this report is that it is a record of research studies from which arise stimulating suggestions but no formal conclusions It would have been easy enough to have used the results of this new approach for the prescription of standard units, leading eventually to standardised hospitals, with the added risk of sterilising original thought on the problems of caring for the patient But this pitfall has been avoided, and the Nuffield Provincial Hospitals Trust has once again earned the thanks of all who are interested in hospitals, not only for the conception and performance of so valuable a research but also for the freedom of its method of presentation

Reactions after Transfusion

WE now know enough about blood-grouping and cross-matching to keep dangerous reactions after transfusion down to a frequency of 1 in 1000 or less—and most of these reactions are due to blunders such as failure to check the name on the bottle against that of the patient Hepatitis, which affects up to 1 in 150 recipients,[1] is a very serious complication that sometimes leads to death rapidly from acute hepatic failure or slowly from cirrhosis, and so far no means of preventing it has been discovered There are other complications which rarely endanger life but distress the patient and alarm the clinician so that a transfusion may be terminated before all the blood has been administered These less severe complications consist, firstly, in urticarial and other allergic reactions, which affect 1–2% of recipients, and, secondly, in febrile reactions, which affect 2–5% of recipients

Different workers have sought to reduce the frequency of these minor reactions in different ways. GONÇALVES[2] remarks

> "emotional patients have had rigors, muscular tremblings, a sensation of impending dissolution, tachycardia, and a rise in temperature which start 20–50 ml blood and continue to the end of the fusion in patients whose central and nervous systems are normal, transfusion reactions very mild"

And accordingly he administers an opiate be starting the transfusion Others[3–11] have administe anti-histamine drugs before transfusion, and that this reduces the frequency of minor by at least half Two groups of American have now reported the results of controlled One group[12] studied 3131 recipients, of whom received tripelennamine, and found that 3 4% of who had received the drug, compared with 5 8 the control group, had pyrogenic reactions odds against this being a chance difference are 1 in 100 Allergic reactions, itching, urti erythematous or maculopapular rashes, or around the eyes developed in 47 (3 1%) of the series, but in only 11 (0 6%) of those who had rece tripelennamine Secondly, in a blind trial Wi et al[13] compared 474 control bottles of blood 495 bottles to which had been added diphenhyd hydrochloride This addition did not affect incidence of pyrogenic reactions (2 2%), but wh there were 5 allergic reactions (1%) among the trols, there were none among patients who rec blood to which diphenhydramine had been added 453 patients who received simple saline infusion had a pyrogenic reaction and 1 1% an al reaction—an incidence almost identical with after blood) It is difficult to understand why of the patients transfused in one hospital sho pyrogenic reactions, but only 2 2% of those tr fused in another Most hospitals report an incid near the upper limit of this range—714 transfu at one English hospital were followed by 36 pyrog reactions (5%) and 7 allergic reactions (1%) seems reasonable to assume that the administ anti-histamine drugs will reduce the incidence pyrogenic reactions to $3^{1}/_{2}$% or less, and will altog prevent allergic reactions

The choice of anti-histamine drug, and the of administration, are still undecided workers have added the drug to the bottle of either soon after collection or just before ad tion, and one of them observes that the dang bacterial contamination is minimised by the material immediately before transfusion this danger is averted altogether by administ the drug by mouth or by injection half to one before starting the transfusion, and this also avoids another disadvantage of mixture the blood—namely, that an effective dose is given until the tripelennamine transfusion is finished As for the drug, tripelennamine,

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1 Ginsberg L, Sussman L N, Auerhan H *Surg Gynec Obstet* 1951 92, 492
2 Gonçalves, J A Congrès International de Transfusion Sanguine Paris 1954
3 Hargreaves, M M *Med Clin N Amer* 1947, 31, 803
4 Ferris H E, Alpert, S, Coakley, C S *Amer Pract* 3, 177
5 Frankel, D B Werdner, N *Ann Allergy*, 1953, 11, 20
6 Weiss S *J Student Amer med Ass* 1953, 2, 19
7 Simon S W Eckman, W G jun *Ann Allergy*, 1954 1
8 Alfonsi, P L *Gazz med ital* 1952, 111, 71
9 Offenkrantz, F M., Margolin, S, Jackson, D *J med N J* 1953 50, 253
10 Munoz Barata, C Congrès International de Tra Sanguine Paris 1954
11 Ringenbach G *Ibid*
12 Stephen C R, Martin R C, Bourgeois Gavardin, M. *J med Ass* 1955, 158 525
13 Wilhelm R E, Nutting H M, Devlin, H B, Jennings, E Brines, O A *Ibid*, p 529

henpyridamine, methapyrilene and diphenhydra e have all been recommended, some English itals have started to use mepyramine maleate promethazine, and studies of diethazine and rpromazine have been promised [11] In view of the incidence of reactions in apprehensive patients, would seem reasonable to administer an anti amine substance with a powerful sedative action a long continued effect A priori, promethazine -yramine maleate, or tripelennamine might be ected to prove suitable and we hope that controlled ls of these will soon be made in Britain

The Death Penalty

HE laws against witchcraft were repealed in this ntry in 1736, but they had been recognised long re that, as an ugly piece of inhumanity disgracing statute book To many of our countrymen today to whole peoples of some European countries the th penalty seems as grotesque as did the witchcraft s to 18th century Englishmen. The feeling against as been intensified by three notorious executions in the last few years that of Evans who may have been guilty of the crime for which he was ged, that of Bentley who was not guilty of ng but of shouting—in a moment of violent ation—incitement to another to kill and that Ruth Ellis, hanged for a murder done in a state of te jealousy All these people were executed in rdance with our country s law after fair trial their deaths have excited a great deal of uneasiness only among those who in an emotional frenzy d outside Holloway gaol on the eve of July 13 iting "Evans—Bentley—Ellis, but among many se sober concern it is that the laws of this country ld be as worthy as any and in the world and ng all who believe that an increasing preoccupation murder trials and judicial executions is harming s a people

apital punishment was abolished in New Zealand ensland Denmark Italy, the Netherlands Norway den, and Switzerland at dates ranging between and 1942, it remains legal in Belgium but h one exception in 1918) has not been enforced e 1863 Hence it is hardly surprising that the ment of other countries on the hanging of Mrs s has been adverse and outspoken To the Swedish ple our failure either to abolish the death penalty llow it to fall into disuse seems barbarous To the nch it seems that we apply it with a blind disregard ifferences in the circumstances and character of the ne Tried in other countries some of the people hang would suffer only a short term of imprison nt and though we may condemn such leniency, can hardly fail to be impressed by the very wide repancy in current punishments for identical nces [1] Evidence received from Denmark the therlands Norway and Sweden by the Royal mmission on Capital Punishment 1949–53,[2] indi ed that murderers who after their release from prisonment commit further crimes of violence are e whereas those who become useful citizens are mmon Figures published in the white paper on Capital Punishment [3] show that the same is true of reprieved murderers in this country Unlike some other crimes, murder is seldom part of a recognisable life pattern it appears unexpectedly, probably taking even the murderer by surprise The habitual murderers —the Smiths and the Christies obsessed by some emotional abnormality—are fortunately rare

The opinions of foreigners on our practice might weigh little with us as a people were we ourselves entirely easy about it But public protests against the executions of Bentley and Mrs Ellis make it quite clear that we are not It has often been said, and is transparently true that the death penalty punishes the innocent with the guilty Not the criminal merely, but his whole family, endure the alternations of hope and fear which a murder trial imposes—a long drawn out anguish far more horrible than all but the worst of murders Once the sentence is carried out the *punishment of the criminal is complete—but not the* punishment of his family who have to live with the memory and stigma of his execution. Mrs Ellis leaves two young children, as well as her parents, to carry this unmerited burden. Such minorities deserve a voice The children, who must inevitably be deprived of the ' normal home life " of which we nowadays speak so glibly have been dealt, in addition, a most shattering psychological blow Any law which in its enforcement does gross injury to innocent people strikes at the whole concept of justice

And not these children only but many others have been harmed by the recent emotional orgy A father at Holloway Prison gates lifted up his six year-old daughter so that she could say she had seen the notice announcing the death of Mrs Ellis Children in a school near the prison are described by one of their teachers as being in a ferment "Some claim to have seen the execution from their windows others spoke with *fascinated horror* of the *technique* of hanging a female ' Our means of communication are nowadays so efficient that the same unwholesome excitement was shared by children up and down the country When an incident becomes the news of the day presented at twenty million breakfast tables it becomes for the time an important part of our national life The murderer, instead of quietly and decently receiving whatever deserts are deemed to be just, becomes the star of an immense and often long remembered drama or even entertainment, quite frankly enjoyed by many people, and none the less because its horrors are true

It is this aspect of the death penalty which seems to us more dangerous and destructive than any other As we said at the time of Bentley s hanging Whether an execution is actually seen or imagined the mental effect is qualitatively the same and in our view the perpetual preoccupation with the condemned cell and the gallows is harmful to the mental health of society ' We gild the worst of crimes with publicity and associate it with an act of communal violence small wonder if the youngsters swallowing the poison find the idea of violence dangerously attractive Used as we use it, the death penalty may well be causing more crime than it prevents Let us hope that those Members of Parliament who have launched a new attempt to get the law changed will succeed in freeing us from this recurrent demoralisation

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[1] woman in Corsica, found guilty at about the same time as Mrs Ellis of the premeditated murder of a lover was sentenced to two years imprisonment and released at once on probation

[2] Report of the Commission p [illegible] H.M. Stationery Office 1953 See *Lancet* 1953 ii 713.

[3] Cmd 7410

Annotations

NITROFURANTOIN

ANTIBIOTICS have transformed medicine, but their shortcomings still make doctors scratch their heads Even the broadest spectrum has its gaps and edges, and the most submissive organism may join a resistance group Insensitive organisms and the development of resistant strains are common causes of trouble for the urologist, but owing to the synthesis of nitrofurantoin ('Furadantin') some of his difficulties may be eased This drug is excreted in the urine, and 40% of an oral dose passes through the kidneys within six hours of its administration With the usual dose of 500–600 mg daily (5–7 mg per kg body weight) an average peak concentration in the blood is 2 23 mg per litre, and the peak is reached two hours after ingestion[1] Nitrofurantoin seems to be almost free of toxic effects except nausea and sometimes vomiting, which can be lessened by giving the drug immediately after food Experimental work and clinical trials have shown no evidence of damage to the liver, kidneys, or blood forming tissues Some experiments[2] suggest that the seminiferous tubules may be damaged, but trials in man have hardly supported this

Studies in vitro show that a very high proportion of strains of *Escherichia coli* and of staphylococci are sensitive to nitrofurantoin More important, proteus also responds quite well, but the concentration of the drug must be higher than for the other two types of organism Unfortunately pseudomonas has appeared to be almost insensitive, except in the studies reported by Felton and Kemp[3] Tube dilution tests suggest that nitrofurantoin is more rapidly bactericidal than tetracycline and chloramphenicol

Clinical trials in the main bear out the laboratory studies Waisbren and Crowley[4] treated sixty cases of urinary infection with nitrofurantoin Proteus was eradicated from the urine in eight out of nine cases Even with pseudomonas their successes amounted to eight out of fourteen, which is much more encouraging than the laboratory studies would indicate On the other hand in eight cases pseudomonas and in six proteus appeared for the first time in the urine during or immediately after treatment with nitrofurantoin In fourteen cases nitrofurantoin was judged successful after previous failure by various other agents, including 'Gantrisin,' oxytetracycline, and aureomycin, but in at least one case failure by nitrofurantoin (against a proteus infection) was followed by recovery after administration of chloramphenicol Nitrofurantoin is evidently not a panacea, but it is a safe and promising drug for the treatment of urinary infections, particularly those due to proteus

GLOSSOPHARYNGEAL BREATHING

THE difficulty in breathing experienced by patients with paralysis of the respiratory muscles due to acute poliomyelitis is well known, and any measure that may aid such patients deserves attention Dail et al[5] describe the use of glossopharyngeal breathing by postpolio myelitic patients at the Rancho Los Amigos Hospital, California, where this mode of breathing has been extensively studied since 1951[6]

In glossopharyngeal breathing the patient forces air into the lungs with the aid of the mouth and throat muscles Apparently about ten mouthfuls of air can be forced down the trachea (and not down the œsophagus) until up to 600 c cm of air have entered the lungs, a single expiration expels this The breathing cycle is repeated up to ten times a minute Dail et al state some patients learn the technique easily and fe altogether Of 100 patients, ranging in age from 47 years, 55 were taught by hospital personnel, 2 with little help from anyone, 15 learnt from other and 5 learnt without being aware of what they doing, but many weeks of hard practice are before this method is of real value to the p 69 of the patients used glossopharyngeal breath assist breathing, 31 to help in stretching the coughing, and talking It may enable the pati breathe, at least for short periods, without re equipment when he is otherwise wholly dependent or to enhance spontaneous breathing when the ca for this is very slight Dail et al do not recom that patients with a tracheotomy who have no bre ability should use the method when unattended, if the tracheotomy plug becomes defective the p is helpless

This "built-in safety factor" requiring no me equipment may obviously have physiological and p logical advantages

Dail et al regard the method as a help and hindrance in re establishing normal breathing I no doubt be studied in many centres with a v establishing its place in treatment

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1 Carroll, G, Brennan, R V *J Urol* 1954, 71, 650
2 Kaplan J H Hobgood, R *Ibid* 1954, 72 549
3 Felton, F G Kemp, A. P *Ibid* 1955 73 718
4 Waisbren, B A Crowley W *Arch intern Med* 1955 95, 653
5 Dail, C W, Affeldt J E, Collier, C R *J Amer med Ass* 1955, 158, 445
6 Dail C W *Calif Med* 1951 75, 217

DISASTER AT ASCOT

A DOCTOR can never shake himself wholly f professional responsibility, for even on holiday h come across a mountain accident, a car crash, mishap on a beach He will act as best he can, how good his best is may depend largely on the in which he works A few weeks ago we publi letter from the Widdicombe File[1] in which a labo worker vividly explained his unpreparedness a doubts and difficulties in rising to an occasion clinicians who read his graphic account may have th of it in relation to last week's accident at Ascot in which two people were killed and forty six when lightning struck a wire fence near which standing How, they must have asked, should I dealt with this situation if I had been the only on the spot?

The first step in such an accident should distinguish forthwith the injured with arrested and possibly impalpable pulse Attention to this has precedence over all else, including the summ of ambulances and further medical aid The rea this absolute priority is that unless artificial is started within a few minutes these people w then or later, because of irreversible damage t heart or brain Maclaghlan,[2] for instance, found the recovery-rate after accidental electrocution was when artificial respiration was started within minutes, but only 58% if four minutes or more elapsed Probably the best technique is the H Nielsen,[3] because with the patient prone the likely to remain clear, because this method prov larger tidal volume than other methods, and becau electrocution the resilience of the lungs and th rapidly diminishes and concomitantly the efficacy passive inspiration (as in Schafer's method) decre But the technique itself is of little importance com with speed in starting artificial respiration, and more than one person is injured the doctor should immobilise himself by applying artificial respiratio a single patient but should supervise others If en trained first aiders do not emerge at once, unsk helpers should be impressed, and these will need cons checking to reduce the speed of artificial respiratio

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1 *Lancet*, 1955 i 1322
2 Maclaghlan W *J industr Hyg* 1930, 12, 291
3 See *Lancet* 1952, i, 548

required limit of, say ten to twelve times a minute to desist when the return of natural spontaneous iration is heralded by laryngeal movement or llowing In these cases patients may recover after uch as eight hours of artificial respiration

he next step should be to move other casualties to r if possible, and to send for ambulances The rns due to lightning like burns proper, are best red if at all, with a dry dressing or (if removal to ital is delayed) by a dressing moistened with sodium rbonate or saline solution but no clothing except which is charred should be removed and the less is are handled the easier will be the patient s sub ent course Lightning may also cause other injuries ding severe lacerations[4] and a simple dressing be applied to these too

o doctor can be certain that he will not tomorrow such an emergency as that described by our Widdi be correspondent or that last week at Ascot. Many doubt their competence to respond adequately at not local medical societies find it rewarding to ote an hour a year to the first aid treatment of the red on the mountains on the roads and railways e countryside and on the sea shore? A doctor can or lose a life in the first few minutes after an lent no less surely than by his actions or decisions in operating theatre consulting room or laboratory

DENTAL SERVICES

a profession dentists are subject to more perhaps, their fair share of criticism both from the public from their medical colleagues Recently at Oxford dentists were denounced at a meeting of doctors failing to operate an emergency dental service[5] rence was made to the Hippocratic Oath and the l obligation it places on doctors to relieve suffering ever they find it

ntists would agree, of course that they are under ral obligation to the community But with the ssion so short handed there are limits to the nsibilities which its members can be expected to rtake In view of the increasingly acute shortage ntists, to organise a rota of practitioners on call' ghout the twenty four hours of the day and night al with dental emergencies might reduce rather than ase the useful service the profession can render to public

ough often dramatic and the cause of considerable ring dental emergencies are not at all comparable medical cases, such as acute appendicitis, calling for ediate surgical intervention Even dental hæmor e, which sometimes follows several hours after ctions, seldom has a fatal outcome Except for the serious cases of dental hæmorrhage which should prompt attention there are few dental conditions h cannot safely be left untreated for a few hours orrhage arising from dental extractions is the onsibility of the dentist who did the operation and t dental practitioners will take the precaution of ring the patient to return immediately for treatment ld such an emergency arise

hat seems to be necessary to improve the dental ices under the N H S is not therefore a twenty four emergency service which could become an intoler extra burden on a profession already stretched to the Instead if in every locality dentists would organise ta and each in turn set aside an agreed proportion of normal surgery time exclusively for the treatment of al emergencies it would almost certainly be found night calls on hospital outpatient departments for relief of toothache would be greatly reduced and a nty four hour service would not be needed Grave tcomings of the present dental service are the long waiting lists for appointments with dental practitioners and the long delay in some cases before even acute dental troubles are treated There are far too few dentists to treat everyone but the worst effects of this unfortunate situation would be mitigated if toothache and dental abscesses were promptly attended to Medical practitioners and hospital outpatient departments would have copies of the rota of dentists on call and would know to whom to send patients whenever an emergency arose Schemes of this kind are already in operation in some areas, and most dentists would agree that the profession owes at least so much to the community

THE ACTION OF THE PARATHYROID HORMONE

THOUGH the precise mode of action of the parathyroid hormone remains unknown a little progress has been made since we last discussed the subject[1] Albright s original hypothesis that all the effects of the hormone could be explained by increased renal excretion of phosphorus has long since been abandoned—even by Albright himself[2], but the opposite view that the phosphate diuresis is an artefact[3] has lost ground lately despite the evidence that part of the increase in phosphate output following administration of the hormone can be explained by a rise in the glomerular filtration rate[4] Last week at the Ciba Foundation symposium on Bone Structure and Metabolism, Dr John Eager Howard who speaks with an authority second only to that of Dr Fuller Albright supported the view that one action of the parathyroid hormone is to diminish tubular reabsorption of phosphate but he pointed out that in normal people the amount of this parathyroid activity is such that administration of additional hormone in standard dosage has little further effect on phosphate output

The calcium mobilising action of parathyroid extract is also firmly established, though we do not yet know how calcium is removed from the skeleton To this problem Dr Howard (whose remarks to the Bone and Tooth Society we report on p 180) brought some fresh ideas which will stimulate further thought He emphasised in particular the remarkable stability of the serum-calcium level, pointing out that whether this is high low or normal it remains the same in the face of drastic attempts to change it. Hastings and Huggins[5] have bled dogs, decalcified the blood and returned it to the animals without lowering the serum-calcium level even when half the calculated extracellular fluid calcium was removed In normal animals the calcium level in the serum could not be reduced below 10 mg per 100 ml and in hypoparathyroid animals it remained equally steady at a level of about 6–7 mg per 100 ml Dr Howard went on to quote the work of a previous speaker Professor Engström according to whom the total surface of the bone crystals must be some 30 acres It is he said becoming increasingly clear that the equilibrium between the bone crystals and the tissue fluid must be the major factor in determining the serum calcium level and since the latter is evidently regulated by the parathyroid hormone it appeared probable that this regulation takes place at the interface between the crystals and the tissue fluid In other words, Dr Howard was suggesting that the hormone determines the level of tissue fluid calcium at which it comes into equilibrium with the bone crystals This is an attractive hypothesis which seems to fit the known facts remarkably well The prevalent concept of the osteoclasts as agents of the parathyroid gland stimulated by it to devour the bone may be too crude but the osteoclasts could be regarded as foreign-body giant cells removing the matrix exposed by decalcification The "halisteresis" of the older workers is coming into its own again

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[4] Ibid 1916 i 351
[5] Oxford Mail July 1 1955

[1] Lancet 1953, i, 79
[2] Ingall T H Donaldson G A Albright F J clin Invest 1943 22 603
[3] Stewart G S Bowen H F Endocrinology 1952, 51, 80
[4] Klein R, Gow R C J clin Endocrin 1953 13 271.
[5] Hastings A B Huggins C 3rd Conf on Metabolic Interrelations Josiah Macy Jun Foundation New York 1951

Meanwhile the work of Gordon and Davies[6] has provided support for Dent's suggestion[7] that there may be two different parathyroid hormones By dialysis they have succeeded in removing from crude parathyroid extract a factor which retains the phosphate diuretic activity but no longer raises the serum calcium level in laboratory animals

EXPERIMENTAL TUMOUR CHEMOTHERAPY

THE search for cytotoxic compounds capable of causing selective regression of the tumour masses of reticuloses and malignant growths continues to stimulate to persistent endeavour the imagination and ingenuity of chemists in many lands Reviews of the clinical successes and limitations of some of these substances have appeared earlier in our columns[8,9] One of the most promising of the various compounds tested, "nitrogen mustard," derived from mustard gas, has formed the starting-point for combinations having other properties which might aid in the selective destruction of malignant cells In the report of the British Empire Cancer Campaign covering the year 1952, Professor Bergel and his colleagues at the Chester Beatty Research Institute[10] referred to an aromatic nitrogen mustard derived from the amino acid phenylalanine to which special attention was then being given In 1953 and 1954[11,12] it was recorded that the three optical isomers, D, L, and DL, of this compound had been synthesised All were tested on grafts of the Walker rat carcinoma, and the L isomer proved the most effective It was injected one day after transplantation of the carcinoma, and when its effect was assessed thirteen days later only one out of nine grafts had developed and this one weighed only 0 5 g In this year's B E C C report, reference is made to further chemical and biological developments[13] Clinical trials are also in progress

Meanwhile, a group of workers in the Soviet Union, proceeding on parallel but slightly different chemical lines, have synthesised and tested the DL form of the compound As recorded on p 169, they obtained complete regression of an experimentally induced rat sarcoma with this preparation, which they have named sarcolysine (It was less effective in trials using another rat sarcoma and mammary adenocarcinoma in mice) Regression caused by sarcolysine is illustrated in fig 3, the two sections of which are representative of 28 treated and 28 untreated animals, and the regression shown is truly remarkable because the tests were more stringent than any previously recorded The grafts were given seven days' start, and at the time when treatment was begun their weight, as judged by untreated controls, was 0 5–0 8 g The untreated grafts never regressed spontaneously, and at the end of the experiment on the twenty eighth day their weight averaged 40 g In those rats treated with three injections of 5 mg per kg body weight, or with a single injection of 15 mg per kg, no trace of the tumour cells of the grafts was found in sections taken on the twenty eighth day, and three months later the hosts were still free of tumours Some comparable observations with the Walker carcinoma were made at the Chester Beatty Research Institute in 1953 when (Professor Haddow informs us) 10 rats, each bearing an 8 day old Walker carcinoma 256, were injected intraperitoneally with 0 5 mg of the DL-phenylalanine mustard in arachis oil The tu regressed completely and the animals continu live thereafter quite normally This is the only in yet observed at the institute of complete regression advanced Walker tumour

In the Russian experiments the margin betwee oncolytic dose and the dose lethal to the host was But unfortunately, as so often happens in using d tives of mustard gas and other chemotherapeutic stances, there was evidence of considerable dam hæmopoietic cells as well as to those of the tu Encouraging though all these results are, they a stages on the way to finding a substance both and selective in its destruction of tumours

THE HOSPITALS OF PERTHSHIRE

SINCE the start of the National Health Service of the extent to which hospitals are used by the munities which they serve have been made in S shire (1948–49), in Ayrshire (1950), and in the W Scotland Now Dr William Mackie, medical intendent of the County and City of Perth G Hospitals, has done the same in his area[1]

The counties of Perth and Kinross have a co population of fully 135,000, they are predomi agricultural, containing some of the most fertile Scotland The eastern district of Perthshire turn to Dundee for its hospital needs, the Western are to drain to Stirling, and the southern and districts of the county look naturally to Perth for h services Excluding mental hospitals and sana beds, the total number of general hospital beds is equivalent to 10 2 beds per 1000 of the population proportion is much the same as that of the neighb county of Angus and considerably higher than reported from the counties of Stirling and Ay Mackie found it difficult to calculate the "cat area" which his hospitals might reasonably be u to serve, some patients came from outside areas Perthshire hospitals, while many patients from shire went to hospitals in Dundee and Stirling, and doubtless to cities further afield Roughly two-th the patients discharged from the Perthshire hosp 1952 belonged to the counties of Perth and but in the special departments the proportion of cases varied Thus over 90% of obstetric and g cases discharged from hospital, and 82% of attending the ophthalmology department, had homes in the counties of Perth or Kinross, where corresponding percentages for gynæcological case orthopædic cases were 43 and 41, and 36% of the cases

Dr Mackie suggests that a group of hospitals enough beds to take 70–80 patients per annum pe population can give a full hospital service to the munity, but he recognises that the 82 di 1000 population found in Perthshire does not nece reflect the true demand for hospital resource increase of beds, for instance, would raise the h ratio and reduce the waiting lists He conclude apart from the demand for more orthopædic bed catchment area served by the Perthshire hospit adequate hospital accommodation, especially since long the area may be contracted by hospital bu projects outside it and the development of a new crossing

Studies of this kind bristle with difficulty, and Mackie makes it clear that he has not analy material according to strict mathematical or stati criteria But he gives a comprehensive picture o work done by the hospitals in the area, and a of this kind is an essential first step towards an inte review of hospital services

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[6] Gordon, A H Davies, B M *Nature Lond* 1953, 171, 1122

[7] Dent, C E *Proc R Soc Med* 1953, 46, 291

[8] *Lancet*, 1954 i, 1118

[9] *Ibid*, 1955 i, 440

[10] Bergel, F Ross, W C J, Stock, J A, Everett, J L B E C C Annual Report for 1952, p 27

[11] Bergel, F, Stock, J A B E C C Annual Report for 1953 p 6

[12] Bergel, F, Stock J A *J chem Soc* 1954 p 2409, see also Bergel F, Burnop V C E, Stock J A *Ibid*, 1955, p 1223

[13] B E C C Annual Report for 1954, p 34

[1] Copies of the report may be had from the Nuffield Hospitals Trust, Nuffield Lodge, Regent's Park, NW 1 2s 6d (post free)

Special Articles

MILY DOCTOR AND HEALTH VISITOR*

Sir SELWYN SELWYN CLARKE
K.B.E , C.M G M C , M.D Lond F R C.P
PRINCIPAL MEDICAL OFFICER MINISTRY OF HEALTH

OME general practitioners who fully appreciate the k of domiciliary midwives and district nurses are not ink, equally well aware of the help they can be given health visitors. Many others, however, have come to ie highly the contribution made by the health visitor ticularly in teaching a mother how to prepare for the h of her child and (once the responsibility has been ded over to her by the midwife or the maternity pital) how to bring up the newborn baby how and n to wean; how to guide the toddler in his first s and how to protect *baby toddler pre-school d school child and adolescent from the many dangers ne sort or another which beset his path.*

Vhere the general practitioner the nurse the mid , and the health visitor have not yet begun to work ther as what the Minister of Health has called a per domiciliary team ' efforts should be made to ak down the barriers between them , and it has ome especially important to establish better contact veen the doctor and the health visitor A short while a family doctor in North West London was telling how a sherry party had brought him more or less dentally into contact with the health visitor in his . He told me what a boon she now was to him with hers who needed to be encouraged to persevere with st-feeding how much time she saved him in teaching mothers where they could obtain all the various ices available under the National Health and Assis e Acts, and from voluntary organisations and rally in steering the mother away from the many lls that *face her—especially* with her first child— elation to food clothes, bathing play exercise teething infectious diseases and 101 other ters.

he health visitor knows *too where to get help for* ents discharged from hospital and needing aftercare as the diabetic and the tuberculous If she is wise will give relatively little time to the household which smoothly (or only needs a very occasional visit) and so doing, will be able to pay rather more frequent s to the feckless type of mother who requires a good of guidance and encouragement and sometimes al home help or other services

y friend told me that he has several old folk on his who live alone and when for any reason he is worried at them and circumstances prevent him from looking see how they are faring he rings up the health visitor asks if she can call on his patient when she happens e *passing For her part* the health visitor when in course of her domiciliary visits she meets a situation re medical help is needed will naturally telephone to patient's doctor This health visitor now has a ding invitation to call at my friend s surgery whenever cares to do so

his sort of friendly spirit is almost always present, I , where home nurses and midwives are concerned , for historical reasons, it still sometimes takes a bit ultivating in the case of health visitors.

ast month when attending a liaison meeting between pital and local health authorities, I was very agreeably ressed by the reception which three regional psychiatrists received from the health authorities present The psychiatrists had appealed to them for help in connection with the placing and supervision of patients whom it was desired to send out on licence or on trial from the overcrowded mental hospitals and mental deficiency institutions The psychiatrists were promised every help and here the health visitor obviously came into the picture Health visitors assist in allaying the tension and anxiety young mothers so often experience with their first baby or when members of the household are in difficulty, and thus their talks to groups of mothers attending welfare centres are a particularly valuable preventive measure. Recently there has been discussion on the possible need for a psychiatric approach in child welfare centres as a means of preventing undesirable behaviour patterns developing in the early formative years of a baby s life, from over anxiety on the part of the mother or from wrong habits acquired by the child. Some local health authorities now employ a health visitor specially trained in psychiatry, who can act as a consultant as it were to her colleagues if they encounter psychological misfits in their family visits I imagine this is just an extension of the specialised health visitor as exemplified in the tuberculosis visitor whose work is so highly prized by chest physicians, especially for contact tracing and in teaching people how to avoid spreading infection

I firmly believe that the health visitor is capable too, of giving a great deal of help in dealing with the aged It is I suggest our duty to do everything within our power to keep elderly folk at home—near their relatives or kindly neighbours, and as closely as possible integrated with the whole community including children—rather than encourage them to go to a welfare home or hospital The health visitor going to see old people is in a better position than almost any other domiciliary worker to recognise early signs of deviation from normal and to seek appropriate help

Nothing but good has derived from the extension of her work and responsibilities since 1949 to the family unit as a whole. On the other hand the very fact that her burden is greater suggests that the time devoted to mere routine visits at the 10th to 14th day after baby's birth weekly during the first month fortnightly for three months and monthly up to the first year and so on needs modifying As I have already indicated visits should be relatively numerous to families where social and medical conditions are clamant and where the mother is not very bright, and should be correspondingly fewer to the happy healthy hygienic household with an intelligent mother at the helm

In some rural areas the work of the health visitor is combined with that of the district nurse and even with domiciliary midwifery: so that many of the points I have tried to make are equally applicable to district nurses and domiciliary midwives. There are places however where the health visitor is in a position to relieve the district nurse of some of her social work and where the heavy burden of purely nursing duties especially for the aged might be lightened if the district nurse were to enlist the help of her health visitor colleague when the situation appears to demand the utilisation of other (including voluntary) services.

Looking at the problem as a whole I am convinced that we need a much closer integration of the work of district nurses, domiciliary midwives health visitors general medical practitioners, local health and welfare authorities hospital authorities, and voluntary organisations. Each of us individually can do something to bring this integration about and it can indeed be brought about in no other way than by our action as individuals.

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* xtracts from an address to the health staff of Northampton County on Dec 31 1954

BONE STRUCTURE AND METABOLISM

THE increasing interest in bone structure and metabolism was reflected in a well attended meeting at the Royal Society of Medicine on July 15 Under the chairmanship of Prof R A McCANCE, F R S , five of the visitors from abroad who had taken part in a highly successful symposium at the Ciba Foundation were invited by the Bone and Tooth Society to report on recent work in their own fields

Prof A ENGSTROM (Stockholm) has been applying biophysical methods to the study of bone structure Micro-radiography has shown that the haversian systems of compact bone are mineralised to varying degrees, and that those with the lowest mineral content have the highest uptake of radioactive isotopes X ray diffraction studies seem to have confirmed the hydroxy apatite nature of the bone salt The apatite crystals measure about 220 × 70 Å and possess an enormous surface —about 130 sq m per gramme Professor Engstrom expressed the view that the carbonate ion is not incorporated in the lattice but is merely adsorbed on the surface He referred also to the new syndrome of hypophosphatasia and demonstrated the low uptake of ^{45}Ca by a piece of bone from one of these cases " In this condition," he said, " the matrix cannot become properly mineralised "

Dr JOHN EAGER HOWARD (Baltimore) opened his remarks on parathyroid function by observing that very little is known about the parathyroid hormone—we do not know its chemical structure, where it acts, or how it acts But clearly, he said, it has some action on phosphorus metabolism, and work had been presented to the symposium which showed that the phosphate clearance is high in hyperparathyroidism and low in hypoparathyroidism The work of Barnicot, confirmed by Chang had shown that there is also a direct action on bone, leading ultimately to the picture of osteitis fibrosa The parathyroids seemed to be stimulated by a fall in serum-calcium They hypertrophied in low calcium rickets but not in high calcium rickets, and more activity could be obtained after perfusions with low-calcium fluids than high calcium fluids

Dr Howard then developed a new conception of the mode of action of the parathyroid hormone He pointed out that the serum calcium is extremely constant—at about 10 mg per 100 ml in normal individuals, and at higher and lower levels respectively in hyper- and hypo parathyroidism Since 99% of the body calcium is in the skeleton, and since the bone crystals present an enormous surface to the tissue fluids, it must be the over-all relationship between the tissue fluid and bone crystals which determines the level of serum calcium If movement of calcium into bone exceeds loss from bone, the serum calcium must fall, and vice versa The secretion of the parathyroids must obviously be important in regulating the equilibrium between the tissue fluid and the bone crystal, or in setting the level at which the homœostatic mechanism operates " The parathyroid gland must regulate the living barrier between the bone salt and the tissue fluid "

Prof G FANCONI (Zürich) described five principal effects of vitamin D, and brought in the conception of varying degrees of sensitivity to it to explain a series of disorders ranging from idiopathic hypercalcæmia to vitamin-D-resistant rickets He pointed out that there familial disposition to rickets (suggesting de sensitivity) and that hypothyroid subjects do not de the disease (i e , they are more sensitive than r the vitamin) He described the relatively new synd of idiopathic hypercalcæmia with osteosclerosi reported the favourable effect of cortisone in condition

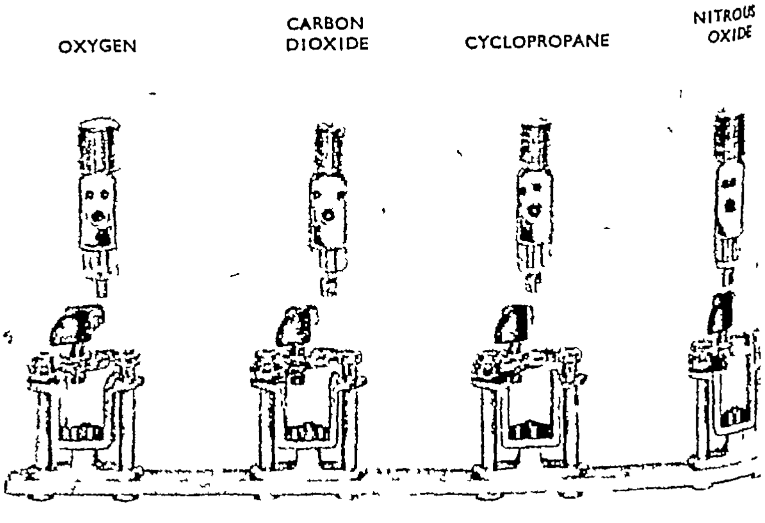
Prof W D ARMSTRONG (University of Minn described " some very simple experiments " wh his opinion supported the view that the homœo action of bone is more important than its functio supporting organ He believes that citrate o " adventitiously " in bone, and reported that dry b bone will take up citrate ions from solutions in However, there was evidence that both phospha fluoride ions compete with citrate ions if they are p in the solutions, and he interpreted this as mean all these ions are adsorbed on the surface rathe incorporated in the lattice

The meeting concluded with a paper by Dr H l (Chicago) on the deposition of radioactive ten bone He emphasised the importance of the sk as the store house of fission products, and showed graphs and histological sections of the bones of p who had died with a " radium burden "

NON-INTERCHANGEABLE GAS-CY VALVES

DESPITE precautionary devices, mistakes in iden medical gas cylinders have cost many patients lives At present each cylinder is clearly labelled w name of its contents, and cylinders are distin coloured to distinguish one gas from another cylinders, such as are used for pipe line m already have valves of a type which makes it im to connect them up incorrectly , and now the B Standards Institution has announced the adopti measure to avoid the risk of wrongly connecting cy with a capacity of 24 c ft or less

The principle of the new system is that of the valve The connection pieces of each apparatus ar made with two pins which will fit into two hole valve of the gas cylinder The pins and co holes will be spaced differently for each type of g figure) An identical valve is already in use in the and in Canada, and it is likely to be adopted by European countries in due course In this coun be available on new equipment before the end o year, but the conversion of existing apparat cylinders will not start until the autumn of 1956



e introduction of the non interchangeable valve will one more loophole due to human frailty, and ut the accidental junction of the wrong cylinder the connection piece of any apparatus. Many types paratus, particularly for anæsthesia have detachable g to carry the gases from the connection pieces and ressure-reducing valves to the meters which record flow These too should be fitted with non inter geable couplings[1] But complete safety can still be secured if practitioners never use any gas appara ntil satisfied that all its connections are correct

FECTS OF ATOMIC AND HYDROGEN BOMB EXPLOSIONS

the suggestion of the Japanese Association of ors against the A and H Bombs, an international cal commission was set up to investigate the medical iological effects of atomic explosions. Help in the usation of the commission was given by the World cal Congress for the Study of Contemporary Living itions The Japanese sponsors included Dr M uki emeritus professor of surgery in the Tokyo nal University Dr Hideo Kumabe director of the tuberculosis Association of Japan and Dr H s, of the Japanese National Institute of Public h

e members of the commission who served in their nal capacity were

HEVALLIER, professor of hæmatology Faculty of Medicine

V GALE, professor of preventive medicine, University College st Africa, and former secretary of health and chief health Union of South Africa.

IETERLE director of the radiological institute and tumour Charité Berlin

UZMAN professor of oncology, University of Chile; formerly or-general of public health, and at one time prime minister of

HOLUBEC chief of the surgical department Trebic Hospital, slovakia.

V KOZLOVA, director of the Molotov Institute of Radiology w

Hsi CHENG professor of pathology China National Medical sity Mukden

EVITT consultant pathologist Birmingham Accident Hospital rns Unit.

YONCKER surgeon chairman of the Belgian Society of ational Law

e members of the commission met in Tokyo on 28 1955 and sessions were held in Tokyo Osaka o Hiroshima and Nagasaki They hope in due e to prepare a full report on the evidence supplied apanese scientists, supplemented by their own vations and their interrogation of survivors who le several doctors Meanwhile they have issued a minary report whose conclusions are

'he rapid release of vast quantities of energy and nable material from the explosion of atom and ogen bombs has produced severe effects in exposed n beings. Most of those affected have died Those survived commonly suffered or suffer from various effects and many cases of blood disease terminating y have already occurred among them. Pregnant en frequently miscarried Some children who were sed have been retarded mentally and physically study of these various effects should continue and lic international conferences convened to evaluate esults

We consider that the persistence of radioactive mination of the sea, rain and atmosphere is the important feature of experimental H bomb explo for we are afraid that the cumulative effects of nsed irradiation over widespread areas may result nfavourable genetic changes among the populations ose areas We are members of a profession whose it is to defend the public health against any threats which can be prevented As doctors we appeal to the mutual understanding of nations and the good sense of mankind to ensure that there shall be no further explosions of atomic and hydrogen bombs, and that the use of atomic energy shall be confined to peaceful and constructive purposes for the benefit of all the peoples of the Earth'

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[1] dical Gas Cylinders and Anæsthetic Apparatus British tandards Institution June 22, 1955 (B.S 1319)

GENERAL MEDICAL COUNCIL

MEDICAL DISCIPLINARY COMMITTEE JULY 12–13

THE Medical Disciplinary Committee of the council met on July 12 and 13 under the chairmanship of Sir DAVID CAMPBELL, the president

MISLEADING STATEMENT

Jack Isaac Conroy registered as of Willow Bank, James Street, Radcliffe Lancashire M.R.C.S (1932) was charged with having sent a statement purporting to have been made by his assistant, Dr Ian Clark, but altered by himself with the intent of misleading the Lancashire Executive Council in connection with a complaint made against him He was represented by Mr P Baylis, *solicitor of Messrs. Hempsons* solicitors to the Medical Defence Union.

Mr G J K. Widgery said that Dr Clark was asked, in Dr Conroy s absence to see a patient whom he found to be suffering from pneumonia. Subsequently the patient s wife complained to the executive council of neglect of her husband by Dr Conroy A copy of the complaint was sent to Dr Conroy for his observations, and he asked Dr Clark to make a statement about the case Dr Conroy wrote to the executive council including a statement purporting to have been made by Dr Clark. When Dr Clark was shown a copy of this by the complainant he told her that it was not his statement and notified the executive council The patient s wife withdrew her complaint against Dr Conroy but the medical services committee investigated the matter of the statement The committee found that this had been altered by Dr Conroy So far as the statement was concerned there was no breach of the terms of service but they ordered that the papers in the case together with their report should be forwarded to the General Medical Council. Dr Conroy s appeal to the National Health Service Tribunal was dismissed.

In evidence Dr Clark said that everything had been toned down from what I had described In the statement which Dr Conroy sent. Cross-examined Dr Clark agreed that Dr Conroy had admitted at once that he had completely redrafted the statement

Dr Conroy told the committee that, as a result of advice from the Medical Defence Union, he asked Dr Clark to prepare a statement of the case so far as he was concerned personally When he read the statement he realised that it did not embody the fact that he had been in consultation with Dr Clark. He drafted a new statement embodying what he thought was necessary to repudiate the allegation. He intended it as a statement of what Dr Clark would say at the oral hearing by the medical services committee. He invited Dr Clark to draw the attention of the executive council to any errors in the statement as submitted.

The committee found the facts alleged against Dr Conroy proved to their satisfaction, and judged him guilty of infamous conduct in a professional respect They were unable to regard the statements made on his behalf as affording any justification for his action, but they hoped that the warning which he had received from these proceedings would be sufficient and did not direct the Registrar to erase his name

BLACKMAIL

Ralph Austin Hamilton Dubery registered as of Stowford Lodge Umberleigh Devon M.R.C.S (1942) had been convicted at Devon Assizes and sentenced to three years imprisonment Mr Widgery said that the charge was one of blackmail of a patient Dr Dubery s appeal was dismissed and the sentence upheld In 1935 when he was 17 he was found guilty of causing a public mischief and bound over he made up a story to the police of a burglary

Dr Dubery said that he had put in a petition to the Home Secretary that further evidence should be heard The Legal Assessor (Mr C P Harvey Q C) told him that the committee were bound to accept the conviction Dr Dubery replied that if he was in fact guilty of the offence there was very little if anything, which he could say in mitigation He could only repeat that he was not guilty, and he had evidence which would prove that he was in fact innocent

Dr R A Nash gave evidence as to character and presented a petition from 2700–2800 people in South Moulton

The Registrar was directed to erase the name of Ralph Austin Hamilton Dubery This is subject to an appeal to the Privy Council within twenty eight days

HEARING POSTPONED

Bak Hin Ong, registered as of 10, Riverside, Malacca, LRCPE (1915), had been summoned to appear following a conviction in Malaya He did not appear, and on his behalf Mr Baylis, in his private capacity, applied for an adjournment on the ground that Dr Ong had been unable to make arrangements to come to London for the present hearing Mr Widgery suggested that Dr Ong had had ample time to prepare for the case The Royal Faculty of Physicians and Surgeons of Glasgow had withdrawn Dr Ong's licence in view of the fact that his name had been removed from the register in Malaya

After consideration in camera the President announced that the committee had, with some reluctance, decided to postpone the case until their November session

UNTRUE CERTIFICATES

William Mackenzie Ross, registered as of Sunnyside, Flint, MB Edin (1924), was charged with issuing 29 certificates for National Insurance purposes which were untrue, misleading, or improper within the meaning of the Warning Notice The certificates were first, intermediate, and final certificates in support of claims for sickness benefit

Mr. Widgery said that the certificates of incapacity for work were in respect of a patient, George Jones They were given to his wife, Mrs Jones, without her husband's knowledge She obtained insurance benefit totalling £72 2*s* 9*d* In May of this year she was fined £20 The medical services committee found that Dr Ross issued the certificates in contravention of the National Insurance Benefit Regulations and recommended that £580 be withheld from his remuneration , on appeal the amount was reduced to £250

Mr George Jones told the committee that during the period covered by the certificates he was carrying out his normal work. Cross examined by Mr Baylis, who represented Dr Ross in his private capacity, he agreed that he had had a number of " off work " certificates from Dr Ross

Mrs Alice Gwendoline Jones said that, apart from the war time, she had been Dr Ross s patient since she was 16 She told him that her husband was ill, and asked for the certificates, signed these with her husband's name, and obtained the benefit In cross examination Mrs Jones said she had told Dr Ross that her husband was not always kind to her She agreed that she got the certificates by playing on Dr Ross's sympathy

Dr Ross said that he had not given the first certificates without examining the patient, except in one instance, when he had seen Mr Jones a little while before He believed Mrs. Jones when she said that her husband was ill He agreed that she had quite ruthlessly and wilfully deceived him He had no motive, apart from sympathy, in giving the certificates and derived no benefit from them He did not know that Mr Jones was at work.

Mr Baylis said that Dr Ross had had no motive except to help the patient's wife, for whom he was sorry He was not putting that forward as an excuse , he had issued 25 certificates without seeing the patient But he had no improper motive

The committee found the facts alleged in the charge proved Mr Baylis produced three testimonials from doctors in Dr Ross's neighbourhood After deliberation in camera for nearly an hour, the President announced that Dr Ross had been found to have been guilty of infamous conduct in a professional respect " The committee regard your action in giving these certificates as a most serious breach of the trust which Parliament has confided in members of the medical profession," said the President " Not only our own repute but that of the profession to which you belong must be injured by actions of this nature " But in view of the testimony which had been produced and the assurance that Dr Ross had given concerning his future conduct, the committee did not direct the Registrar to erase his name

MEDICAL RESEARCH COUNCIL

For their annual report the Medical Research have evolved a pattern which avoids the danger much detail and still presents a readable picture is going on In recent years the main part of th has included some discussion of general trends in research, often from a broader standpoint than the contributions made by work within the counc *programme Such a scheme must inevitably* mention many of the investigations in which the workers take part , but by judicious choice o from year to year the council aim to deal with al tant subjects of study once every few years A general account of what has been happening in branches of research, the report adds a summar work of the separate establishments, and for mor those interested can turn to the classified list of r which follows

CHEMOTHERAPY

Chemotherapy has been one of the big council since 1928, when they set up a committe the chairmanship of Sir Henry Dale, to advise this subject , and the newly published report[1] for (the Ehrlich-von Behring centenary year) appr starts with a review of what has been achieved sin Looking back over these busy years, the report this reflection

" In retrospect it seems that the necessity for close tion between chemists and biologists in ch research should have been so obvious as to be un recognized from the outset That it was not so re was due in part to the absence of any underlying the to the fact that discoveries made by chance or on meagre evidence and sometimes very dubious reasoning to indicate that the prospects of developing a comp *theory were remote In these circumstances the* semi-empirical method of screening new synthetic compounds appeared to offer the best chance of

The different outlook that prevails today ste Domagk's discovery of the antistreptococcal prontosil and from the increase in our knowledg biochemistry of micro organisms The report

" biological research has invigorated the whol of chemotherapy From bacterial biochemistry emerging a satisfying theoretical background for th In the search for new synthetic chemotherapeutic may expect to be guided in general by this theory detail by increasing knowledge of the biochemistry of metabolism, and by the results of study of the action of naturally occurring antibiotics. The conc chemotherapeutic agents has been widened to includ that may exercise their effects through the host directly on the parasite, and the development of th is being assisted by investigation of the cellular me of higher animals Chemotherapy has travelled a l since the days when it amounted to little more th empirical selection and biological testing of organ pounds, whether already known or specially prepared purpose "

RETROLENTAL FIBROPLASIA

The remarkable story of this disease may fi pronounced closed, though, as the report says, cases may appear in the future as they did before the year in which Terry, of Boston, called att the increase in bilateral blindness in premature Work in this country made notable contributions solution of this problem, and the latest results recorded, both here and abroad, confirm that the ment of oxygen administration to premature b greatly reduced the incidence of retrolental fibr Moreover, the reduction of oxygen has had no de effect upon the survival-rate

MALNUTRITION

There have been two currents of thought on malnutrition in recent years—on the one han ciency viewpoint (with *vitamins in the forefront*) on the other, the idea that disease must result from action of a positive agent such as a bacterial infection some poisonous substance The report points out over that nutritional disease is no longer a question mutually exclusive concepts but rather that both s of stress—the nutritional and the infective—may be rating together to produce deviations from the normal orm

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[1] Report of the Medical Research Council for the Year H M Stationery Office Pp 274

it is clear that the study of human *malnutrition is* longer the clear-cut investigation of disease entities the study of the reactions of the individual throughout life span to what may be termed the chemical environment sed by his diet This study must properly be considered anch of human physiology as well as of pathology since concerned not only with causes of death and with the ed patterns of disease which are found in malnourished des, but also with the suboptimal performance and ency which, in the long run may well be the most ortant effects of marginal malnutrition

NEUROSIS IN INDUSTRY

he council s unit for research in occupational adapta directed by Prof Aubrey Lewis has been making ematic observations upon the consequences of otic disturbances on social well being and industrial iency

study in a light-engineering factory showed that the p with the consistently higher level of production con d more stable and emotionally mature persons than nor less productive group it was more closely knit and d a better record of general health. Surprisingly the which was less healthy and industrially less effective had bsenteeism than the other so that in this study absen n was paradoxically associated with a higher standard of ational efficiency

e report emphasises the difficulties which the hiatric research worker must face

f his clinical social and psychometric examination of worker is to be adequate it is impossible to examine a population; but unless his examined population is his findings will be inconclusive He must examine his cts during a comparatively short period since economic s in the industries studied may otherwise affect his s differentially When he uses the survey method to a working group he cannot feel confident that his sions will apply to different groups working under conditions, since the number of people studied in such a y can represent only a small percentage of the labour

ield studies provide useful descriptive material uggest valuable hypotheses on which further work can sed. But much surer and simpler methods of examina and assessment need to be devised before such surveys ield conclusions of general validity on the connexion en occupational behaviour and psychopathic traits.

SUPERANNUATION RIGHTS OVERSEAS

E Minister of Health has arranged[1] that British tal doctors dentists nurses and other professional ical and administrative staff who accept employment e new University College Hospital Ibadan Nigeria, not lose their National Health Service superannuation s This is the first time that provision has been made mployment in a hospital outside England and Wales arry with it N H S superannuation The new tion, which came into operation on June 23 applies ose who accept employment with the University ge Hospital Ibadan for not longer than six years who have been employed by a regional hospital l or board of governors within the previous twelve hs The hospital will be opened in 1956 or 1957 or some years will be dependent on recruitment from United Kingdom for filling many of its higher ssional technical and administrative posts

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[1] Ministry of Health Circular H M (55) 69

Public Health

THE HEALTH-DEPARTMENT PSYCHOLOGIST

HIS RÔLE IN A MENTAL-HEALTH SERVICE

DENNIS G PICKLES
M.A. Camb
PSYCHOLOGIST PUBLIC HEALTH DEPARTMENT OLDHAM

LOCAL health authorities need to think seriously taking on new responsibilities for mental health Part because of the difficulty of staffing our mental a mental-deficiency hospitals the emphasis is swingi away from the hospitals to the idea of extended con munity care and to undertake this the local authoriti will require specialist staff

The employment of a full time psychologist in con munity work is new in this country and it may be usef to describe my experience in the Oldham public-healt department during the past three years

It has of course, long been the practice for education or clinical psychologists to take part in child guidanc where their knowledge of normal and development psychology and of statistical and mental test procedure has supplemented the psychiatrist s knowledge of medic psychology Nowadays, psychologists are working to in mental and mental-deficiency hospitals, and in son of the larger general hospitals where pædiatrician physicians and neurosurgeons use their findings assessing the needs of patients, in evaluating the resul of treatment and in planning rehabilitation

Work in the public health department, however quite a new venture for the psychologist, and it bring into a novel context many problems with which he h been familiar more generally In particular, he is likel to be called in at an early stage in the ascertainment mental deficiency—not necessarily in a clinical settin but in the home also He has opportunities for helpin and working with defectives and mental patients in th community He is in close touch with medical and con sultant staff of the department with duly authorise officers, with mental health social workers and wit health visitors Though he will probably be engaged certain school health duties his proper position in th department is as a member of the mental health tean and the scope of his work can thus be wide.

These commitments will vary from one area to anothe and local needs and hospital facilities will determine ho such a service develops. In Oldham there is close integra tion between the public health and hospital psychiatri services on the one hand and the educational services o the other This enables a system of joint use of officers t operate with benefit to the efficiency of the service a a whole avoidance of duplication of effort and econom in expenditure The social work for the hospital psychi atric unit and clinic including group and recreationa therapy is done by the mental health staff of the healt department Direction is given by the consultan psychiatrist to the hospital who is also consultant t the health department, mainly by means of a weekl case-conference, when recommendations and decision on aftercare and the helping of patients in the com munity are made The emphasis, so far as possibl is on community care and admission to hospital i considered only for cases urgently in need of it

In such a unified and integrated community mental health service the work of the psychologist is divide between (*a*) the public health department (*b*) the schoo health service and (*c*) the hospital—and these vario duties overlap

THE HEALTH DEPARTMENT

Diagnosis of mental deficiency comes naturally to the forefront, since this is work in which psychological tests are essential With children the commonest problem is that of " educability " A child's whole future will depend on whether he is regarded as educable, since the verdict " ineducable " excludes him from the school system Very careful consideration must therefore be given to the child's history, opportunities, and circumstances, to the diagnosis of his mental condition, and to the methods used in arriving at that diagnosis School medical officers may find such decisions difficult, and may refer the child to an independent consultant It saves time, energy, and expense to have a psychologist available in the health department, who by virtue of his background and training is particularly suited to assist

Where the problem is whether an adolescent is likely to need supervision after leaving school, and is therefore subject to ascertainment as a mental defective, the answer depends entirely on the validity of the diagnosis, and skilful testing and test interpretation, as well as very careful consideration of social circumstances, may be required Objective personality testing might prove to be of value

Adults suspected of being mentally defective, who may have missed ascertainment at school, quite often come to the attention of the local health authority, either through the courts or through social agencies A typical example is the unmarried mother of low mentality who may have led a tolerably useful and socially acceptable life until the arrival of her child put too great a burden on her intellectual resources In cases of this kind assessment often requires diagnostic procedures not normally applicable to children In Oldham it is the practice for all adults suspected of being defective to be seen and assessed by the health department psychologist, whose findings and report, accompanied by a detailed medical and social case history, may then be passed on to the consultant in mental deficiency This procedure has considerably reduced the time spent in diagnosis and disposal

Defectives under Community Care —Guidance of defectives under supervision or guardianship in the community calls for careful assessment of their capabilities and potentialities This means more than merely testing on a single test and expressing the findings in terms of intelligence quotient or mental age It should include the detection of special strengths and weaknesses in mental functioning quite apart from general intelligence

This type of work has particular value in the running of an industrial centre, which should have as its objective the training and rehabilitation of selected defectives so that a proportion of them may find remunerative employment Occupational maladjustment is often associated with disturbances of conduct or precipitation of mental illness, and this is a danger which particularly needs to be guarded against with employable defectives Such assessment is, to a large extent, the province of the psychologist Initial assessment of mental capabilities and disabilities is carried out by him, and, in cooperation with mental health visitors and instructors, he follows the progress made by the defectives under training and tries to estimate end-results in an objective way In many problems of actual training procedure he may be able to advise and assist, especially if he is acquainted with the techniques of industrial or occupational psychology Special test procedures and the application of statistically reliable rating reports may be wanted

More needs to be known about the occupational potentialities of defectives, and there is room for research in a community setting

Psychometric assessment of mental patients is often necessary, because mental symptoms are sometimes the result of specific intellectual inadequacies, not necessarily amounting to mental defect but nevertheless req thorough objective assessment Personality te by means of special techniques is another contri which the psychologist in a community servi make

Home Visiting —The psychologist in a service should be available for visiting patients in homes, and for the visiting and supervision of defectives From time to time he may be requ help with other administrative matters which within the province of the mental health visitors. a useful and often necessary extension of his w gives him, incidentally, much first hand social and domestic situations with which he otherwise be out of touch It also gives necessary into administration and into the situations conf social workers

THE SCHOOL

On a broad view, many of the problems encoun school medical officers come within the scope of pu mental health work Difficulties in school are source of personality maladjustment, or conv be symptoms of it Problems of this type are catered for by a child-guidance service, though not children may require psychiatric treatment In the psychologist to the health department is also logist to the child guidance clinic, and his as with this clinic and with the schools allows of clo in cases where the emotional element is pr At the child guidance clinic he carries out the functions of a psychologist in such a clinic, und atric direction, and in cooperation with a psy social worker His duties involve psychological observation of children in the clinic, school visits the occasional interviewing of parents

An example of the kind of school problem him by school medical officers is that of the chi a specific reading disability The question m whether the child is in need of special class individual remedial coaching, or admission to school, and, though the decision rests with medical officer, a detailed examination of the which may be several and complex, is needed as step Besides study of the background history, of attitudes to learning or to school, and of difficulties, selected tests should be carefully in every case Many of these are tests of the constituent skills which are basic to reading, cannot be properly applied and interpreted exc trained psychologist

HOSPITAL

The bulk of the psychologist's work at the ho diagnostic testing of patients referred by the psychiatrist The problems here range from stra ward intellectual assessments to complex inves of personality deviations by means of proje niques Intellectual deterioration and vocational tudes may have to be estimated, and group tr patients, and some group therapy, are also unde

CONCLUSION

A psychologist employed in a public health dep has a definite contribution to make to a com mental-health service which aims at being compre This is so because mental health work—whether pital, clinic, or community—is team work, requi joint efforts of the various people engaged but m also some division of responsibilities for the use o various skills These principles will need to be p practice by any local health authority intending t on new commitments and to provide an efficient the care of mental health

MEAT PIES

OUT two thirds of the outbreaks of food poisoning in nd and Wales are due to eating 'made up' meat—ausages, saveloys meat pies and a host of similar les some of which have a merely local distribution omenclature[1,2] Members of the genus Salmonella sponsible for about a quarter of these, but there is s some doubt whether the organisms are contained raw materials or are added by those who prepare

German work in the early part of the century asised the danger of the cow horse or pig naturally ed with salmonella We know that such infections in this country though their frequency can only essed and it is pretty certain that some infected and offal is likely to slip through a system of meat tion which makes almost no use of bacteriology is in fact little recent information about the er of infected animals in the slaughter houses of pigs reaching slaughter houses in Florida were to harbour species of salmonella[3] but we are told n other parts of the United States the figure is less ying Ludlam's observation that at times 40% rats in a factory processing the inedible residues meat trade carried these organisms gives reason courage similar observations here[4]

almonellosis in man is uncommon (in comparison influenza or ringworm) it may well be due to our al distaste for raw or undercooked meat Never s an exhaustive report on a serious outbreak of oisoning in Lancashire suggests that the danger be nearer to hand than we recognise[5] Over a nd people were infected of whom 5 died Many ten meat pies made by a reputable baker *S bovis ficans* was found in the faeces of most but not all fferers and in a large proportion of the pies Not se affected had eaten the pies. Some who had pie and showed symptoms of infection never yielded ecies of salmonella and a few yielded species other *bovis morbificans* Many of those affected could o clear picture of what they had or had not eaten rt the investigators met most of the difficulties ed herrings which are inseparable from these les, but it was clear that the connection between d salmonella had to be unravelled One of those ade the pies had a sharp attack of diarrhœa, but as thought to be a victim rather than the origin, accident Gelatin was as usual, a constituent of es and gelatin is dangerous stuff because of its and because in the trade it is usually held at a rature suitable for bacterial multiplication In stance it seems to have been innocent of blame neat was a mixed lot which included some veal bed as having an off and hammy taint and d meat which had been kept eight days before ry to the baker Which if either of these was d was never discovered though by unusual fortune possible to trace the herd from which the carcasses No direct evidence of infection in this herd could und and the serological evidence is not easy to rise. Whatever the source of infection it might have no damage if the usual baking practice had been ed 380°F for four hours appears to be lethal to nella in a 4 oz pie On the fatal day (and probably frequently) this temperature was not reached in the or any considerable length of time mostly because en door was opened to add more pies or cakes to ad Extensive experiments showed that the rature and time quoted are fairly near the critical ones for safety though it is true that the strain of *S bovis morbificans* had a thermal death time as long as 20–22 minutes at 80°C The baker's choice must lie between damage to his pies or his customers.

This report deserves to be read throughout It is a reasonable guess that such accidents are rare for infected meat and inefficient baking are both uncommon and the coincidence of the two operative factors is most exceptional More scientific meat inspection and better storage may do something to reduce the one danger and more conscientious baking the other Absolute prevention demands a system of regulating trade practices to which nobody is likely to be agreeable Education has for many years been a blessed word by which it was hoped to correct the failings of others the recent campaigns for food hygiene suggest that it has its limitations It is the public' who suffer by these accidents and it may be that their best protection lies in a weapon which is seldom used It was the heavy damages given against a reputable firm for the fatal results of a picnic, that led to the manufacture of potted meat being made as free from risk as is humanly possible

POLIOMYELITIS VACCINATION

AT a luncheon of the National Fund for Poliomyelitis Research on July 15, Dr G S Wilson director of the Public Health Laboratory Service, spoke of the present situation in poliomyelitis vaccination He recalled that in 1935 a vaccine was prepared in the United States from a suspension of infected spinal cord treated with formaldehyde The resultant vaccine protected laboratory animals, but when it was tried in man poliomyelitis developed in a proportion of those inoculated and further use of the vaccine was forbidden

When the results of the recent trials in the United States were announced they were regarded as a triumphant success but, Dr Wilson went on some of the drawbacks of the vaccine had been glossed over To those who had studied the problem of disinfection the sequel caused little surprise The zone of safety between danger on the one hand and ineffectiveness on the other was not wide Despite the use of a comparatively pure suspension of virus the Salk vaccine contained a good deal of foreign matter derived from the culture tissues and it was difficult to ensure that every particle of virus was acted upon by a concentration of formaldehyde necessary to kill it Dr Wilson thought this was one of the fundamental difficulties of the killed vaccine In the laboratory the vaccine appeared to be safe and yet just as with the vaccine twenty years ago it was found to be dangerous in the field Further purification of the virus suspension might improve matters, but the procedure could never be devoid of some risk This was one reason Dr Wilson said why many virologists believed that the future lay not with killed vaccine but with attenuated virus

The use of the Salk vaccine had now been thrown right back to the experimental stage—into the melting pot in fact Dr Wilson added Experiments were in progress to find a safer vaccine incorporating less virulent strains of vaccine It was hoped to establish a unit at Fajara in the Gambia where there was reason to believe that strains of low virulence might be found As soon as a new vaccine was available a field trial of its accuracy would doubtless be undertaken but not until the Medical Research Council's committees were completely satisfied of its safety

A Ministry of Health statement on July 16 said that Government policy still rested on what the Minister had said in the Commons. So far it had been found best to abandon the idea of using the original form of the Salk vaccine but modifications of it were certainly still the subject of research

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If I Were .

IF I WERE DIRECTOR-GENERAL OF UNICEF *

Cicely D Williams
D M Oxfd, F R C P

FORMERLY ADVISER IN MATERNITY AND CHILD HEALTH, SOUTH EAST ASIA REGION, WORLD HEALTH ORGANISATION

All the world over, but especially in the developing countries, the disorders of children are more often due to the ignorance and fatalism of their parents than to disease

One of the chief difficulties of Western administrators and doctors is that the countries from which they come have a high regard for specialists In these countries it is often felt that the more highly specialised the worker, the better the service he gives Now the specialist may have a profound knowledge of his own specialty, but he usually takes for granted the setting in which it has functioned It is unreasonable to expect that his advice will be equally efficacious in a setting totally different from that in which he gained his experience

A specialist in *x* disease, or in *y* engineering, who goes to a new country will find many cases of *x*, or deficiencies in *y* But he will not be able to judge how important these are in the economy of the new country unless he is helped by someone with wide local knowledge as well as a critical knowledge of what treatment for *x* or equipment for *y*, can achieve This local adviser takes longer to gain his experience than a professional worker to acquire his training in some narrow specialty

In the past there have been disappointments when Western machines and labour saving devices have been applied to agriculture and engineering in developing countries—largely because they have been introduced without regard to the new background, human and environmental The same is true of other programmes It is usually necessary to "get acquainted" before health and welfare projects can be implemented. Material supplies are only a small part of the equipment needed, knowledge, understanding, and experience are necessary if a project is to succeed

Unicef is "The Children's Fund" Its main object, therefore, is to concentrate on the care and well-being of children But it is not always easy to adjust the declared policy of Unicef, as set out in its *Compendium*, with its "emphasis on mass impact and far-reaching effects,"[1] to the great and imperfectly comprehended needs of the children

The same document declares that "Unicef aid is primarily in the form of supplies and equipment not available within the country" It seems unfortunate that this policy of "supplies and equipment" should be propounded before the needs of children have been investigated, and before the people to use them have been found It may be that there are other ways in which help might be necessary and welcome, in which "supplies and equipment" would play a minor rôle

The same document also says "Other (United Nations) agencies supply technical or expert personnel who may be required to operate the programs until people within the country can be trained to tak over" But the people of the country cannot be trained within a mere year or two Some programmes have been started, or approved, by agencies before they have been financed by Unicef Unicef has a large budget Its income in 19 $16 million The other United Nations' agencie comparatively small budgets—the World Health Or tion, for instance, has only about half this am and it is difficult for an agency with a low bud a small staff to give the professional and te supervision needed to make Unicef financed p effective

These agencies have many other respon besides child care The maternal and child health is only a small part of W H O In practice "equ and supplies" may not always be used to th advantage because of this overpowering em material aids and mass impact, when, as many who have worked in these areas would agree, t needs are for understanding, education, and

Unicef reckons to supply "the initial imp programs which assisted countries will eventuall out themselves" Now an initial impetus is needed for a vehicle that already has an efficient and a fuel supply But it is not enough to u starting-handle when the machine scarcely ex there is hardly any fuel Nor does "mass build machines, indeed it may not even suppl fuel

There are especial difficulties in promoting p in child health It is obvious that they need wo the highest calibre and of wide experience But i of the more advanced countries child health is tr divided between pædiatricians, with mainly experience, and medical officers of the mate child health departments with public health In contrast with experts in forestry, agriculture, and fisheries, few pædiatricians have any wide experience outside their own countries Tropical is mainly concerned with insect-borne diseas tropical pædiatrics scarcely exists

There is enough ill health among children in ing countries to make good use of Unicef fun if they were much greater than they are I countries the infant mortality is ten times, toddler mortality forty times, greater than in th advanced communities It may be fairly reckon the working days lost by adults with this disease, but at present it is impossible to comp physical, emotional, and economic waste caused high infant and child mortality and morbidity

To start, implement, supervise, and evaluat grammes in child health it would be necessary t and employ a large staff of pædiatricians ex in organisation and in tropical conditions But has not the funds to do this There are one, or p two, medical officers in the maternal and child section at headquarters in Geneva, and one ad five of the six regional offices The nutrition sec W H O, which is largely concerned with the nu needs of children, has one medical officer These are seriously overworked, and yet together they accomplished a great deal The staff employ field projects are generally on short-term appoint of two to four years, so it is not easy to build up of experienced workers Of course there is close co tion with other sections such as mental health and education, and most particularly, nursing

The nutrition section of the Food and Agric Organisation, on the other hand, has seventeen nutritionists If it were appreciated that the h medical aspects of nutrition are as important hile then the child health specialists and the medical tionists would surely be increased

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* Mr S M Keeny's article entitled If I were a Minister of Health in Asia (*Lancet*, July 2, 1955, p 30) must have been read with the greatest interest in many countries. I earnestly hope that some of the ministers of health will also put their point of view Having worked in child health in developing countries for nearly thirty years I have ventured to record some of my own reactions —C D W

[1] Unicef Compendium, 1954–56, vol 4, p 4

e valuable work done by social anthropologists, culturists scientific nutritionists psychologists health itors social workers and others could be used more actorily to further child health if it were coördinated ecialists in child health As it is there is a tendency ncentrate on details of nutritional diseases rather on treatment and prevention There is more accumu information on the biochemistry of liver cells than is on the basic causes of malnutrition Not only fail to see the wood for the trees but international rences are engrossed with the xylem and phloem e or two particular trees and tend to disregard the forests and the soil they grow on

ic and balanced advice is all the more necessary use some developing countries feel that to ask for lex machinery, whether it is useful or not is a sign ogress In this way effort and money may be d.

nd nutrition cannot be built on scientific findings There must be hospitals, clinics, and health es to teach people to apply them Supplies and ment for these institutions are effective only if are trained doctors and nurses to use them Training demonstration programmes are valuable only if are continuous and are adapted to local needs nuity and effectiveness can be achieved only international staff that cooperates in these pro mes is adequate—in calibre experience, and ers—to assess the significance of child health ems Some of the delays and disappointments may well have been due to lack of personnel to the donor and recipient countries how to choose se the right kind of help

were director general of UNICEF I should tackle uation somewhat as follows

should make a clear distinction between emergency her programmes.

should abandon the policy of mass impact supplies and equipment' and concentrate on eaching effects.' These may be slower but in the un are probably more valuable

should make certain that the needs of children in icular country were investigated by experienced tricians before projects were started

should not spend money collected for children control of general disease until the professional rs were satisfied that this was the most con ive way in which money could be spent

f I were asked by a minister of health to supply ling dispensaries I should (like Mr Keeny) ask rofessional advisers to make certain that there were to carry them and personnel to operate them complying

should use UNICEF funds to provide extra staff H.O. and other specialised agencies that coöperate grammes for child care I should try to induce agencies to build up a cadre of expert and experi professional workers for loan to countries for planning implementation and evaluation of its.

I should enable specialised agencies such as W H O range programmes in maternal and child health were sufficiently long term and flexible to

Observe local needs and resources before starting operations

Give expatriate personnel an opportunity to get acquainted with these needs and resources and for raining with more experienced workers.

Give them time and opportunity to adapt their requirements in personnel supplies, and equipment to the considered progress of the work, and to assess their own methods and achievements

8 I should encourage the development of child health programmes by conferences, lectures and refresher courses and literature for administrators, for doctors nurses, and other workers

9 I should put the greatest emphasis on training of personnel at all levels and in all training schools. I should encourage the establishment of institutes of child health as UNICEF is already doing in France[*] and in Calcutta rather than spend large sums on disease control and equipment These institutes would investigate child health problems and train personnel at all levels, as well as care for children in hospitals clinics and demonstration and research areas

10 I should promote long term (or longitudinal) surveys rather than short term ones

11 I should give special consideration to areas where the needs of children are great, but the governments have not enough money or personnel to provide a "matching" contribution

12 Above all I should recognise, and try to get the world to recognise that the health and well being of children depends on the education and affection of their parents rather than on material assets

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Parliament

Drop in Consumption of Welfare Foods

INTRODUCING a Ministry of Health vote in the House of Commons on July 12 Mr IAIN MACLEOD Minister of Health, said that the welfare-food scheme for some time had provided milk and supplements to expectant and nursing mothers and children under five. The scheme was administered by the Ministry of Food and when the local food offices were closed new arrangements had to be made for distribution The Government had invited local authorities to take on this work because they believed that it was on the whole a good thing to give an important function back to these authorities from whom so many functions had lately been taken These authorities were already responsible to the Minister for so many aspects of the health of mothers and young children it seemed appropriate that they should also distribute and encourage the use of welfare foods. The Minister would be concerned with the definition of the beneficiaries with the fixing of the quantities of welfare foods, with the determination of prices and with the enforcement, if that was necessary in the event of offences It followed that if the Minister was to determine policy he should also be responsible for cost under this supplementary estimate

The Government, Mr Macleod continued regarded welfare foods as an important part of the country's social services, and he was uneasy to find that, comparing July to December 1951, with the same period in 1953, the consumption of National milk had fallen by 8% cod liver oil by 14%, orange juice by 13%, and vitamin tablets by 20% The figures for the first quarter of the present year showed the same trend for dried milk and orange juice, but more cod liver oil and vitamin tablets had been used A few spot checks had been taken in different parts of the country and these trends seemed to be level throughout the country Mr Macleod suggested that these figures gave cause for thought but not necessarily for concern. It could not be assumed that a drop in the figures of National dried milk had any nutritional significance It might merely mask a turn towards some of the popular proprietary brands The demand for welfare orange juice was affected by the availability of fresh fruit and there were many other sources of vitamin D besides cod liver oil. All the same, the drop was substantial and must be watched in the next few months

He thought that the local authorities might help in this matter Part of the drop might be due to the difference in the siting of the places where these foods were available and the hours at which the new centres were open What the Ministry were really concerned with was to be certain that the diets of these children and mothers, which might be deficient, were supplemented Local health authorities, through their staff at clinics, their health visitors, and in many other ways were well placed to see that the strongest possible advice to take up the welfare foods was given to those who needed them

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[*] Cookson J S *Lancet* 1955 i 666

Dentists' Remuneration

On a further vote, necessitated by the cancellation of the 10% cut in dentists' remuneration, Mr Macleod explained that this increase was an interim measure to operate while a new scale was being worked out for the fees of the dental profession—a complicated affair Under the new arrangement average dentists would receive, including the Exchequer superannuation contribution, about £2000 net That compared with the general practitioner's average net income of rather more than £2200 But it was calculated that single-handed dentists working without assistants, in the 35–54 age-groups, would receive rather more than £2400 net so that the relativity between dentists and doctors in general practice had been kept well in mind in making these arrangements In a full year the 10% restoration would cost £3½ million for England and Wales, plus, of course, an extra amount for Scotland

Mr **Arthur Blenkinsop** was sorry that the opportunity had not been taken to review more thoroughly the payment of dentists Many people took the view that the payment for individual services rendered was open to objection He would have been glad if some investigation had been made to see whether it was possible to get on to a basis of sessional payment, or something of that kind, for at least the conservative type of treatment He assumed that the Minister hoped that this restoration of the 10% cut would do something to arrest the rather alarming decline in the number of dentists The Central Health Services Council had made it clear that there was an over-all shortage of about 8000 dentists About 40% of the practising dentists were 55 years of age or over, and there would be a rapid decline in the numbers of dentists in the next few years If a proper dental service was to be built up, a large number of new entrants must be recruited to the dental schools It had been said that about 900 new dental students were needed each year, but at present they were getting only about 450 new entrants It was of great importance that dentists should be given a better status in the hospitals

Dr **Barnett Stross** said that it was hoped that in twenty years there would be 20,000 practising dentists in this country today there were about 9500 What was the difficulty about recruitment? There was a wonderful field for recruitment among women Only 6 dentists out of every 100 were women both in the schools and in practice He saw no reason why women should not be as good dentists as men, they might be even better

Mr **John Baird**, speaking as a practising dentist, said that he did not believe that remuneration was the main reason for the present lack of dentists He thought that the decline in recruitment was due to the vacillation of both political parties Dentists did not know where they were from one day to another until a few years ago Another reason was that dentists were bad publicists They tried to tell the public that they were hard up That was a lot of baloney, because they were doing very well That type of propaganda had done the dental *profession a lot of harm. Mr Baird believed that openings* for young people in the dental profession were now very attractive The sooner that attractiveness was publicised, the better it would be for the dentists and the country as a whole

QUESTION TIME

Lung Cancer

Mr **Norman Dodds** asked the Minister of Health, in view of the increase in this country of deaths from cancer of the lungs revealed in the survey by the World Health Organisation, what action was being taken to deal with the situation —Mr **Macleod** replied The facts about the rise in mortality from lung cancer are, of course, well known Research into the causes continues and expands, and facilities for are being improved The value of early diagnosis stantly emphasised and, where it has been shown that in certain industries are prone to lung cancer, action is being taken

Dr **Barnett Stross** Would it be reasonable to that the Minister has been advised that from time he should draw the attention of the public to the there is a known association between heavy cancer of the lung? Does he not agree that we *look upon this matter as a method of preventing* rather than waiting until it is well established and be cured easily?—Mr **Macleod** This matter considered only by a committee of the Central Health Council and not yet by the full council itself understanding, which I am sure is right, that I take action on the individual reports of committees council has had an opportunity to advise me Mr **Craddock** Is it not a fact that all the more recent shows that there is no proof of any direct connection lung cancer and smoking?—Mr **Macleod** That too far

Replying to further questions, Mr **Macleod** said next meeting of the Central Health Services Council to take place in October There were differing this matter

Group-practice Loans

Replying to a question, Miss **Patricia Hornsby** parliamentary secretary to the Ministry of Health, by the middle of July this year 160 applications for the group practice loans fund had been received Of applications had already been approved

Use of Observation Wards

In reply to a question, Mr **Macleod** said that patients admitted to mental hospitals during 19 totalled 20,297 and 20,579 respectively Of these proportions admitted following a period of obser general hospital were respectively 16 92% and 15

Dr **Donald Johnson** Is the Minister not aware figures that the majority of the large number of sions are direct into mental hospitals and only a through the intermediary mental observation ward, not aware of the statement made by a number of medical psychiatrists that, despite the warnings of Royal Commission, the certification of these people from temporary delirium and their consequent mental hospitals is still taking place?—Mr The figures given are for patients who spent an period in the mental observation wards of a general There are, of course, in addition a great many spend a period in the observation wards of mental which would put rather a different complexion on the That is a proportion which I should like to see

Mr **Kenneth Robinson** Does the Minister there is considerable difference of professional the whole desirability of observation wards? Minister look into this aspect of the problem and consider the setting up of a departmental inquiry?—Mr **Macleod** There is a difference of about almost everything in connection with this and every other matter in the health service and I cannot take to set up departmental committees into all of

Medical Rejections of National Service

Replying to a question, Sir **Walter Monckton** some 47,000 men were found medically unfit for Service in 1954, this was 19 5% of the total number examined

Hospital Pay-beds

Replying to a question, Mr **Macleod** said that the of pay beds expressed as a percentage of the complement (excluding beds shut owing to lack was as follows

	1950	*1951*	*1952*	*19*
Teaching hospitals	7 29	6 56	6 19	6 1
Non teaching hospitals	1 10	1 02	0 99	0 9

Guillebaud Report

Replying to a question Mr **Macleod** said that stood that the Guillebaud report might be ready by autumn

In England Now

unning Commentary by Peripatetic Correspondents

OSE who were uneasy about what the film *Doctor e House* might do to doctor patient relationships have no worries about the sequel, *Doctor at Sea* h had its premiere last week True a family doctor en leaving for 'an important consultation with of golf clubs over his shoulder; and this (among things) constrains his assistant Dr Simon Sparrow, Swithin s to run away to sea But thereafter n (again played with skill by Mr Dirk Bogarde) striking a model of professional rectitude and skill the ship s crew present him with the traditional in-cage to mark his graduation as a real ship s or Even Mr James Robertson Justice as one of most trying patients ever to command a British cannot ruffle his good humour, and Simon rises to a classical high seas appendicectomy But the nce on board of the delightful Mlle Brigitte Bardot e quite compensates for the absence of Mr Kenneth —the splendid Grimsdyke of *Doctor in the House* Richard Gordon must make sure his next book des a part that Mr More cannot resist

* * *

day Mrs. B, a newcomer to the district brought y to the infant welfare clinic for the first visit nly child a lively friendly boy of 4½ years he came cing into my room It was soon obvious who was in ol. Conversation on his health development and ies was almost impossible because of his continuous rupting chatter—which his mother stopped to answer atiently and meekly—and his persistent scraping little chair across the floor

What shall I do about his screaming? He s so spirited! ' Mrs. B asked He comes in from the en into the house and just screams and screams. ust *loves* noise! And another thing is it important? times he bites his fingers—it s when he has nothing '

this, Barry stood close to me and said Listen by his sides he took a big breath closed his eyes, d his mouth wide and launched a powerful earing scream Even an assistant medical officer s nce has limits It had been a very hot and busy noon My reaction came like lightning Shut up! sit on that little chair and keep quiet He did hout ado. Astonishment at such lack of appreciation masterpiece was obvious, but he showed no resent- Mother smiled on him complacently There now Blessed silence followed for a short time Mrs. B I resumed our discussion now able to hear each for the first time Suddenly he remembered some- else mother had said about him Jumping up and he cried Look, look I bite my fingers too eyes were dancing with mischief in response to the de in mine Mother rose beaming proudly on her ure There dear Doctor thinks you re ever such little boy

tside she confided to the health visitor Its so helpful to be able to come and talk about his ways with Doctor I shall certainly come again Mothercraft, Tuesdays at 3? No I won t be able me—you see he wouldn t agree to that He does his television so

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is morning there was the same haze making out- of houses and trees indistinct the same stillness, same remoteness of sounds as in the tropics. We t have suddenly been transported there 2 off Equator, where we had learnt to love the sun and n in its flaming face We almost began to think s time to dose the children with Paludrine But dream was rudely shattered when we saw Mrs. Brown r way to the bus outwardly at least, as fully clothed ual beads of perspiration streaming down her face. aps one needs to have lived in the tropics to know to enjoy this heat The children were happy at after the prolonged bondage of respectable clothing h had given rise one wintry morning to that agonised remark from our small boy so lately home from the freedom of the African forests— Daddy, where are my trousers to keep my braces on with? '

* * *

I was sitting on my anæsthetist's stool looking at the backs of the surgeons and their satellites, when the idea came to me of writing a monograph on Braces and their Relation to the Personality

Those of the Great Surgeon have severe lines Their grey colour is in keeping with his cold and ruthless determination

The Not-So-Great Surgeon is a fussy little man with big fussy braces consisting of a conglomeration of wires and loops like the springs of a mattress in miniature

The large smooth braces of the E.N.T man are in keeping with his large frame and smooth manner

Those of the harassed Anæsthetic Registrar induce a fine element of suspense How much longer can the one and only surviving button hang on to the threadbare and much mended braces—particularly as its load is usually increased by being fastened to the diagonally opposite and twisted buttonhole

What s that? The operation finished half an hour ago? Well, why couldn t you have told me sooner?

* * *

It may not be too late. We have seen the benefits of antibiotics and their after-effects in alimentary upsets, black tongues and the emergence of resistant organisms We hear on every side of bigger better and newer antibiotics with wider and yet wider spectra. But nobody has grasped the significant fact that what we really need is a *narrow-spectrum* antibiotic—the narrower the better And until this is achieved we shall remain on the merry-go round and end up like the wonga wonga bird

* * *

The fruit-growers put glue around the trunks of their trees as a caterpillar trap My patient had a pimple on his wrist with the beginning of a red line and above it a brown steak all around the arm He explained

Oh, Doctor that s to stop blood poisoning You just paint iodine around the arm and the bugs won t travel upwards '

* * *

Automation "
Is an abomination
Fit only for extermination.
I prefer the whatnotery
Godwot-ery
Robot-ery

* * *

When I landed in New York the presence of so many armed officials unnerved me and I was wearing a Harris tweed suit with the temperature at 90 and the humidity 90%!! I struggled nervously through the customs and was relieved to see a T-shirted Goliath approach to take my baggage through the barrier He must have sized me up as yet another alien for he grinned reassuringly and as he swung my trunk onto his barrow said in a deep drawl You re goin to like this country bud—this is a *free* country

His assertion of freedom in what seemed to me to be a veritable arsenal annoyed me, and as my irritation increased so my enunciation became crisper as I replied petulantly What do you mean free country? I have just come from a free country and it is an older democracy than this!' The barrow stopped Amazement spread over his face as he said ' Gee! You sure learned English quick!

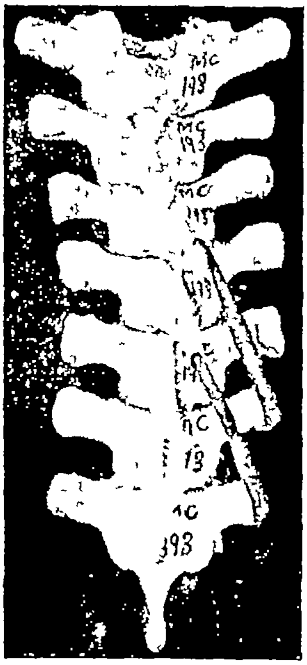
* * *

News from School — I have done nothing this week except making highly explosive chemicals, modelling clay into absurd shapes, finding latent heat of vaporisation of water learning [illegible] etc and not playing cricket Also possibly developing up to 40 negatives and printing them However last night there was a slight break in all this to allow two masters to give talks—one on Singapore the other on Russia Do I want a blazer? I have been offered an almost new one which fits me for a pound.

Letters to the Editor

MUSCLE IMBALANCE IN SCOLIOSIS

SIR,—A possible mechanism underlying idiopathic spinal scoliosis was postulated by Mr Riddle and Mr Roaf (June 18) as a result of their electromyographic studies They found that the deep spinal muscles on the convex side of the scoliotic deformity contracted more strongly than on the opposite side, whereas the more superficial muscles either had the same strength on both sides of the deformity or were weaker at the convexity



They merely hinted at the anatomical explanation of their findings But this is easily seen in a few minutes of experiment with a disarticulated vertebral column, considering the precise origins and insertions of the deep back muscles

The sacrospinalis group (iliocostalis, longissimus, and spinalis) have a longitudinal cranio-caudal orientation, and are extensors (and in the case of iliocostalis weak lateral flexors) of the vertebral column

The deeper muscles (semispinalis, multifidus, and rotators) are directed medially, posteriorly, and cephalad They arise from transverse processes or laminæ, and pass medially, backwards, and upwards to be inserted into the spinous processes of more cranially placed vertebræ The deeper the muscle is placed the fewer vertebræ it spans

The function of these deeper muscles is said in the standard textbooks to be a postural one But these electromyographic studies confirm what may easily be deduced from a study of their bony attachments—that these deep muscles are in fact important rotators, and that when those of one side are paretic, the muscles of the opposite side, by virtue of their attachments, rotate the vertebræ into a scoliotic position (see accompanying figure)

Department of Anatomy
Makerere College Medical School,
Kampala, Uganda

D B ALLBROOK.

GASTRIC ATROPHY PRECEDING PERNICIOUS ANÆMIA

SIR,—The most interesting observations of Dr Robertson and his colleagues (July 9) establish that gastric atrophy may precede the appearance of the megaloblastic anæmia of addisonian pernicious anæmia However, it has yet to be established that gastric atrophy invariably precedes the development of vitamin-B_{12} deficiency For example, it is possible that their patient had vitamin B_{12} deficiency for many years before the time of the first biopsy, for he had already been complaining of neurological symptoms for six years

Patients in whom the neurological complications of vitamin-B_{12} deficiency develop before the onset of anæmia are as severely deficient in the vitamin as patients with pernicious anæmia in severe relapse[1] Furthermore, there is evidence that the serum-vitamin-B_{12} concentrations may be low in patients for a co able time before either the anæmia or the neur complications appear

There is little doubt that gastric atrophy and per anæmia are inter-related, but until it is establi the gastric atrophy precedes the depression of i factor secretion and the development of vit deficiency, the relation of the atrophy to the genesis of pernicious anæmia will remain un The observation that addisonian pernicious may very occasionally occur without gastric a suggests that, in some instances at least, the at not the primary lesion in this condition

Department of Hæmatology,
Postgraduate Medical School,
London, W 12

D L Mo

GASTRECTOMY IN A HÆMOPHILIAC

SIR,—In your issue of April 9 Dr Walker r a successful gastrectomy in a hæmophiliac Th operation, and indeed all operations on patient to suffer from hæmorrhagic diathesis, are rar formed except under very urgent circumstance wish to add another case of gastrectomy carried a hæmophiliac in whom bleeding remained c the stomach

The patient was a man of 29 There was no famil of bleeding As a child he had repeated epistax stopped after nasal cauterisation He bled from had severe hæmorrhages after tooth extractions T persistent bleeding after minor cuts and he bruis After the age of 14 his only source of bleeding was the in the form of hæmatemeses, melæna, or both.

We saw him for the first time in 1949 when he r four pints of blood on account of hæmatemesis. S *he has been admitted several times for a similar* and altogether he has had twelve episodes of bleed last one was in October, 1954, when he had to h fourteen pints of blood (stored blood) There ha *been any symptom of dyspepsia*

Investigations —Barium meal, repeated three times no abnormality Gastroscopy, carried out three tim last four years, showed patchy atrophic gastritis in t half of the stomach only The fractional test m normal Red and white cells and platelets were Hæmoglobin varied according to the severity of the rhage and was 28% on his last admission. Bleeding and prothrombin times, capillary fragility, and clot were all normal on repeated occasions Liver f were normal

We felt that the bleeding might be the result of acute erosions on his atrophic gastric mucosa but i view of his previous history, an abnormality of h could be responsible for the severity of the hæmorrha

We referred him to Dr J V Dacie, who found undoubtedly had hæmophilia as confirmed by t thrombin consumption test and the thromboplastin test

Treatment —Blood transfusion was given on many o for his repeated bleeding After his last admission he extremely anxious about future attacks and he was demanding an operation, although the risks of it discussed with him and his relatives A two third gastr was carried out in January, 1955 The patient was *pint of fresh blood, starting* ½ hr before opera continuing during and after it At operation there unusual bleeding The patient was well for twenty f after which he bled from the stomach for six days T this time he received ten pints of fresh blood stopped bleeding suddenly and made an uneventful r Examination of the stomach after removal co gastroscopic findings—atrophic gastritis and no ulcer

This patient's bleeding tendency had been c to the stomach since the age of 14 It is well that in a large proportion of patients with hæmo conditions the tendency to bleed decreases ach adult life, except occasionally from some ular site which may be diseased, the treatment of may stop the bleeding—e g , epistaxis In this the repeated hæmatemeses were associated with atrophic gastritis

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[1] Mollin D L, Ross, G I M *Proc R Soc med* 1954, 47 428

[2] Mollin, D L, Baker, S J, Doniach, I *Brit J Hæ* 1, 278

mophilia in this case was established only after thromboplastin generation and prothrombin con tion tests The need for these elaborate tests is ally important when absence of family history may against a diagnosis of hæmophilia

spite its risks, a major operation in a hæmophiliac have to be done when his life is endangered or nnised by repeated bleeding Generous transfusions fresh blood before and during the operation is the measure now available but it is our hope that the emophilic globulin being prepared at the Radcliffe ary, Oxford may be made available to general als and prove the best safeguard against post tive bleeding

llege s Hospital
ndon, S.E.10

M G Eldin
F T Bassadone

TAFFING THE TRANSFUSION SERVICE

—Your annotation last week gives some idea of the ulties of the transfusion service with regard to cal staffing but these difficulties are only part of ater problem of technical staffing of hospital and usion laboratories There has been a considerable from these to industry over the past five years general salary scale and prospects of technicians satisfactory It would appear that a recent offer e management side does not offer for technicians reat advance on present scales or any advance of prospects My own opinion is that younger cians have only stayed in the hospital and trans laboratory service in the hope that the forth negotiations would give them pay and prospects ally better than those they have at the moment ess the management side undergoes a change of and makes a more realistic offer I think that al and transfusion laboratories throughout the ry are going to suffer a further disastrous loss of l and partly trained technicians which will make esent level of service impossible.

p Pathological Laboratory
akin Road, Warwick.

A P Prior

ACUTE INFECTIVE POLYNEURITIS

—Dr Allison and Dr Gordon (July 16) in their uctory review of acute infective polyneuritis ite its first description to Guillain Barre and in 1916 It should be noted that although we may egard their two cases as falling into this group authors were under the impression that they were bing something quite different which they called radiculoneuritis. Guillain maintained this distinc t least until the symposium of 1938 He and his ues were the first to draw attention to the rise ebrospinal fluid protein without increase in cells was later found in other forms of polyneuritis as that of diphtheria An earlier account of the l features was that of Laurens[1]

estion whether many now believe that a virus is sible for this syndrome. In spite of much experi l work no acceptable evidence of transmission of ctive agent has ever been obtained In recent years iochemical approach has appeared much more l There have also been reports of successful treat based on the hypothesis that an altered tissue vity causes the manifestations.

ætiology is not only unknown as your contributors o but may be various Their demonstration of a hanical cause in their report is of much interest apply this interpretation to the generality of such patients, as your readers might be tempted to do, would be to ignore the post mortem studies of many neuropathologists published during the last forty years

London, W 1

C P Petch

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[1] Paris thesis no 210 1908

LEUKÆMIA IN ANKYLOSING SPONDYLITIS TREATED WITH X RAYS

Sir,—I have read with great interest the article by Dr Court Brown and Dr Abbatt (June 25) concerning the incidence of leukæmia in ankylosing spondylitis treated with X rays Their findings are obviously of extreme importance but it would seem that a much more detailed investigation should be carried out before the rôle of irradiation in producing leukæmia in these cases can be assessed

For instance the authors state that the incidence of leukæmia is appreciably raised in patients given more than one course of X ray treatment. There is however a wide variation between different radiotherapy centres both in the dosage given and in the volume irradiated in the treatment of this disease Some centres give as much as 2500r in two weeks to the whole spine and sacro iliac joints, while others give as little as 100r–150r a week for six to ten weeks, often limited to the part of the spine giving symptoms It would be interesting to know (1) whether the incidence of leukæmia varies directly with the X ray dosage given and/or the volume irradiated and if so what are the safe levels (2) the incidence of leukæmia in untreated cases.

Radiotherapy Department
St. Thomas's Hospital,
London S.E.1

L Churchill-Davidson

TREATMENT OF STATUS EPILEPTICUS

Sir —The recent admission to this hospital of a patient in status epilepticus who had failed to respond to the usual forms of treatment and the admission of other cases of the same condition during the past nine years, prompts me to draw attention to a method of treatment which deserves to be more widely known The only published reference of which I am aware[1] deals with its use in status epilepticus occurring as a complication of insulin coma therapy It is through the kindness of one of the authors of this article Dr S W Gillman that I am recording the method anew

The patient a woman of 28 has been a known epileptic for four years, the diagnosis having been confirmed by an electroencephalogram in 1952 She has been in status epilepticus once before—in March, 1954 Her present attack began on May 8 and was initially controlled for a short time by intramuscular paraldehyde but there was a recurrence on May 10 when she was admitted to this hospital as a temporary patient. On the morning of admission she had 16 grand mal attacks. She was then given 5 ml of a 10% solution of hexobarbitone sodium into each buttock. This controlled her fits for three hours, when a further two convulsions necessitated the injection of an additional 10 ml. This proved sufficient to establish control and she was then placed upon routine treatment with phenobarbitone and primidone.

Intramuscular hexobarbitone sodium in doses between 0 5 g and 1 g has been used successfully at this hospital in the treatment of every case of status epilepticus for at least nine years It has proved more reliable than the intramuscular injection of paraldehyde or phenobarbitone Furthermore it is technically easier to give than intravenous barbiturates in a patient with clonic movements and the need for an anæsthetic machine to give positive pressure respiration does not arise Although a 10% solution of hexobarbitone sodium is alkaline (pH 10 5) no local reactions have been found to occur if it is given deeply into the muscle

I am grateful to Dr E. S Stern for permission to publish details of this case

The Central Hospital,
near Warwick

Peter J Williamson

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[1] Gillman S W Parfitt D N *J ment Sci* 1938 84 718.

THE MICRO-ENVIRONMENT OF INFLAMMATION

SIR,—I was greatly interested in Professor Dubos's lecture (July 2) which throws new light on the inflammatory process

With reference to the important peptides which, as he states, may be derived through necrosis from "more complex organic structures (nucleoproteins, for example)," it is perhaps interesting to note that Simpson[1] has demonstrated the presence of fibrils of deoxyribonucleic acid in purulent exudates, their source being the eosinophil and neutrophil leucocyte Since the amount of deoxyribonucleic acid in granulocytes appears to diminish with advancing years[2] and at the same time the resistance to infection is lowered, is it not possible that this "substance within the phagocytes" has among others an antimicrobial effect?

Tooting Bec Hospital
London, S W 17

NOEL ALDER

POLIOMYELITIS AND TONSILLECTOMY

SIR,—I do not think enough attention has been paid to the most important aspect of this subject—namely, host immunity, both local and general This may be indefinable, but it is now well appreciated that, in poliomyelitis, any trauma (e g, injection and operation) may upset local tissue immunity so that subsequent signs may develop at that point

Although criticism of tonsillectomy has been rising in recent years, relatively little thought has been given to the relationship of host immunity to it Inevitably, therefore, the question of the operation itself must be considered

Among the numerous useless indications, in my view, is that of repeated general infections—respiratory, exanthemata, and so forth It is illogical to expect that the operation will prevent or minimise their occurrence, which is largely a question of general host immunity It should, therefore, be unnecessary to repeat what is well known—namely, that, in children at any rate, the lymphoreticular system is the most active defence against infection The removal of a part of it (the tonsils) in the pious hope of bolstering immunity, is as effective as the removal of a *sound* link of mooring-chain in preventing or minimising a ship's movement

Long tonsillectomy lists would be shortened and any upset of the immune reaction, such as in poliomyelitis, minimised, if the indications for operation were confined to the only *two* logical ones—gross chronic infection of the organs themselves and/or gross obstruction to the nose and ears by them or other nasopharyngeal lymphoid aggregations

Ilford Isolation Hospital,
Essex.

I M LIBRACH

OBSERVER ERROR

SIR,—Dr Stradling and Dr Johnston (June 18), reporting on a series of 1000 cases referred by general practitioners and examined radiographically on 70 mm films, deduce from their findings that two films should be taken of each patient, and that every film should be examined by two observers

From our own experience we would support their case for two films, though whether the lordotic is the best choice for the second film is debatable, but we wonder where their claim for a second observer may lead us

In any field of medicine a case could be made out for observer error Why not have two G P S examine patients at all surgeries, or two consultants check each other's findings in outpatients? If this contention were accepted even in the mass-radiography field alone, every unit would require two medical officers!

We know that observer error exists, and in practice it must be countered to the best of one's ability Surely we must remember that the main reason for radiography is economy If we do not want the burden of recalling nearly 40% of cases miniature film, and of doubling the medical we consider that the four following points are a alternative

(1) Employ a competent technician who will the films are of the highest quality

(2) Take two films of every patient, as the is more than repaid by the reduction in recalls.

(3) Have the films read by an experienced obser interested in the work

(4) Arrange for periodic checks of the observers

X ray Department,
Churchill Hospital, Oxford

J L Bo
K Lu

LUNG CANCER AND SMOKING

SIR,—No plant virus has so far been found infect a mammal although some can infect inse therefore unlikely that tobacco mosaic virus co cause of lung cancer, as Mr Goodman suggests So much for theory In practice some thou rabbits, guineapigs, and mice have by now been with tobacco mosaic virus by various routes have been no reports of effects other than antibody formation

Theory and animal experiments seem to we can turn to what is known about man Th been few deliberate experiments but if exp tobacco mosaic virus were a cause of lung ca incidence would presumably be affected by the of exposure I have been splashing the virus casual large-scale chemical way almost ever more than 20 years and I and my associates absorbed much more of it through various ori any smoker would in the course of smoking our lungs seem to be normal If mine finally cancer it will be very significant because all is an occasional cigar

Rothamsted Experimental Station,
Harpenden, Herts

N W

TREACLE FOR CONSTIPATION

SIR,—Mr Allen's wholly delightful literary (July 16) has illuminated the thick black treacle treatment besides revealing a ph error in my letter of July 2 I am indebted to calling my attention to my *lapsus calami*, alb somewhat circuitous route

My letter was essentially practical and the acetylcholine was in the nature of an *obiter* I did not in fact "suggest" anything—as Mr in the best legal tradition, suggests I did The I used, "is said to," implies hearsay, doubtful evidence However, that does not exp inaccuracy which he rightly points out and to necessary correction I must refer briefly to the of my interest in the treacle for constipation Th from reading the best paper on the postoperative ment of the abdominal case I have ever come Here the value of the treacle enema is men its effectiveness attributed to the choline Acetylcholine is, of course, highly unstable should, therefore, have read "said to contain cho

I must confess I have not sought to analyse beyond this point but have contented myself virtues And here we are in good company since himself with all his down to earth wisdom had its therapeutic usefulness when he said "I caught a cardynacle by corpus bones, but have a triacle, or elles a draughte of moyste ale mine herte is lost" Ale also contains cho nevertheless if Mr Allen pursues his biblio ches I fear that he might find treacle which as ng from Mithridates (124–64 B C) is the bed rock art contains nothing at all but stickiness Perhaps the sole reason why it works so well.

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[1] Simpson, R. E H *Lancet* 1951, i, 110
[2] Alder, N *Ibid*, 1951, ii, 293

[1] Lawrence Abel, A *Postgrad med J* 1937, 13,

on W 1 D LANG STEVENSON

MERRYGOWHIMBLES

—Perhaps someone can tell us something of the of this word (Widdicombe File June 11) Presum t must not be confused with the billy go nimbles the *English Dialect Dictionary* tells us is an ary disease and apparently largely confined to Cheshire where at one time it formed a picturesque with the pimple pimples and pompitation o the l

adcliffe Infirmary
Oxford JOHN POTTER

VITAMIN B_{12} IN URÆMIA

—After reading Professor Bull s interesting article 9 and 16) I would like to say that I have tried n B_{12} in 3 uræmic patients who had anorexia , lethargy heaviness of the head and vertigo g of vitamin B_{12} was injected intramuscularly other day (800–1000 µg in all)

r two or three days there was considerable ement of appetite, followed by reduction of lethargy heaviness of the head and vertigo All nts felt much better This improvement lasted out three or four weeks after stopping the n B_{12}

ems to me that vitamin B_{12} may have a place in nptomatic management of uræmic states

lpur India DEBABRATA PAL

ICAL TESTS OF PASSIVE JOINT SENSE

—We are grateful for last week s observations Charles Symonds and Dr William Gooddy on our July 9) In the case of Sir Charles Symonds s nts, there is less disparity between his method ng passive joint sense and ours than would at pear The basic procedure is the same except that vided for constant rotation by using a machine in fact consider carefully the question of rotational and in preliminary trials used speeds of 0 2° 2° per sec., finding little difference in the average traversed before movement was appreciated r we subsequently abandoned the slowest speed of the difficulty sometimes experienced in decid he exact moment at which sensation of movement t experienced with certainty [1]

ing these speeds we were aware of the statement Gordon Holmes that since rapid and abrupt ments are most easily perceived passive move should always be carried out slowly and at a rate.' [2] In view of this, and the fact that no nt difference in the minimum angle perceived nd between the two speeds of 1 and 2 per sec stigation did not include the examination of the f higher speeds of rotation Also we were doubtful he reliability of determinations at higher speeds ion at which the reaction time of the subject e undesirably long in relation to the duration ovement

conditions would be realised with the speed on used by Dr Gooddy in which the anatomical movement of the toe would be reached in one However we are grateful for the description of as it misses the basic issue of our article If the rried out as he describes it then other sensations beside passive joint sense may be evoked and it is possible that only patients with lesions in the posterior columns of the cord would fail such a test But we maintain our view that if the test is carried out in such a way as to evoke only passive joint sense at the metatarso phalangeal joint it is unreliable, where satisfactory results are obtained in clinical practice this is because it is not solely passive joint sense that is being tested.

London W C 2 J LEE
K BROWNE

SIR,—It is unfortunate that tests of passive joint sense are still a subject of controversy It has been shown [1] that tests of sense of skin movement are superior and that one of these called ' the discrimination between pinching and pressing of the skin ' is probably best of all It was suggested that tests of joint sense should be discarded from clinical practice

It is not generally realised that any test involving the element of space—that is, space external to the body —reveals a disturbance of the posterior-column/parietal lobe system It is actually the sense of space that is being tested and one is at liberty to choose the most sensitive tests of this function. Two point discrimination is the most sensitive but unfortunately tends to be unreliable

There is such a large number of tests involving the element of space that there is need of a term to cover a loss of sense of space I have thought of introducing the terms dyschoræsthesia and achorognosia. Dyschoræsthesia and paralysis and achorognosia and apraxia would thus be complementary terms

Glasgow S RENFREW

THE BOMBS

SIR,—As a member of the international medical commission which visited Japan to investigate the medical and biological effects of atom bomb and experimental hydrogen bomb explosions * I should like (1) to draw attention to new evidence given to us about the genetic effects of the A bombs at Nagasaki and Hiroshima in 1945 and (2) to outline the evidence given to us about the radioactive contamination of a vast area of the globe persisting for months after the experimental H bomb explosions at Bikini in 1954

Genetic Effects of the A bomb

Professor Hayashi of the Nagasaki Medical School told us that he had performed necropsies on 887 neonatal infants born in Nagasaki during 4½ years from 1940 to 1953 He divided these infants into two groups and compared the incidence of *major* congenital malformations among those whose parents (one or both) were exposed to the A bomb with the incidence among those whose parents were not so exposed Only major anomalies were considered and common abnormalities such as acces sory spleens abnormal lung lobation &c ' were excluded Parents were regarded as having been exposed to the A bomb if when the explosion took place they were living within 10 km of its centre Table I shows an incidence of 18 9% major congenital malformations among the infants of parents one or both of whom were exposed to the A bomb compared with 11% among infants neither of whose parents were exposed In other words the frequency of such malformations was increased by 72% Related to this finding is that of Macht and Lawrence [2] who found that congenital malformations were 24% higher among the children of radiologists than among the children of other doctors Table II shows that

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[1] rne K Lee J Ring P A *J Physiol* 1954 126 418
[2] oduction to Clinical Neurology London 1952 ; p 91

* A report of the preliminary conclusions of the commission appears on p 187 —ED L.

[1] Renfrew S Cavanagh D *Brain* 1954 77 305
[2] Macht S H Lawrence P S *Amer J Roentgenol* 1955 73 442

TABLE I—CONGENITAL ABNORMALITIES IN RELATION TO EXPOSURE OF PARENTS

—	No of infants	No malformed	% malformed
One or both parents exposed to A bomb	497*	92	18 9
Both parents exposed	149	27	18 1
Father exposed mother not	80	18	22 5
Mother exposed, father not	259	47	18 1
Neither parent exposed	363	40	11 0
Both parents unknown or exposure information not available	27	10	

* Includes 9 children " mother exposed, father unknown "

in Nagasaki the congenital defects which particularly increased were those of the cardiovascular, central nervous, and genito urinary systems, although the incidence of bone and muscle defects was also higher Hayashi stated that certain malformations, like " meningeal cyst, atresia ani, &c ," were found only in the exposed group, while others (" complicated cardiovascular anomalies and diaphragmatic hernia ") were much commoner He said, moreover, that for each of the 4 years the incidence of congenital abnormalities was higher in the exposed group This strengthens the general conclusion that major congenital abnormalities were more frequent among the children of parents who had been exposed to the A-bomb 4–8 years previously, and that this greater frequency is probably continuing

TABLE II—MALFORMATION OF VARIOUS BODY SYSTEMS IN RELATION TO EXPOSURE OF PARENTS

—	No of infants	Abnormalities of				
		Bone and muscle	Cardio vascular system	Central nervous system	Genito urinary tract	Respiratory tract
Parent(s) exposed	497	39 *(8%)*	34 *(6 8%)*	26 *(5 2%)*	19 *(3 8%)*	4 *(0 8%)*
Parents not exposed	363	25 *(7%)*	18 *(5%)*	13 *(3 6%)*	8 *(2 2%)*	1 *(0 27%)*

As Hayashi did not give the total number of births of infants from which his material was obtained, his results might be explained in one of three ways

1 Exposure of the parent(s) to radiation had reduced the number of infant deaths from other causes and had left the number of malformations unaltered, thus producing a relative increase in the incidence of malformations This seems far fetched

2 Other causes of infantile death were unaltered and the incidence of malformations had increased by over 70%

3 Other causes of death increased the death-rate by, say, about 20–30%, while malformations went up by 100%

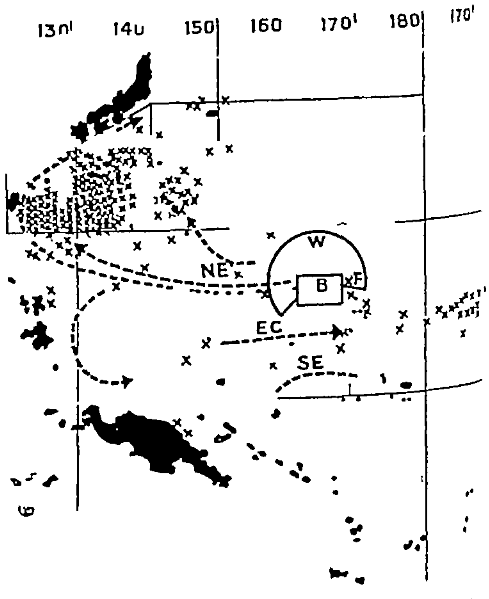
In my opinion either the second or third explanation is the correct one Theoretically the most probable explanation for Hayashi's findings is that lethal genetic changes (including chromosome rearrangements in current genetic theory) occurred in the sex organs in many of those who were exposed at Nagasaki The other possibility is that unfavourable intra uterine environment, due to exposure of the mother, was responsible, but this is unlikely, since the incidence of 22 5% of malformations among the 80 " father exposed, mother not " group, does not support this Supplementary evidence of genetic effects due to exposure to radiation at Nagasaki has been found by Neel et al , of the Atomic Bomb Casualty Commission [3] These workers found significant changes in the male/female ratios among the children of exposed parents For example male children were less among the offspring of women exposed to radiat this is said to be the result of sex linked recess mutations The sex incidence of Hayashi's ma infants should be of interest

Experimental H-bomb Explosions [4–10]

Perhaps even more important to the future of than the terrible A-bombs in Japan have been th of the experimental H-bomb explosions at Bik of which took place in March, 1954 The experien ill-fated fishing-boat, *Fukuryu Maru*, which was showered with radioactive dust for 4 hours whilst ing 80–100 miles outside the " calculated danger was merely an incident in the radioactive of the Pacific Ocean and of the atmosphere

Radioactive rain fell all over Japan for mont ticularly along the Pacific Coast and in the so central areas In May the radioactivity var 0 1 to 1 0 μC per litre This was associated tamination of the atmosphere by radioactive was falling to the ground and contaminating Radiochemical analysis of the rain at diff tions has shown that the radioactivity was mixture of fission products similar to those de the Bikini ash collected from the deck of the *Maru* The elements detected in the rain inclu ^{140}La, ^{131}I, ^{132}I, ^{95}Zr, ^{95}Nb, ^{89}St, ^{129}Te, ^{237}U, and of rare-earth elements Similar artificial radi was found on the surface of the soil and on veg

In various parts of Japan radioactive rain resulted in the contamination of many kinds



Map showing points (×) where contaminated fish were cau the sea was found to be excessively radioactive *(by kind Y Nishiwaki somewhat simplified)*

B = original " danger zone " around Bikini an the U S government

xF = position of the *Fukuryu Maru*

W (quadrant) = " danger zone " extended later

NE, EC, SE are equatorial currents

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[3] *Science*, 1953, 118, 537

[4] Report on the Contamination by A and H bomb Japanese preparatory committee of the Conferen Nations, Tokyo, March, 1955

[5] Miyake, Y Papers in *Meteorology and Geophysics* also special report to the international commission

[6] Nishiwaki, Y Special report to the international 1955

[7] Kimura K , et al *Japan Analyst* August 1954

[8] Arizumi N *J met Soc Japan*, 1954, 32 9

[9] Egawa, T , Iimura, K , Shirai, T , Yoshida, T Kaw Kono M , Tsukahara, S *Soil and Plant Food*, 195

[10] *Asahi* Jan 22, 1955

most of which have been freely sold in the markets ontamination was not only due to surface contami of the leaves *but also to absorption of radioac* through the roots In this way barley wheat, rice ibles and tea were contaminated—all the main in Japan The degree of radioactivity was not high iere was a definite or considerable excess of radio y in the tea barley rice, and wheat as compared he 1952 and 1953 crops[4,9] In many places the rice for example was found to be 10–20 times more otive than in the preceding years Most of the ctivity in the tea was water soluble and it was ted that the drinking of three cups of tea daily dose of radioactivity in excess of the so-called inum permissive dose laid down by the U S of Standards

ioactive contamination of the fish caught in ese waters and in other parts of the Pacific led to a ment inspection of all fish landed at Japanese Fish with a surface radioactivity of over 100 counts inute at 10 cm distance (normal background was 20) were condemned This affected about 6% atches and about a million pounds of fish Other ith excessive surface counts between 20 and 100 nute were sent to market and eaten by the Japanese

The tuna and bonito fishing organisations d that the total loss to the fishing industry ted to $6 million[10] For various reasons the ment discontinued the inspection last December en at that time occasional highly contaminated 000–2000 counts per minute) were being caught in waters.[9]

mination of many fishing boats and their catches own that radioactive contamination of the water the fish in the Pacific persisted at least for months tended from around the coast of Japan in the as far south as New Guinea or Australia from iwan (Formosa) in the west *to Hawaii in the east* ure) Oceanic currents had played a part. The se government sent a scientific observation ship o specimen catches in various parts of the ocean examine the water and zooplankton Radioactive ination of fish was found to be associated with ead contamination of zooplankton and of the 0–100 metres of the sea In other words at least e Pacific was contaminated and abounded with tive fish In the Bikini area maximum counts of 000 per minute were found The fish population acific may be permanently affected for example, umbers may be decreased by lethal mutations

the whole Japanese people were eating radio fish bread rice and vegetables drinking radio tea, and inhaling radioactive dust in the air for after the Bikini explosion The dose per head of ion was probably insufficient to cause acute n disease (except to the Marshall Islanders ve suffered the bloody diarrhœa, epilation and ma of radiation disease) but the cumulative of continuous small doses of radiation upon the Japanese people (and no doubt upon the popn of other countries) may well have unfavourable effects upon future generations

ns have to defend the public health *If for* the water supply of a city were poisoned by steps would be taken to ensure that no further nation could take place For this reason my es in the commission and I believe that it is the doctors all over the world to call for the prohibi explosions which are a menace both to mankind nd to future generations

indebted to Prof J B S Haldane and Prof L S for their helpful comments on Professor Hayashi's

thology Department,
tham Accident Hospital.

S SEVITT

Medicine and the Law

An Overlooked Swab

A SURGEON performed a successful cæsarean section on a patient in a nursing home, but a swab or pack placed in situ by the surgeon before delivering the baby was found and removed six days later Before closing the peritoneum the surgeon had been told by the theatre sister that the count of swabs was correct In the resulting action for negligence Mr Justice Pearson awarded damages of £3000 and £1140 respectively to the patient and her husband holding the surgeon and the nursing home liable in equal shares[1] The surgeon appealed contending that the whole liability should fall on the nursing home, which had accepted the finding of negligence against the sister The Court of Appeal dismissed the appeal and refused leave to appeal to the House of Lords on the ground that the question involved was one of fact.

LORD JUSTICE SINGLETON said that it had been suggested that the judge's decision was wrong in that the surgeon's conduct of the operation was supported by well recognised surgical practice and a layman should not judge such matters No such point arose here; but it was right to say that it was no part of a judge's duty to tell surgeons how they should perform their duties That would not be for the good of surgeons or lawyers or the community The judge had to determine every charge of negligence on the evidence before him and *it was clear that Mr Justice Pearson had not gone one* step beyond the facts in this case, which had to be decided largely on the evidence of the surgeon himself

His answers showed that he did not remember the details of this particular operation and had spoken rather of his usual practice. He had said that he was justified in relying on the count of this most experienced sister This nursing home provided packs with tapes attached Some surgeons attached Spencer Wells clips or small rings to the tapes. This surgeon did not use tapes clips, or rings On the evidence of other surgeons it could not be said that a surgeon who did not use any of these was negligent But the evidence did not disclose any reason why tapes with clips or rings should not be generally used for everyone seemed to agree that they were an additional precaution A surgeon who discarded or disregarded that safeguard placed an additional burden on himself

The plaintiff's case had been that the surgeon must look and feel for the packs which he had himself put in The surgeon had pointed out the danger in this operation of too much interference with the intestines He said that he looked that he would have expected to feel a pack in the position in which this pack had been left and that he must have been satisfied that there was no pack remaining in the body or he would not have stitched up His usual practice was to place three packs one each side and one in front of the uterus. He was uncertain whether he had placed two or three packs in those positions If he was doubtful, he ought to have felt with his finger in the way that Prof W W Nixon Mr Aleck Bourne and Mr John Howkins had agreed in their evidence was reasonable or proper He did not do so

The patient was entitled to expect that the surgeon would do what was reasonable to ensure that packs were removed from the body before he asked if the count was correct The one was independent of the other The sister's count was an additional check for the protection of both patient and surgeon That it failed occasionally only emphasised the need for diligence on the surgeon's part The judge was right and the appeal should be dismissed

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[1] See *Lancet* 1955 i, 680

LORD JUSTICE HODSON, agreeing, said that if a pack or swab was left in a patient's body by a surgeon in the course of an operation, that of itself called for an explanation from him It would be unfair to this surgeon to say that his evidence showed that he relied on the sister's count as the last, first, and only precaution , and it must be accepted that he had no duty to count all the packs, for to do so would distract a surgeon from his task But though this surgeon did not use clips, he had taken no step to draw the sister's attention to the particular places where he put the packs His Lordship could see no reason why when a surgeon reached the stage of recovering packs he should not make some mental effort to think what packs ought to be there, particularly when they had been placed in a standard pattern round the uterus The surgeon had fallen short of the standard of care required of him, and was equally responsible with the sister

LORD JUSTICE MORRIS also agreed The Court was not here called to choose between the competing opinions of those with experience in surgery This surgeon on the evidence had taken no step which was designed to minimise the risk of a pack being overlooked in the event of the sister making a mistake

URRY *v* BIERER —*Court of Appeal* Singleton, Hodson and Morris, *L J J* July 15 1955 Counsel and Solicitors H V Lloyd Jones, Q C , and T R Cumming Bruce (Hempsons), Martin Jukes, Q C , and Harris Walker (J F Coules & Co), R F Hannay (Charles Russell & Co)

M M HILL
Barrister-at-Law

Obituary

HENRY TREGELLES GILLETT

M D Lond

Dr Gillett, who died in Oxford on June 26 at the age of 84, was of Quaker stock on both his father's and mother's sides Born in Banbury, he qualified from St Bartholomew's Hospital in 1895, and in 1907 took his M D Lond After holding resident appointments at London hospitals, he married Miss Lucy Bancroft of Wilmington, Delaware, and for a time considered making his life in the United States , but he eventually settled in Oxford, where he practised for some fifty years

This mere recital of facts gives an inadequate picture of the real man, who, as well as being a conscientious, capable, and much-loved family doctor, added many other facets to a full life He gave richly to a wide circle He was active on both the religious and administrative sides of the Society of Friends, and strove always to apply his Christian principles to medicine, as indeed to all his activities His conscience made him a pacifist, at times almost a militant one and he was always to be found on the side of the under-dog There was, however, nothing dull about him, and his intense convictions on religious and social questions did not blunt a keen and sometimes impish sense of humour The range of his interests is shown by his two books, one on vaccine therapy in respiratory infections, and the other, published only three years ago, on the *Spiritual Basis of Democracy* During the depression between the wars he played a prominent part in the foundation and maintenance of the Quaker settlement for the rehabilitation of unemployed miners at Maes-y-haf in South Wales He served the city of Oxford as councillor and alderman, and in 1938-39 was mayor His unflagging energy was always at the service of his chosen causes, and age dimmed none of his enthusiasms or his determination to battle for what he knew was right He will be held in grateful remembrance by a host of patients and friends

There were five children of the marriage, of whom four survive him The two sons are both doctors and the elder is in his father's old practice

Notes and News

THE VINCENT SQUARE LABORATORIES

ON July 12 Lord Nathan, chairman of W Hospital, opened new laboratories forming part hospital's development scheme Comprising depart morbid anatomy, chemical pathology, bac , hæmatology, these will serve particularly the three in or near Vincent Square (the Children's Hos Gordon Hospital, and All Saints' Hospital) which stituents of the Westminster teaching group

An account of the project and its history was Prof R J V Pulvertaft as head of Westminster pathology services , and a tribute to his "inspir persistence " was paid by Lord Nathan, who spok the contribution made on the biochemical side N F Maclagan The three constituent hospitals (Lor said) had, between them, 260 beds, with gastro pædiatric, genito urinary, and gynæcological units Horseferry Road laboratories of Westminster Hos not equipped or staffed to do the work they requi laboratory now built to serve them was one of the fir laboratories put up since the war and was mo facilities, both for routine investigation and for "A main purpose of this laboratory, in common others in the Westminster Hospital teaching fuse as closely as possible the pathological investig research projects with the clinical problems, important—to encourage the clinicians to take interest in the daily workings of research " The offered were not in any way confined to workers in hospitals for which the laboratory was principally and already three members of the staff of Westmin pital had investigations in progress or in prospect

The building includes, besides the laboratories, house, a conference room, an office, and rooms transfusion and photography , and the archit Alver Hall and Mr Cole Adams The director of the tories is Dr George Lumb (university reader in and the deputy director Mr J H Wilkinson, The departmental staff, all of whom take an activ teaching students of Westminster Medical School, anatomy, Dr Lumb and Dr R H B Protheroe, pathology, Dr Wilkinson, Dr R M Haslam, and Chadwick , bacteriology, Dr G I M Ross , and Dr W M Edgar On the opening day an excellent of work in progress had been laid out, including ulcerative colitis, diarrhœa in infancy, exfoliative and thyroid biochemistry

In the first three months of next year Dr Lum visiting professor in pathology in the University of and Lord Nathan expressed a hope that an exch would be developed " whereby research workers an may have an opportunity to visit America, while leagues from the States come over here to work in and laboratories of the Westminster "

THE RENAL CIRCULATION

SINCE 1947, when Professor Trueta and his coll Oxford produced their monograph on the renal c much has been written in support or rebuttal of the and conclusions On the whole the support has co from anatomists and clinicians, while the biochem been sceptical, particularly those belonging to th logical schools of Homer Smith and Van Slyke It fair to say that a growing number of authorities no with reservations varying in extent—that there is one type of circulation through the kidney

In a monograph published last year by the medicine of Coimba in Portugal de Carvalho[1] detail the different concepts of urine formation, references to some German and Austrian writings had little attention in this country—particularl Fuchs, Popper, Mandel, and Frey who in earlier day the existence of some kind of renal medullary by even attempted to relate diuresis to the opening of medullary vessels The second part of the book one by de Carvalho in the rabbit using techniques not nlike those of the Oxford investigators—among them adiography and also angiography for which the uese school, as the inventor of the procedure has always igh reputation. About 60 experiments are reported in etail

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[1] Contribuicao para o Estudo da Circulacao Renal to the Study of the Renal Circulation) By SIMOES DE CARVALHO Coimbra, 1954 , pp 309

lly the monograph discusses the mechanisms which he cortico-medullary circulation into operation In clusion de Carvalho says that he has confirmed the f the Oxford investigators, adding that the opening of tamedullary circulation corresponds to an increase of e. Also he describes the easy passage of the blood the vessels of the renal perihilar region An 8 page ry in English and also in French and German is ed.

EATMENT OF ANTHRAX BOTULISM AND SNAKE BITE

ENCY supplies of sera for the treatment of anthrax and snake bite are kept at the following centres:

Region
ary, Cumberland Infirmary Carlisle (tel. 2233*)
ary Newcastle General Hospital (35911)

ion
Hill Hospital Cottingham, Hull (Cottingham 4137*)
ft Hospital, York Road Leeds (45101)

Region
gham City Hospital Hucknall Road Nottingham (63351)

glia Region
al Blood Supply Depot, Brookland Avenue Cambridge
day–Friday 8.30 A.M.–5 30 P.M. Saturday 8 30 A.M.–12 30
56912 Other times: 56913

ast Metropolitan Region
Middlesex Hospital N 18
chief pathologist night resident pathologist Tottenham
l

ast Metropolitan Region
East Sub-Depot Weavering House Ashford Road Maid
ent
service: 4108 3001
ht service: 4060 3718

est Metropolitan Region
London Blood Supply Depot Stanley Road, Sutton Surrey
t 8221)
mary Royal South Hants and Southampton Hospital
ite antiserum only) (26211)

Region
ampton General Hospital (1080)
Berkshire Hospital Reading (61721)

estern Region
Green Hospital Bristol (31106)
logical Department Royal Devon and Exeter Hospital
3619, 2261†)
Isolation Hospital Plymouth (64311)
logical Department Royal Cornwall Infirmary Truro

egion
arvon and Anglesey General Hospital Bangor (botulinum
ke-bite antisera only) (1181)
solation Hospital, Cardiff (21466)
Wales General Hospital Glangwili Carmarthen (botulinum
ke-bite antisera only) (7433)

ham Region
mary Selly Oak Hospital Birmingham (Selly Oak 1361)

ter Region
mary Manchester Royal Infirmary (Ardwick 3300)

l Region
erley Isolation Hospital Liverpool (Aintree 2321)

ospital carries anti-snake serum not only against native es, but against tropical snakes which may be imported with oes arriving at the docks
laboratory closed

DANGEROUS DRUGS

Home Secretary has issued an order (SI 1955 no 872) the following drugs under the control of part III Dangerous Drugs Act, 1951:

ylthiambutene (3-diethylamino 1 1-di-(2 thienyl) 1 butene)
nyl 4 phenylpiperidine-4-carboxylic acid isopropyl ester
thadone (4 : 4-diphenyl-6-dimethylamino-3 hexanone)

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sities Federation for Animal Welfare

ederation is holding its summer school this year at n House Barford Warwick from Sept 24 to Oct. 1 ill be expeditions to a dairy farm Dudley Zoo and a house and lectures on animal behaviour animals in l circuses, slaughtering methods, animals in research, usbandry and whaling Further information may be m the branch organiser UFAW, 7a Lamb's Conduit London W C 1

University of London

Mr G W Taylor, acting assistant director of the surgical professorial unit at St Bartholomew's Hospital Medical College has been appointed to the university readership in surgery at the college

At recent examinations for academic postgraduate diplomas the following were successful

Dip Bact—Zuhayr Hasan Annab Joan R Davies P S Gardner I D L Gulbride Margaret P Jevons J C Kelsey E. P Lindley L D Sachdeva, Harbans Singh Sodhi L. O Stewart C F D Taylor, W R G Thomas

D I H—E O Barnes Gunvantray Jatashanker Bhatt Sailendra Kumar Bose Ahmed Bukhari, G C R. Carey Niranjan Chatterjee W W Cowen Waldemar Drawnock, Michael Gibbs, D H S Griffith Aarne Sakari Häro Patricia Herdman A. C Howard *Eric James W T Jones Jogindar Singh Khurana, J. O Kjellander* S J Krister W W Laughland Mary Lightbody Sarah Lorimer Patricia E A McFarland P O M McGirr Thomas McKendrick F D Maur G G J Mottrop K. H Meller Abdel Fattah Mowafi, G G Murphy, W P Nelson, William Ouko C S Pitt Malathi Rajasingham, T A I Rees M O Richardson A D Robertson W R. Rochester Annia Mina Said, Yosef Sayegh Ravindra Nath Varma Elizabeth G Vaughan, J C Wyatt, Francis Zammit

D T M & H—M T Ashcroft, Abudu Rasaki Oladotnde Bakare Hsien Chen Hsieh, Khalid Asad Shami Valyapuri Velayudhan

University of Birmingham

On July 2 the honorary degree of doctor of laws was conferred on Prof H F Humphreys. The following degrees were also conferred:

M D—W T Cooke Brian MacMahon (with honours) H G H Richards.

Ph.D—E A Smith, A G W Whitfield

M.B Ch.B—Molly Hill (with second-class honours); Jean E M Baron Brenda L Bodenham F S Boi Doku Ann D Braham Jeanne L Brough, G T Brown, K G Buckler P J Chaudoir Jay Gopal Chitnis, A. E. Cutler T S Dogra Denise J Duchesne J L Dyke, Elizabeth A Fisher Christine M *Fitzgerald* C B Franklin Elizabeth George J D Goode C M Green Peter Hall Sheila I Hancock Barry Hansell A J Harbott M. A. Harper Pamela A. Harris, B G Harwin John Haslam C. N Haynes, R. W Heslop Margaret W Hill-Owens, J R. Holliday Gabriel Horn Julia C. Hurford G T Kelley J N Kille D G Larard J D Leng Leslie Lewis, H McD Liegeois, M B Love Mary L Mackay R B Miller Valerie F Millward, Mary G M Moss, P M Moss, S H Nicolaides G D Officer A L. Parker A. W Parkes J L Pearce, D O Pearson Eric Peters D M. Price Bryony B Reid, R. F Reynolds M. T Rigby, R O Rimmer M L Rutter Frank Sayer Betty V Scott R. C Shapiera, Helen R. Sharples Roy Summerly, Robert Tinkler J A Tooth G J Varley D M Ward M S Warwick, J L Webster Myrtle E White B N Williams M. A Woodhouse

University of Glasgow

On July 9 the diploma in public health was awarded to the following:

K F X Bourke D P Brunton W R. Falconer, D J B Fletcher A N Hunter L. S Macdonald Sheila F Schofield, D J L Tredoux Cameron Weymes, S M Young

Royal College of Physicians of London

On July 14 Queen Elizabeth, The Queen Mother dined with the president and fellows of the college

Royal College of Surgeons of Edinburgh

At a meeting of the college held on July 13 with Prof Walter Mercer the president in the chair the following were admitted to the fellowship:

Syed Mohamed Alwi Alhady Ary Blesovsky P A Bos Mannah Kumar Roy Chowdhury Emmanuel Evans Anfom Joseph Hon Yin Fung Roshan Lall Gupta, H C Hastings, John Humphreys, I J MacLaren Jogeswar Mahanta, Man Mohan Malhotra M R. Neely E. C Neser J E Newsam Lajpat Rai Pathak A. E. Pritchard, C M Sarkin Barry Sender Pravinchandra Amrutlal Shah, M B Wingate

National University of Ireland

Dr Thomas Murphy has been appointed to the professorship of social and preventive medicine in University College, Dublin.

Royal College of Physicians of Ireland

At a meeting of the college held on July 1 with Dr Edward T Freeman the president in the chair the following were admitted licentiates in medicine and midwifery:

J M. G Anderson, Unu Omar Ali D C. Armstrong Anthony Beadman H. W Beaumont, T F Bourke William Brereton Mary B McK Butler C S Christopoulos Patricia Clement W G Cooke Marcella Davies S B Day, M G Dignan Jean Fishman H J Galvin, Jan Golaszewski T A I Grillo H G Haynes Tino F J M. Haynes, M. B *Kilcoyne* T E. *Lear* M B *Levine*, Gerald Lynch, Geraldine B McKevitt, W E. Mackinnon David McSwiggan F J McVerry Daniel Maher Roman Mrodzinski G G Noott, J N O Donnell D C Paterson Satyavrat Ramrakha K B A Stanley R. H W Treneman E. L. Norman Williams E S Williams

Royal College of Surgeons of England

At a meeting of the council held on July 14, Sir Harry Platt was re elected president, and Mr Julian Taylor was re elected and Mr R P Scott Mason elected vice presidents for the ensuing year Prof Paul Santy (Lyons) was admitted to the honorary fellowship Mr A Lawrence Abel, Mr R H O B Robinson, Mr Harold C Edwards, and Dr Frankis Evans were admitted to the council Mr A C H Bell was coöpted to the council for the year 1955–56, representing gynæcology and obstetrics

The Hallett prize was awarded to Dr B J Dooley (Melbourne) Dr Angus Macpherson was re elected Laming Evans research fellow for a third year The Gilbert Blane medal for 1955 was awarded to Surgeon Lieut Commander W H B Ellis

The following lecturers were appointed

Thomas Vicary lecture—Prof K F Russell (Melbourne)

Hunterian professorships—Mr E Rohan Williams skull at birth, Mr Ashton Miller, diverticulum of the bladder, Mr Eric Samuel anatomy of the bile ducts in relation to the post cholecystectomy syndrome, Mr D M. Wallace, natural history and possible cause of bladder tumours, Mr Santokh Singh Anand, hypertrophic ileo-cæcal tuberculosis in Indian patients, Mr J H Peacock, ætiology, diagnosis, and treatment of Raynaud's disease, Raynaud's phenomenon, and acrocyanosis in the upper limb Mr B B Milstein, cardiac arrests and resuscitation Mr F T Graves, anatomy of the intrarenal arteries in health and disease, Mr J S R Golding bone changes in sickle cell anæmia, Mr Leon Gillis amputations in children, Mr Bishnupada Mukopadhaya, rôle of excisional surgery in the treatment of bone and joint tuberculosis Mr E F Chin, surgery of funnel chest and pigeon chest, Mr C W D Lewis, melanomas and melanosis, Mr W J W Sharrard muscle paralysis in poliomyelitis, Mr Charles Marks, observations on the surgical sequelæ of bilharzial disease

Arris and Gale lectures—Mr F D Hart, hormone replacement therapy in the surgery of endocrine disorder Mr Roger Warwick, functional topography of oculomotor nuclei, Mr J D Griffiths, surgical anatomy of the blood-supply of the distal colon

Erasmus Wilson demonstrators—Mr B E Heard, Mr J S Young, Mr L M Franks, Mr L W Proger

Arnott demonstrators—Mr G W Causey, Mr David Slome, Mr Frank Stansfield, Mr R J Last, Mr R McP Livingston, Miss Jessie Dobson

A diploma of fellowship was granted to W A Malik

It was reported that Edward Lumley research fellowships had been established in the Royal Australasian College of Surgeons, by which young surgeons from that country could pursue clinical and research activities in this college in London and the hospitals associated with it

The council agreed to a number of measures designed to facilitate the arrangements for reciprocity of primary fellowship examinations with other colleges of surgeons

On Thursday, July 28, at 5 P M, at the college, Lincoln's Inn Fields, London, W C 2, Prof Frederick G Kergin, senior surgeon to the Toronto General Hospital, will give a Hunterian lecture on the Treatment of Chronic Pleural Empyema

Yorkshire Society of Anæsthetists

On Wednesday, July 27, at 8 30 P M, at the General Infirmary, Leeds, Dr D G Melrose will speak on Hypothermia

Scottish Society of Anæsthetists

The following officers have been elected for 1955–56

President Dr F G Gibbs vice president Dr H Bruce Wilson, hon secretary Dr A G Miller, other members of council, Dr I M Campbell Dewar, Dr D W Shannon Dr M. Shaw, Dr R Lawrie, Dr J W Levack, Dr W Auld Dr F Holmes

The society's prize for the best paper submitted by an anæsthetist of senior registrar grading or below was awarded to Dr A H B Masson

Uganda Medical and Health Services

On Feb 16, the legislative council resolved that a committee be appointed " to examine the present stage of development of medical and health services in the Uganda Protectorate and, having regard to available resources of manpower and finances, to make recommendations for future policy ' The Governor has now appointed the following members

Dr A C Frazer, professor of pharmacology Birmingham University (chairman) Mr H J Croot, professor of surgery, Makerere College Medical School Mrs Florence Lubega, member of Makerere College council, Hon J M Madhvani B SC LL.B, member of legislative council, Dr I K Majugo general medical practitioner Captain H M. Naylor chairman Toro Tea Company, Dr S J Scurlock senior administrative medical officer Birmingham Regional Hospital Board Dr Cicely D Williams, of the London School of Tropical Medicine and Hygiene

The secretary of the committee may be addressed at the P O Box 101, Entebbe, Uganda

Society of Apothecaries of London

On July 19 Sir Cecil Wakeley, the Master on beh court conferred the mastery of midwifery, honoris Dame Hilda Lloyd and Sir Arthur Gemmell. The in therapeutics was presented to Sir Russell Brock.

Royal Medical Benevolent Fund

The 190th annual general meeting is to be 11, Chandos Street, London, W 1, at 5 P M, on T July 28 Lord Webb Johnson will take the chair

Medical Society for the Study of Venereal

At a meeting of this society at 11, Chandos Street, W 1, at 8 P M, on Friday, July 22, Dr R R W open a discussion on the Future of Venereology

Congress of Neurological Surgeons in United

This Congress will be held in Los Angeles, from Oct 27 to 29 Further particulars may be Dr Philip D Gordy, 1007 Delaware Avenue, W Delaware

Association Européenne Contre la Poliomyélit

The third symposium of this association is to be Zürich on Sept 29 and 30 under the presidency of Fanconi Further particulars may be had from Dr 67, Boulevard Auguste Reyers, Brussels

Royal Society of Medicine

Honorary fellowships have been conferred on Sir Fish, Prof W R Hess, Sir Geoffrey Jefferson, I W Magill, Prof A H Olivecrona, and Novak (*in absentia*)

Sir Geoffrey Jefferson, F R S, has been appointed Jackson lecturer and medallist for 1955 He has the subject of the lecture, which he will deliver on Neurology of the Trigeminal Nerve

Appointments

ANDERSON, A B PH D Camb, B.SC. Adelaide, M R C pathologist St Bartholomew's Hospital, lecturer pathology at the medical college

BOLTON ANNE M B Camb, M R C P, D P M consultant in psychological medicine, Elizabeth Garrett And pital London

CARRUTHERS J K M, M B Lond whole time asst che (S H M O), Cardiff chest clinic

DHOLI M K M B Lucknow, T D D whole time asst clan Wrexham chest clinic

GREEN, R. A, M B Camb, F F.A R C.S, D.A part time anæsthetist, Royal Free Hospital London

JENNINGS ELIZABETH M, M B Lpool, D OBST asst co Hertfordshire

LEVY, JACK, M B Glasg D O M.S ophthalmologist Edinburgh Royal Infirmary

LYONS, A R, M D Belf, M R C.P D M R.T whole-ti consultant radiotherapist Northern Ireland ra centre, Purdysburn, Belfast

MACAULAY, D B M B Lpool, M.R C.P consultant David Lewis Northern Hospital and the Liverpool and Throat Infirmary

McCORMACK, JOHN, M.B Durh asst school M.O, New Tyne

NORTH, H D B M B Manc, D P H M.O H, West B district and Bingham rural district.

OLDHAM K W M R C S, D A whole time asst (S H.M O) to the Northampton and District H.M.C

THOMPSON, R. C W, M B Lond, F F A R C.S D.A consultant anæsthetist Charing Cross Hospital

WATKINS MONICA E, M B Lond asst county M O, He

Colonial Medical Service

APIYOR, T D M R C.S, F F A R C.S, D A M O grade A Trinidad

CRAWFORD, B K A, L.R C P E M O, Kenya

FORRESTER, A T T, M B Lond M O, Kenya

HARRISON, J P, M R C S, L D S Senior M O Northern Region, Nigeria

HUMPHRIES, S V M R C.S D.M O Bahamas

MACKAY, C G G, M B Edin, F R C S M O Northern Region Nigeria

MERCER, J W, M R C.S M O, Northern Region,

NICHOLSON J A B M B E, M B Lpool, D T.H. officer, Medical Field Units, Northern Region,

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Births, Marriages, and Deaths

BIRTHS

DANIEL—On July 11, at the Jessop Hospital, Sheffield, to the wife of Mr Owen Daniel, F R C.S—a son

OLD THOUGHTS AND NEW WORK ON BREADS WHITE AND BROWN*

R A McCance
C B E., M.A M.D Ph D Camb F R.C.P F R S
ROFESSOR OF EXPERIMENTAL MEDICINE, UNIVERSITY OF CAMBRIDGE

E M Widdowson
D Sc Ph.D Lond

m the Medical Research Council Department of Experimental Medicine University of Cambridge

HE title of this lecture carries two ideas and the ure really has two parts The new work deals h some of the experiments which we made in Germany l England between 1947 and 1951 This work con ned the nutritive value of white and brown bread got results which surprised us very much at the time in spite of everything we had been led to believe the last thirty years white turned out to be just good as brown and all kinds of wheaten bread to have utritional value far in excess of anything we had been to suppose It seemed fairly clear, however after ew more experiments why we had got the results The l and still outstanding problem was why they had been unexpected and this we set out to solve We started urally with the most recent literature but we soon nd ourselves involved in a tangled skein of social and nomic history with threads that reached back to the y beginning of things These are the *old thoughts* o we worked backwards as it were starting from our n work and going further and further into the past we shall tell you the story in its proper sequence ay starting from the very early days and ending with own work History is not so exciting as detective ion—but it is usually more logical and easier to ow

Early Mediterranean Civilisations

Men began to cook cereals long before they made ad Some form of porridge was probably the first velopment and many African tribes are still in this ge of cultural development The history of bread tainly of fermented bread or yeast bread begins with cultivation of wheat for barley which probably ceded wheat as the cereal for human consumption l not "rise" and therefore cannot be made into d loaf bread It was probably eaten as porridge or flat unleavened cakes much as oatmeal is eaten ay It is not known when men found out how to ke their bread whiter and improve the baking qualities their wheaten meal by taking the bran out of it there is a wall picture at Thebes of ancient Egyptians ving off the bran and we believe the meshes of the ves were made of interlacing papyrus grass or rushes. Pliny s time the Gauls used horsehair and the rians flax The product of this separation was the ne flour often referred to in the Bible as suitable for erings or special occasions He shall bring for offering the tenth part of an ephah of fine flour viticus 5 11)

We do not know how the ancient Egyptians regarded ir brown and white breads but we know pretty well at the Greeks and Romans thought about them for re are plenty of quips at their expense in the comedies l satires and discussions of their respective merits the more serious literature. There were at least four grades of flour The finest kind was expensive a really luxus food for it could only be made from the best wheat sieving cost money and the final product was only some two thirds of the original purchase Then came a somewhat lower grade which was referred to as seconds, then a wholemeal product and finally a very coarse variety sometimes a mixture of wholemeal and bran and sometimes just a collection of branny residues mixed perhaps with beans In Athens however white wheaten bread was by no means confined to the houses of the idle rich It was a food the theatre-going public knew all about liked demanded and ate if they could afford it There is a revealing little fragment from Antiphanes (Athenæus c 200) which makes one think of the *Bisto advertisements* Someone had evidently been told to clear off a baker s premises and he replied

'How could any gentleman go away when he sees those rows of lovely white loaves filling the oven ? ' At the same time white bread in Roman times was certainly one of the class distinctions—as everything which is rationed by price has always tended to be—and black bread was the food of the slaves and the down and-outs There was often a contemptuous ring about the term black bread ' A character in a comedy of Plautus (c 200 B C) says to the mother of one of his mistresses

Before I courted that girl of yours and offered her my loving heart you used to live on black bread in rags and poverty—and were glad to have the bread and rags

Nevertheless, it must not be supposed that no-one had a good word for dark bread. The drift to the towns was a worry to the Romans, and at times to the Athenians and in the eyes of some white bread stood for city life and sophistication Wholemeal bread was the country man s fare It put strength into you—*et vires facit.* It became a symbol to some people of the good old days, the simple life of long ago when men were always fit and strong and in Plato s (c 400 B C) build up of the ideal State there came a time when he pictured men as living into healthy old age on wholemeal bread ground from a local wheat Socrates put the other point of view very aptly in his reply by suggesting that this proposal meant that the whole population would be living on pig food To identify wholemeal bread with health and strength and the good old days was psychological symbolism, for there was of course no experimental evidence or vital statistics to show that any of it was true and the medical opinions were rather the reverse The Hippocratic school were well aware that bran in the bread increased the bulk of the fæces wholemeal bread clears out the gut and passes through as excrement white bread is more nutritious it makes less fæces. (Hippocrates 430 B C) Galen (c 160) rated the nutritive value of the four kinds of bread as varying inversely with the amount of bran in them because in his opinion the greater the bulk of *stools made by a given amount of bread the less nutritious* that bread was likely to be These were shrewd observa tions to have been made two thousand years ago

Medieval and Early Modern England (1200 1700)

It may seem a far cry from classical Rome to medieval England and in some ways it is, but human nature had not changed so why should people s feelings about white and brown bread ? The millers however now began to come into the picture and they ultimately became an important group The mills were driven by water power rather than by slave labour and medieval practice laid it down that all grain to be ground had to be taken to the manorial mill and the millers were paid—not in cash but in kind The same principles applied in a lesser degree to bakers This led to endless trouble and the miller was always suspected of sharp practice Chaucer represented both his millers as dishonest men, and millers and bakers were generally regarded with great distrust

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* This article forms the substance of the Sanderson Wells lecture which was delivered by R A. McCance on June 14 1955; it is itself a résumé of a detailed study of the subject which will be published by Pitman Medical Publishing Co Ltd.

> " For which this miller stal both mele and corn
> An hundred tyme more than biforn ,
> For ther biforn he stal but curteisly,
> But now he was a theef outrageously "
> (Chaucer 1388)

The English climate was not that of the Mediterranean basin Wheat could only be harvested successfully in the south and east of England, and barley, rye, and oats were widely grown, and used extensively for human consumption Wheat, however, was always the cereal of choice and, as in Rome and Athens, people who could afford it liked the soft bread and the good baking qualities which only white wheaten flour could provide

There were various grades of wheaten bread The finest wheat was often baked into small rolls termed manchets In the Percy's Yorkshire household in 1512 "My Lord and Lady" each had "a manchet for breakfast" (*Regulations* 1770) The larger white loaves in medieval times were termed wastel bread or pain de maigne (demesne bread, panis dominicus, monk's bread, &c) The coarser breads were referred to as cheat breads or ravelled cheats, and the price of the three standard grades, white, wheaten, and household were regulated by the " Assize of bread "

We know a good deal of what people thought and did about white and brown bread in medieval and later times, for there are plenty of references to them in the writings of the day. In times of dearth, for instance, Piers Plowman could only afford an oatcake and 2 loaves of beans and bran for his children whereas when plenty came

> " Ne no beggar ete bred that benes inne were,
> But of coket or clerematyn, or elles of clene whete "
> (Langland 1377)

White bread was a treat, as we know from the Nursery Rhyme

> " Ride a cock horse
> To Coventry Cross
> To see what Tommy can buy
> A penny white loaf,
> A penny white cake,
> And a two penny apple pie "
> (Percy Society 1841)

And brown bread carried just the same social stigma as it did in Greece and Rome " The Duke would eat mutton on Fridays He's now past it , yet and I say to thee, he would mouth with a beggar, although she smelt brown bread and garlic " (Shakespeare 1604)

Medical opinion as to the nutritional value of the different kinds of bread was much the same as it had been in classical times because physicians were still in the main quoting Hippocrates and Galen rather than making their own observations, but the public now recognised the laxative properties of bran Some regarded it as a worthless impurity " Asses, fools, dolts ! chaff and bran, chaff and bran ! " (Shakespeare 1609) Others had a high opinion of brown bread because of it Brown bread relieved constipation , it was the bread for the strong White bread was overnourishing and made people fat Tryon (1683) wrote with deep psychological feeling about the matter It was wrong for anyone who set any store on Health or Nature to separate the bran from the finest flour Nature required both to nourish the body and to cleanse the system Only by eating both in their natural proportions could a man be strong The trick of separation

> " was first invented to gratifie *Wanton* and *Luxurious* Persons . If we look into the *Country* where the *Pheasant*, that has no better than *course Bread*, and other hard and mean fare, is healthier, stronger and more agile and sprightly than the *City Cormorant* whose brutish Appetite cannot be satisfied with any other thing than the costliest and richest that Nature can afford "

Tryon in short was advocating wholemeal bread be (a) it was laxative, (b) it was a natural food, (c) it would promote health and strength This is the appeal which Stubs had voiced nearly a hu years before " Doe we not see the poore man eateth browne bread healthfuller, stronger, complectioned, and longer living than the other, fare daintelie every day " (Stubs 1585) Referen already been made to the expression of similar sent in the classical literature

The Eighteenth Century (1700-1820)

These years witnessed great changes in the structure of Britain, and by their close England been transformed from a collection of rural c living in a comparatively well wooded island to a of organised industry based upon coal Technical im ments revolutionised the milling industry, trans tion, and the productive capacity of the land. beginning of the century the millers were still th trusted servants of the bakers and the public relationships died hard, but by 1820 the mills had b a mass of machinery and the miller had taken o task of separating the bran, which hitherto in had tended to be the responsibility of the baker domestic user of the meal The population inc rapidly, but the extensions and improvements in ing more than kept pace with it, and the acreage wheat increased so much in southern England t many years there was a surplus for export abr to other parts of the country where wheat could grown

In spite of these sweeping changes in the things of life there was really no new alignment attitude towards white and brown bread Wh tinued to be the delicacy to be offered to a distin guest, just as it had been in the time of (*Genesis*, 18, 6)

> " I'll have none of your nasty beef,
> Nor I'll have none of your barley ,
> But I'll have some of your very best flour
> To make a white cake for my Charley
> (Jacobite song 1748, see Thomas

During the prosperous fifty years at the opening 18th century the labouring classes in the south a ceased to think of white bread as a luxury and to regard it as one of the necessities of life The obstinately to this point of view in spite of the white bread during the series of bad harvests and ec misery of the latter part of the century Ther to accept potatoes as the people in Ireland, Lan and the North had done, or to go back to wholem barley bread, and established their right to have bread after a bitter struggle in which many har unkind words were spoken and written by both s

In the 18th century meal was still being bol home, but by its close the millers were quite pr to produce a white flour for any customers who pay for it , they got a better price for it than for meal, and over and above that were able to dispose offals to the manufacturers of ship's biscuits horse owners England was so far forward industr the 18th century that the evolution in social relatio and cereal economy which took place at that ti not begin to gather momentum in some En countries for another hundred and fifty to two h years (League of Nations 1930)

Although the foundations of scientific medicin been well and truly laid by the early 19th application of scientific thought to food had n begun to have much effect on medical opinion, views of the physicians of the day were still th don and Hippocrates Wholemeal bread, however, ntinued to be advocated by middle class dreamers and wnsmen who regarded it consciously or unconsciously s a symbol of what they supposed to be the healthy constipated life of the countryman and the days of ng ago ' Great numbers of our fellow subjects eat eir bread much coarser than the Londoners : are they aker ? They are generally stronger Some part of the vantage must be carried to this account (Advocate Trade 1773)

Peace and Plenty (1820 1914)

There were outstanding developments in the milling lustry during this century and the impact of science gan to make itself felt on nutritional thought but e public demand for a white loaf continued without ermission It did so for the same reasons as before spite of the unscrupulous adulterations and other vices to which the millers and bakers had to resort order to meet competition within the trade and oduce a white loaf which their customers could afford buy The millers and bakers came in for a great deal criticism for these practices between 1800 and 1850 d their reputation fell to a very low level once more t the whole economic structure of the trade and its ations with the public changed about 1860 for by at time the sale of offals and residues had become ofitable enough to allow the millers to reduce the price white flour below that of brown Employers and others uld no longer make out a case that their employees re living on food which was beyond their legitimate ans for white bread had now become the cheapest d the poor could buy and in the industrial cities y were in fact subsisting largely upon it The intro ction soon afterwards of the roller mill and silk bolting ves enabled the millers to effect a much more perfect aration of the offals, particularly of the germ and tellum from the product sold as white flour This de the latter look whiter still and improved its keeping alities It also improved the value of the offals These nges were welcomed by the public and the stock eders, and the millers naturally cooperated because y found their turnover and profits increased thereby everyone or nearly everyone was happy Millers and blic were now at one strongly supported by the mal husbandmen and these three strong pressure ups came together in favour of white flour

While all this was going on the old idea of wholemeal ad as a symbol of all that was natural vital l good spread widely among certain of the intelli tsia under the teachings of men like Sylvester Graham l Allinson Both were vegetarians and Allinson was a teetotaller They were both deeply sincere and y achieved great reputations and a considerable owing Graham bread is still the term for wholemeal ad in the United States and there is still a steady in parts of England for the wholemeal bread baked m Allinson s stone ground flour These men s belief t wholemeal bread was the natural and therefore per food for man amounted almost to a religion aham frankly considered that in separating the bran m the endosperm man was tearing asunder what God l joined together in the grain It is for a wise purpose t the Deity has so intimately associated in the grain several substances which are necessary for the nplete nutrition of animal bodies (Graham 1837) nson (1886) preached that brown bread was the true f of life children brought up on it would have ng frames and good health and be able to fight their (unconstipated) through the world, free from the ving for beer and spirits A Bread and Food Reform gue was established which helped to spread the el This body was responsible for the introduction standard bread ' in 1909 its sponsors attributed its valuable properties, not so much to the amount c bran it contained which was small but to the vital an mysterious germ This bread achieved considerabl ephemeral reputation thanks to the activities of th *Daily Mail* Graham Allinson and their adherent formed a small but sometimes vociferous group whic maintained pressure and educated opinion in favour o brown bread

Chemical analysis in the early part of the 10th centur showed that although wholemeal flour contained mor indigestible cellulose it also contained more protein fat and minerals than white flour, and chemists lik Liebig considered that weight for weight it was mor nutritious The balance ' experiments however which were carried out by the more biologically minded scientists in the latter part of this period all showed (what in fact Hippocrates had stated two thousand years before) that the indigestible nature of the branny parts so increased the losses of nutrients in the stools that weight for weight the chemical advantages were more than counterbalanced by the physiological drawbacks The scientists, therefore constituted a relatively neutral group although their discoveries were made use of by the protagonists both of white and brown The work on vitamins which was destined to exert such an influence in the next forty years, came too late to make much impression in this period

Shortages and War (1914-1921)

There was nothing new in a grain shortage or in its effects, and when the submarine campaign prevented the normal quantities of wheat entering Britain the reactions both local and general were very similar to those during the series of bad harvests at the close of the 18th century The King issued a similar proclamation for instance to that issued by George III in 1800 and the Government and its spokesmen made similar exhortations to economise bread Workers liked their beer in 1917 just as they did in 1800 and at neither time did they welcome the idea of having it watered down in order that the barley grown for brewing it should be put into bread Nevertheless on the advice of the Royal Society Parliament ultimately ordered the millers to raise the extraction rate of wheat to 90% and to incorporate 20% of other cereals, barley among them, in the flour sold for bread making During the long period of plenty and industrial development before the war milling and baking had become large scale standardised processes, and it was much more difficult to conform with these orders successfully than it would have been for the small private concerns in previous centuries The public had also become accustomed to the standardised products and liked them Consequently the millers and bakers disliked these orders for apart from reducing their turnovers, they created real difficulties in the production of good bread The public on the whole found the bread unpalatable partly because its members were not accustomed to it partly because it was often bad bread and finally because it had to be kept for at least twelve hours before it was sold Incidentally this order was another echo from the 18th century An attempt was made by the authorities to reduce the number of animals, such as pigs and poultry which competed with man for cereal foods but bread was never rationed as it was in France, and an attempt was made to keep its price within the reach of all In spite of the advantages of the last two achievements the more irresponsible and unpatriotic of the groups who favoured milling to 70% extraction and the consumption of white bread lost no opportunity of voicing their feelings. People attributed their indigestion and other complaints, real and imaginary, possible and impossible to the bread but no experimental support could be found for their ideas The millers advocates criticised the reports of the Royal

Society most polemically, and the animal husbandmen reacted in a similar way

The group of people traditionally in favour of wholemeal bread welcomed the higher extraction rate with satisfaction, and the parliamentary secretary to what later became the Ministry of Food put their point of view clearly at a meeting of the Royal Society of Arts

> "We should be careful how we interfered with any of nature's gifts and thereby destroyed her provision such as prevailed in the production of white bread War bread was almost a complete human food and when combined with either butter or margarine was in fact a complete human food We had attained a bread which passed muster with our chief scientific critics" (Bathurst 1917)

The last was true The evidence about vitamins which was now accumulating pointed to the fact that there was something nutritionally very important in the outer layers of the wheat berry The exigencies of the war and the scientific work before and during it had made disinterested men like Hopkins and McCarrison think about bread in all its nutritional aspects, and they probably felt relieved to see the extraction-rate going up When the war ended and there were prospects of a return to white bread some people began to wonder if this would be a good thing for the health of the country

> "We deprecate the use of the phrase 'better bread' to describe the return to whiter flour Those with a taste for such bread may consider it nicer but it is elevating personal predilection on a pedestal to make it the standard of goodness It would be better to continue to extract 80 per cent or more from wheat for the use of man " (*Lancet* 1918)

Return to Plenty (1921-1939)

The return to free milling and white bread after the war satisfied the millers, the bakers, and on the whole the public, but the rising standards of living were reducing the consumption of bread and the millers realised that efforts would have to be made to maintain and if possible increase the amount of wheat milled for human consumption This made the trade a firm pressure group in favour of white flour, and as before the pressure was supported by the stock breeders and by the majority of the general public

Scientific results rapidly accumulated to show that, under chosen conditions, wholemeal flour was a better food than white for pigeons and for growing rats and mice Vitamin B_1 and protein were thought to be the important ingredients Many people assumed without question that these results would also apply to British and American men and women living on their customary diets, and they were supported in this by the experience of the British recruiting boards during the war with men who had been reared for at least two generations on roller-milled white flour, for the boards had found that the nation was not the fit one which many had supposed, and that the physique and health of those presenting themselves for the Army, particularly in certain areas, was bad Those in favour of high extraction therefore came to include, not only the food reformers and Nature-worshippers, but all those people who were interested in improving national health, and scientists of the highest calibre were numbered among them The majority of the people in these pressure groups had not been trained in scientific methods although they now looked to science to further their cause This fusion of interests was unfortunate, for the enthusiasm of the non scientific members of the groups tended inevitably to modify the outlook and to blunt the keen critical judgment of even the best scientists in them The following quotation from a scientific journal is a good example of this "The peasants maintain a degree of health unknown to their wealthier lords living upon refined foods" (Moore and Brodie 1925) Furthermore, relatively untrained scientists began to take part in these "bread" experiments, both on rats and children These experiments always seemed to give a result in favour of bread, and although many of them were weak bot design and execution, very few people had the tem to say so, and when they did nobody took much no Consequently the build up of evidence that the pro and vitamins of brown bread were almost a nece adjunct to a diet continued unchecked

The millers' advocates were mostly connected the industry and their papers and articles were not upon original scientific work Consequently, they vinced nobody outside the trade that white bread as good an ingredient of British and American diet brown, and in the end the millers were suffic impressed by the strength of the evidence accum against them to offer to fortify white flour with synt vitamin B_1 This was a very clever move It dis a certain number of their scientific opponents comp although, naturally enough, it only stiffened the res of those to whom wholemeal bread had a sym appeal

The Second War

The groups were now lined up for the struggle whic to take place over bread policy in Britain and countries in the ensuing years Anyone with a know of history might have foreseen that there was likely a shortage of wheat in Britain and that steps shou taken from the first to meet it The Government, h over, held a small stock of wheat when the war ope and the shipping position was not immediately ur The Ministry of Food accordingly introduced no ch of policy till 1940 and then proposed to fortify flour with vitamin B_1 This was a triumph for the M Advertising Committee, but it was not a very rea policy The scientists, moreover, were mostly ag it because they had now convinced themselves th many nutritional advantages would accrue from ra the extraction-rate to around 85% that the restor of aneurin to white flour was a most unsatisfac substitute The Medical Research Council Acce Food Factors Committee (1940) recommended accor that "the percentage extracted should be at le to 85%," and the members of the Food Edu Society, which was the direct descendant of th Bread and Food Reform League, were ready to su any policy which meant a return to what they be Nature had intended people to eat They were a therefore, with the scientists in wishing to see a to long extraction flour, if possible, however, g between stones! They foresaw that they might new ally in the war time pressure on shipping spac

Owing to delays of one kind and another the to fortify white flour with vitamin B_1 was only pa implemented and an "optional" 85% flour was duced This vacillation and indecision gave every chance to come out in his true colours, and the troversy which ensued over the advantages of r the extraction rate was most illuminating P individuals, members of Parliament, journalists, inv tors, and scientists all did what they could by spe letters, articles, and experimental work to bring o value of the step which they themselves fav In March, 1942, the shipping position forced the C ment to raise the extraction rate to 85% The fought on bread made from this meal, and durin war the national health improved

At the end of 1944 the extraction rate was redu 80% and this gave rise to further polemics and troversy The millers and bakers pressed for a fu reduction and offered to make good the nutritional comings of the flour brought about by lowering extraction-rate by adding minerals and synthetic vita The groups in favour of high-extraction reacted str against (*a*) any reduction at all, (*b*) the principle of a ing nutritional shortcomings caused by such redu

, be made good by the subsequent additions of minerals synthetic vitamins. Their argument was that since body knew *all* the good things that were lost in the lling of white flour, no-one could guarantee to put em back The controversy, which had never really ed down once more became intense Some people pressed themselves strongly The public eats with palate—not its brain—and the palate likes the ste of what the dietitians tell us is the inferior white ead (*Milling* 1944) There has been a suspicion more than one quarter that the interests of the millers ve been allowed to stand in the way of the nation's alth" (*British Medical Journal* 1942) The two debates the House of Lords were illuminating although they re of course couched in the most dignified language There is another and more general effect of this national eat meal bread upon the country as a whole and that that the country is much less constipated ' (Lord order 1945) Is it not justifiable to think how ngerous it must be to interfere with Nature's products the shape of the grain? (Lord Teviot 1945) A nference was convened by the Ministry of Food on o post war loaf and its report was published in '45:

> There is a strong *prima facie* case for thinking that the amins in the wheat berry exist in the form of a balance hich has been proved to be conducive to health and therefore ich caution is called for before starting upon a new line of tion which might upset the balance with deleterious effects. inistry of Food 1945)—but might equally well have been raham 1837) or (Tryon 1683)

It is rather important to realise that the whole issue d now changed It was no longer whether high traction flour was better than white—nobody ques tioned that—but whether white flour enriched with vitamins and iron was as good as the natural 80% 85% extraction flour

Progress by Experiment

We were working on undernutrition in Wuppertal berfeld in 1946 It was obvious that a good experi nt might go a long way towards settling the con versy about whether or not it was wise to reduce the traction rate There was a children's home in Duis rg with about 150 hungry children in it and accordingly arranged with the authorities that we might carry t nutritional experiments there The original proposal s to compare the nutritional value of an 85% wheaten al with a white flour which had been enriched with eurin riboflavin, nicotinic acid and iron to the els found in such a meal Had we only done that we uld not have had much of a story today but in order measure the full extent of the benefit which we never ubted would come from raising the extraction rate m 70 to 85% we decided to include unenriched 70% traction flour in our tests, and as a final thought holemeal flour and a 70% flour enriched to wholemeal els were also used

This work of ours has all been published (Widdowson d McCance 1954) and the details would be quite out of ice here It is only necessary to say that the children d been undernourished for some time Their diets re short of calories; their ration of milk (mostly mmed) was somewhere around 100 ml per day and ir total intake of animal protein was only some 8 g day We took away their German ration of bread and ve them unlimited amounts of one or other of our ads, and this meant that about 75% of their total lories was coming from one of the experimental eads Most of the remaining 25% was coming from tatoes and vegetables As the objects of the experi nts were limited to finding out whether the proteins, n B vitamins, and possibly unknown substances pplied by the five breads met the requirements of the children equally well we supplemented the diets with fat-soluble vitamins, ascorbic acid and calcium

We made two outstanding observations – The first was that the children grew and improved equally well on *all* the breads Not only were the enriched 70% as good as the high extraction flours they were meant to imitate but the unenriched 70% was equally good We confirmed these results under more exacting conditions at another children's home and we were forced to accept them The second observation was that the children did extraordinarily well on all the diets They grew throughout the year of test at a rate considerably greater than well nourished English or American children would have done This was because they started the year under the height and weight to be expected from their age They were making up for lost time so to speak It had never occurred to us that children could do so well on diets containing so much bread and so little milk meat fish or cheese and we decided to test the diets further by adding a milk supplement for milk had been shown to improve the growth rate of children so many times that it had come to be regarded as a *sine qua non* of all good diets. Accordingly we regrouped the children at the end of the first year, divided them into two lots gave them all the same kind of bread still in unlimited amounts and added one pint of milk per day to the diet of the first lot and an equi-calorific supplement of biscuits and orange juice to that of the second The milk made no difference The children with or without it continued to grow at the same highly satisfactory rate as before until the experiment came to an end six months later

These observations made us think. Our first reaction was to check back on some of the experiments on rats, particularly those made by Dr Chick during the war (Chick 1940 1942) upon which so much importance had been placed in England by the high extraction enthusiasts We did so by giving weanling rats diets similar to those used at the children's homes and to our satisfaction we obtained results very similar to those of Dr Chick Wholemeal flour gave better growth than white We could only obtain this difference however with weanling rats When we started with rats a few weeks older we found that white and brown flours gave equally good growth whether the young rats were undernourished (like the German children) or well nourished (like British children) when the tests began We found also that imitations of the children's diets gave equally good growth in pigs whatever the nature of the flour Unlike the children however none of the animals grew as well on these diets as they did on the stock diets We think this was because the experimental diets did not contain a high enough protein-calorie ratio for growing rats and pigs These were just the conditions likely to bring out differences in the quality of the proteins provided by the various flours and we must conclude that they were small Differences in the total amounts of protein provided by the different flours were scarcely large enough to be detected by the means at our disposal.

We have naturally re-examined the papers describing the experiments upon which current opinions about the value of milk had been based A number of these had been made without any supplement having been given to the control group In some the basal diet was unknown and uncontrolled while in others the tests had been sponsored by people interested in the sale of milk In Corry Mann's (1926) pioneer experiments the important ingredient may have been the calcium in the milk not the proteins or vitamins We were forced to conclude that the intrinsic and almost mysterious value of milk had not been demonstrated so conclusively as we had supposed

We feel justified by these investigations in making certain observations.

The experiments themselves show clearly how important it is not to generalise too widely from any experiment carried out within limiting conditions Brown bread may be much more nutritious than white bread for the weanling rat but no more nutritious for the growing child It follows, therefore, that if anyone wishes to know whether brown bread is or is not more nutritious than white he must define very clearly the conditions for which an answer is required Our diets were not the same as those used in Britain or in most other countries, but they can be compared with them and the results applied to the construction and planning of diets in this country or elsewhere, and let it be remembered that when natural diets, based upon white bread, contain a sufficiency of the B vitamins, enough is as good as a feast, and the only people likely to gain anything by the manœuvre of fortification are the manufacturers of the synthetic additives To most people conventionally trained, the diets used in Germany appear unsatisfactory at present, but if diets such as the ones we were using, consisting largely of cereals and vegetables, can be made so nutritious that they cannot be improved by a milk supplement, this should greatly simplify the problem of those interested in nutrition in parts of the world where milk, meat, and other sources of animal protein are costly or difficult to obtain

The results were unexpected because general opinion and also scientific opinion had been wrong in laying so much emphasis on the value of high extraction for all persons under all conditions The mistake was made partly because the scientists, ourselves among them, had allowed themselves to be drawn into a controversy with commercial interests which was fatal to scientific detachment, and partly because they had become associated in this controversy with administrators anxious to promote what they termed " positive health," and with a most interesting group of people with subjective beliefs which can be traced back almost unchanged for thousands of years These people's worship of Nature, desire for the good old days, call it what you will—whatever its cause, and in whatever form it may appear—should have had no place in scientific judgment

It is of course always quite possible that little attention will be paid to these experiments of ours until we are all dead and buried It would be difficult now, for instance, for any administrator to go back on the policy of enrichment The herd instinct " gives widely held beliefs a spurious validity irrespective of whether or not they are founded on any real evidence " (Beveridge 1950) Anything which threatens to make an adult change his beliefs, particularly if he has expressed them openly, is disturbing to him and it may safely be predicted—in fact it has already happened—that people who believe in the value of high extraction or have committed themselves to it will react to these results by attacking the evidence as best they can or by neglecting it, and so escape from its disturbing effects (George 1936) We shall not mind, we have had the fun of doing the work

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NATURAL DURATION OF BRONCHIA CARCINOMA

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In order to find out whether a particular prolongs life we must know the pattern of survi untreated patients observed under similar condi The natural duration of the illness has been studie group of 255 patients with a bronchial carcinoma, the influence of certain factors on survival has investigated in order to determine which of them be taken into account when the survival of dif groups of patients is being compared

During 1951 and 1952, 637 patients with a br carcinoma were seen at the Brompton Hospital a Royal Marsden Hospital 135 were treated and 210 by radiotherapy, 292 received no tre likely materially to prolong their life In 37 of th time when the first symptom appeared was not k nor, therefore, is the total duration of the illne remaining 255 form the " untreated " group investigation All but 8 are known to have died 8 who were alive at the time of the last report squamous tumours and are known to have bee twenty-five, twenty-nine, forty, and forty one after the start of symptoms No histological e of malignancy was obtained in the other 4, wh alive after sixteen, twenty three, twenty four twenty seven months The 2 who were followed less than two years have been counted as dead time of the last report

Validity of the Diagnosis

There was histological evidence of a malignan plasm in 129 cases The tissue was obtained by ne in 10, bronchial biopsy in 81, biopsy of a metastati in 25, and drill biopsy of the primary neoplasm

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ytological diagnosis was based on examination of um in 9 and of pleural fluid in 3

nong the 126 cases in which histological evidence not obtained there were 14 post mortem examina and 2 thoracotomies the naked eye appearances rmed the diagnosis but no histological examinations made 93 had clinical radiographic, or broncho ic evidence of metastases A tumour was seen at choscopy in 13 and in a further 16 there were other estive bronchoscopic abnormalities In 18 (14%) the nosis rested only on clinical or radiographic evidence lmonary abnormalities *16 of these have died* and ourse of the illness in the remaining 2 leaves little t that the diagnosis was correct

Duration of Illness

is of course difficult to find out precisely when ptoms first appeared Few of the patients were ined personally and the start of the illness has estimated from the recorded history When the first ence of ill health is hæmoptysis, a febrile illness or the recorded date is probably accurate But when first symptoms are *for example unusual tiredness* ing or change in the character of a cough it is monly impossible for the patient to remember when began, and the recorded duration of illness is clearly approximate It seems reasonable however to me that, with the exception of subgroups defined by nature of the symptoms themselves there is as much uracy in one subgroup as in another and com ion of survival times within the whole group is ably valid On the other hand comparison of the tion of illness in this series with that in another *rded by a different observer would be invalid*

ne deaths are not distributed evenly in the successive ths (fig 1) The highest frequency occurs in the fifth th but 35 lived for longer than two years As some he patients were still alive when last heard of mean survival time cannot be easily calculated The ern of survival has therefore been expressed as the ian duration—the time by which half the patients dead—together with the proportions surviving for and two years The median survival time also has dvantage of being uninfluenced by the few patients lived *for exceptionally* long periods

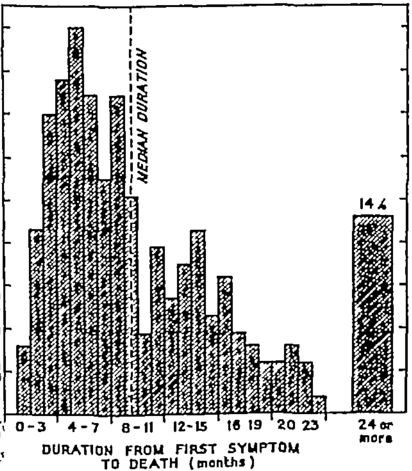

Fig 1—Duration of life of 255 patients.

TABLE I—MEDIAN SURVIVAL-TIME AND THE PROPORTION LIVING MORE THAN ONE AND TWO YEARS AFTER APPEARANCE OF THE FIRST SYMPTOM

—	*Total*	Median survival time (mos)	Proportion (%) living longer than	
			1 yr	2 yr
All patients	255	9	39	14
Histologically confirmed	129	9½	41	16
Differentiated	84	11½	46	25
Undifferentiated	45	7½	31	
Not histologically confirmed	126	8½	36	11
Metastases at diagnosis				
Present	94	7½	27	5
Absent	161	11½	40	23
Age (yr)				
Less than 50	32	7½	31	9
50–59	89	8	37	15
60–69	110	9	41	13
70 and over	24	9	46	21
Site of tumour				
Upper lobe	87	11½	47	22
Lower lobe	64	9½	40	13

Half the 255 patients were dead by the end of the ninth month; 39% survived for longer than a year and 14% for longer than two years

Factors Influencing Duration of Life

Histological Type

The histological type of the tumour was recorded in 129 patients There were 73 squamous carcinomas 11 adenocarcinomas, and 45 undifferentiated carcinomas. The survival of the few with an adenocarcinoma did not differ materially from that of the squamous group, 5 surviving for a year and 2 for two years. The two types have therefore been combined and called the differ entiated group The median survival time of those with differentiated tumours was eleven and a half months 46% surviving for longer than a year and 25% for two years or more (table I) On the other hand half those with undifferentiated growths were dead within seven and a half months, and the proportions surviving for one and two years were only 31% and 7% The difference *at two years was 18% with a standard error of 6%*

In the group without histological confirmation of the diagnosis the median survival time was eight and a half months, 36% surviving for a year and 11% for two years It is likely that this group contained relatively more with undifferentiated tumours than did the group with histological evidence in whom the median survival time was nine and a half months.

Duration of Illness at Diagnosis and Presence of Metastases

The diagnosis had been established in some of the patients before they were first seen at the hospitals For convenience however the date of the patient's first attendance is considered to be the date of diagnosis in all cases It is self-evident that the duration of life of a group of patients from the start of symptoms will be influenced by the duration of illness before diagnosis In a disease with a median duration of life of roughly nine months, a group diagnosed after an illness of ten months or more must live longer than a group diagnosed after only three months.

The duration of life after diagnosis is related to the length of symptoms before diagnosis but the relation *ship is not a simple linear one* (table II, fig 2) Thus, of the 60 patients with symptoms for less than three months half died during the next five months and 28% within three months. The prognosis became worse with increasing length of history until the median survival time from diagnosis was only three months in those with four to five months illness. But in those with an illness

TABLE II—MEDIAN SURVIVAL TIME AND THE PROPORTION SURVIVING FOR DIFFERENT PERIODS AFTER DIAGNOSIS RELATED TO DURATION OF ILLNESS BEFORE DIAGNOSIS

Duration of illness before diagnosis (mos)	Total	Median survival time (mos)	Proportion (%) surviving for different periods after diagnosis			
			0–2 mos	3–5 mos	6–11 mos	12 or more mos
0–1	66	5	26	36	23	15
2–3	63	4½	40	19	22	19
4–5	40	3	50	25	12	12
6–7	28	4½	39	28	18	14
8–11	25	6½	20	24	36	20
12 or more	32	7	28	12	28	31

longer than five months before diagnosis the prognosis improved, and the median survival time after diagnosis of 32 with histories of a year or longer was seven months, only 28% dying in the next three months and 31% living for at least another year This trend is also apparent in the prevalence of metastases at diagnosis, the highest prevalence—50%—having been found in patients with symptoms for five months (Bignall 1955), and a low survival-rate has been observed after resection in those with a similar length of history (Bignall and Moon 1955)

Patients with clinical or radiographic evidence of metastases at diagnosis survived, of course, for shorter periods after diagnosis than did those without such evidence But they did not in general have longer illnesses before diagnosis, 50% in each group were ill for less than four months, although only 7% with metastases had been ill for longer than a year, compared with 15% of those without metastases It is not surprising, therefore, that the total duration of the illness from the start of symptoms was found to be shorter in those who had metastases when the disease was diagnosed There were 94 such patients with a median survival time of seven and a half months, 27% surviving for longer than a year and only 5% for two years (table I) 161 patients had no clinical or radiographic evidence of metastases at diagnosis, and the median survival time was eleven and a half months, with one and two year survival rates of 46% and 22% The difference at two years was and is unlikely to have been due to chance

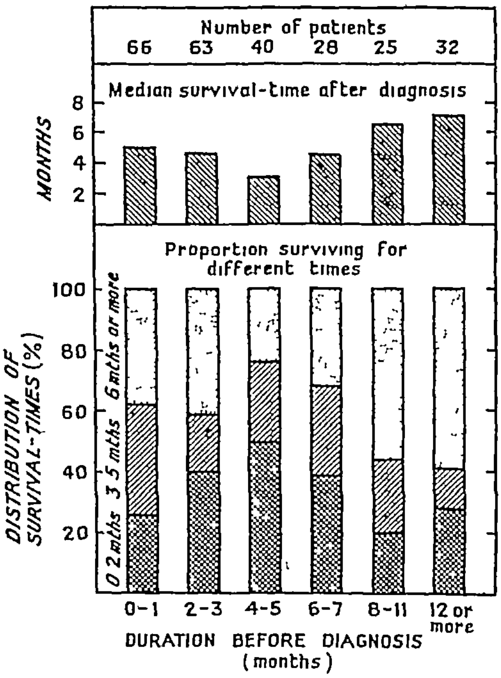

Fig. 2—Duration of life after diagnosis related to duration of illness before diagnosis

The First Symptom

Only hæmoptysis, fever, and chest pain have studied separately The date of appearance of symptoms was probably recorded with much the degree of accuracy, and comparison of the dur of illness may be valid On the other hand, the of a cough, increased dyspnœa on exertion, or tiredness can in general be dated only very approx Comparisons between groups with indefinitely symptoms and groups with more precisely recorded would clearly be unprofitable

There were probably fewer with undiffere tumours among those whose illness began with the chest unaccompanied by fever The histologica was known in 24 In only 4 (17%) was it repor undifferentiated, compared with 8 (44%) of 18 in the first symptom was hæmoptysis and 14 (45%) in whom the first symptom was fever But a higher proportion had metastases at the time of di —38%, compared with 27% of the other two grou bined There were only small and unimportant d in age and duration of symptoms before diagnosis, are the other factors affecting prognosis In spite being fewer with undifferentiated tumours among who complained initially of chest pain, their was slightly worse The median survival the appearance of the first symptom was seven and months, compared with nine months in those in the first symptom was hæmoptysis or fever A higher proportion died within six months—43% pared with 25% of the other two groups co (difference 18% ± 9%) But the differences after two years were smaller

Pain in the chest, other than the pleuritic pain panying infection of an occluded lung segment, occur late in the evolution of the symptoms rarely be due to invasion of the chest wall or met in the ribs More commonly there is no clinical or graphic evidence of invasion or metastasis, and th has neither the well-known characteristics of pain nor the intensity and clear localisation with rib involvement It is a deep, persistent, ill ache Even when such a pain is the first sympto disease may be at an advanced stage If so, the time of patients in whom the illness starts with pain would tend, as has been observed, to be that of those in whom the other obtrusive appear first, and the proportion with meta diagnosis might be greater There are, moreover, ences between the groups in the proportions who went lung resection 103 of the 637 patients complained initially of chest pain, only 14 (14 a resection But 76 (33%) of the 232 in whom the began with hæmoptysis or a febrile episode were surgically, and the difference (19% ± 4%) is unli have been due to chance

It seems reasonable to conclude that among a gr patients who started their illness with chest pain will probably be more in an advanced stage of the than among groups in whom hæmoptysis or fev first symptom The proportion with this initial sy can therefore be used as an additional index different series are being compared

Age

The differences in the pattern of survival in th age groups are small, but they show a consistent Thus, half of the 32 patients aged less than 50 year in the first seven and a half months, compared median survival-times of eight and nine months in the sixth and seventh decades, and nine mon the 24 patients over 70 Similarly, the prop

ving for one year were 31% 37% 41%, and 46%
or two years 9% 15% 13% and 21% Although
differences are small the same trends are found in
histological groups and it seems reasonable—and
eping with clinical experience—to infer that the
ion of life increases with age

o 255 patients included only 29 women Their pat
of survival differed very little from that of the men
lying within the first eight months and there was a
ly higher proportion with undifferentiated tumours

f the Tumour

had carcinomas in the right lung and 116 in the
In those with differentiated cancers the duration of
as in general longer in those with a right sided lesion
median durations being thirteen months for the
and nine months for the left the proportions
ving for one year were 52% and 30% and for two
27% and 10% The groups are small and the differ
at two years (11% ± 9%) was probably due to
e Moreover in the undifferentiated group the
ences are even smaller and in those without
ogical confirmation they are in the opposite direc
those with left sided tumours having higher median
val times than those with right sided tumours—
and a half months and seven and a half months
ctively In the whole series there are no material
ences at any stage

the other hand there is at first sight a suggestion
he lobe in which the tumour is situated may have
effect In 182 it was possible to infer the location of
umour from the radiographs and bronchoscopy
ts 87 were in the upper lobe the median survival
was eleven and a half months, 47% surviving for
r than one year and 22% for longer than two years
I) But half of the 54 with lower lobe cancers had
after nine and a half months 40% surviving for a
and only 13% for two years. The differences are
small Moreover these differences are largely
d by the experience with one lobe—the right lower
were 28 with cancers in this lobe and only 3 sur
for two years from the start of symptoms A
r short survival was found in those with tumours
right main bronchus
numbers in each group are small and the differences
But tumours of the upper lower and main
hi certainly behave differently in some other
ts In the whole series of 637 patients the location
tumour was known in 505 139 being in the right
bronchus or the right lower lobe The illness started
a febrile episode in more of these than of those with
urs elsewhere (31% and 19% the difference being
±4%) A similar though smaller difference is
on the left side That fever initiates the illness
ommonly in patients with cancers of the upper lobes
be due merely to the smaller risk in the upper lobes
rtially stenosed bronchi becoming grossly infected
are however other differences The incidence of
est metastases at the time of diagnosis was much
r in those with tumours of the right main and
bronchi (10% compared with 24% in the remainder
difference of 14% ± 4%) This difference did not
on the left side the proportion with metastases
in fact higher in those with left main or lower
han with upper lobe tumours The proportion in
a resection was done was greatest in the group
right lower lobe bronchus lesions—40% compared
27% of those with tumours of the left lower and
upper lobes a difference of 13% ± 6% Those with
bronchus lesions have been excluded since opera
is as likely to be affected by the position of the
r in the bronchus as by its regional spread Patients
lower lobe tumours have been reported to have a shorter survival after radiotherapy (Brown 1952) and after resection (Carlisle et al 1951), and those with right lower lobe cancers appear to have a better prognosis after resection than those with lesions of the left lower lobe (Bignall and Moon 1955) It has also been reported that the duration of illness is shorter in untreated patients with peripherally situated tumours than in those with cancers of the major bronchi (Tuttle and Womack 1930)

These differences indicate no more than that cancers at different sites in the bronchi may produce different clinical pictures which may themselves lead to differences in treatment and in survival after treatment They do not support the suggestion that the duration of life in untreated patients is influenced by the particular lobe in which the growth occurs. Moreover when to the untreated group is added the 109 patients who received palliative radiotherapy and whose total period of survival was much the same the differences between the lobes almost disappear Certainly the effect of the site on survival is not large enough to be important in comparing the experience of groups of patients

Discussion

The duration of illness cannot be measured accurately in a group of patients with bronchial carcinoma. Comparisons between groups observed under different circumstances are, therefore unconvincing unless the observed differences in survival are dramatic and unmistakably meaningful Published reports and clinical experience suggest that the survival of patients treated, for instance by radiotherapy is certainly not strikingly different from those untreated and the alleged prolongation of life is not self evident (Bloch and Bogardus 1940 Leddy and Moersch 1940, Tenzel 1941, Widmann 1944, Hilton 1945 Shorvon 1947) Moreover unless patients have been allotted at random to treated and untreated groups those given long courses of radiotherapy will almost certainly be, in general, better risks than those not treated in many of whom the disease is not diagnosed until they are severely ill and cachectic or have widespread metastases. Some characteristics—age and sex—can be accurately recorded Others such as the histological type evidence of metastases, and the site of the cancer are less accurately assessed and there is even more possibility of error in recording the first symptom and the duration of illness. Some characteristics cannot be expressed at all in a form suitable for analysis ; and these are often the most important in influencing the decision of the surgeon or radiotherapist If a comparison is to be attempted it is necessary to know which of the factors that can be recorded might influence the duration of the illness, in order that roughly comparable groups can be constructed

Other investigations have demonstrated that the duration of illness in a group of patients is materially influenced by the pattern of the histological types (Tuttle and Womack 1930 Bryson and Spencer 1951 Buchberg et al 1951 Harnett 1952) It is also affected by the duration of symptoms before diagnosis and the proportion with clinical or radiographic evidence of metastases at diagnosis It may to a less extent depend on the nature of the first symptom and the age of the patients ; but it is uninfluenced for practical purposes by the site of the growth or the proportion of women in the group

The duration of symptoms before diagnosis and the time at which treatment was given are clearly especially important factors when different treatment groups are compared For instance, 63 patients of the 637 seen during 1951 and 1952 received radical courses of radiotherapy In only 4 of them was treatment begun during the first three months of their illness But 33 of the 255 untreated died during this period The radical course of radiotherapy given at the Royal Marsden

Hospital lasts for four to six weeks Thus, patients whose treatment was begun after three months' illness must live for a further one to two months in order to be included in the "radical radiotherapy" group The survival of the patients with three months' history before treatment should, therefore, be compared, not with that of the whole group of untreated patients, but only with those who had survived for five months from the first symptom Such a comparison is impossible without large numbers of patients In a small series it might be a reasonable approximation to compare all those treated after, for instance, three or more months from the first symptom with all untreated living five or more months from the first symptom Even these groups might be further reduced when the other important prognostic factors were considered For instance the influence of the presence of metastases at diagnosis is such that it is necessary to compare separately those with and those without manifest metastases in the treated and untreated series

It is unlikely that small differences in the pattern of survival could be convincingly demonstrated as due to treatment, however large the number of patients and carefully balanced the known factors influencing survival Yet a planned trial by random allocation is almost certainly ethically unjustified, there being general agreement that radiotherapy offers at least some hope of relieving certain symptoms

Summary

During 1951 and 1952, 637 patients with bronchial carcinoma were seen at the Brompton Hospital and the Royal Marsden Hospital 135 were treated surgically and 210 by radiotherapy 292 received no treatment likely materially to prolong life , and in 255 of this "untreated" group there was sufficient information for the natural duration of the disease to be studied

Half the 255 patients died within nine months from the appearance of the first symptom, but 14% survived for two years or longer

The duration of life from the start of symptoms was found to be significantly influenced by the histological type, the duration of illness before diagnosis, and the presence of metastases at diagnosis It appeared to depend, though to a less extent, on the nature of the first symptom and the age of the patient, but it was not materially influenced by sex, or by the lobe in which the tumour occurred

The relation of the duration of life after diagnosis to the length of history before diagnosis is not a simple one The poorest prognosis was found in those who had had symptoms for four to five months before diagnosis, half of whom died in the next three months But half those with symptoms for a year or more lived for a further seven months, and almost a third for another year

I am indebted to the medical committees of the Brompton Hospital and the Royal Marsden Hospital for permission to publish this report, which records part of the work of the joint consultative clinic of the two hospitals The keeping of records and tracing of patients was largely done by Mrs I Appleby, of the secretarial staff of the Institute of Diseases of the Chest I am grateful to Mr P M Payne, statistician to the Royal Marsden Hospital, for his advice

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HYOSCINE CYCLOPLEGIA IN

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HYOSCINE, though known as an effective cyclop not widely used as such, because of its toxic pro If two drops of $^{1}/_{4}$% hyoscine hydrobromide are into each conjunctival sac; a total of gr $^{1}/_{100}$ drug is given Excluding idiosyncrasies, this is a safe dose, and such toxic effects as have been are likely to have come from the use of hyoscine in concentrations than $^{1}/_{4}$% A dose of gr $^{1}/_{100}$ is than the doses given to children who receive ' and scopolamine as a preoperative measure, ampoules of this mixture contain gr $^{1}/_{150}$ of scopo (i e , hyoscine), and, as children are generally about half an ampoule, they get subcutaneously of hyoscine Such doses have to be used with are apparently safe It is impossible to assess how of the gr $^{1}/_{100}$ of hyoscine in two drops into each tival sac is absorbed into the system , and, tho likely that there is a considerable loss and th instillation is probably safe, the margin of this dosage cannot be wide Taking instillations as the maximum permissible, observations were m the efficacy of hyoscine in low concentrations purpose of inducing cycloplegia

Assessment of Cycloplegia

I BY RETINOSCOPY

Observations on Hyoscine $^{1}/_{4}$%

51 children (mostly between four and ten years and fairly evenly distributed over these different were refracted under complete atropine cyclop drops or ointment of 1% effectively instilled a day for one week Either several weeks bef several weeks later, refraction was also de the instillation of one drop of $^{1}/_{4}$% hyoscine int

TABLE I—ASSESSMENT OF AGREEMENT BETWEEN REFR DETERMINED UNDER FULL ATROPINE CYCLOPLEG AFTER THE INSTILLATION OF HYOSCINE HYDRO DIFFERENT CONCENTRATIONS

—	No of cases showing					
	Agreement				No	
Hyoscine	$^{1}/_{4}$%	$^{1}/_{8}$%	$^{1}/_{10}$%	$^{1}/_{20}$%	$^{1}/_{4}$%	$^{1}/_{8}$%
Refraction class						
−0 25 D and more	2					
0 to +2 0 D	13$^{1}/_{2}$	1	2	2	2$^{1}/_{2}$	
+2 25 D to +4 0 D	20	3	2	7	1	
+4 25 D to +6 0 D	7	1	1	5	2	
+6 25 D and over	3					
Totals	45$^{1}/_{2}$	5	5	14	5$^{1}/_{2}$	

These data are from the records of six observers, each of responsible for both refractions in the same subject There individual variation With few exceptions the children 6 to 10 years and fairly evenly distributed over the diffe Results were regarded as showing agreement if the re the two methods did not differ by more than 0 5 D

In classifying the results differences of less than 1 0 D the two eyes were ignored and the higher plus refr regarded as applying to both. The refractions under $^{1}/_{4}$% were done at 30–60 minutes after instilling a single drop conjunctival sac With the weaker concentrations refract done after 1 hour nctival sac (the child therefore receiving a total of ·· of hyoscine) Care was taken in the instillation h drops a Bengué drop bottle being used to ensure uniformity With drops adequately instilled and efractions carried out within half an hour to ur there was agreement within 0·5 D in 91 eyes a total of 102 refracted (table I) The 11 eyes in there was no agreement belonged to 6 children of whom one eye did show agreement) In 2 of the en the atropine refraction was the lower and in 2 the *instillation of hyoscine was probably not* ve in the remaining 3 eyes the refractions did not and it was difficult to be sure which was correct preliminary survey therefore gave this over all e of 51 children there was agreement between wo methods in 45$^1/_2$ there was no agreement in nd there was nothing to incriminate hyoscine in ck of agreement Of these 51 children 12 had latism of more than 1·0 D In 11 the amount of atism as assessed by the two methods showed nent in the remaining child the disagreement was and an error of observation appeared likely The further suggested that if a standard time of one

II—COMPARATIVE VALUES OF POWER OF FRONT SURFACE THE LENS AS DETERMINED BY PHOTOGRAPHY AFTER OPINE CYCLOPLEGIA AND HYOSCINE CYCLOPLEGIA

Right eye		Left eye	
oscine	Atropine	Hyoscine	Atropine
0 D	5·8 D	5·9 D	5·7 D
9 D	7·0 D	7·0 D	7·2 D
0 D	8·1 D	8·1 D	8·1 D
6 D	7·3 D	7·3 D	7·5 D

pine cycloplegia was induced by instilling ointment of e sulphate 1% three times daily for a week. Hyoscine romide was used in a concentration of $^1/_{20}$% two drops being l into the conjunctival sac 1 hour before examination

vere used and particular care taken in instilling the the resultant cycloplegia was satisfactory

his stage two obvious advantages of hyoscine over assical atropine cycloplegia became apparent In st place it was possible to achieve cycloplegia as against repeated instillations of atropine stillation of hyoscine was adequate. Secondly the legia induced by hyoscine wore off quickly for n appeared to be normal within forty eight hours

ations on Hyoscine $^1/_4$% $^1/_{10}$% *and* $^1/_{40}$%

e the amount of hyoscine given to a child by one f $^1/_4$% into each eye was in excess of that given aneously as a preoperative measure, trials were with instillation of drops of a lower concentration be seen from table I there were 5 cases treated with op of $^1/_4$% and another 5 with one drop of $^1/_{10}$% hese cases (mostly children between five and eight the hyoscine refraction was carried out one hour nstilling the drop and complete agreement was d between the atropine and hyoscine refractions. ases $^1/_{40}$% was used but neither dilatation of the or the cycloplegia was constant The subsequent ations were made on cycloplegia induced by drops %

ations on Hyoscine $^1/_{20}$%

an be seen from table I in 14 children (11 of whom ged six to eight years, 2 ten years and 1 three and years) there was complete agreement between the e and hyoscine refractions in all cases. 3 eyes (in ent children) showed astigmatism of over 1·25 D, o the results by the 2 cycloplegics agreed As e other instillations of hyoscine in low concentra efractions were carried out one hour after instilling p into the conjunctival sac.

TABLE III—MEASUREMENT OF POWER OF THE FRONT SURFACE OF THE LENS BY THE PHOTOGRAPHIC METHOD ONE HOUR AND TWO HOURS AFTER INSTILLING TWO DROPS OF $^1/_{20}$% HYOSCINE HYDROBROMIDE INTO EACH CONJUNCTIVAL SAC

Power of front surface			
Right eye		Left eye	
1 hr	2 hr	1 hr	2 hr
8·2	7·7	8·2	7·6
6·9	6·8	7·4	6·8
0	7·1	7·0	7·0
1	7·2	7·5	·4
8·3	8·1	8·3	8·0

2 BY OTHER CRITERIA

Measurement of Residual Degree of Accommodation

Clinical methods for assessing the efficacy of cycloplegics are all rather inadequate, for with full cycloplegia they all show an apparent residual degree of accommodation In 4 children all aged eleven to twelve years, the amount of such residual accommodation was measured by subtracting from 3 D the power of the addition required to read J 1 at 33 cm The binocular residual degree of accommodation found three hours after instillation of two drops of $^1/_{20}$% hyoscine hydrobromide into each eye was 1·50 D 1·75 D 2·0 D and 0·75 D for the 4 children tested This agrees fairly well with the amount of 1·42 D found by Brickley and Ogle (1953) as an average by this method for patients with full atropine cycloplegia

Measurement of the Anterior Surface of the Lens

A photographic method, modified from those developed by Fincham (1937) and by Campbell and Primrose (1953) which will be described in a subsequent publication was used for assessing the curvature of the anterior surface of the lens in 4 cases both after atropine cycloplegia and after cycloplegia induced by two drops of hyoscine $^1/_{20}$% instilled one hour before measurement The results are shown in table II It will be seen that there is close agreement between the measurements obtained by the two methods

The Time factor in Hyoscine Cycloplegia

No full study on this aspect has been carried out The following observations appear to be valid:

(1) The pupil is generally well dilated within twenty minutes.

(2) Effective cycloplegia appears to be achieved by the end of the first hour

In 5 children the power of the front surface of the lens was determined by the photographic method at one hour and at two hours after instilling two drops of $^1/_{20}$% hyoscine into each conjunctival sac The results are shown in table III from which it is seen that in 6 eyes there was close agreement between the findings at one hour and at two hours; in the remaining 4 eyes a reduction of about 0·5 D in power had occurred between one and two hours after instilling the drops

It may be noted that a difference of 0·5 D in the reading of the power of the anterior surface of the lens would give a difference of about 0·4 D in the clinical refraction

(3) Cycloplegia persists maximally for at least six hours

In 2 children the persistence of cycloplegia, as determined by the curvature of the anterior surface of the lens, was measured by the photographic method with the results shown in table IV It will be seen that by one hour cycloplegia is not far from fully effective Such reduction in the power of the anterior surface of the lens as occurs in the second hour and subsequently lies within the experimental error—findings supported by those on the anterior chamber Cycloplegia appears to be maintained for at least six hours. The rapid onset of cycloplegia and the relatively rapid wearing off is shown by the readings recorded at five and at fifteen minutes and at twenty four and twenty five hours.

TABLE IV—POWER OF THE FRONT SURFACE OF THE LENS AND DEPTH OF ANTERIOR CHAMBER AT DIFFERENT TIMES FROM FIVE MINUTES TO TWENTY-FOUR HOURS AFTER INSTILLING TWO DROPS OF $^{1}/_{20}\%$ HYOSCINE ONE EYE MEASURED IN TWO SUBJECTS

Interval after instilling hyoscine	P C , aged 12 refraction +0 75 D				M S , aged 12 refraction +0 5 D	
	Power of lens (D)		Depth of anterior chamber (mm)		Power of lens (D)	Depth of anterior chamber (mm)
	First observation	Repeat observation	First observation	Repeat observation		
5 minutes					11 1	3 0
15 minutes		8 5		3 4		
1 hour	7 0	6 7	3 7	3 6	8 3	3 3
2 hours	6 9	6 5	3 8	3 6	7 8	3 3
3 hours	6 7	6 5	3 8	3 6	7 0	3 3
4 hours	6 8	6 6	3 8	3 6	7 0	3 3
5 hours	6 7	6 6	3 8	3 7	7 0	3 3
6 hours	6 6	6 6	3 8	3 7	7 7	3 4
24 hours	7 9	7 7	3 6	3 6	8 8	3 3
25 hours		8 5		3 6		

(4) Clinically much of the cycloplegia has worn off within twenty-four hours

(5) Children are generally able to do their lessons within forty-eight hours

Discussion

The available evidence shows that cycloplegia comparable to that obtained from repeated instillations of atropine 1% is obtained by a single instillation of one drop of hyoscine hydrobromide $^{1}/_{20}\%$ Such cycloplegia sets in within one hour and has worn off within forty eight hours Support for the validity of these clinical findings is given by observations on residual accommodation and on measurement of the anterior surface of the lens, and of the depth of the anterior chamber

An instillation of one drop of $^{1}/_{20}\%$ hyoscine into each eye gives a total of gr $^{1}/_{1000}$ of hyoscine—i e , less than one-third of the dose used widely as a subcutaneous injection for premedication in children The instillation of a second drop of hyoscine in this concentration would, therefore, still leave a very wide margin of safety

Since this method has been evolved it has been used in some 800 children, the subjects of a special investigation into the nature of refractive errors In no case has there been any suggestion of toxic symptoms, and in all but 2 cases the desired cycloplegia was achieved In the 2 cases where this was not obtained, atropine too gave no ready result

One of us, in charge of a school clinic, has been using the method advocated here as a routine for all children—squinters not excepted There appears to be no reason why a single application of two drops of hyoscine in a concentration of $^{1}/_{2000}$ should not replace repeated instillations of atropine in the routine refraction of children The advantages of hyoscine cycloplegia, as described here, are too obvious to need labouring

Summary

Taking one drop of $^{1}/_{4}\%$ of hyoscine as the maximum permissible dose as an instillation into each conjunctival sac, the findings in 51 children suggested that the cycloplegia achieved was as good as that obtained by the generally used method of repeated atropine instillations

With cycloplegia achieved by the instillation of two drops of $^{1}/_{20}\%$ hyoscine, assessment of residual accommodation in 4 children showed close agreement with the amount recorded by other observers for full atropine cycloplegia

With similarly induced cycloplegia in 8 eyes studied, the power of the front surface of the lens showed close agreement with the values obtained under cycloplegia

In 5 subjects investigated, there was little *the power of the front surface of the lens* at on two hours after the instillation of two drops hyoscine

With hyoscine cycloplegia, assessment of th the front surface of the lens and of the anterior chamber over a period of five minutes five hours after the instillation of two drops suggests that cycloplegia is clinically eff hour, is maximal by two hours, maintained a further four hours, and is wearing off by hours

On the available evidence a single inst drops of hyoscine hydrobromide $^{1}/_{2000}$ into the tival sac appears to give within one hour ov adequate as is achieved by the repeated instil atropine sulphate over several days The advocated here has been used successfully untoward result in well over 1000 children

Our thanks are due to Miss Irene Gregory, Dr L Mr I Payne, and Mr M Shaffi for kindly the comparative refractions We are indebted to Scott, medical officer of health for the County of to Mr P McG Moffatt, oculist to the London Count for their interest and help with material

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INTERPRETATION OF TUBERCUL LESIONS AFTER CHEMOTHERA

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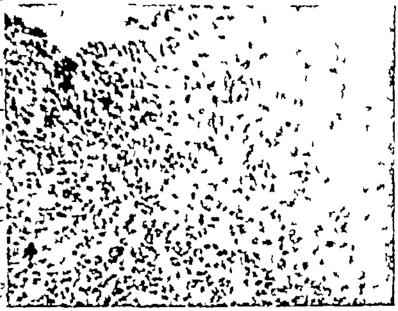
Now that there is a fairly definite picture of th in tuberculous lesions after chemotherapy with drugs, it is possible to judge their significa tuberculosis, a chronic disease with very immunity and hypersensitivity reactions (both general), resulting in varied lesions often ex widely differing periods of time, there is co overlap in the changes found in untreated ca one hand and in treated cases on the other Ac emphasis is laid here on the average reaction treatment considered

Recent Lesions

AFTER STREPTOMYCIN

The changes in tuberculous lesions after with streptomycin and a combination of with *p* aminosalicylic acid (P A S) were st various periods of treatment in miliary (Ritchie, Taylor, and Dick 1953) and in renal (Dick 1953a, 1954) From this material a picture of the course of events in recent lesions up, and this confirmed fully the earlier des *Lancet* 1955) and the conclusions that these ar specific changes that occur with regression of tuberculosis lesions under favourable cir Thus, fibrosis develops within and around the zone of *individual follicles* and surrounds and group of follicles , it also extends from the zone into any central caseation in this epithelioid and giant cells remain unaltered

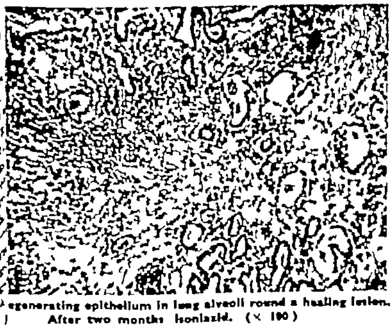


version of epithelioid cells to macrophage type: granulation ecoming non-specific. After two weeks isoniazid + P.A.S.) All sections stained with hæmatoxylin and eosin.

they gradually disappear as the fibrosis becomes dense and contracted. Simultaneously, any non exudate (*as in the perifocal reaction in tubercu* onchopneumonia in the meninges and on serous s) becomes re-absorbed if slight in amount and structure, but if abundant and dense (especially meninges) it also undergoes fibrosis. The sooner cease to progress stopped either naturally or by ministration of streptomycin the smaller will be imate fibrosed scar while the degree of clearing the lesion depends entirely on the amount and of the reaction which has developed before ion commences.

picture of fibrosis though often described as ng' is healing of a degree inferior even to that foreign body reaction the process is relatively lar there is only slight regeneration of specialised tissues of the organs involved and necrotic or d tissue remains in situ surrounded by the dense and frequently becomes calcified. There is none active repair which follows a simple injury or healed pyogenic infection. There is some depres tor, acting like a toxin still present in the tissues ecently this was accepted as the most favourable ie which could be expected for the general run of *lous lesions, and true* healing involving complete ion of the lesions, was believed to be rare (Fishberg inner 1945 Rich 1951 p 735)

ertheless it was believed that healing which left overable trace must occur *commonly* in certain stances—e.g in adult-type pulmonary tubercu other parts of the lungs while the presenting developed in the subapical areas (see *Lancet* 1954)



egenerating epithelium in lung alveoli round a healing lesion. After two months isoniazid. (× 100)

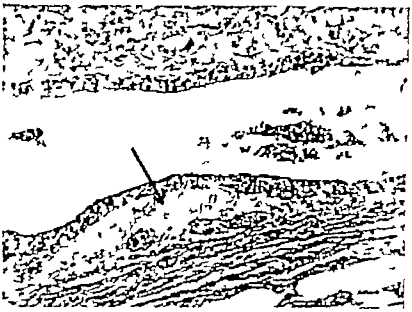


Fig 4—Small patch of very loose granulation tissue (arrow) under calyx epithelium an absorbing lesion. After five weeks isoniazid + P.A.S (× 100.)

or in individuals who were in contact with patients and must have become infected yet never developed signs. Such lesions, however, were rarely available for histological examination.

AFTER ISONIAZID

After isoniazid therapy also the changes in renal tuberculosis have been followed according to the length of treatment and are practically the same in recent lesions for isoniazid alone (Dick 1953b) for isoniazid combined with streptomycin (Dick 1954) and for isoniazid combined with P.A.S (18 specimens have been examined after this last régime). They have also been described for miliary and meningeal lesions (Ritchie, Taylor and Dick 1953 Canetti 1954) and for pulmonary lesions (Canetti 1954). To appreciate the full details of the process observations must be made from the second to the eighth week of treatment. Within this period recent lesions disappear completely in a way never before believed possible in man.

First there is increased vascularity due both to congestion of existing capillaries and to formation of others often with small hæmorrhages in and around the lesions simultaneously the epithelioid cells revert to their parent type of ordinary macrophages (fig 1), *sometimes producing masses* and *islets of "foamy cells,* and subsequently many are re-absorbed from the lesions. Vacuolation occurs between the macrophages, indicating absorption of necrotic material and this also *occurs along the edge of caseation. The tuberculous* granulation tissue becomes transformed into non specific healing granulation tissue. At the same time there is vigorous regeneration of the specialised cells of

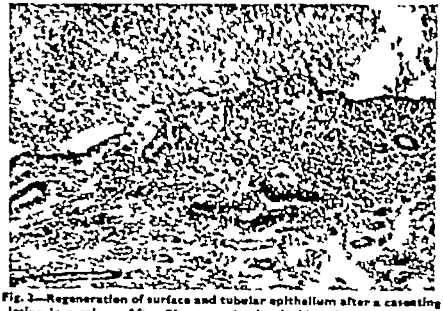


Fig. 3—Regeneration of surface and tubular epithelium after a caseating lesion in a calyx. After fifteen weeks isoniazid + P.A.S (× 100.)

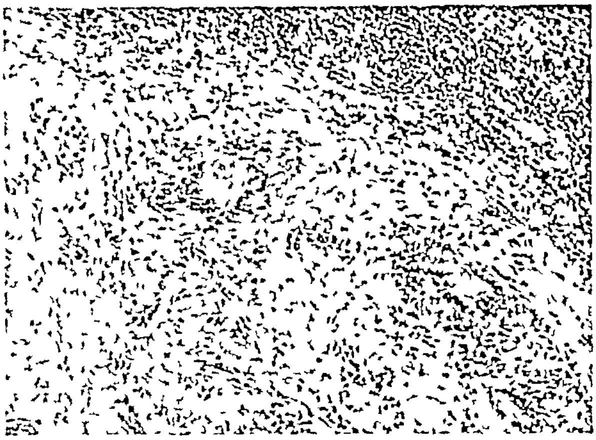


Fig 5—Larger lesion with central caseation (lower left centre), all becoming converted into loose connective tissue tubules engulfed in lesion show regeneration of their epithelium After six weeks' isoniazid + P.A.S (× 100)

the organ (figs 2 and 3) If the area involved is small the lesion becomes completely absorbed in two to eight weeks (fig 4) if slightly larger a small quantity of very loose granulation tissue persists for eight to twelve weeks or perhaps longer, and larger lesions (fig 5) may leave quite extensive areas of very loose fibrous tissue which gradually contract to small scars The only tuberculous elements not removed are the giant-cells these vary greatly in number and morphology in different cases, and when Denst (1953) and De Figueiredo and De Paola (1955) reported an unusual number and pleomorphism after isoniazid therapy, they may have seen the remains of much more extensive lesions which had otherwise been absorbed, and similarly with their reports of exuberant collagenous formation There is nothing in recent lesions following isoniazid like the dense fibrosis after streptomycin Others of the various features mentioned above as being involved in the process have been emphasised in other investigations, mostly on lung lesions (see *Lancet* 1955)

This histological reaction during isoniazid therapy suggests that the toxic factor (which remained during streptomycin therapy) has been removed from the tissues either by the isoniazid itself or by the drug having a more profound action on the tubercle bacilli Mackaness and Smith (1953) have shown that both streptomycin and isoniazid are bactericidal and that the latter kills intracellular as well as extracellular tubercle bacilli Both drugs act by killing sufficient numbers of the invading bacilli to enable the body's reactive forces to come into play in all acute lesions But the difference in reaction with the two drugs is more than difference in the intracellular killing of bacilli by The number of mononuclear cells which unde change into epithelioid cells is often far greater number of invading organisms, and some are beyond the actual site of the organisms (Flor p 638) yet *the reversal of* epithelioid cells to phages can occur with isoniazid, but not with mycin The increased vascularity and rapid recovery with isoniazid also suggest the remo depressing or toxic factor

That this toxic factor is not confined locally lesions is suggested by the following evidence. clinical reports on the effect of isoniazid all em the rapid occurrence of a feeling of well patients This was crystallised in the pre of the M R C trials (Medical Research Coun where it was shown that after a three-month isoniazid, patients showed greater gain in improvement in general condition than with strep + P A S, though slightly less reduction in erythrocyte sedimentation rate Subsequently shown (Medical Research Council 1953a and *while all acute lesions were checked* and the all gained weight with either streptomycin + streptomycin + isoniazid, there was a greater healing and so a greater gain in weight with combination That this was not due to a stimulating effect of the isoniazid was shown et al (1954) and Laron (1954) The fact that the histological appearances occur only round lesions also confirms that the increased weight and general condition with isoniazid were to any general stimulating effect, but to local rem depressing or toxic factor which still persist streptomycin

Further evidence of the persistence of a after streptomycin therapy is provided by the rates reported in the five year report (Fox et al the first M R C trial of streptomycin the curv *deaths after four months' treatment* with strep in acute bilateral pulmonary tuberculosis (a ver form of the disease) in young adults followed the same pattern as that for the controls but so that the peak for the rapid rise occurred ab months after that for the controls and was not high The streptomycin had not mastered effect of the disease in most cases, though it had it This was also shown by Kreisel et al (Monroe et al (1955) If this reasoning from logical findings is correct, the death rate in of acute disease after isoniazid therapy should considerably reduced

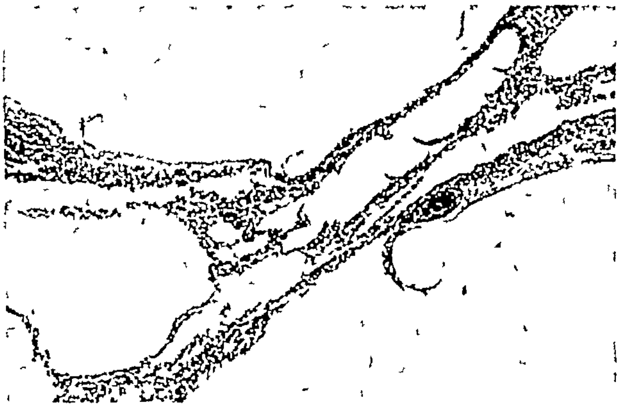


Fig 6—Small lung cavities with thin fibrous walls and no tuberculous granulation tissue. After nine months' streptomycin and six months' P.A.S (× 100)

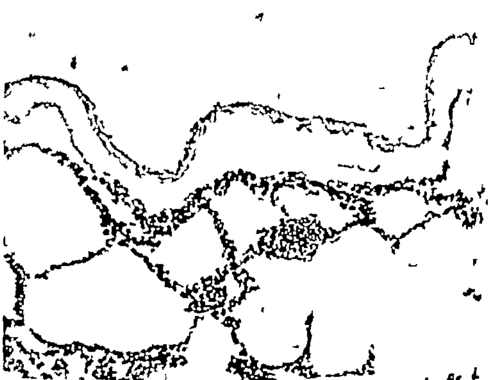
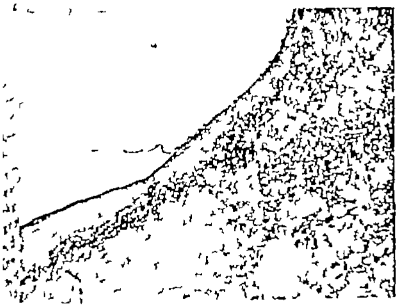


Fig 7—Another part of a cavity wall shown in fig (cf fig 3 of Brouet et al 1954.)

s not been possible to identify either an endotoxin exotoxin from the tubercle bacillus (Rich 1951 but from in vitro experiments with macrophages (1954 p 641) suggests that there is a cytotoxic due to a toxic component of the bacterial cell and her co workers have studied the chemical ns from cultures with a view to examining their , but a much greater quantity of any fraction is d to produce a lesion in tissues than is present number of living bacilli required to produce a f similar size It is accepted that the development osis in the lesion depends on sensitisation of the (Florey 1954 p 641) If however bacterial ensitivity were responsible for most of the changes lesions it would seem extraordinary that so of the lesions can be reversed with isoniazid and ld be expected that the disease would be better led by cortisone and corticotrophin whereas unately the disease can progress during the period ministration of these drugs (American Trudeau 1952)

e histological investigation gives no clue to the of the toxic factor in tuberculosis in man the ct that it can be neutralised by isoniazid in recent may stimulate further investigation

ndicated in the introduction the average tissue n to the drugs has been considered at length ceptional responses, either good or bad, may also ained Thus after streptomycin therapy it may n that if the lesions are obtained very early and ient's resistance is sufficiently good an appearance resembling resolution may be found (figs. 6 and 7) without streptomycin such may be the course of when infection occurs in individuals with good resistance and no patent illness develops On er hand an occasional very toxic case may be which no drug treatment is of any avail



ld cavity with smooth wall and thin epithelium. Other lesions in the same kidney were active. No chemotherapy (× 25.)

man, aged 63 years, admitted with eight weeks history n, spit and dyspnœa, showed physical signs and radio evidence of infiltration of the left lower lobe and positive for tubercle bacilli She was given strepto nd isoniazid; but her condition steadily deteriorated ho-œsophageal fistula developed and she died sixty ter admission At necropsy both lung bases showed spiration bronchopneumonia and the apex of the er lobe showed puckering fibrosis, and small calcified Histologically the left lower lobe showed tuberculous which had resolved almost completely leaving fairly us giant-cells in many alveoli and there was remarkable sence of bronchial and alveolar epithelium. Until cho œsophageal fistula developed there was no physical account for the steady deterioration of the patient's n apart from tuberculous toxæmia

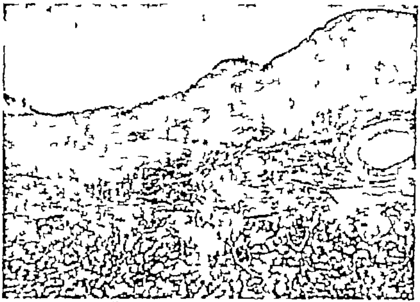


Fig. 9—Old cavity with smooth wall and thin epithelium. No active lesions in this kidney After six months streptomycin + P.A.S (× 25.)

It can now be postulated that minute lesions may develop and regress completely if the body defences can control the toxæmia When a lesion progresses sufficiently to present clinically however, the toxæmia has overcome the defences and some assistance is generally required It is not claimed that isoniazid acts specifically against the toxæmia in acute tuberculosis, but the drug possesses a sufficient degree of bactericidal effect not only to arrest the activity of recent tuberculous lesions but also to enable the body defences in the great majority of early cases to overcome the toxæmia and achieve resolution of the lesions. Streptomycin possesses a lesser degree of bactericidal activity sufficient to arrest the activity of most recent lesions but not sufficient to enable the body to overcome the toxæmia, leaving the lesions to undergo regressive fibrosis

Chronic Lesions

AFTER STREPTOMYCIN

In chronic lesions after streptomycin alone (Dick 1953a) or streptomycin + P.A.S (Dick 1954) active parts became quiescent (except with the development of resistance following streptomycin alone) and the lesions regressed as in naturally regressing lesions individual follicles or groups of follicles became more and more densely fibrosed and epithelioid cells gradually disappeared; giant cells were usually relatively scanty and it was presumed that some had disappeared; if a little caseation was present the fibrosis traversed it and caseation and fibrosis sometimes became a hyaline mass After two or three months treatment with the drugs it became very difficult and ultimately impossible to decide how much of the fibrosis was due to treatment and how much to natural regression before treatment started.

This material and more recent specimens were further examined especially with regard to the cavity walls Here the fibrosis occurred in two sites

(1) Central fibrosis formed at right angles to the cavity wall running between the palisaded epithelioid cells into the caseation. If this part and the necrotic material were dense the cavity wall was not affected by treatment and remained with a shaggy wall and adherent caseation if it was loose and the caseation soft the cells gradually disappeared or were desquamated, leaving on the surface the fibrosis at the second site

(2) Peripheral fibrosis formed round the lesion, and if it became exposed to the cavity the wall was smooth and often hyalinised and ultimately acquired a flattened epithelial lining

Unfortunately both results were often found at different parts of the same cavity wall so that the smooth lining did not surround the whole cavity A cavity with the whole lining smooth is occasionally found in untreated

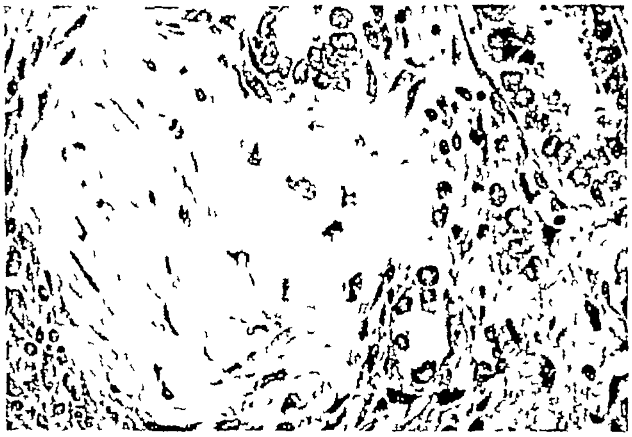


Fig 10—Fibrosed and hyalinised miliary follicle After ten weeks' streptomycin + P.A.S (× 400)

tuberculosis, in kidney (fig 8), and in lung (Auerbach et al 1953, Pagel 1953), but is more common after streptomycin (fig 9)

Renal tuberculosis provides an extremely stringent test for the healing of lesions There is no coordination between the duration of symptoms and the duration of lesions, and the great majority of specimens contain lesions of long standing before the diagnosis was made, on the other hand, a few specimens from patients with long histories of hæmaturia had very small lesions Accordingly, it is instructive to consider how the whole specimens reacted to treatment

Of 35 kidney specimens from patients who had been treated with streptomycin + P A S (in 16 cases for more than two months) only 1 showed smooth fibrosis of all cavity walls (fig 9) and dense fibrosis (leaving only a few epithelioid or giant cells) of all lesions elsewhere in the organ, 1 other showed only hyalinised miliary follicles with no trace of a cavity (fig 10), while a 3rd showed repair of a calyx but no real cavity, and a closed caseated focus was still present in the organ All the rest still presented cavities with rough or shaggy parts in their walls, though other parts showed smooth fibrosis with varying amounts of re epithelialised surface

These regressive changes developed only in tuberculous lesions active at the onset of treatment Old, inactive lesions showed no change as the result of the streptomycin and appeared exactly similar to old lesions found in untreated patients

AFTER ISONIAZID

The changes in chronic renal lesions have been described following isoniazid alone (Dick 1953b) and isoniazid + streptomycin (Dick 1954) Following isoniazid + P A S, 18 specimens of kidney or portions of kidney have also been examined and the same series of changes has been found as after isoniazid + streptomycin, with one exception the secondary pyogenic infection, present in three quarters of all the tuberculous kidney specimens examined in these chemotherapy and control trials, was not so well controlled in the early stages as when streptomycin was combined with the isoniazid, showing that the streptomycin had a beneficial effect on the pyogenic infection

Parts of chronic lesions showing recent activity underwent the same resolving changes as occurred in recent lesions, in addition, there was some loosening and vascularity of the surrounding fibrous tissue and distinct vacuolation of the edges of caseation in necrotic lesions In cavity walls this often led to desquamation, sometimes of the inner part of the wall, sometimes of the whole wall, leaving healthy tissue below, in each case there was excellent regeneration of epithelium, which came to line all the smooth parts of the wall and there had been desquamation of the whole wall, all evidence of the tuberculous lesion Unfor in many of these chronic cavities there were parts with dense fibrosis and dense caseatio remained unaffected by the chemotherapy and the healing process in the other parts Anoth to healing was the presence of secondary infection (Dick 1954)

Of 34 specimens now examined after tre isoniazid + streptomycin (23 after treatment months or more) 4 showed complete resol tuberculous lesions, while 3 others showed on remnants, and in another 2 most of the cavity of old smooth hyaline fibrosis while all recent l resolved Of 18 specimens from patients isoniazid + P A S (9 for more than two months) complete resolution of all the tuberculous the remainder of both series, resolution was by secondary pyogenic infection or by mac lesions

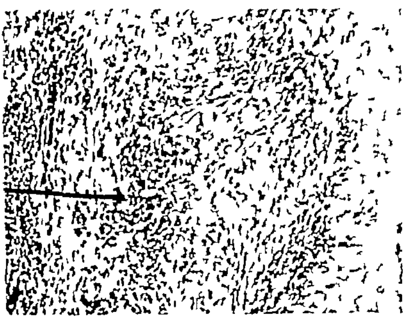
Similar appearances have been reported cavities after treatment with isoniazid co (Brouet et al 1954, Bernard et al 1954, Canett the noteworthy points being that the cavity is lined wholly or partly with epithelium, the dense collagen with no evidence of tuberculo may be caseous remnants (perhaps with virulent bacilli), and there may or may not be with bronchi

The control of the toxic effect of active parts of lesions is again exerted by isoniazid and not by mycin, as in recent lesions. After resolution of th recently active parts, however, the inertia of fibrosis and caseation presents a barrier that is in the same way as a result of both drug comb and natural regression—by lining cavities with fibrous tissue and eventually covering it with ep from the nearest available sources By this i e, after treatment for three months or more—th toxic effect must have gone from many of streptomycin-treated or naturally regressing le this newly formed epithelium can line the whole The host's defences have now come into play, as gested in Hart's (1954) excellent survey of the the host in the chemotherapy of tuberculosis.

The excellent results in 10% of these diffic emphasises the importance of finding cases promp starting treatment with an isoniazid combin drugs promptly, with a view to obtaining resolution where possible

Persistence of Organisms in Lesions

In specimens of kidneys examined after various therapeutic régimes a very detailed histological ex tion for the presence of tubercle bacilli in the specimen after the method of Medlar (1926) w attempted But a section from each of six to blocks examined in each specimen was stained by Neelsen's method, and the results were, in a wa disappointing Acid fast bacilli, morphologically tubercle bacilli (many of the so called degen were also seen but disregarded), were found prolonged search in caseated material, both in lesions and more so in open cavities, in several sp even after three to six months' treatment with the chemotherapeutic agents This is the more in the kidneys, especially in the open cavities, drugs are continually present in the urine and expected to get easy access to the organisms. the organisms were usually seen in the largest at the edges of, or in cracks in, the caseation, at points near the cavity wall where healing



-Recently active giant-cell tubercle (arrow) in old fibrosed wall. After nineteen weeks isoniazid + P.A.S (100)

o parts met In other specimens no tubercle were seen, though many closed and open lesions present and there seemed to be no means of uishing between the specimens which showed and those which showed no bacilli

n without directly displaying the organisms in nons histological examination of the walls of old s showed that there were occasional areas, either e inside, or in the thickness of the walls (figs. 11) in which much more recently active tuberculous ation tissue was present. The appearances sug that organisms had lain latent in the tissues considerable time and reassumed activity thus ting for relapses after treatment

ical and bacteriological evidence is consistent with ding The following case showed a latent period reatment with tuberculin followed by recrudescence five years later

an, aged 48 years, had extensive tuberculosis of the and of the kidneys seminal vesicles prostate and He responded very well to sanatorium treatment berculin, and the lesions became quiescent (those in state were calcified) and remained so for twenty five After an injury to his side lesions in one kidney active again and the organ was removed after three treatment with streptomycin + isoniazid The showed a firmly fibrosed outer rim the centre being d by large cavities with white caseous material the walls showed dense old fibrosis with hyalinisation but helial lining; parts had been recently active but were oing resolution

rations may also rouse latent organisms to activity following 2 cases show

n aged 21 years, had a fall followed by swelling of the lbow found to be tuberculous Two years later the was admitted for correction of the poor position of his The elbow was brought to an angle of 90 under an etic and maintained in posterior plaster-of paris Three later tuberculous abscesses had developed and down round his elbow One month later he showed f renal tuberculosis, and two months later acute miliary ulosis developed This cleared with two months mycin therapy with distinct healing of the sinuses his elbow but tuberclous meningitis led rapidly to despite continued streptomycin after another two

l, aged 11 years had miliary tuberculosis and tubercu ningitis and was treated for one year with streptomycin s She recovered well but had residual stiffness of nces Eighteen months later when there had been no f reactivity to complete her recovery manipulation nees was carried out under an anaesthesia. Relapse of eningitis occurred and she died after fifty days of sive deterioration despite streptomycin and isoniazid

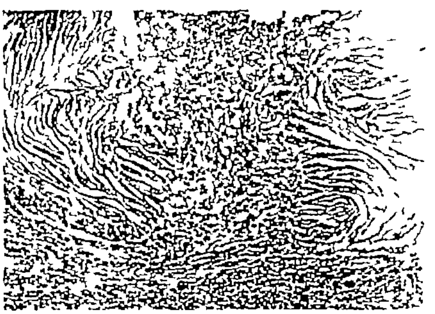


Fig 12—Recently active tuberculous granulation tissue in old fibrosed cavity wall After three months isoniazid + streptomycin (× 100)

It has been a great disappointment that chemotherapy has not prevented this persistence of organisms in the lesions and that relapses still occur At first it was thought that the organisms still seen in lesions after treatment were not viable (see Hobby et al. 1954) but many workers (see *Poumon* 1954) have cultured organisms by standard methods after many combinations of chemotherapy Dubos (e.g 1952, 1953) has carried out much work on the conditions in tuberculous lesions which prevented growth of the organisms and has also found other factors which can neutralise these conditions by using some of these findings, Hobby et al (1954) have evolved a technique of maintaining material in albumin for long periods subculturing at intervals from which they conclude that tubercle bacilli can survive in healed or semi healed necrotic pulmonary lesions even after prolonged chemotherapy and in many instances can be cultured These workers discuss the idea of the organisms lying latent or dormant in the lesions. The question whether the drugs cannot penetrate to the organisms to affect them deep in the lesions has also been studied and can probably be disregarded (Hart 1954 Russell et al 1955) It has been shown that some organisms from a culture can remain viable after thirty years storage at 37°C (Corper and Cohn 1951) or after two years in a refrigerator (Yegian 1952) It is now generally accepted that organisms in this latent or non proliferative phase are not susceptible to chemotherapy (Middlebrook and Yegian 1946 Mackaness 1952 Mackaness and Smith 1953 Schaefer 1954) It is the inability of drugs to affect these dormant bacilli that constitutes the greatest danger in using cortisone and corticotrophin in tuberculosis.

Clinicians have already tacitly recognised this dormant state of the bacilli by continuing chemotherapy for considerable periods in the hope that many of the organisms will come out of the state become susceptible and be killed The continuing chemotherapy must obviously be at full doses to achieve this The histological and bacteriological studies, however suggest that this will not control all the organisms and such studies give full justification for surgery in chronic lesions, wherever possible

Bacterial Resistance and Combined Chemotherapy

In the report on the effects of streptomycin on the histology of renal tuberculosis (Dick 1953a) the specimens had been removed only when tuberculous activity had recurred after treatment In 6 out of 8 specimens the organisms had become resistant to streptomycin in 1 specimen culture after treatment was not carried out and in the 8th the organisms remained susceptible It was also recorded that in as many other cases in the clinical trial in which the organism developed resistance to streptomycin, nephrectomy had not been required, and in 1 in which the organism was originally very resistant to streptomycin the drug had a favourable effect on the patient's condition Thus it would seem that the resistance of the organism to the drug as tested in vitro, though useful, was by no means an absolute indication of the clinical effect

Similarly, after isoniazid alone (Dick 1953b) the lesions in some specimens did not resolve but became active again, and, though cultures were not obtained in sufficient numbers after treatment to provide definite evidence of the development of drug resistance, there was sufficient histological evidence to show that isoniazid alone was not a satisfactory treatment régime

During or immediately after combined chemotherapy there was no histological evidence of renewed activity of lesions, though some time after all forms of treatment relapses did occur owing to persistent organisms The combination of streptomycin + P A S produced the same regressing fibrosis as occurred in favourable circumstances without drugs, isoniazid + P A S produced 2 excellent results in a very short time, but the others were not so good on account of the secondary infection, while isoniazid + streptomycin provided the most satisfactory results of all, with complete resolution of recent lesions and a lesser degree of fibrosis in older lesions

Clinical evidence has fairly uniformly supported the contention that the development of streptomycin resistance has been accompanied or followed by diminished clinical response (Medical Research Council 1950), but the position with isoniazid alone is more confused Some records show clinical deterioration with the development of resistance (Joiner et al 1952, Coates et al 1953), while others deny this (Ferebee 1953, see Deuschle et al 1954) Carefully controlled trials, however, show that combined chemotherapy produces the best results (Medical Research Council 1952, 1953a and b) and that the best combination is streptomycin + isoniazid (Joiner et al 1954, Carroll et al 1955, Medical Research Council 1955) But the dosage schedules of the drugs must be sufficient, and where the combination is not successful (e g, in that a large number of isoniazid-resistant bacilli can still be cultivated after treatment) it is probably because the streptomycin was given only twice a week (Ferebee 1953, Russell et al 1955) so that there was too little to exert its protective effect with the isoniazid

The problem of drug resistance and its relation to clinical effect is being extensively studied by bacteriologists First, it should be noted that the rate of spontaneous mutation of tubercle bacilli to forms that are highly resistant to both streptomycin and isoniazid at the same time is extremely low (Middlebrook 1952, Mitchison 1954) After isoniazid therapy, Tison et al (1954) found in 2 cases that organisms from one lesion were resistant to isoniazid while organisms from another lesion in the same case were susceptible to the drug Fisher (1952) showed that isoniazid-resistant forms of tubercle bacilli would not grow in a simple synthetic medium but required an additional growth factor Also, a proportion of isoniazid-resistant strains were of low virulence to laboratory animals, but complete absence of virulent bacilli was rare (Mitchison 1954) It should be noted that the organisms isolated by the elaborate technique of Hobby et al (1954) from treated lesions were still fully susceptible to both streptomycin and isoniazid It would seem fairest to leave the last word to those who claim (Mackaness and Smith 1953) that drug resistance as measured in vitro represents a metabolic change in the bacillus which is not necessarily reflected in conditions in vivo So far we have no other widely accepted method of measuring this change more accurately than by the present resistance tests, which are so difficult to standardise that results from different laborato hardly comparable More hopefully, however, ba gists have shown synergism between stre isoniazid (Hobby et al 1953, Mackaness and Smi Singh and Mitchison 1954)—probably by th acting in different ways on the bacilli This may the success of combined therapy

Conclusions

Patients with recent lesions should be treated combination of chemotherapeutic drugs which isoniazid, to obtain resolution The drugs should in their full therapeutic doses—i e, isoniazid daily, streptomycin 1 g daily, P A S 10-20 g Diminished dosage scales should not be tried unl scale tests have shown them to be as effective, cl bacteriologically, and histologically, as the ful already tested

Patients with mixed old and recent lesions receive similar treatment, to obtain as much re as possible Resection of remaining lesions s considered

In patients with remaining lesions, three stages of open cavity walls must be considered

(*a*) Lesions with completely healed walls but a mechanical defect

(*b*) Lesions with smoothly lined walls, which m not still contain caseated material with or withou tubercle bacilli

(*c*) Lesions with parts of the walls still rough, wit extending into caseated material, with or withou tubercle bacilli

Patients with lesions in group (*a*) are complete infective, those with lesions in group (*b*) may excrete tubercle bacilli to the danger of family mates without even having an exacerbation of th tuberculosis (e g, caseated material from a lun may be coughed up in an attack of ordinary c those with lesions in stage (*c*) are also possible infection and, along with all patients with old require frequent observation for recrudescence research should be undertaken to enable lesions (*a*) to be distinguished from those in stages (*b*) Surely some serological test could be devised f purpose The tuberculin reaction will not help is a previous primary lesion, but it would be in to know whether the reaction is ever reversed isoniazid treatment of primary lesions (e g, in adult)

Further research should be undertaken to de how latent organisms can be made susceptible to or to find out whether there is any cyclical rhyth metabolic state which enables the organisms to in the tissues, with a view to coördinating with duration of chemotherapy in chronic cases where is not practicable

Summary

The difference between the changes in recent lous lesions after therapy with a combination of including isoniazid and those after a streptom bination suggests that isoniazid enables a toxic be removed and real healing to occur

The same difference is present early in the tr of chronic lesions, enabling a larger proportion where isoniazid has been administered to satisfactory quiescent stage

Histological evidence is presented for the pe throughout chemotherapy of dormant bac bacilli which are in a state of metabolic inactiv reproducing, not susceptible to antibiotics, not nec capable of growth on ordinary media, perhaps not roscopy but able to re assume any or all of these ties.

motherapy with a single drug leaves a considerable tion of lesions active probably by altering the olism of the organisms so that they are no longer d by the drug Testing in vitro for the sensitivity organisms to the drug (though the only method ve) is not a fully reliable index of this altered olic state Streptomycin and isoniazid appear to the organisms metabolism in different ways, and d doses are apparently synergistic since the best g of lesions is obtained with this combination

work has been possible only through the close clinical ation of Dr M A Foulis physician superintendent Jacobs and Mr W Borthwick urological surgeons and colleagues at Robroyston Hospital. I am also deeply d to Dr W M B Davidson of the department of ogy Stobhill Hospital for helpful criticism and to n Mackie and Mrs. C Neilson of this department for hotographic and secretarial assistance respectively

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COMPLICATIONS OF OXYTETRACYCLINE AND TETRACYCLINE THERAPY

RELATED TO A DEFINED TYPE OF RESISTANT STAPHYLOCOCCUS

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Recent reports from Great Britain France, and the U S.A have drawn attention to the occurrence during antibiotic treatment, of complications attributed to antibiotic resistant strains of staphylococci These complications include gastro-enterocolitis, sore throat with scarlatiniform rash, sore throat without rash balanitis with scarlatina, and urinary infection Usually they have followed treatment with broad spectrum antibiotics—chloramphenicol chlortetracycline (aureomycin) oxytetracycline (terramycin), and tetracycline (see *Lancet* 1953 1954)

The following questions arise

1 Are they caused by staphylococcal infection ?
2 Is a special type of staphylococcus responsible ?
3 If so does hospital cross infection play any part ?
4 What connection, if any is there between the complications and the antibiotics ?

A therapeutic trial of antibiotics in bacillary dysentery at the Infectious Diseases Hospital in Dundee enabled us to inquire into these points

The Complications

The main complications associated with oxytetracycline and tetracycline treatment of bacillary dysentery are (*a*) scarlet fever, (*b*) sore throat without rash, and (*c*) gastro-enteritis Each has usually occurred alone, but occasionally gastro-enteritis has accompanied scarlet fever or sore throat without rash As a rule they have appeared about the fourth or fifth day of treatment but occasionally they have come on after its discontinuance one patient developed the scarlet fever five days after ceasing to take the antibiotic There were no deaths

In the scarlet fever syndrome the temperature may reach 102–103°F The face is flushed, with circumoral pallor, and the child looks ill The rash is a punctate erythema most pronounced on the trunk : it differs in no way from that of scarlet fever and is followed by desquamation The soft palate and uvula are intensely congested and œdematous at first there may be small vesicles but soon they are covered by a thin patchy white exudate later becoming confluent which may spread to the tonsils and over the buccal mucosa The appearance may, indeed resemble that of monilia infection Sometimes ulceration is a feature

In the cases with sore throat but no rash the general illness is less severe The throat resembles that seen in the scarlet fever cases

The mild gastro-enteritis is extremely difficult to differentiate from bacillary dysentery and in this paper we take account only of the cases in which the symptoms were so severe as to suggest a staphylococcal rather than a dysenteric origin The stools are frequent and fluid often containing blood and mucus and vomiting may be the predominant symptom

Laboratory search was made for hæmolytic streptococci in all cases of the scarlet fever and sore throat syndromes and for salmonella and shigella in the gastro enteritis syndrome but these organisms were never found

TABLE I—COMPLICATIONS IN RELATION TO AGE

Age (years)	No of cases	No with complications	Percentage with complications
Under 1	21	1	5
1–4	215	30	14
5–9	73	14	19
10–14	12	1	8
15 and over	57	2	3 5
All ages	378	48	12 7

The drugs used and their dosage were

Oxytetracycline 5 mg per lb body weight, up to a maximum of 600 mg daily

Tetracycline A 5 mg per lb body weight, maximum 600 mg daily

Tetracycline B 10 mg per lb body weight, maximum 1000 mg daily

The drug was given for five consecutive days

Table I shows that of 378 patients treated 48 (12 7%) had a complication The incidence was low in those under a year old and in those fifteen years of age and over, but relatively high between one and nine years of age

Table II arranges the complications in relation to the three antibiotics given The differences do not seem to be substantial

Laboratory Investigations

A survey for staphylococci was made in 15 cases of "scarlet fever" and "sore throat without rash" syndromes (hereafter called the sore throat group) and in 18 cases of gastro enteritis clinically attributed to treatment with the antibiotics Our intensive bacteriological investigation did not start at the beginning of the therapeutic trial, and thus covered only the last 33 of the 48 cases in which complications arose It included over the same period patients in the dysentery wards who did not show complications during treatment, and it was also extended to the nurses

TABLE II—COMPLICATIONS IN RELATION TO ANTIBIOTIC USED

Complication	Oxytetra cycline	Tetra cycline A	Tetra cycline B
"Scarlet fever" alone	2	1	1
Sore throat alone	2	6	5
Enteritis alone	1	11	6
Pyodermia alone	1	0	0
Vaginitis alone	1	0	0
Scarlet fever with enteritis	3	0	0
Sore throat with enteritis	2	1	3
Sore throat with pyodermia	0	1	0
Pyodermia with enteritis	0	0	1
No with complications	12 (*10%*)	20 (*15%*)	16 (*13%*)
No of cases treated	124	134	120

Methods

Selection of strains—Specimens were taken on cotton wool swabs from the nose, throat, or rectum. The primary isolation of staphylococci was carried out on 8% salt-agar After forty eight hours' incubation on this medium at 37°C a single pigmented colony was selected for examination for phosphatase production by the plate method (Barber and Kuper 1951) and for coagulase production by the tube method (Mackie and McCartney 1953) The selection of strains for "typing" was made from those which were both phosphatase and coagulase producers The typing of the selected strain was based on an analysis of its antigenic structure by slide agglutination with absorbed antisera prepared from Hobbs types of staphylococci and on the results of "sensitivity testing" by the plate and tablet method

Preparation of absorbed antisera—Formalinised suspensions of Hobbs types of staphylococci (1948) were made from cultures harvested off 8% salt agar plates Twice weekly intravenous injections were given to rabbits and these were bled out when the titres were satisfactory The antisera were preserved with 0 5% carbolic acid

Accepting the antigenic formulæ assigned to Oeding (1952 1953a and b, 1954) cross absorptions wer obtain absorbed antisera on the same basis as Oed always employing the Hobbs types As a result, mon antisera were prepared to contain antibodies to antig e, f, h, i, and k A monospecific "b" antiserum made from the combination of antigens in the Hobb but this did not appear to be necessary since anti present in all the Oeding types

Slide agglutination tests with live suspensions of s cocci were usually conducted with absorbed antisera 1/100 although antigen k had to be used at 1/10 c rather slow even at that strength, and antiserum (potent) was used at 1/150 Slide agglutination tests same suspensions after autoclaving (120°C for two and hours) were done with the antisera diluted 1/10 which dilution used when carrying out the antibody ab technique

The absorbed antisera were not used until they agglutinate the absorbing strain even after ten exposure In the tests with freshly isolated staph only agglutinations easily read after one minute's were recorded

In our experience Hobbs types 3, 4, and 12 had mon antigenic formula ac/- and these types could differentiated by the antisera used

Antibiotic testing—The sensitivity or resistance selected strain was tested by the agar plate and tablet against seven antibiotics in the concentration of in parentheses against the name of each antibiotic penicillin (2 5 units), chlortetracycline (100µg), ch col (100 µg), oxytetracycline (100µg), streptomycin erythromycin (10 µg), and tetracycline (100µg). E erythromycin, a high concentration of each drug to *save time and materials* The results were re eighteen hours' incubation at 37°C Strains were re being resistant if there was growth up to the edge tablet, if there was a zone of inhibition not more round the disc, and if in the zone of inhibition we numerous resistant colonies

"*Typing scheme*"—The combined results of the analysis by slide agglutination and sensitivity t used to type each strain examined For example ac (pronounced "poxed") represents a strain which with absorbed sera "a" and "c" (only) in the live stat failed to agglutinate with absorbed sera in the au state (/), and which was resistant to penicillin, chlortetracycline, streptomycin, and tetracycline (

Results

Table III shows the results of typing the st staphylococci isolated from 33 patients complications during the treatment of bacillary dy with oxytetracycline and tetracycline It also in for comparison, the frequency of isolation of the defined type of staphylococcus (ac/ POCST) from similarly treated who did not suffer from compli during treatment, and from the nurses of the h This latter figure is based on a single snapshot for carriers of nasal staphylococci among the survey was made during the period when the co tions were observed

TABLE III—FREQUENCY OF DEFINED TYPE OF STAPHYLO (ac/ POCST)

Group	Source of specimen	No of specimens	No coagulase positive	% coagulase positive	No of defined type	Others
Sore throat	Throat	15	8	53	7	1
	Nose	15	8	53	7	1
Gastro-enteritis	Fæces	18	10	55	6	4
	Nose	18	8	44	4	4
No complications	Fæces	317	85	27	14	71
	Nose	314	97	30	34	63
Nurses	Nose	64	31	48	3	28

llowing points may be noted

i the sore-throat series 8 out of 15 patients had a ase positive staphylococcus on their throat-swabs and these it belonged to the type ac/ POCST

i the gastro-enteritis series 10 out of 18 patients had ulase positive staphylococcus on their rectal swabs 6 of these it belonged to the type ac/ POCST

i the dysentery without complications series 27 out of tients had coagulase positive staphylococci on their swabs and in 14 this belonged to type ac/ POCST

out of 64 nurses had a coagulase-positive staphylo on their nasal swabs and in 3 this belonged to type CST

the frequency of isolation of type ac/ POCST is among the nurses (nose 10%) higher among the s with no complications (nose 35% rectal swabs much higher in the gastro enteritis group (nose ectal swabs 60%) and highest in the sore throat (nose and throat 87%) We may add that of the yielding this organism 1 was a sister in a dysentery nd 2 had been on duty in dysentery wards for two s in the early part of the period when complications ccurring

Discussion

close association of our defined type of staphylo (ac/ POCST) with the cases showing complications treatment is strong presumptive evidence that it e organism responsible for them Two difficulties r call for explanation (1) the failure to isolate i some of the cases showing complications and presence in many patients in the dysentery wards l not show complications The first difficulty may be an expression of the selection which inevitably s when single colonies are picked from the culture t primary isolation The second difficulty is more ical than actual for in communicable disease the rate is often higher than the incidence of illness sence of the organism in three nurses all of whom rked in the dysentery wards but had not received tics is evidence that at some stage cross infection en place

then does one explain the observed relation i treatment and the onset of the complications ? point we can produce little satisfactory evidence rth noting however that in many cases the com ns started on the fourth or fifth day of treatment admissions to a hospital ward we have observed ncidence of cross infection of nasal staphylococci he first week of residence in the ward (unpublished It may well be that (as has been suggested) after fection the cross infecting strain of staphylococcus to multiply rapidly when the organisms which e normal flora are inhibited by an antibiotic

we believe the complications of treatment with ectrum antibiotics are but one more manifesta staphylococcal cross infection what can be done ol such cross-infection ? This is a big subject aps we should indicate the lines along which we king

ld axiom know malaria and all other things ological will be added unto you can be applied sing hospital epidemiology in general and coccal cross infection in particular *The* funda principle of malaria control is *species* sanitation hers (1902) developed this concept as the result ilure to control malaria at Mian Mir by general ne control He showed that the control of nes in general was a nigh impossible task but control of the vector species was a reasonable ion It may well be that classification of the phylococcus is the key to the control of staphy cross infection in hospitals.

uccess of the present study depended on our of typing and the control of staphylococcal ection may depend not on the search for staphylococcal carriers in general but on the recognition of carriers of defined types of proven pathogenicity, of which ac/ POCST seems to be one This we would call "type" sanitation

Summary

During treatment of bacillary dysentery with oxytetracycline and tetracycline some of the patients showed complications—notably scarlet fever" sore throat without rash and gastro-enteritis

These complications seem to have been caused by cross infection with a hospital' staphylococcus of defined type

The term ac/ POCST (pronounced 'poxed ') applied to this type implies that it is agglutinated by absorbed sera 'a and c ' (only) in the live state is not agglutinated by absorbed sera in the autoclaved state and is resistant to penicillin oxytetracycline, chlortetracycline, streptomycin and tetracycline

We wish to express our thanks to Prof W J Tulloch for encouragement to Dr Mary Kerr for help in the clinical studies to Mr H Lawrence A.I.M.L.T for technical assistance and to the Medical Research Council for an expenses grant to one of us (T S) for a technician

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APLASTIC ANÆMIA AND MYELOID LEUKÆMIA AFTER IRRADIATION OF THE VERTEBRAL COLUMN*

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> Ionizing radiation is the only external agent that has been conclusively shown to be leukemogenic for man.
>
> KAPLAN (1954)

IN ankylosing spondylitis X ray treatment is one of the most reliable means of combating discomfort and pain In osteo arthritis and other rheumatic disorders of the spine radiotherapy has a far less dramatic effect but it is still widely used As for its therapeutic value and its capacity to arrest these diseases the existing data even for spondylitis are confusing Desmarais (1953) concluded that in spondylitis we can see little evidence so far that deep X ray materially alters the evolution of the disease

When other measures have failed it is not unreasonable to try radiotherapy provided this therapy is relatively harmless But the occurrence of seven cases, reported here in which there was a fatal hæmatological complication probably due to X rays suggests that careful thought is needed before radiotherapy is started On the basis of this experience I disagree with Desmarais who stated that with a dose of 1200–1500r there is almost no danger of affecting skin and marrow for severe involvement of the marrow may manifest itself many years later

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* In this paper Dr van Swaay gives an account of the cases in Holland referred to by Dr W M Court Brown and Dr J D Abbatt in their recent article (*Lancet* 1955 i 1283) —ED L

At necropsy in four cases of ankylosing spondylitis it was found that each of the four patients had had courses of X-ray treatment and that all had died from myeloid leukæmia Blood examination before radio therapy had been essentially normal In Holland seven cases with fatal hæmatological complications have been collected Six such cases have been published previously Johnson (1945) and Sharp and Easson (1954) each described a case complicated by aplastic anæmia, Graham (1948) described two cases complicated by leukæmia, and Kuzell et al (1952 and personal communication) a third, Ragan (personal communication) has seen myeloid leukæmia in a spondylitic who had received yearly courses of radiotherapy

In other diseases the hazards of the influence of radio activity on blood forming organs are well recognised Moeschlin et al (1953) describe a case of fatal aplasia of all blood elements seven years after a diagnostic thorium dioxide injection, and they remark on several analogous reported cases Dameshek (1954) considers that X ray therapy for hyperplasia of the thymus may have been the cause of acute leukæmia in three children, and in polycythæmia vera the incidence of acute leukæmia seems to be distinctly greater in patients who have been treated with radioactive phosphorus than in those who have not In dermatology, too, hæmatological complications are believed to follow X-ray therapy, LeDonne (1954) describes myelogenous leukæmia in a patient with mycosis fungoides, and mentions another patient with this disease who died of aplastic anæmia MacKee and Cipollaro (1946) referred to the possibility of leukæmia after prolonged irradiation, and Lynch (1951) records a case of death from acute myelogenous leukæmia in a patient who had received X-ray treatment for psoriasis

Case-records

Case 1 —A male office clerk, aged 25, with a three year history of back pain Radiographically the sacro iliac joints showed typical lesions of ankylosing spondylitis Radiotherapy was given over a four year period The total dose on each portal was spine I (cranial) 500r, spine II 200r, spine III 1300r, spine IV 1200r, spine V (caudal) 1500r, left hip 200r, sternoclavicular joints 600r Physical factors 180 kV, 3 mA, 0 5 mm Cu filter, focus skin distance 40 cm Leucocytes were normal during therapy Six years after the last course of X-ray therapy acute myeloid leukæmia developed, with 146,000 white blood cells (mostly myelocytes) per c.mm Three months later, after radiotherapy of the enlarged spleen, the patient died of aplastic anæmia Necropsy was performed

Two brothers of this patient also have ankylosing spondylitis, and one was treated with analogous X-ray therapy more than ten years ago Both are in relatively good health now, and have a normal blood picture

Case 2 —A male postal worker, aged 46, with a twenty-six years history of ankylosing spondylitis The sacro iliac joints were fused and a typical "bamboo spine" was found radiographically Radiotherapy of the spine and sacro iliac joints was given over a two year period The total dose was spine I (cranial) 1650r, spine II 2400r, spine III 2600r, spine IV and V (caudal) 2000r, sacro iliac joints 1100r, hips 600r Physical factors 150r over each portal, 180 kV, 15 mA, 0 5 mm Cu filter, focus skin distance 30 cm, each portal 10 × 15 cm was treated for 110 seconds two or three times on different days during each course One year after the last X ray therapy amidopyrine was given for four weeks, without effect on the leucocytes, no other hæmatotoxic drugs were administered One year later a fatal aplastic anæmia with extreme bone marrow depression developed Necropsy was performed

Case 3 —A bricklayer, aged 41, with a five year history of ankylosing spondylitis Both sacro iliac joints were fused Courses of X-ray therapy were given over an eight month period The total dose was spine I, II, and III each 1600r, acro iliac joints 400r There at work without any medical treatment Two years later petechial bleeding occ symptom of myeloblastic leukæmia (white blood c per c mm) Bone marrow aspiration confirmed th The patient died within two weeks Necropsy was p

Case 4 —A 55 year old man with a ten year lumbar pain was treated as a case of ankylosing sp Two courses of radiotherapy were given to the wh with an interval of three months The total dose on ea was 900r Fifteen weeks later aplastic anæmia d this was followed ten weeks later by acute myeloid l from which the patient died At necropsy the of ankylosing spondylitis was corrected to the spine

Case 5 —A docker, aged 58, with a rigid spine ankylosing spondylitis and with peripheral joint ment Radiotherapy was given over a ten The total dose was spine I (cranial) 1950r, spine spine III 1450r, spine IV 1250r, spine V (cauda sacro iliac joints 200r, peripheral joints 1000r, 2350 and 3000r During each course of X-ray the number of white blood cells fell to 2500 per c.mm., gradually to normal in the intervals Three mo radiotherapy ended, administration of gold th started, and this was continued to a total dose of Aplastic anæmia developed, of which the patient months after the last X ray therapy Although gold had some influence, previously the radiotherapy had affected the bone marrow

Case 6 —A man, aged 50, had a completely typical of ankylosing spondylitis The total dose therapy during a four year period was spine I 700r, spine II 2800r, spine III 4300r, spine IV 595 (caudal) 3450r, right shoulder 1800r, sacro-iliac joi knees 150r Ten weeks after the last X ray died of myeloblastic leukæmia Necropsy was

Case 7 —A woman, aged 62, had a rigid spine ankylosing spondylitis, and both hip joints were involved The ankylosing spondylitis was treated courses of X ray therapy with a six month interval dose on the whole spine except the neck was 900r nine months after the last radiotherapy she d myeloid leukæmia Necropsy was performed.

Data on these seven cases are shown accompanying table

DATA ON SEVEN CASES IN WHICH RADIOTHERAPY OF FOLLOWED BY BLOOD DYSCRASIA

Case no	Age (yr) at which radio therapy given	Age (yr) at death	Latent interval	Maximum dose (r) on one portal	Di
1	25–29	36	6 yr	1500	Myeloid
2	46–48	49	2 yr	2600	Aplastic
3	41	43	2 yr	1600	Myeloid
4	55	56	5 mos	900	Myel
5	58	59	1 yr	1950	Aplastic
6	56–60	61	2½ mos	5950	Myelo
7	62	64	¾ yr	900	Myeloi

Discussion

Aplastic anæmia sometimes precedes leuk distinct separation of these diseases is often in Young et al (1951) describe an extreme examp orderly erythropoiesis, with sixteen months o anæmia preceding leukæmia Segerdahl (1934), Landes (1938), and Fontein (1945) described with aplastic anæmia terminating in myeloid as in the present case 4

The incidence of leukæmia in the general p is about 1 25000 (Folley et al 1952) It th not very likely that the onset of leukæmia in described here is a chance occurrence It se that there must exist some relation betw ankylosing spondylitis or radiotherapy on the and blood dyscrasia on the other Statistica has not yet been feasible because the data were from different centres and the total number its in these centres is not known nor is the cause ith of many other spondylitics and several cases registered in more than one clinic It is unlikely ther hæmopoietotoxic agents, such as benzol pyri aniline dyes, indol or tar, played any part in these

extensive study of reported work (van Swaay 1950) t reveal any record of leukæmia in ankylosing litis, except when radiotherapy had been given other hand leukæmia and/or aplastic anæmia induced by exposure to radioactivity Nielsen considered 16 cases of leukæmia in X ray and workers but concluded that the incidence was not *ingly higher than in any other occupation* and Furth (1936) stated that the incidence of enous leukæmia may be enhanced by X irradiation cent publications leave no doubt that there may causal relation between exposure to radioactivity e development of leukæmia The relation to anæmia was established many years ago through cases from a New Jersey plant where tive luminous paint had been used (Martland

Hiroshima and Nagasaki the number of deaths ukæmia in the years 1948–50 was significantly in the more exposed groups in people who had within a range of 1000 m from the explosion ntre the leukæmia rate was forty times higher people beyond 2000 m (Folley et al 1952) The leukæmia amongst physicians and radiologists en repeatedly studied (Levent 1932 Henshaw Hawkins 1944 Dublin and Spiegelman 1948) (1950) confirmed that the incidence of leukæmia radiologists was abnormally high—even higher event had postulated in 1932, the rate being about mes as high as among other physicians In 1952 and Pick found an even higher incidence in young gists

nost of these reported cases as in five of the six f leukæmia reported here the leukæmia developed five years after the exposure but often longer of latency are observed as in our first case

Summary

n cases are described in which radiotherapy orders of the vertebral column was followed by lood dyscrasia Only one patient received an ve dose of X rays.

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TESTING APPARATUS FOR INTERMITTENT POSITIVE-PRESSURE RESPIRATION

INFLUENCE OF INSPIRATORY PRESSURE WAVE FORM

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ARTIFICIAL respiration by intermittent positive pressure introduced for treating poliomyelitis (Lassen 1953), has proved life saving not only in that condition but also in polyneuritis of the Landry type (Smith et al 1954, Harries and Lawes 1955 Bendz 1955) and in tetanus (Bjørneboe et al 1953 Honey et al 1954 Shackleton 1954 Lassen et al 1954)

Mechanical devices of widely different characteristics have been introduced to provide intermittent positive pressure (Bang 1953 Beaver 1953, Macrae et al 1953 Russell and Schuster 1953 Engström 1954) but their comparative merits and disadvantages have not yet been clearly expounded Complete clinical testing may be difficult and in the case of very ill patients unjustifiable so reliance has hitherto been placed on unspecified clinical impressions.

The need for a laboratory standard for testing apparatus has been pointed out by Galpine and Smith Clarke (1955) At least one apparatus could not provide the minimum of ventilation required by some patients but was widely distributed before this was found out laboratory testing would prevent this dangerous state of affairs

We describe here a simple apparatus which, for this purpose, simulates the chest of a paralysed patient, and we report investigations made with its aid into the effect of varying the wave form of the inspiratory pressure

Laboratory Testing

It has previously been shown that the tidal volume of a paralysed patient receiving artificial respiration by intermittent positive pressure is directly proportional to the inspiratory pressure at the tracheal tube but not directly proportional to the duration of inspiration (Spalding 1955) Fig 1 (points X) illustrates the relation of tidal volume to duration of inspiration in a severely paralysed young adult man whose lungs were healthy The positive pressure was provided by the power unit of a Monaghan portable respirator which is designed for use with a cuirass but can supply positive as well as negative pressure The tidal volume was measured by collecting the expired air from a valve of similar design to that described by Galpine and Smith Clarke (1955)

It will be shown below (fig 1 points ● and ○) that by using this valve and the Monaghan power unit the tidal volume can be measured with a very satisfactory degree of accuracy although with other sources of positive pressure this method may be much less accurate

The curves in fig 1 are a guide to the type of mechanism which should be used as a model of the lung In the first place for inspiration of any given duration (t) the tidal volume (V) is proportional to the peak pressure (p) It follows that when the lungs are inflated they behave like a piston moving in a cylinder against a spring with no appreciable friction or inertia In the second place the shape of the V–t curves would be given by a constriction impeding the flow of air into the cylinder Provided that the constriction is such that the flow of air is streamline rather than turbulent it need not disturb the proportionality of p and V

A model consisting of a constriction and what is in effect a spring loaded piston can be made to reproduce very closely the behaviour of the lungs of a patient. The

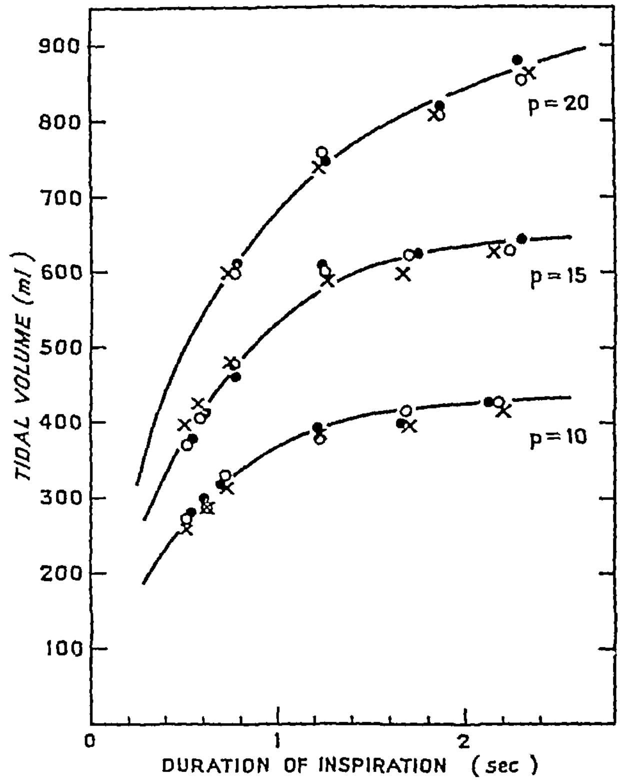


Fig 1—Relationship of tidal volume (V) to duration of inspiration (t) Peak pressure (p) in cm water is given for each curve Points were obtained as follows X by measuring expired air from a severely paralysed patient , ● by measuring “ expired air ” from the model , and ○ by calculating tidal volume from pressure in rigid vessel of the model

model is shown schematically in fig 2, and consists of two main parts, A and B A is the constriction, provided by many narrow tubes in parallel The length and diameter of the tubes are chosen to ensure streamline flow at the maximal rate of air flow deduced from fig 1 The number of tubes in use is adjusted by sliding a plunger to give the resistance required

B is a rigid vessel When air is blown into it, the increase in internal pressure simulates the compressed spring of the piston-and cylinder analogy mentioned above, and complications due to friction and inertia are eliminated The strength of the “ spring ” is determined by the size of the air-space, which can be reduced as necessary by adding water to the vessel It should be emphasised that the volume of the air-space represents the elasticity of the chest and not the tidal volume or the vital capacity

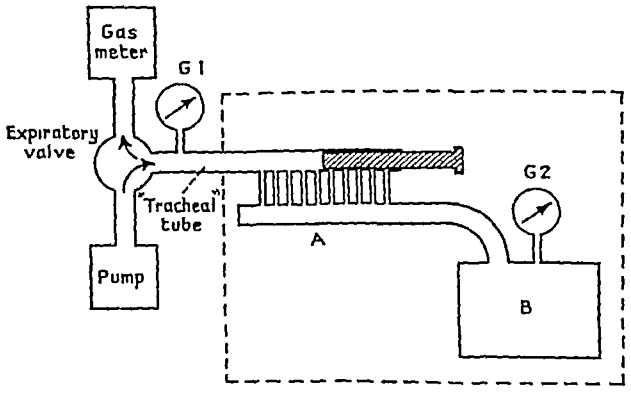


Fig 2—Model lung (within interrupted lines) ; A, constriction formed
gid vessel , G1, G2, pressure gauges

The pressure is measured with a bourdon typ (G1 in fig 2) placed before the constriction Th was checked statically against a water column rapid motion by reference to a quick acting manometer (East and Kahn 1946) which itself calibrated statically against a water column maximal error of p is thought to be less than water at all pressures

The “ tidal volume ” V can be measured in tw (1) the “ expired air ” is measured with a spiror gas meter, as is done clinically , and (2) V is cal from the rise of pressure in the rigid vessel m on gauge G2 (fig 2) Measurements by both are shown in fig 1 (points ● and ○) and their ag shows that, with this apparatus, collection of the air gave an accurate estimate of V.

Results obtained with such a model are fig 1 The constriction and the volume of an rigid vessel were arranged to reproduce the obtained from the patient with a peak pressure of water For this the constriction consisted of 2 cm long and about 1 7 mm in diameter, rigid vessel contained 43 5 litres of air The ag between the data from the patient and the model is good at all values of p, V, and t investigated This provides further evidence that the assumptions made about the behaviour of the lungs are justified

Inspiratory Pressure Wave-form

Clinical investigations have shown that, with the same values of p, different types of pump give different relations between V and t The model was used to investigate the relationship between V and the inspiratory pressure wave-form produced by various types of pump The wave-forms studied are shown in fig 3 and the corresponding V–t curves in fig 4 The values of V were obtained by calculation from the rise of pressure within the rigid vessel Although measurements were also made by collecting the “ expired air ” they were not accurately reproducible with pumps I and III , with these pumps there was too little negative pressure applied to the valve in expiration to operate it properly Nevertheless V–t curves obtained in this less reliable on the patient and with the model were in relative positions as those in fig 4

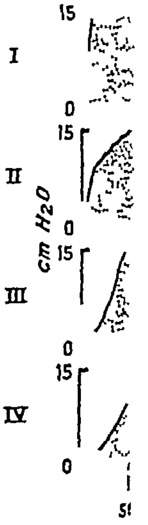
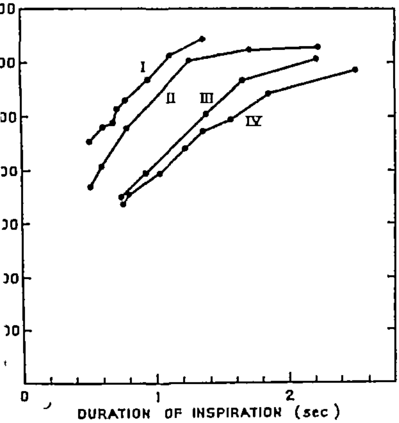


Fig
external end of
tube” ; I Radcl.
ration pump
Schuster 1953), I
han portable resp.
as described in
Beaver respirator
specially des
tus. Inspiratory
stippled

Discussion

The different V–t curves shown in fig 4 qualitatively deduced from the different from which they were obtained The rate at passes through a constriction in which flow is st is very closely proportional to the pressure across it For a given value of p the pressure across the constriction, or, in the patient, betw trachea and the alveoli, is greatest at the beg inspiration It follows that a wave form which the maximal tracheal pressure at the beg inspiration enables a given tidal volume to be in in the shortest time

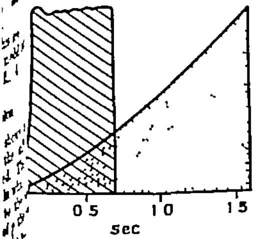


Relationship of " tidal volume to duration of inspiration with ant wave-forms Peak pressure throughout was 15 cm. water

ing inspiration the intrathoracic pressure in a y person is negative, but it is positive in a person ng artificial respiration by intermittent positive re In selecting the wave form most suitable for al respiration by intermittent positive pressure we consider the physiological effects of this reversal sure.

ficial respiration whether by intermittent positive e or in a tank respirator (Maloney and Whitten 1951) imposes on the circulation a strain due to ction in the pressure gradient which normally blood to flow from the veins to the right side of art. Apparatus for artificial respiration should re not only provide adequate ventilation but also a minimal strain on the circulation This is lly important since the acutely sick patient may ability to compensate for interference with the ion To minimise the strain on the circulation uirements must be fulfilled (1) the duration of ion must be as long as possible for during this an increase in the cardiac output makes up for crease during inspiration and (2) the mean e in the face mask or in this case at the tracheal ust be as small as possible (Werkö 1947 Cournand 948 Motley et al 1948)

3 and 4 show that a tidal volume of 500 ml provided in 0 7 sec by the pressure wave form I (square wave) but that with wave-form IV (gradual rise of pressure) 1 6 sec is required for the same tidal volume Since inspiration is less than half as long with wave form I as with wave form IV it is clear that the first requirement a long period of expiration can be provided better when wave form I is used



spiratory pressure wave-forms re- to provide tidal volume 500 ml tion lasts less than half as long with curve and mean pressure is lower

Fig 5 shows the inspiratory pressure wave forms of types I and IV which are required to give a tidal volume of 500 ml The mean pressure with wave form I is 84% of that with wave form IV therefore wave form I fulfils the second requirement better than does wave form IV

It may therefore be concluded that apparatus for prolonged artificial respiration by intermittent positive pressure should be designed to give a square wave form This is achieved by a rapid onset to the pressure curve and a gradual rise at the beginning of inspiration should be avoided Experiments on animals point to a similar conclusion (Maloney and Handford 1954)

Clinical Results

Experience in testing ten consecutive paralysed patients with intermittent positive-pressure respiration since August, 1953 indicates that a square wave form is clinically satisfactory and comfortable for the patient A pressure wave form of type I (fig 3) derived from a Radcliffe Respiration Pump (Russell and Schuster 1953) or similar gravity operated pump was used in all cases, and except in the first case duration of inspiration was about 0 85–1 10 sec at respiratory rates of 13–22 a minute The results of treatment are shown in the accompanying table Only one of the ten patients died while receiving artificial respiration and her death was attributable to an intense hæmorrhagic consolidation of five sixths of the lungs due to inhalation of vomit before coming under treatment

CLINICAL RESULTS WITH PRESSURE WAVE FORM OF TYPE I

Case	Age (yr)	Diagnosis	Duration of treatment with I.P.P respiration	Result
1	10	Acute toxic polyneuritis	4 weeks	Complete recovery
2	13	Poliomyelitis	Till death after 22 hr	Died after 22 hr from effects of previously inhaled vomit
3	17	Polyneuritis following glandular fever	2½ weeks	Complete recovery
4	30	Poliomyelitis	7 weeks	Died 10 weeks after cessation of I.P P respiration
5	42	Tetanus (heavily curarised)	6½ days	Complete recovery
6	35	Poliomyelitis	3 weeks	Died 17 days after cessation of I.P P respiration
7	10	Poliomyelitis	Continues after 12 mos	Very severely paralysed
8	33	Poliomyelitis	7 mos	Severely paralysed
9	58	Acute toxic polyneuritis	Continues after 13 weeks	Gradually recovering
10	7	Acute toxic polyneuritis	4½ weeks	Almost complete recovery

Cases 1–4 were reported in detail by Smith et al (1954) case 5 by Honey et al (1954) and case 8 by Harries and Lawes (1955)

Summary

Apparatus for providing artificial respiration by intermittent positive pressure must be thoroughly tested before being approved for clinical use

A model lung is described which is suitable for the laboratory testing of such apparatus

Investigations made with this model and clinically demonstrate the advantages of a square pressure wave form for the inspiratory phase

I am grateful for valuable advice from Dr Ritchie Russell, director of the Respiration Unit in Oxford and Dr Crampton Smith who has contributed so much to the survival of the patients.

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TREATMENT OF TETANUS WITH CHLORPROMAZINE AND NITROUS-OXIDE ANÆSTHESIA

R I BODMAN
M B Brist, F F A. R C S
ANÆSTHETIST

H J V MORTON
M D Camb, F F A R C S
SENIOR ANÆSTHETIST

E T THOMAS
M B Lond, F F A R C S
SENIOR REGISTRAR

HILLINGDON HOSPITAL, MIDDLESEX

SINCE Lassen (1952) began treating bulbar poliomyelitis by tracheotomy and intermittent positive pressure respiration (I P P R) there have been reports of seven cases of tetanus treated along similar lines, complete paralysis being induced by muscle relaxant drugs (see accompanying table, cf Bodman 1954) The table shows that in only one case was the period of onset less than three days, and this was the patient that died

DATA ON SEVEN REPORTED CASES OF TETANUS TREATED BY I P.P R

Source	Sex	Age (yr)	Incubation period (days)	Period of onset (days)	Outcome
Woolmer and Cates (1952)	F	58	?	3–4	Recovered
Forrester (1954)	M	42	6	3	
Honey et al (1954)	M	42	7	3	,,
Lassen et al (1954)	M	10	5	3	,,
,,	M	11	11	4	,,
	M	60	9	3	,,
,,	M	15	4	1	Died

The method of treatment followed by these workers has two serious disadvantages First, it is difficult to maintain correct respiratory exchange by artificial means Secondly, the profuse bronchial secretions, which are a feature of the disease, are probably increased by a tracheotomy Accordingly we have approached the problem differently In a case of generalised tetanus we have administered chlorpromazine, promethazine, pethidine, and nitrous oxide/oxygen anæsthesia The patient survived for twelve days, but despite the fatal outcome we think that the details of the method are worth recording

Case-record

A boy, aged 9 years, suffered a deep laceration of his knee, this was sutured, but he was not given antitetanic serum After seven days he complained of stiffness in the neck and jaw, and the first generalised convulsion occurred twenty one hours later

He was admitted to another hospital on the second day of his illness There he was given 200,000 units of tetanus antitoxin and penicillin, and was sedated with paraldehyde and pethidine

On arrival at Hillingdon Hospital on the third d illness he was having mild convulsions lasting a fe and repeated every two to three minutes He w between spasms and his general condition was good ment with paraldehyde and pethidine was for twenty-four hours, but the convulsions controlled

On the morning of the fourth day, treatment w promazine and pethidine was begun. The drugs separately in 25 mg doses p r n Each dose preve vulsions and produced flaccidity for a half to one ho twenty four hours of this régime tone was present vulsions occurred despite treatment On the fifth d a major convulsion with cyanosis He was immedia suxamethonium, an endotracheal tube was inserte was anæsthetised with nitrous oxide and oxygen stage we intended to perform tracheotomy and t to treatment with muscle relaxants and I.P.P.R. was being arranged we noted that the boy remain and there were no further convulsions, but tone r the nitrous oxide was stopped, so we decided to c line of treatment, and we substituted for the endotra an oral airway under a face mask

After some hours tone returned again and c vulsions occurred, owing, we believed, to the w the chlorpromazine and pethidine We then gave each of these drugs intravenously every four hours, to the nitrous oxide Promethazine 25 mg was muscularly every eight hours With this regime were controlled and the patient remained flaccid, there was some recurrence of tone about three each dose of the drugs

Every two hours the oral airway was changed. were aspirated from the mouth and pharynx, and was altered These movements, and possibly drawal of nitrous oxide, provoked a convulsion wit on about a third of the occasions on which taken In an attempt to overcome this difficu methonium was administered and artificial applied at these times This had the effect of convulsion, but laryngeal spasm occurred as the the suxamethonium wore off, and this prevented in the period when spontaneous respiratory move inadequate Cyanosis followed and persisted when the relaxant was not used On one occasion was tried, with even more unsatisfactory results.

Since these episodes were relatively infrequent patient's general condition did not seem to b affected by them, the treatment was continued un morning of the twelfth day, while being turned a secretions aspirated, the patient had a more th lengthy convulsion, became severely anoxic, and thirty minutes later

At necropsy both lungs showed extensive reco which was not due to bronchial obstruction ventricle was enormously dilated

Further Data

Clinical and Laboratory Findings—The pulse-r from 100 to 120 per minute, body temperature 97– was voided spontaneously, and its volume was tained The patient was not catheterised once we ourselves that there was no retention with overfl was normal throughout by routine ward tests. B lytes were always within normal limits

Supervision and Nursing—An anæsthetist was in throughout the twenty four hours, a bed was p him in an adjoining room The patient was and uncovered, in the semi prone position with pill the hips He was turned from one side to every two hours during the day and every four night

Feeding and Fluids—The patient was given t gested by Higgins et al (1954), via a Ryle's tube. 2–3 litres of 5% glucose, physiological saline, and solution in various combinations were given daily venous drip

Administration of Gases—Nitrous oxide 6 litres and oxygen 2 litres per minute were given from apparatus, by a semi closed circuit The delivery connected directly to a modified oral airway—an a which proved to be more convenient than a face-m

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hich were scanty and easily removed, were aspirated
e mouth when changing the airway A 2000 gallon
r of nitrous oxide and a 120-c.ft cylinder of oxygen
upled to the apparatus. These lasted approximately
four hours, and no difficulty was experienced in keeping
ntinuous supply A humidifier (Marshall and Spalding
ot to 70°F was used. Higher settings caused over
of the patient.

Treatment—Penicillin 500,000 units was given intra
arly twice daily A further 500 000 units of tetanus
in was given on the seventh day

Discussion

his very severe case of tetanus chlorpromazine,
hazine, and pethidine, together with nitrous
and oxygen anæsthesia completely controlled the
sions without impairing adequate spontaneous
tion Withdrawal of the nitrous oxide resulted
reappearance of convulsions within two or three
s, withdrawal of the basal sedation had the same
after some hours

virtual absence of secretions in the trachea and
i was a remarkable feature The peripheral lung
remained clear throughout the collapse found at
sy was probably a terminal event The lack of
ve secretions was we believe due to the pharmaco
effects of chlorpromazine and promethazine and
sence of a tracheotomy

failed to devise a method of changing the airway
rning the patient without sometimes provoking
rulsion This finally caused the patient's death
ht be argued that we could have overcome this
ty by a tracheotomy, and this was constantly
in mind It would certainly have enabled us to
the anoxic episodes caused by laryngeal spasm
occurred as the effect of the suxamethonium were
t the spasm of the respiratory muscles might still
interfered with inflation This consideration
ied with the known complications of tracheotomy
as increased secretions blockage of the tube
rhage, infection and ulceration of the trachea
us decide to carry on without a tracheotomy—
rse that seemed to be justified by the long
s during which our treatment was entirely
ctory

prognosis in this case with a period of onset of
-one hours, must have been hopeless with orthodox
ent and indeed we think it unlikely that a case
i severity has ever survived The use of relaxants
ontinuous I P P.R has improved the prospects of
al in severe cases of tetanus. But as we have
d out of the seven reported cases treated in this
he most severe had the shortest period of onset
id not survive

Summary

ery severe case of tetanus was treated with chlor
zine, pethidine and promethazine combined with
s-oxide/oxygen anæsthesia This controlled the
lsions and virtually eliminated the problem of
ons in the chest Continuous curarisation was
essary and the patient breathed spontaneously
hout He died on the twelfth day of his illness

are indebted to the respiratory unit at the Radcliffe
ary Oxford for the loan of the humidifier

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Bjerneboe M Ibsen B., Neukirch, F (1954) *Ibid* ii 1040
H J Spalding J M K (1953) *Ibid* ii 1022
or R, Cates J E (1953) *Ibid* i 808

Reviews of Books

Congenital Syphilis

DAVID NABARRO M D F.R.C.P., consulting pathologist formerly director of the pathological department The *Hospital for Sick Children London* London Edward Arnold 1954. Pp 470 50s

FROM 1917 to 1939 Dr Nabarro had charge of the venereal-diseases clinic at the Hospital for Sick Children Great Ormond Street, and through most of his medical life he has been a leader in the attempt to prevent the distressing congenital infection of which he saw so much To an extent for which even he could hardly hope this attempt has succeeded and in consequence this book based on his wide experience, describes a disease much more severe and with more serious sequelæ than is commonly seen in this country today But syphilis is very far from being a thing of the past, even in these islands and Dr Nabarro does a valuable service by describing so fully the natural history and manifestations of the disease as transmitted to children His interesting opening chapter on the historical background has evidently entailed a great deal of research The section on transmission is a little disappointing in that, though various hypotheses are outlined, the author does not give his personal views The clinical picture however, is described very fully, and illustrated with his own cases, an extensive bibliography being added He puts the likelihood of third generation syphilis higher than would most other clinicians the passing of infection to a third generation is very difficult to prove, since in the first-generation congenital syphilitic the disease may cure itself spontaneously and the patient acquire syphilis, producing not a third-generation syphilitic but a second In what is so largely a retrospective work it is perhaps inevitable that the survey of treatment should be less instructive than the other parts and it does not take account of the fact that penicillin has almost supplanted all the arsenicals in the majority of treatment centres in this country But, if these are shortcomings, they are small in relation to the rest and the book can be recommended both to students and practitioners as the standard work on its subject

The Lung

Clinical Physiology and Pulmonary Function Tests JULIUS H COMROE JR M.D., professor of physiology and pharmacology ROBERT E FORSTER, II, M.D associate professor of physiology ARTHUR B DUBOIS M.D assistant professor of physiology WILLIAM A. BRISCOE M D associate in physiology ELIZABETH CARLSEN A.B Isaac Ott fellow in physiology Graduate School of Medicine University of Pennsylvania. Chicago: Year Book Publishers. London: Interscience Publishers 1955 Pp 210 40s

THIS book sets out to bridge the gap between a primer and an encyclopædia. It is written for the practising doctor, who can well be excused for not being familiar with the tests elaborated during the past forty years—many of which have been described only in papers written by experts for experts. It is high time that such a book was written and we can be thankful that it has been written (with the help of four young workers who have made their mark in experimental physiology relatively recently) by Dr J H Comroe an expert of such distinction that he is able to describe his subject in terms which are intelligible Pulmonary physiologists often seem reluctant to disclose the relatively few and simple facts and hypotheses on which their knowledge is based instead they take a wicked delight in displaying the technical difficulties which abound in their field of research Syntheses like this one benefit those who have neither the time, nor perhaps the insight, to sort the immense amount of original work which has gone into the design of these seemingly simple tests The text is built around a series of diagrams, so beautifully clear that we wish the artist had been named. The plan of the book is simple and direct an introductory chapter gives a bird's-eye view of the subject and this is elaborated piecemeal in the succeeding chapters No deep acquaintance with the operations of advanced mathematics is required to follow the lucid descriptions of methods, adequate lists of normal values are given wherever these are appropriate, and there is a chapter devoted to useful data and equations Part II describes the results of pulmonary-function tests in a number of cases well chosen for their illustrative value

This is a thoroughly useful book

The Health of the Elderly at Home

A Medical, Social, and Dietary Study of Elderly People Living at Home in Sheffield WILLIAM HOBSON, M D professor of social and industrial medicine, University of Sheffield, JOHN PEMBERTON, M D, M R C P, senior lecturer in social and industrial medicine in the university London Butterworth 1955 Pp 238 30s

THIS is a survey, primarily medical but including, as corollaries, inquiries into diet and weekly budget, of 170 old people living at home in Sheffield The object of this survey, which was aided by the Nuffield Foundation, was to investigate the health and diet of this group, and examine their relation to age sex, marital and occupational state, and social class " and, if possible, to determine standards of normality in the elderly " Not too much has been attempted statistics are simple and illuminating, case-histories are few and brief but vivid, and deductions and suggestions—whether for further research or for immediate steps to bring help and comfort to old people at home—are moderate, practical, and justified by the facts A valuable finding of general interest is the absence of correlation between height of blood-pressure and vertigo, tinnitus, effort angina, clinical arteriosclerosis, radiological size of heart, albuminuria, activity, and sense of well-being There is a full bibliography and ample index

Fluid and Electrolytes in Practice

HARRY STATLAND, M D associate in medicine, University of Kansas School of Medicine Philadelphia J B Lippincott London Pitman Medical Publishing Company 1955 Pp 206 35s

THE steady Transatlantic flow of more or less popular books on fluid and electrolytes suggests that the adepts of electrolyte studies in America are anxious to set out their mysteries in terms which are understanded of the people *In this self-imposed task they succeed in* varying degree Dr Statland's book can be regarded as a qualified success A good general picture of the various syndromes of electrolyte depletion is presented, and the importance of clinical observation is emphasised, but the underlying chemical alterations are treated rather sketchily, and it comes as something of a surprise to find that the directions for treatment rest somewhat heavily on laboratory results Also there is t emphasis on the intravenous route thus it see assumed that " routine requirements " postop will be met by intravenous fluid, and there is no of giving potassium salts by mouth in the trea potassium depletion The book concludes with t chapters on the special problems of heart-dise disease, diabetic acidosis, pædiatric fluid bal finally " burns, cirrhotic ascites, toxæmia of p The author consciously allows himself some simp " in order to keep the text intelligible to those p physicians who have long been removed from sciences " , and by doing so he has produced a volume which will attract rather than repel th

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Neurology (2nd ed Vols I, II, and III Londo worth 1954 Pp 2060 £3 10s per vol, £10 10s The first, two volume, edition of Kinnier Wilson's edited by Ninian Bruce, was a courageous att to the public at the earliest opportunity the fruits o considerable labours *The work interrupted by th* death, was inevitably incomplete, and the e at times a source of real frustration to the reader p in the indexing Despite these faults, the debt interested in neurology to the producers of this incalculable, and they will greet with especial ple new three volume edition The matrix of the Kinnier Wilson's own encyclopædic knowledge—a pound of personal experience and a unique acqua and recollection of, the apposite literature More the writing is still characterised by the simple m style, though it is a matter for regret that the pr nouns of the section on progressive lenticular de have been replaced by the third person On the o this section has been extended by the addition of biochemical importance which were unknown to Wilson Elsewhere, too, the new edition adds to the basic structure new knowledge on ætiology and In certain sections, as in that on myasthenia summaries of the more important neurological sometimes sacrifice subtlety to brevity, but this is to the editor's laudable desire to preserve uncha general character of the original book Sir Russell contributed a section on aphasia, apraxia, and a lucid and informative analysis of the chaotic st *knowledge of these subjects* Dr Nevin has re section on neurosyphilis with particular attention to treatment with penicillin

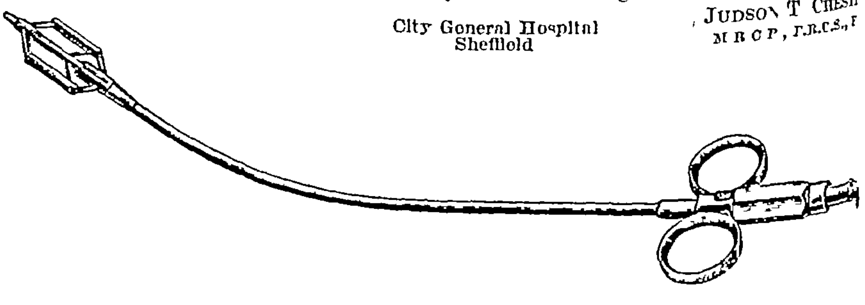
The print is good, a previous tendency to burst i type on the slightest provocation has been the references are now collected at the end of each The covers, however, seem inadequate both in str elegance

New Inventions

A NEW VALVULOTOME

THIS valvulotome was devised so that one instrument only need be passed into the stenosed aortic or pulmonary valve to act as probe, knife, and dilator Its small size when closed ensures a minimum of trauma when it is inserted either through the ventricular wall or retrogradely through the aorta or the pulmonary artery

The blades are formed by either the anterior edge of the front supports of the dilator or by the posterior edge of the rear supports, so that the instrument can be used for cutting when being inserted or withdrawn through the stenosed valve The blades are shielded when the dilator head is closed for insertion or for use as a probe The degree of dilatation possible can be set before insertion or, if necessary altered after insertion by rotating the hexagonal screw on the handle up to a maximum of 24 mm The size of the dilat used at any given time is recorded on the he of the handle 0 mm (closed), 12 mm, 15 mm, 21 mm, or 24 mm



The measurements of the instrument are as

Head closed 6 mm wide, 4 mm in depth, but opened up to 24 mm wide, 4 mm in depth.

Length of the expanding blades 22 mm

Forward cutting blades 12 mm long, posterior one less

The diameter of the main stem is 4 mm and th length of the stem 260 mm

This instrument has been made for me by the Urinary Manufacturing Co Ltd, London

City General Hospital
Sheffield

JUDSON T CHEST
M R C P, F.R.C.S., F

THE LANCET

ONDON   SATURDAY, JULY 30, 1955

The "Wrong" Hospital

elderly man on a motor tour in Devon was
n with acute retention. He determined to
home rather than be admitted to a strange
l, and travelled north in easy stages. Wherever
a hospital sign he stopped and requested
and so progressed from catheter to catheter,
o reached his home town and the surgeon of
nce. He found that the hospital sign led him
ous times to cottage hospitals, city infirmaries
rnity hospital and a mental hospital. At all
se his distress was relieved cheerfully and
ly. No praise is too high, in this man's mind
National Health Service. Contrast this with
e of a small boy who suffered an injury to his
d was sent from the eye hospital (because it
n extra-ocular injury) from the accident
l (because there was no fracture) from
rmary (because he was a child), and from the
n's hospital to the plastic-surgery unit at the
l centre. As hospitals become more and more
ised the chances of a patient in urgent need
ntion being sent to the "wrong" place increase.
y press has reported many instances of the ill
ured being sent from one receiving-room to
r before being accommodated. When such a
dies soon after admission, this outcome is
y to be connected with the transfer from one
l to another just before death but distraught
es are not easily convinced of this and in any
such transfers are deplorable from the humani
viewpoint. The patient with the enlarged
e was fortunate in that those who saw him
etricians psychiatrists physicians surgeons or
l practitioners—were all "doctors", and we
a plea that the value of this be not forgotten
nalisation continues to grow. Any emergency
le to send a patient to the nearest hospital
er or not it is authorised or equipped to deal
is case, and every hospital, we suggest should
resources at least for applying first-aid, for
ng the severity of the condition, and for arrang
nsfer to a more suitable centre if the patient
o travel further or accommodating him if he
to travel.

dent cases are more liable than others to suffer
h delay in attention, and Gissane[1] has called
on to the desirability of extending arrangements
ir treatment. A perfect accident service starts
accident itself. Opinion is still divided about
visability of applying accident surgery at the
of the incident the Ministry of Health has
mended[2] that mobile teams be formed but
believe this might commonly cause damaging
n definitive treatment. Effort might be con
ed in the first instance, on seeing that know
f the existing organisation is readily available
scene of the emergency that first aid is correctly
and that the patient is despatched in the right direction from the very beginning. This calls for correlation of the various services that may be involved—industrial medical units, district nurses, police, fire brigades, ambulance services, first aid societies, casualty departments and duty residents in all hospitals, emergency bed bureaux, family doctors, and those medically responsible for public gatherings. These individuals and bodies will be most effective if they are aware of the proper disposal of accident cases before the accidents happen.

There will always be times when hospitals must override the limitations of their special functions. Preparedness will reduce the number of such occasions, but it will never eliminate them.

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[1] Gissane, W. *Lancet*, 1955, i, 562.
[2] H.M.(54)11. See *Lancet*, 1954, i, 1225.

The Action of Insulin

In the early researches on the cause of diabetes at the turn of the century, a start was made on an ever widening field of inquiry which now embraces complex biochemistry, enzymology, and isotope studies. It was natural that attention should first be focused on the effect of insulin on the metabolism of glucose, an excess of which in the blood and urine characterises diabetes, but it has since become clear that insulin affects many other metabolic processes either directly or indirectly owing to the altered carbohydrate metabolism. The three main hypotheses of the action of insulin on carbohydrate metabolism can be termed the permeability hypothesis, the hexokinase hypothesis, and the hypothesis of action on oxidative phosphorylation. The permeability hypothesis is in essence the most basic, for if the passage of glucose into the cells is under the control of insulin then other possible intracellular actions of insulin on glucose would lose much of their relevance, at least in states of acute insulin deficiency.

Levine and his group[1] first produced convincing evidence that insulin affects the permeation of sugars into cells. They used galactose because it is metabolically inert in muscle, and they injected this intravenously into animals from which the liver, kidney, and intestines had been removed to prevent the conversion of galactose to glucose. Under these circumstances the "galactose space" represents a measure of the permeation of sugar into muscle. In the controls the galactose space was 45% of the body weight representing the extracellular fluid compartment, but when insulin was administered with the galactose there was an increase of galactose space to about 80% which represents total body water. Having studied various sugars by this technique, Levine and his colleagues divided them into 'insulin responsive' and 'insulin non-responsive' groups, and concluded that the entrance of sugar into the tissues is "governed by a transfer system which is especially adapted with respect to chemical structure." In complementary experiments Park[2] measured the accumulation of 'free glucose' in the intracellular space of muscle. He circumvented the usual rapid phosphorylation of sugar on entering the cell by using rat diaphragm chilled to retard the phosphorylation process. In non-insulinised tissue the amount of free glucose approached closely the value to be expected for an entirely extracellular distribution but in animals given insulin the quantity of free glucose was four to five times greater than in the insulin-deficient controls A somewhat similar approach, but using C^{14}-glucose, was made by DRURY and WICK,[3] who separated the effect of insulin on glucose transfer from that on glucose oxidation by competitive inhibition of the latter with β-hydroxybutyric acid The results showed that insulin still produced increased permeability to the isotopic glucose If further confirmation is needed that insulin is concerned with glucose permeation, it is provided by Ross,[4] [5] who used the barrier formed by the ciliary body of the rabbit's eye to the passage of glucose from the blood to the aqueous humour He demonstrated by his kinetic data that the transfer of glucose across the cell barrier in the eye is influenced by insulin It is still unknown whether the insulin effect on permeability is mediated mainly by physical or chemical means

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[1] Levine, R., Goldstein, M. S., Huddleston, B., Klein, S. *Amer. J. Physiol.* 1950, 163, 70.
[2] Park, C. R. *J. clin. Invest.* 1953, 32, 593.

The hexokinase hypothesis deals with the stage of glucose 'activation' once it has penetrated the cell It is generally agreed that activation of glucose is accomplished by the formation of hexose-6 phosphates by reaction with adenosine triphosphate catalysed by glucose hexokinase Early reports [6] seem to show that the hexokinase reaction in muscle extracts of normal and diabetic rabbits is inhibited by pituitary and adrenal cortical hormones, and that this inhibition is released by the addition of insulin This work has not been confirmed, however, using preparations with the cell structure destroyed,[7] and the hypothesis clearly cannot explain the extreme insulin sensitivity of hypophysectomised animals It does explain the greater facility of the diabetic organism to use fructose as compared with glucose in the absence of insulin, since fructose hexokinase acts independently of insulin [8] It is extremely difficult to obtain information by which to differentiate between the permeability action of insulin and that on gluco-hexokinase, for both appear to have specificity for different sugars, and it is not clear whether this specificity depends on the permeability factor or on a specific action on enzymes within the cell This uncertainty could be ended only if insulin were shown to act on hexokinase in a homogeneous system

The third hypothesis of insulin action—that of oxidative phosphorylation—does much to bring together otherwise unrelated experimental facts The oxidations of the Krebs tricarboxylic-acid cycle are concerned with the formation of high-energy phosphate bonds which are stored as adenosine triphosphate and creatine phosphate Such energy-rich phosphate bonds are essential for the initial phosphorylation of glucose and possibly also for its transfer across the cell membrane [7] They are needed, too, for the synthesis of fatty acid and protein STADIE and his group [9] have obtained clear evidence that insulin increases oxidative phosphorylation in the diaphragm of normal rats What is more, they have shown that the extra phosphorylation was not associated with increased oxygen uptake or rise in respiratory quotient They suggest, therefore, that insulin can increase the
efficiency of oxidative phosphorylation in
diaphragm More recently STADIE and
have shown that in the cat the mitochondr
liver seem to be specifically concerned with ph
lation under the control of insulin

Our knowledge of the relation of insulin to
protein metabolism is still very scanty,
biochemistry of these materials is less well un
than that of carbohydrate It has been cle
ever, since DRURY's work in 1940[11] that
accelerates fat synthesis, and more qu
information was provided in 1944 by S
BOXER[12] They studied the rate of incorpo
deuterium into the body-fat of normal and
diabetic rats In the diabetic animal the
utilisation of glucose for fatty-acid synthesis
5% of that in the normal, but insulin resto
process towards normal More recent
indicates that this failure to synthesise fat is
to deficient glycolysis of glucose Fruct
glycolysis of which occurs independently of
restores fat synthesis to normal in untreated
rats Insulin also favours synthesis of prote
ing, for instance, reversal of negative nitrogen
and fall of plasma amino acids [15] [16] As in
of fat, protein synthesis appears to be infl
insulin indirectly through its action on g
KRAHL[17] has measured the incorporation of
glycine into glutathione by normal and di
liver slices The glutathione synthesis in the
was restored towards normal by adding insul
medium, especially when glucose also was pr

So far the actions of insulin have been
loosely in terms of the hormone affecting
enzyme systems, but this takes no account of
modes of molecular interaction In the
enzymes, a useful explanation of their action
based on the concept of a chemical union
the enzyme and its substrate, so it was natu
STADIE should attempt a similar approach to
lem of the action of insulin He first demon
insulin is specifically bound to cells, in a simpl
ment with rat hemi-diaphragms which
to synthesise additional glycogen when
for a few seconds in a glucose containing me
Diaphragms pre-treated with insulin made sig
more glycogen, although control experiments
show any insulin free in solution Later work
strated metabolic activity of bound insulin
tissues, including lactating mammary gl
adipose tissue Brain tissue failed to bind
and this may be relevant to the evidence
metabolism of brain is independent of insulin
hormones seem to exert a peripheral effect on
binding This is reduced, for instance, in
diabetes, increased after hypophysectom
decreased by prior injection of pituitary and
cortical hormones Low bound-insulin values
in normal diaphragms give no increase in
synthesis, gave almost maximal increases

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3 Drury, D R Wick, A N *J biol Chem* 1952 **196**, 129
4 Ross, E J *J Physiol* 1951 **112**, 229
5 Ross, E J *Ibid*, 1952, **116** 414
6 Cori C F *Harvey Lect* 1949, **41** 253
7 Stadie W C *Amer J med Sci* 1955, **229**, 233
8 Renold, A E, Hastings, A. B, Nesbett, F B *J biol Chem* 1954, **209**, 687
9 Haugaard, N Marsh, J B, Stadie, W C *Ibid* 1951, **189**, 59
10 Stadie, W C, Vester, J W Cited by W C Stadie
11 Drury, D R *Amer J Physiol* 1940, **131**, 536
12 Stetten, D jun, Boxer, G E *J biol Chem* 1944
13 Baker, N, Chaikoff, I L Schusdek A *Ibid* 195
14 Chernick, S S, Chaikoff, I L *Ibid*, 1951, **188**,
15 Mirsky, I A *Amer J Physiol* 1938 **124** 569
16 Lotspeich, W D *J biol Chem* 1949, **179**, 175
17 Krahl M E *Ibid*, 1953, **200**, 99
18 Stadie, W C, Haugaard N, Hills, A. G, Marsh, J
J med Sci 1949, **218**, 275

omised rats [19]—the first clear cut demonstra it hypophysectomy can increase the insulin ty of the peripheral tissues

esent many of the data on the mode of action in have not been integrated into any unified r but with the growth of information on the sic biochemical processes particularly in fat tein metabolism some simplification of ideas possible

Bread

ears ago we reviewed [20] the history of the rate of flour from the time immediately first world war when the need to find feeding livestock caused reversion to a whiter each occasion when the extraction rate has ered we have deplored the consumption of ead and we go on deploring it even now flour is enriched with nutrients—i e when are made to improve it or to compensate has been removed in milling In his n Wells lecture for 1953 Sir CHARLES DODDS [21] to demolish the argument that all food tinue to be consumed as nearly as possible rm in which it is provided by Nature he hat survival of the present large populations orld depends on processing of food which ts storage and distribution, and he evidently the wheat grain (itself already modified by a raw material from which biochemists and are fully entitled to produce something more e than a palæolithic scone In his Sanderson ture for 1955 which we publish this week A MCCANCE traces the preference for whole- ead from PLATO to the Food Education it is, he says part of a nostalgic, almost belief of town dwellers in the lost virtues forefathers rural life and it has nothing to fact and realities ancient or modern Yet of these persuasive lectures we maintain tantly that, when it is a question of altering s been a staple food for a very long time, of proving advantage lies on those who wish the alteration, not on those who oppose it for the use of chemical improvers of flour nor v extraction rate do we regard this advantage d

onference on the Post-War Loaf,[22] held in 1945 ided in its views about the extraction rate embers of the official side who included ORDER, disapproved of enrichment and held the retention of the natural constituents of eat grain is so incomparably preferable to ement that they are not prepared to contem e adoption of enrichment but the represen of the industries would not recommend that ent should be prohibited Both sides were that flour should contain not less than stated s of the three token ' nutrients—thiamine, o acid, and iron Two years ago when cereals controlled the Flour Order 1953 [23] required y flour with an extraction rate of less than 80% should have these three nutrients restored to the minimum amounts specified by the Conference on the Post War Loaf. Continued consumption of flour with an extraction rate of 80% or more was encouraged by the retention of a subsidy by which the 1¾ lb loaf of National bread sold at 7½*d* whereas unsubsidised breads made from whiter flours sold at 10*d*–1s and this difference in price has been largely responsible for the relative unpopularity of the white loaf recommended by the National Association of Master Bakers [24] But clearly such a subsidy could not be long maintained if the white loaf were really shown to be the better In their authoritative book written as nutritional advisers to the British milling industry, Lord HORDER, Sir CHARLES DODDS, and Mr T MORAN, D.S.O ,[25] emphasised the importance in deciding this issue of MCCANCE and WIDDOWSON's work on undernourished German school children, of which short abstracts only had then been published and the account of this work given at the front of our present issue may suggest that it does in fact say the last word on the subject But does it ?

This experiment of MCCANCE and WIDDOWSON's was started as a result of the difference of view of the members of the Conference on the Post-War Loaf and it has now been reported in full[27] The trials were made in 1947–48 in two orphanages in Germany with children whose previous diet had been insufficient for their needs and who were consequently below the weight and height usually considered normal for their age The children were divided into groups and given unlimited amounts of bread made from five different flours—namely 100%-extraction 85%-extraction, 70%-extraction 70%-extraction enriched with the three token nutrients and riboflavine to the amounts present in 100% extraction flour and 70% extraction enriched with these nutrients to the amounts present in 85% extraction flour The rest of the diet was mainly vegetables and the amount of animal protein was very low The children grew even faster than British or American children of the same age, and during the twelve months of the trial growth was equally good on each of the experimental flours But the investigators rightly said that the greatest caution must be exercised in coming to any conclusion at all, ' and there are in fact certain points not particularly emphasised in their report which must be taken into account in assessing any nutritional differences between the breads First the children under study were initially short of calories and were therefore underweight but they were probably not deficient in vitamins which were being fairly liberally distributed at that time to German children through the auspices of the Swedish Red Cross and other organisations Secondly an analysis of the calories and nutrients they consumed during the experimental period shows that these were adequate, with the possible exception of riboflavine There seems indeed to be no reason whatever why the children should not have grown optimally even upon the 70%-extraction flour without fortification. But an outstanding and important point is that this 70%-extraction flour had a much higher content of nutrients than is usual For

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e W C Haugaard N Vaughan M *J biol Chem* 200 743

t 1953 i 1235

s E C *Ibid* p 1211

6701 H.M. Stationery Office see *Lancet* 1945 ii 789

953/1284 H.M Stationery Office

21 *Times* Sept 23, 1953

25 Bread the chemistry and nutrition of flour and bread with an introduction to their history and technology Con table London 1954 Pp 186 18s.

26 Widdowson E M McCance R A *Spec Rep Ser med Res Coun Lond* 1954 no. 287 see *Lancet* 1954 ii, 1006.

instance, it contained about 0 15 mg of thiamine per 100 g of flour, whereas according to Lord HORDER and his colleagues[25] 73%-extraction flour as used in this country averages 0 09 mg per 100 g Similarly, the amount of nicotinic acid in the 70%-extraction flour used in Germany was about double that occurring in flour of this extraction typically used in this country In fact, the white flour of WIDDOWSON and MCCANCE approximated, as regards these vitamins, to the National flour of this country That these high vitamin values for the white flour used in Germany were not caused by differences in analytical methods is indicated by a paper published by MCCANCE and his colleagues on the chemical composition of wheat just before the German experiments began[27] , the figures given in this paper for the composition of flours of 70% extraction are in general much lower than those for the flours used in Germany Thus in this important trial, one purpose of which was to test the nutritional differences between flours of different extraction fortified and unfortified, flour used does not appear to have been the 70%-extraction flour used in this co

The millers and bakers are said to be the subsidy on National flour, which c £30 million per year, should be removed an public should be offered at one and the either National flour or 70%-extraction flo with the three token nutrients To advise th ment whether this should be done, a pane appointed[28] to determine, in the light of th and medical evidence now available, the di composition and nutritive value between flour and flours of low extraction rate with the three token nutrients, and also to adv any such differences are significant from th view of the health of the population Th to be decided is whether it is better to kn extraction (i e , National) flour or to use which a number of nutrients have been re to which three have been restored

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[27] McCance R A , Widdowson, E M , Moran, T , Pringle, W J S , Macrae T F *Biochem J* 1945 39, 213

[28] *Lancet* 1955, i 1021

Annotations

TREATMENT OF TETANUS

IN this country tetanus kills sixty to eighty people a year Most of those attacked are active and healthy, and about half of them are children Severe tetanus, though its manifestations are terrible, leaves no sequelæ those who recover do so completely Much thought has been given to increasing the chances of survival Despite the difference in their pathology, severe tetanus and bulbospinal poliomyelitis have much in common In both diseases the primary cause of death is respiratory insufficiency This insufficiency has two components One is impairment of the bellows action of the chest , the other is the pulmonary infection which arises, through disorganisation of the pharynx and larynx, from invasion of the lungs A striking decrease in the death-rate from bulbospinal poliomyelitis has been achieved, since 1952, by the application of the principles worked out in Denmark by Lassen[1] and by Ibsen[2] It seemed reasonable to hope that the analogous manifestations of tetanus might yield to the same methods, particularly if the analogy could be made closer by converting the spasticity of tetanus into the flaccidity of poliomyelitis, so that the bellows action of the chest could be more easily restored by artificial respiration The muscle relaxants have been used commonly in tetanus, but it is only in the past two years that clinicians have become aware of the promise offered by bringing tetanus close to poliomyelitis, and then treating it on the lines which have been so successful in that disease[3] Several recoveries have resulted from applying this plan, but it has not proved as spectacularly successful as might have been expected theoretically This is probably because of the difficulty of carrying out the treatment, which is exacting and calls for nice judgment

In severe tetanus the main objectives are to keep the respiratory tract free from invasion, to reduce muscle spasm, and to maintain nutrition[4] Tracheotomy is the best means of protecting the respiratory tract[5] [6] , while muscle spasm has been countered by means of drugs which reduce hypertonia either by central depression[7] or by peripheral neuromuscular block The di of the central depressants is that they furt the activity of the brain stem, already attacked toxin The disadvantage of the relaxants is use often demands long continued artificial re

That the central depressants can be used is shown by Forbes and Auld,[8] who report t secutive cases of tetanus without a death protection of the lungs, and the use of narcoti doses were the main features of their Dr Bodman and his colleagues report elsewh issue a case with a short time of onset in whi maintained for twelve days The lungs were by an airway, posture and suction , and the h was treated mainly by chlorpromazine, peth nitrous oxide This did not suffice to prevent c one of which resulted in fatal anoxia , but th oxide and chlorpromazine evidently played a It may be that their action, though central different level from that of the narcotics, so th to reduce hypertonia without at the same time d the vital centres Those impressed by the of the relaxants—namely, that artificial res commonly necessary —may wish to try Bodman of reducing hypertonia

ABORTION LEGISLATION IN U S.S

THE law of England changes slowly It re after a cautious interval to shifting social cond changing climate of public opinion, or dev scientific knowledge Medical practice is more to these influences than legal practice, and lawyer hesitates the doctor is sometimes in a position Today several points at which a legal may be in due course expected touch on medi of these is the law of abortion Discussions on it amendment have been going on for a long time last short lived amending Bill was introduced ment in 1953 The experience of other countr fore relevant, and a recent summary of Soviet le will be of interest to lawyers and doctors alike

The preamble to the first Russian Act on which was passed in 1920, pointed out that p only drove the evil underground By propa legislation for the protection of mothers and ch government hoped to eradicate it gradually meantime abortion was legalised with certain tion must be performed, without fee in a State by a doctor The penal code of 1922 laid down nqualified person who performed the operation tor who performed it for a fee, was liable to a prisonment or forced labour Where the opera performed without the consent of the woman the woman died, the sentence could be increased ears imprisonment

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[1] Lassen H C A *Lancet* 1953 i, 37

[2] Ibsen B *Proc R Soc Med* 1954, 47 72

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gislation remained in force till 1930, when a new passed making abortion illegal except when the e mother was endangered or where the parents reditary disease. Penalties were imposed of one ears imprisonment for a doctor who performed ation illegally, and a minimum sentence of three unqualified persons or where the operation had ried out in unhygienic surroundings To force a o undergo an abortion carried a penalty of two prisonment A pregnant woman who in defiance ct arranged for an abortion was to be punished by pinion, and on a further offence by a fine of up oubles

order of the Supreme Soviet, dated Aug 5 e penalties imposed on the woman were revoked alties for those performing the operation remain

ENEMAS

nema or clyster is a very old remedy references se as early as 600 B C have been found in lian and Assyrian tablets The Egyptians l many curious mixtures for the purpose The voided such extravagances and used only boiled r saline, occasionally adding milk honey or t Hellenic good sense did not last, and in the Ages complicated enema solutions were reintro The peak of absurdity was reached in 17th Europe when according to Liebermann[1] it fashion in smart Parisian circles to have three delicately tinted and scented enemas daily ouis XIV himself is said to have received over usand in his lifetime This period has been called tury of Clysters. 18th century rationalism led line in the enema's popularity, but the custom l cleansing of the lower bowel persisted until tively recent times. Today it seems to be hat the purpose of an enema is purely evacuatory ing of enemas containing astringent sedative, lled stimulating drugs is virtually useless As uant the enema is of great value in the post e period, in medical diseases it is rarely required. gular or repeated administration of enemas ly to children may be psychologically harmful.

vacuate the rectum, the enema need consist one pint of plain warm water The addition of nnecessary and indeed may irritate the mucosa a custom that dies hard According to Jackson[2] because many years ago the English translator rench treatise on enemas mistakenly assumed e word *lavage* implied the use of soap as well as Anyhow nurses are still taught in our hospitals an enema saponis They are also expected to be with many other medieval confections contain example, ox bile, asafœtida and black treacle nt nursing manual contains thirteen such recipes tely they seem to be rarely prescribed For tration a funnel and a soft rubber catheter should Higginson's syringe with its hard bone nozzle, jure the rectum. A new plastic disposable dis unit has been introduced[3] which seems to be lly the clyster purse of Avicenna (A.D 980–

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S A Riley C R Haag H B *J Amer med Ass* 1955 1205

GROWTH HORMONE

Growth hormone or, as it is often called, somatotrophic hormone has been prepared from pituitary glands in a form which is biologically free from contamination with the other pituitary trophic hormones. Its physicochemical and physiological properties have been extensively studied and some of this work has been reviewed by Weil[1]

Growth hormone, in a broad sense is a metabolic hormone and is characterised by ability to act without the mediation of any target gland It acts on all cell systems—epithelial, mesothelial, and endothelial—and it influences the metabolism of protein carbohydrate and fat Growth hormone causes an increase in the rate of protein formation which is evident in growth of cells It probably affects the rate of both protein anabolism and amino acid katabolism the two together are measured by the amount of nitrogen retained in the body Its action is influenced greatly by the nutritional state being enhanced in the well fed and diminished or abolished in the starved animal The protein deposited in the tissues is apparently in a labile functionally ineffective form which is transformed under the influence of the thyroid hormone, into specific physiologically active tissue components. The action of growth hormone on protein metabolism depends upon the presence of circulating insulin It fails to store protein in the depancreatised animal without insulin and its effectiveness increases with increase in the dosage of insulin administered Lastly it is influenced by the presence of certain circulating steroids, such as testosterone, which are known to cause an increase of protein in the body Its action therefore contrasts with that of corticotrophin and the other adrenocortical oxysteroids which diminish the amount of total body protein

Growth hormone has long been known to influence carbohydrate metabolism The administration of this hormone to a fasting rat causes initially a fall in the level of the blood glucose. The physiological background of this effect is not understood, but continued administration leads to a progressive rise in the level of glucose and a corresponding increase in the secretion of insulin—a change associated with the development of remarkable resistance to insulin In some animals the persistent hyperglycæmia causes at first temporary exhaustion of, and later permanent change in the pancreatic islet tissue and diabetes mellitus supervenes In addition to increasing the secretion of insulin growth hormone inhibits the peripheral utilisation of carbohydrate and increases the storage of glycogen in the muscles but there is evidence that the maintenance of glycogen stores by a related phenomenon glyconeogenesis is a function of corticotrophin

The action of growth hormone on fat metabolism is interesting The carcass fat of treated animals is reduced Fat katabolism occurs at the expense of depot fat for the level of lipids in the serum is raised and triglycerides accumulate in the cells of the liver This enhanced utilisation of fat is further demonstrated by depression of the respiratory quotient and formation of ketone bodies Corticotrophin and the adrenocortical oxysteroids likewise stimulate the formation of ketone bodies and promote the deposition of lipids in the liver but they do not appear to accelerate the mobilisation of depot fat and may even tend to augment the storage of carcass fat.

Whether growth hormone acts independently on protein carbohydrate and fat, or whether it acts on one or other primarily and the rest secondarily is undecided Perhaps the most widely held view is that it acts primarily by increasing the utilisation of fat thus sparing protein

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SLIPPED FEMORAL EPIPHYSIS

Slipping of the upper femoral epiphysis is primarily a disorder of puberty it is rare before the age of ten years and does not arise in late adolescence after the epiphysis has fused It is four times as common in boys as in girls and is usually unrelated to injury Two varieties of slipping are recognised (1) the "acute," which is uncommon and is associated with complete displacement of the head, and (2) the "chronic," in which the onset is insidious and diagnosis may be difficult

Most children with this condition are overweight, and some have a typical adrenogenital syndrome Perhaps an endocrine disturbance produces changes in the epiphyseal cartilage, a possibility supported by the experiments of Harris,[1] who found that growth hormone decreased, and sex hormones increased, the resistance of the epiphyseal plate of the rat to shearing Lofgren[2] has shown that the pituitary fossa is small in the child with slipping of the upper femoral epiphysis While endocrine factors may play an important part, there is no doubt that the increasing obliquity of the epiphyseal plate during growth is a predisposing factor, and that this must dictate the downward and backward displacement of the femoral head Klein et al[3] have emphasised that such displacement is commonly bilateral, as many as 40% of their patients ultimately showed changes in both hips In the diagnosis of minor degrees of slipping lateral radiography is essential, and, when the disorder is bilateral, comparison with standard radiographs may be necessary

Attempts to reduce the displacement by traction or manipulation, although reported by Heyman[4] to give good results, have fallen out of favour Cleveland et al[5] have shown that no permanent reduction can be maintained by this method, and the incidence of avascular necrosis of the femoral head is considerable Most surgeons prefer to apply traction only when the slipping is acute, and to follow this by surgical fusion of the head and neck When the slipping is slight reduction is probably contra indicated, and insertion of a Smith-Petersen nail through the neck into the head of the femur produces reasonable fixation, and ultimately epiphyseal fusion The theoretical advantages of bone-grafting across the epiphyseal plate,[6] which produces fusion more rapidly and has the merit of opening the epiphysis to metaphyseal blood-vessels, must be weighed against the increased risks of open operation

In the presence of considerable displacement of the femoral head, nailing without reduction is neither desirable nor, in most cases, feasible The deformity may be corrected by wedge osteotomy of the neck of the femur, and the position of the fragments can then be maintained by a nail or wires Wagner and Donovan[7] have had considerable success with this procedure, and Compere[8] has emphasised the importance of over correction in changing the line of shear in the femoral neck Avascular necrosis of the head of the femur is apparently uncommon after this operation

Harris[9] has drawn attention to the importance of early diagnosis and has described a characteristic symptom-complex—a limp of spontaneous onset, and pain referred to the knee, in an obese adolescent Since the deformity may progress despite relief from weight bearing, and since the hip appears to tolerate, at least for many years, minor changes in its anatomical configuration, surgical fixation of the head at this appears justifiable In an adolescent of good approaching the end of the growth period, may result in epiphyseal fusion and also limb equality No general agreement exists ments of the more extensive reconstructive Howarth[10] has emphasised that this is a limited duration which is usually followed, treatment, by a long period of symptomless The evaluation of treatment is very despite a good anatomical result arthritis may in later life It may be better for the patient the onset of arthritis before submitting to operation

TEA

In the 1930s popular song writers proc little risk of contradiction, that "everything tea," and there is no reason to believe that then have disturbed this custom In the U.S. once the "colonists" dumped tea into Boston and even today they accuse the British of to the habit, consumption in 1954 had equivalent of 138 cups for each member of the This gain in popularity may have been partly for the decision to arrange the symposium on which was held in New York last May[11]

As Prof J C Krantz pointed out, "only ages which affect the central nervous survived the acid test of time" Tea is derive at least some of its attributes from its caffeine Throughout the world, various drinks caffeine have become established independently China, coffee in Arabia, kola in West Africa, and Paraguay Any regular tea drinker will neverth that taking the appropriate amount of caffeine even with tannin, cannot be compared with the natural infusion In the symposium Krantz that the drinking of infused tea leads to slight stimulation and mild diuresis on account of the and an astringency to the alimentary tract tannin Dr H J L Marriott maintained that the variety of its constituents, "tea is a harmless beverage", while Dr R L Jenkins sised that its cheering effect may be mainly psych The experimental studies of Wirts et al[12] indicate the alimentary tract tea does little but increase of gastric emptying (a faculty that it may share beverages), while Stanley and Schlosberg[13] little change in the performance of certain physiological tests after taking tea that could ascribed simply to the custom of drinking it

In his introduction to the symposium Dr S suggested that, so far as tea is concerned, "the be greater than the sum of its parts" and effects on body and mind cannot be calculated according to its constituents, this would not for instance, the seeming paradox whereby may ultimately get off to sleep after a restle watch by taking a cup of tea—despite its content Medically, there seems to be hardly contra-indication to tea drinking in moderation matters is that it should be carefully infused the palate, and taken in appropriate company the mind

Mr Charles Read has been elected presiden Royal College of Obstetricians and Gynæcologists

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Special Articles

SULTATIVE HEALTH CENTRE FOR OLDER PEOPLE

The Rutherglen Experiment

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years ago the public health department of
n started a welfare service for old people Our
o maintain them in a sound state of physical
ıd social well being and we have tried to carry
) by providing clinical facilities for medical
t at the premises of the local authority
operating with other statutory and voluntary
or old people (3) by extending the health
vork to the aged and (4) by setting up a
service

ıctions of the centre are: to promote health
nt disease to compile a register of old people
thin the district to search for early and
ed disease by the examination of older people
omplaints and those with minor ailments to
treatment with social environment through
to run a citizens advice bureau for old
o research into the ageing process

theory was put into practice we held a meeting
e of the local general practitioners to discuss
centre should be run Out of this discussion
ıt system arose and it has remained unchanged
start All new patients are introduced through
al practitioners, who are free to select patients
k likely to benefit from the centre s help

HOW THE CENTRE WORKS

glen is a good site for an experiment of this
it is a densely populated area (25 000 people
acres) with a central well equipped local
clinic, in which the old people s centre is housed
he usual services provided by a local health
diagnostic chest and gynæcological out-
inics of the Western Regional Hospital Board
ere

dical officer of health sees new cases in the
rt of each week and interviews any old patient
ns for guidance He carries out general clinical
cosocial assessments. As he is also the chest
for the burgh he can arrange directly for
ns of the chest and where necessary other
he body The interview and examination is
for if an old person is given a cup of tea
facts can often be elicited which otherwise
ıdiscovered The consultant physician holds a
ı Friday morning and examines the new cases
ıe earlier part of the week by the M O H and
ırning for continued supervision With the
physician comes one of his house officers who
t simple laboratory procedures at the centre
nple hæmoglobin estimations, red and white
counts blood films and test meals. More
nvestigations are dealt with by the regional
service All new patients are introduced to
through their own general practitioners, and
tant physician dictates the letters which are
e doctors. These letters give the opinions of
tant physician and the M O H and cover the
ıl medicosocial needs of the patients

Health visitors attend the clinic sessions and thus gain an insight into the problems of old age and the needs of the patients whom they may later visit Representatives of the Rutherglen Old People s Welfare Committee also attend the centre each Friday morning They try to encourage patients who have not already done so to join this organisation These voluntary workers make domiciliary visits as occasion demands, and also conduct occupational therapy at the clinic

A physiotherapist is employed at the centre by the Western Regional Hospital Board, while a chiropodist is paid by the local authority for part-time work A charge of 1s 6*d* is made for chiropody but this may be waived wholly or in part at the discretion of the M O H If a patient wishes to pay more than the standard charge he may do so

If the consultant physician thinks that more investigation is necessary, a further examination at the centre or admission to a hospital for short stay assessment is arranged

PHYSICAL HEALTH OF THE OLD PEOPLE

From August, 1952 to November 1954 some 500 ambulant old people have attended the centre, 243 men and 257 women 288 of them were seventy years of age and over 148 had no symptoms 107 of whom were aged from seventy upwards 352 mentioned some degree of physical disability Pain in various sites of the body was the commonest symptom followed by weakness, breathlessness on exertion and giddiness Symptoms of this kind were the main complaints made by 315 (89%) of the 352 cases

The general nutrition of the old people, their height and weight were noted Their percentage overweight to ideal weight was reckoned according to Anderson's nomogram (Greene 1951) 20 of the women but none of the men were 50% overweight while in the 20–49% overweight group there were 67 women and only 26 men Among the 148 old people with no complaints only 7 women were 30% or more overweight none being *over 50% overweight 103 were 1–9% overweight*

Blood pressure readings were taken by one observer at the end of the clinical examination after the patient had been lying quietly for thirty minutes and often the reading was verified by a second observer

Blood pressure readings in elderly people are under review at present (Hamilton et al. 1954) In 1922 Symonds stated that for people of sixty and over the average normal blood pressure was 135 2/80 9 but in 1952 Masters et al suggested for the age group sixty to sixty four years a range for men of 115–170/70–100 and for women of 115–175/70–100 In our series, however, no fewer than 126 men and 187 women had a systolic pressure of over 170 mm of mercury, while 28 men and 53 women had a diastolic pressure of over 100 mm Among the old people with no complaints, 42 men and 43 women had a systolic pressure of over 170 mm, and 10 men and 7 women a diastolic pressure of over 100 mm

The results of the hæmoglobin estimations were better than expected. 396 out of the 500 cases showed a level of 80% or over and in only 9 patients was the hæmoglobin content less than 60% The hæmoglobin percentage was estimated by one observer using a Sahli hæmoglobinometer, calibrated by the same observer against specimens estimated in a standardised photoelectric instrument using the oxyhæmoglobin method (70% = 11 g per 100 c cm 80% = 12 7 g)

The principal measures we have taken to improve the health and promote the welfare of these old people are as follows

(1) The prescription of drugs—such as iron, tolazoline hydrochloride, theophylline ethylene diamine phenobarbitone and, for some and after sensitivity tests an antibiotic Deafness in 11 patients was due to wax in the ears and this was successfully dealt with by syringing

CAUSES OF UNHAPPINESS AMONG 126 OLD PEOPLE *

—	Women	Men	Total
Extreme loneliness	20	7	27
Restriction of activities due to physical ill health	21 (2)	5	26 (2)
Alone and unable to provide reasonable care and attention for self	11 (7)	5 (2)	16 (9)
Disagreement within the family circle	11	5	16
Grief over death of near relative	5 (2)	6	11 (2)
Neglect by children	4 (3)	4 (4)	8 (7)
Dissatisfaction with place of residence	1	5 (1)	6 (1)
Nursing invalid relative	4 (1)	1	5 (1)
Introspection	3	1	4
Husband drinks to excess	3	0	3
Miscellaneous	0	4 (1)	4 (1)
	83 (15)	43 (8)	126 (23)

* Figures in parentheses show those who were also lonely

(2) Patients with obesity or malnutrition were advised on food intake and in the regulation of their daily lives

(3) 8 patients were sent to the surgical outpatient department of the consultant physician s parent hospital with the permission of the general practitioners 13 women received attention at the gynæcological unit in the public-health department 16 patients with diseases of the eye, skin, or ear, nose, and throat were referred for consultant opinion through their own general practitioners

(4) 18 of our 500 cases were admitted to the hospital attended by the consultant physician for further investigation, and, on occasion, for a period of rest in bed

(5) Physiotherapy was freely used with the emphasis on individual attention Small-group instruction for suitable exercises—such as breathing exercises—was commonly advised with success

(6) The centre's chiropodist—or the patient's own chiropodist—was used for many and varied foot defects

(7) Surgical appliances were prescribed as needed Many of the old men with herniæ wore trusses which had long passed their usefulness and new trusses were recommended

(8) The eradication of lice was necessary for two old people

(9) 9 women and 5 men were admitted to the local authority's residential home for the aged Others were rehoused at ground level

THEIR MENTAL HEALTH

Of the 500 old people 126 (25%) were unhappy of whom 61 (48%) lived alone Patients were regarded as happy when they were mentally at ease, and showed no undue evidence of worry or anxiety about their health or home circumstances The principal causes of unhappiness in these 126 patients are shown in the accompanying table

We tried to improve morale and promote mental health by the following procedures

(1) While the M.O H made his medicosocial assessment he tried, wherever possible, by explanation, reassurance, or guidance, to deal with problems as they came up The later medical examinations, by the M O H and the consultant physician, were used, along with the coöperation of the general practitioners, to reinforce the advice already given

(2) Where necessary patients were visited in their homes by the M O H and the health visitors

(3) Patients, with their consent, were introduced to the activities of the Old People's Welfare Committee

(4) Free holidays were arranged for some patients

(5) Financial aid was given in special cases from private sources

(6) Some patients were admitted to the residential home of the local authority

(7) The patients, generally, were advised to extend their range of interests, and ways and means of doing so were suggested

DISCUSSION

At the outset of this scheme there was no guarantee that the old people would use the centre, but from the start we have had a steady flow of new patients There is as yet no sign of slackening, and according to the 1951 census the number of people over the age of sixty years in the area was 3802 All new cases through their general practitioners, and exp shown this to be a wise procedure The link between the old people in the community centre Their cooperation with the M.O.H. consultant physician has been excellent sistently chose their cases with discernment mind the aims of the service Non ambulant were outwith the immediate scope of the centr it was believed that they were covered by th services Furthermore, it was felt that the ment was to start an integrated preventive keep old people ambulant, happy, and, if of hospital

The physiotherapist apart from his profes by his personality encouraged his patients to their disabilities He enhanced their morale valuable ancillary to the doctors The nee centrate on improving the morale of the pati with equal force to the health visitors, chiropodist Indeed the chiropodist, durin hour which he spends on a person's feet has opportunity to hold his subject in convers chiropodist took part in the follow up of th and reported directly to the M O H any came to his notice

Many of the patients had few outside some were virtually social isolates common among those who lived alone, and patients who needed the comfort of considera but had none The Old People's Welfare provided the ideal answer to many such they interviewed the old people who passed centre The old people were encouraged to activities of the committee, and the committee in the centre a valuable and continued sour people whom they could help This liaison statutory and voluntary effort was of advant The successful conduct by voluntary workers, in a small way, of an occupational therapy cl people in the premises of the public health merits serious attention At a recent display work £90 was realised on articles made by the

Some believe that a consultative health older people is comparable to a child welf While it is true that both are services to prom there the analogy ends Children are usually by loving and devoted parents The aged hope to receive such care *from* their children, exist at all The complaints and illnesses are generally single or few in number With they are often multiple and closely interw social problems If child-welfare clinics are sary, how much *more* essential is the need authority consultative health centres for old their age group has been left behind in th advance of the public health services ?

In our experience healthy old people will rea to a thorough medical examination Inde patients who attended the centre willingly most comprehensive medicosocial and clinical tion, which now also includes routine rectal

It has been a delight to meet so many and charming old people who have, by their confirmed the belief that reassurance based plete physical examination is of the greatest maintaining morale and well being

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HOSPITAL COSTING

orking party set up by the Minister of Health
a system of costing the departments and
f a hospital has now reported[1]
, 1950 the Minister introduced as an interim
a simple uniform system of hospital cost
g based on the *subjective* headings of the
accounts. By this system the cost of each
s expressed ultimately in terms of the average
week of maintaining a patient adjustments
de for expenditure relating to outpatients on
l basis and for vacant staffed beds

onse to the Minister's invitation King Edward's
Fund for London and the Nuffield Provincial
Trust submitted reports on unit costing in
[2] which agreed that the existing accounting
ased on subjective analysis should be replaced
em based on the departments and services of
tal In addition the Minister received a report
subcommittee appointed by the treasurers of
hospital boards which also advocated the
ion of departmental cost accounting but con
hat a subjective accountancy system should be
and used for defining the cost of individual
nts and services within the hospital

nister concluded that a system of departmental
costing supplementary to the subjective analysis
liture in, at any rate the larger hospitals would
ital administration and promote efficient and
spending Views on the most suitable system
widely, and accordingly the working party
port has now appeared was set up under the
ship of Mr W O Chatterton to devise a
system

orking party's conclusions in summary are as

purposes of internal management all hospitals
nsider producing during the year interim cost
s limited to the direct expenses of the departments
es to be separately costed To allow flexibility
ing the interim statements hospital authorities
free to decide to what extent expenditure should
t into the cost accounts for each department and
at they should have regard to the requirements of
l cost statements to which the interim statements
l. To be of the greatest possible use to management
ents must be produced *without delay after the end*
iod to which they relate

nd of the year all hospitals should produce annual
ments summarising in one of two forms (set out
ices to the report) according to the costing arrange-
he particular hospital. These annual cost statements
provide the basis for inter hospital regional, and
omparisons of costs.

l departmental costing should be introduced
At first only acute and mainly acute hospitals
itals of other types, at discretion) with an annual
re less direct credits of £150 000 or more should be
o operate such a system. The working party names
tments and services to be listed under this main
and it recommends that the average total cost
of an inpatient should be shown annually in addition
mental unit costs. Eventually the main scheme
extended to hospitals with an annual expenditure
0 or more. No management committee or board of
should for the first two years be required to operate
scheme in more than one hospital

ospitals should, for the time being be required to
a simpler costing arrangement; and here as in the
me the average total cost of an inpatient should be
annually

penditure of particular departments and services
ere expedient be reduced to costs per unit of work

Much more research and experience are necessary before a departmental costing system can be used as an aid to the central distribution of funds

The working party emphasises "that comparative costs do not of themselves provide proof of either efficient or inefficient management They do however, indicate lines of inquiry which might profitably be followed but to be of maximum use to management it is essential that enquiries into apparent abnormalities should be vigorously pursued as soon as possible after the end of the period to which the figures relate

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Public Health

HOSPITAL ISOLATION IN THE CONTROL OF DYSENTERY

H G Easton
M D Glasg

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Hospital isolation in the control of infectious diseases needs to be reviewed in the light of the finding that separation experiences in infancy and early childhood may have a deleterious effect on personality development Dysentery was chosen as the subject of the present review because it leads to the admission to hospital of many infants and because such admission is seldom necessary for the sake of the patients themselves; its principal purpose is to prevent the spread of infection It is therefore necessary to consider whether the psychological risk to the individual patients is justifiable and whether the community itself benefits in the end.

Dysentery in Glasgow is briefly described as a basis for discussion of these questions.

Dysentery in Glasgow

The incidence of dysentery in Glasgow is described by Carter and Young (1952) and in the annual reports of the medical officer of health The number of notifications rose sharply in 1944, since when the annual total has only twice (in 1946 and 1947) fallen below 1000 The total in 1954 was 6242 which is more than double the highest previously recorded But despite a 9 7 times increase in incidence between the quinquennium ended in 1943 and that ended in 1954 the number of deaths fell from 40 in the earlier period to 21 in the later this represents a fall in the case fatality rate from 3 15 to 0 14%

As to the cause of these changes, two of the suggestions made by Glover (1947) discussing the position in England and Wales, would seem to be particularly relevant: that increasing use of bacteriological facilities has led to the recognition of a greater proportion of the many clinically atypical cases, and that the short term changes in prevalence are due to an unknown epidemiological' factor

With regard to the age-distribution of the disease in the quinquennium ended in 1954 56 2% of the patients were under 5 years of age and 80 6% were under 15

Owing to the housing conditions in Glasgow some 60% of all patients with dysentery are admitted to hospital but in children under the age of 5 the proportion is about 70% This policy resulted in the hospitalisation of 2340 children under 5 in 1954 and of more than 900 in each of the four preceding years There were also many admissions in which the diagnosis of dysentery was not confirmed.

CASES IN RUCHILL HOSPITAL IN 1954

Severity

Study of 381 patients (119 Flexner 150 Sonne and 112 clinical) aged less than 5 years showed that much

TABLE I—DYSENTERY CASES TREATED IN RUCHILL HOSPITAL IN 1954 (INCLUDING 54 "NON-SPECIFIC ENTERITIS" AND 13 "NO DISEASE" CASES): AGE AND BACTERIOLOGICAL FINDINGS

Age	Flexner	Sonne	Clinical *	Total
Under 1 yr				
Under 6 months	21	18	37	76
6–11 months	32	46	34	112
	53	64	71	188
1–4 yr				
1 yr.	88	125	117	330
2 yr	79	91	68	238
3 yr	74	68	34	176
4 yr	57	71	33	161
	298	355	252	905
5–14 yr	261	235	107	603
15–74 yr	132	76	86	294
75 yr +	4	7	2	13
Total	748	737	518	2003

* Includes all dysentery admissions (bacteriologically negative) *except* those with definite evidence of some other condition—e.g., salmonella infection, acute infantile gastro-enteritis, cœliac disease.

the same proportion of patients in each of the three groups still had diarrhœa on admission to hospital (51%, 47%, and 54% respectively), but overt blood and mucus were present in only 2% of the clinical group as against 13% and 10% of the Flexner and Sonne groups. Except for the 2% of cases with typical dysenteric stools, there was usually much doubt as to what had caused the symptoms which had led to the admission of the "clinical" cases, but the main reason for admission was fear of the spread of dysentery among the community. Many of the Flexner and Sonne patients were not admitted until the laboratory reports had been received, by which time the disease had often run its course.

In some cases of Flexner dysentery the stools contained profuse blood and mucus, and the degree of constitutional upset was considerable, with pyrexia of up to 103°F. These relatively severe attacks were most common in adults and older children. Only 1 of the 2003 patients (table I) died, and this was due to a side-effect of treatment; the patient, an adult female in the clinical group, developed staphylococcal enteritis while receiving a course of aureomycin; her case was similar to those observed by Hay and McKenzie (1954) after administration of oxytetracycline.

The need for parenteral administration of fluid indicates severity and need for hospital facilities. This form of treatment was used in only 3 cases: the fatality already mentioned, an infant suffering from intussusception as well as Flexner dysentery, and an infant who contracted Flexner dysentery when only a few days old.

Our experience in Ruchill is contrary to that of Boyd (1951) and Hardwick (1955), who state that dysentery is often particularly severe in infants. Apart from the cases already mentioned, only 1 of the 188 patients aged less than 1 year was more than moderately ill. Of 4 patients aged less than 2 weeks, only the 1 given fluid parenterally showed any signs of constitutional disturbance. Our experience is that if an infant with diarrhœa (and usually vomiting also) is severely ill, then he is likely to be found to have gastro-enteritis or some other condition, but not dysentery.

Duration of Stay in Hospital

The average stay in hospital of the 1093 patients aged less than 5 years was 12·7 days. That this period was not longer is due to three measures which were adopted because of difficulty in meeting the demand for beds: (1) treatment with antibiotics was started soon after admission, without waiting for the bacteriological findings; (2) the criterion of freedom from infection was less strict than it often is (dismissal specimens were usually sent on three consecutive days, starting the day after the end of the course of treatment); (3) permission was obtained to dismiss most patients w dysentery after 11 days in hospital, irre pectiv findings in the dismissal specimens.

Dysentery patients are detained for m longer periods in some other hospitals. For Harries and Mitman (1951), discussing Sonne recommend that dismissal specimens should during a period of not less than 4 weeks, and t should then be released from strict isolation only results are negative. Such methods greatly the period of hospitalisation, not only becau delay while taking the specimens, but al they lead to the recognition of a larger convalescent carriers.

Readmissions

Only incomplete records are available as to t of patients who required readmission, for patients may well have been readmitted. Especially in the case of patients who were a hospital on three or more occasions, there some social reason why clinical or bacteriolo tigations were made—some of the children day nurseries, others came from households someone was a food-handler.

Discussion

The Case for Hospitalisation

The proportion of dysentery patients hospital varies greatly in different parts of thus in Leicester during 1953 only 1·3% we (Ross 1955), in Islington in 1951 7·5% (Free and in Glasgow in recent years about 60%. Th tion of the high admission-rate in Glasgow housing conditions of most of the patients are hospital isolation is considered essential. Tab that most patients came from overcrowded h isolation could not have been attempted the water closet was usually shared by sever Considering these circumstances, it might well that hospitalisation was necessary both for the patients themselves and for the sake of th and the community generally.

HOUSING CONDITIONS AND THE FAM

Even if the illness is slight, as it commonly be very difficult to nurse an infant with diar overcrowded home. None the less, I am general practitioners that most mothers ma and that the suggestion of admission to hos opposed. These practitioners also stressed symptoms seldom last for long, if approp ment is given.

When infants are admitted because they nursed at home, a further question arises

TABLE II—HOUSING CONDITIONS OF 347 PATI 5 YEARS OLD

No. of apartments	Patients from households in which th total persons in the house to the numb ments was as shown					
	¼–1	–2	–3	–4	–5	6
1		3	8	40	30	11
2		35	70	31	9	
3	2	27	10	1		
4	3	6	6	2		
5	1	1		2		
Total	6 (2%)	72 (23%)	94 (30%)	76 (24%)	39 (12%)	11 (4
Institutions	—	—	—	—	—	

sed when they are well or must they be detained ir stools have been shown to be bacteriologically ? This is essentially the same question as that considered next

CONDITIONS AND THE PATIENT'S FAMILY AND THE COMMUNITY

regard to the welfare of the household contacts atients it was shown by Davies (1952) Shaw and Ross (1955) that Sonne dysentery is fre a family infection affecting most of its members aw found that most of those who were going to symptoms had already done so by the time the was notified and routine inquiry was made it likely that hospitalisation has much influence mount of family spread Surprisingly Davies nd that the cleanliness of the home has no bear e incidence of secondary cases and the medical health for Glasgow (annual report for 1953) ved that this is also true of the lavatory accom (whether shared with other families or not)

regard to the spread of dysentery in the com generally several observations suggest that ation does not contribute very much to the f the disease

generally stated that there are many mild cases ry and temporary carriers who are not notified fore not subject to control Carter and Young example speak of the swarms of occult infections t escape notification The value of isolating those m to be notified may therefore be questioned n those patients who are treated in hospital are arily rendered non-infectious no matter how he dismissal criteria may be Thus Harries and 051) state that Flexner and Sonne carriers may sitive stools only intermittently with negative ting for a month or more And MacLeod (1955) missal criterion was 12 consecutive negative stools, 15% of his patients had positive stools soon after rge

age-incidence of dysentery suggests that the n endemic and domiciliary infection, from which follow that as with measles routine hospitalisa y no part in its control (Anderson 1953) incidence of dysentery in Glasgow has greatly espite large-scale hospitalisation

HE CASE FOR DOMICILIARY TREATMENT

which is probably slight that the domiciliary of dysentery in poor housing conditions to an increased spread of the disease must be gainst the following advantages:

nts are less exposed to cross-infection at home pital This is particularly important in infants are several reports of deaths from staphylococcal hospitals in which antibiotics were being widely and McKenzie 1954 Choremis et al. 1954) and is mentioned in this paper It has been suggested ndition is caused by cross-infection in a semi unity in which antibiotics are being continuously long period of time and that it is much less ccur in domiciliary practice than in hospital 955)

is reason to believe that the bacteriological of cases of infantile diarrhœa is often resented nts who fear that a positive result will lead to on If it were possible to reassure them on this should facilitate work on the epidemiology of ions generally and thus contribute to their

uch less expensive to treat patients in their own n hospital

id the psychological stress occasioned by a separa ce in early childhood is a positive contribution to h It is necessary to outline the evidence in is statement

(1943) Bowlby (1951) and others have found rk in child guidance clinics that separation experiences in infancy and early childhood may result in serious personality disorders The typical reaction to a short period of separation is an anxiety state which may persist only for a short time, or indefinitely Prolonged separation may give rise to a type of psychopathic personality characterised by inability to form affective relationships with others Both of these types of reaction have ill effects on society in general as well as on the individuals directly concerned but the social repercussions of the second type of reaction are particularly striking

As most of the earlier reports on this subject were based on retrospective studies of disturbed children or adults it was scarcely possible to assess the risk of any particular type of separation experience Prospective studies present peculiar difficulties for as Bowlby points out parents often try to conceal even from themselves, the defects of their children particularly if they feel with or without reason that they are to blame and affected children may seem to be quite well until perhaps years later a stress provoking situation reveals their hidden weakness In spite of these difficulties several short term follow up studies have been made from which it is apparent that the risk of damage is considerable Thus Prugh et al (1953) found that 15 out of 34 children aged 2–3 years had severe reactions, persisting for more than 3 months, after being detained in a medical ward of a hospital for an average period of 1 week The incidence was much less in older children in their case, but not so much so in the case of the younger children it was much reduced by the introduction of special methods, including play therapy, frequent visiting by the parents and their coöperation in nursing care. None of Prugh's patients was aged less than 2 years, but it is apparent from Bowlby's report and a report by the W H O Expert Committee on Mental Health (1951) that the most susceptible age is between 6 months and 30 months, and that infants of less than 6 months are not necessarily immune It is generally agreed that separation is particularly undesirable under the age of 3 years, and over that age in cases in which other predisposing causes of neurosis are operative

Animal experiments (Hunt 1941 Weininger 1954) confirm the general thesis that security in infancy fosters ability to cope with subsequent insecurity

In an infectious-diseases hospital the severity of the affective deprivation is increased by two factors first the barrier nursing technique which makes it difficult for the patient to establish contact with his fellows and with the staff and second, visiting is often forbidden or curtailed The findings of Prugh *et al* already mentioned suggest that these considerations are important

CONCLUSION

If it is agreed that care of the individual patient is the doctor's first concern and that this is limited only if it is overruled by a serious threat to the community at large, then it does not seem possible to justify the admission to hospital of infants with dysentery unless this is necessary for their own sake

Summary

Recent access of knowledge on the harmful effects of isolation in infancy and early childhood necessitates a review of our methods of control of infectious diseases.

Observations are described on dysentery in Glasgow This disease causes a great many infants to be admitted to hospital but it is doubtful if this has much preventive effect Domiciliary treatment could be expected to contribute to mental hygiene and to have other advantages

I wish to thank Dr J Bowlby of the Tavistock Clinic and Dr J H Lawson physician-superintendent Ruchill Hospital, for the interest they have shown in this paper and

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Outbreak at London Teaching Hospital

On Saturday, July 23, admission of patients to the Royal Free Hospital, Gray's Inn Road, was suspended on account of an outbreak of an acute febrile disorder, which was reported to be glandular fever By the evening of Sunday, the 24th, altogether 37 nurses and 16 others (mostly medical students) had contracted the fever, which, according to a spokesman, was "unusually infectious,"[1] Last Monday the total of cases increased by 13 to 66 (46 nurses, 17 students, and 3 patients), and admissions to the Liverpool Road branch of the hospital were suspended[2] On Tuesday the total was 74 One of the first to become ill—a member of the medical staff—has now returned to duty[3]

The illness, which has high infectivity, is regarded as infectious mononucleosis (glandular fever) with unusual features

Suicides in Hampstead

In his report for the year 1954, Dr D H Geffen, medical officer of health for Hampstead, examines the causes of the high suicide-rate in that borough

In 1950 Hampstead had the highest rate for suicides —287 per million population—followed by Holborn (270), Burnley (259), Eastbourne (258), and Westminster (257) In 1951 and 1952 the Hampstead rates were 242 and 189 In 1951, applying the suicide-rate for London to Hampstead, there should have been 12 such deaths in fact 23 were recorded

In an attempt to establish the cause of this excess Dr Geffen has abstracted details of deaths in Hampstead attributed to suicide in the years 1950–53 Part of the excess, he concludes, is associated with the relatively high proportion of the population in social groups I and II He also remarks that a high proportion of the population of Hampstead, as of other London boroughs with a high suicide-rate, live in lodgings, boarding-houses, or rooms, and some of the excess may be associated with the type of population who leave their own home towns and come to London in search of jobs

Turning to prevention, Dr Geffen says

> "By and large there tends to be some impression amongst the public that the person who threatens to commit suicide will not do so I do not think there is any justification for this impression A proportion of people who eventually do commit suicide have threatened to do so, or have indicated in their conversation that their minds are turning towards [illegible] ending of their lives In some cases it is possible that [illegible]eir conversation they are throwing forward hints in the [illegible] that their listeners will help them In my opinion a [illegible] of suicide should be taken seriously"

Dr Geffen also urges that the public should easy access to dangerous medicines in lethal qua

> "I do not think it to be a fact that the person made up his mind to commit suicide will sooner or It is likely that the presence of a fatal drug, or an of terminating his life, may cause him to take a at a time when temporarily his mind is unbalanced.

Referring to fashions in method of suicide has previously termed a "mentally infectious Dr Geffen deplores the publicity given to the adopted by people to end their lives "I seen press reports of cases of attempted suicide I think are of no advantage to the public extremely difficult to cure and rehabilitate suicide, once his friends, relatives and social have become aware of the occurrence"

Birmingham's Health Services

Three years ago the Birmingham public ment issued a compact "ready reference" to they offered It was intended for the use of practitioners, but requests for copies from National Assistance Board, the Ministry of National Insurance, hospitals, and voluntary showed that many other people found it useful edition has now been compiled which again the public-health services under alphabetical so that, for instance, pig-keeping, pleasure plague stand side by side A practical the department's close collaboration with the council is a new section on the council's service sheet is enclosed which will probably soon gratefully over a number of desks, for it addresses and telephone numbers in each domiciliary midwives, maternity and chil centres, home nurses, home helps, and day

Safe Milk

In Berwickshire all registered dairymen licensed for the sale of "certified" or "tu tested" milk All the animals in the herds producers have passed the tuberculin test and declared free from tuberculosis About 90% of 9000 producers of milk now hold licences for " or "tuberculin-tested" milk

Statistics for England and Wales

The Registrar-General's return for the March of this year[1] shows that the birth-rate was 15 population, compared with 15 9 in the corre quarter of 1954 and an average of 16 4 for quarters of the five years 1949–53 The still was 23 1 per 1000 live and still births, and the rate was 15 4 per 1000 population The infant rate was 29 0 per 1000 related live births, wh new record low rate for a March quarter Th 9840 notifications of tuberculosis, compared in the corresponding quarter of 1954

A provisional table of the causes of death and Wales in the year 1954 shows that dea several infectious diseases declined to record low these include tuberculosis, diphtheria, whoop and measles The main causes of death which continuing tendency to increase were cancer leukæmia, vascular lesions affecting the central system, coronary heart-disease, hypertension vehicle accidents, accidental poisoning, accide and suicide

In the second quarter of this year[2] the birth 15 5 per 1000 population—the lowest rate for quarter in any peacetime year since 1936 The rate was 22 9 per 1000 live and still births, with 23 1 in the corresponding quarter of 19 death-rate was 11 2 per 1000 population, 10 6 in the second quarter of 1954 The infant rate was 24 4 per 1000 related live births—a low rate for a June quarter

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1 *Times* July 25, 1955
2 *Ibid*, July 26, 1955
3 *Ibid*, July 27 1955

1 The Registrar General's quarterly return no. Stationery Office Pp 28 1s 6d
2 The Registrar-General's weekly return no Stationery Office Pp 20. 1s

Parliament

Scottish Health Services

principal theme of the debate in the House of ns on July 19 on health services in Scotland care of the aged sick. Mr E G WILLIS one of nbers for Edinburgh said that a recent survey burgh suggested that the size of the problem had derestimated Of over 5000 old people who were d 40% were found to be in need of some kind If that was applied to the whole of Scotland, ad just over half a million old age pensioners 0,000 would probably be in need of either nursing, treatment, therapy, reablement, or something kind. The Edinburgh survey also showed that ne bedridden patients were living alone and 90 ying with spouse only Of those whose move- vere restricted 112 were living alone and 213 ouse only Out of 900 people living alone, 587 of all those taking part in the survey were ely bedridden or were restricted in their nts.

THOMAS OSWALD another Edinburgh member, 1 that, however alarming the findings might appear hey were in fact an understatement of the real Of the 5086 patients, 1270 required some form of attention and that need was not being met ier 1274 needed home or domestic help and them needed physiotherapy which they were not g Of the 1270 patients who had some medical 1 were living alone 17 were completely bed and 72 restricted in their movements 301 or 6% of the total needed nursing care 21 of eeded nursing equipment, although they did essarily require nursing assistance The 658 needing institutional care was a very low estimate ere 152 on the waiting lists and 35 of them were lone 5 of them were bedridden and 12 were d even in indoor movement. 40 were living with only, 11 were bedridden and 51 restricted Of the remaining cases 72 were bedridden

J NIXON BROWNE, joint under-secretary of or Scotland, recognised that there were still cies in the services for old people But regional had been able year by year to set aside more the aged. In some areas the provision of long- ds was probably almost adequate. In most e main need was for more beds for assessment ive treatment. Good results were being obtained of this kind at Maryfield Hospital, Dundee and hill Hospital in Glasgow The hospital medical ngaged in the care of the aged had increased, was hoped that the opening of a training school stant nurses at Foresthall Hospital, Glasgow ase the difficulty of finding nurses for the aged mber of patients attended by home nurses had reasing year by year, and it was estimated that alf were aged or chronic sick. Health visitors e being called on more and more to give advice ly people. All but two of the 55 local health ies were providing a service of domestic helps. d was doing rather better than England in g a chiropody service for old people.

HOSPITAL BUILDING PROGRAMME

rowne also gave details of the hospital building me announced in February Two major schemes t the Western General Hospital Edinburgh between them £910 000 would provide a radio- institute of 100 beds and a neurosurgery unit ds.

chemes for 1955–56 included a start on three major The first was the reconstruction of the Westgreen Hospital in Dundee due to start in September at ated cost of £250 000 The second due to start in was a surgical unit of 120 beds at the Victoria Hospital ldy at an estimated cost of £450 000 The third the e in the Bellshill Mental Hospital undertaking was a ree homes, which would be started next month homes, providing between them for about 850 additional mental-deficiency beds together with ancillary facilities, were planned to start next year at Ladysbridge near Banff, Baldovan Institution near Dundee and the Royal Scottish National Institution at Larbert The three schemes together would cost about £1 200 000 and take some four or five years to complete

Plans were being prepared for three schemes due to start in 1957–58 The first was a radiotherapy and research unit at the Glasgow Western Infirmary the second a large-scale reconstruction of the Royal Mental Hospital at Edinburgh at a cost of £450 000 and the third the replacement of the Gilbert Bain Hospital Lerwick by new buildings at a cost estimated at £250 000

Together these schemes Mr Browne said would cost just under £1 million There was also £800 000 to be spent on the work in hospitals—such as heating systems—which would save revenue expenditure None of the major projects related to tuberculosis But, without underestimating the size of the remaining task, he was able to report considerable progress in this field The death rate from respiratory tuberculosis in 1954 was 20 per 100 000 population compared with 28 in the previous year and 66 per 100,000 as recently as 1948 Even so, there were still over 7000 notifications in 1954 and the final victory was still some way off Thanks to advances in medical care made possible by the newer drugs, the average period of stay in hospital had been reduced. Furthermore, given good home conditions, more patients could be cared for without entering hospital In some areas this had been encouraged by administrative rearrangements linking the facilities for outpatient supervision with the hospital inpatient treatment. But the decision on the suitability of patients for domiciliary treatment was entirely a matter for the tuberculosis physician who had been given no instructions to keep hospital waiting lists down in that way For the whole of Scotland the total number of patients awaiting admission was now fewer than 500 This might seem a considerable number but when it was compared with the figure of more than 9000 admissions in 1954 it fell into proper perspective

In conclusion, Mr Browne said that the House of Commons had an inescapable responsibility for the Scottish health services which cost over £60 million of public money a year It was the concern of the whole House that the best possible value in terms of health should be obtained for this expenditure. They hoped soon to have the advice of the Guillebaud Committee on organisation and administration; but, whatever the committee recommended they could not hope to succeed without the coöperation of the public as users of the service in the avoidance of abuse The health service was a valuable feature of our national life and we ought to take every care of it.

New Health Service Superannuation Regulations

In the House of Commons on July 19 Mr IAIN MACLEOD, Minister of Health, explained that these regulations were in the main consolidating but there were some important amendments to the 1950 regulations The amendments dealing with concurrent employments were largely to remove anomalies that had arisen particularly among doctors, who seemed more than members of other professions to be engaged in overlapping appointments The major proposals put forward were that all superannuable service could reckon towards benefit unless there had been a disqualifying break of a year without any superannuable health service appointment The second main point was that for benefit purposes a medical, or dental practitioner who had contracts with more than one executive council could be treated with advantage to himself as though he were in a single appointment. Thirdly, a person who gave up part-time employment at or after, the minimum retiring age, if he ceased to be superannuable in respect of a part time employment which he still held, could have his superannuation rights preserved in the continuing employment In accordance with the request of the medical profession, a special regulation had been included to enable doctors who were in partnership to have their remuneration allocated between them in an agreed proportion which could take into account the amount of remuneration that came from hospital employment

Future of Remploy

In the House of Commons on July 19 Mr Ian Mikardo moved a resolution expressing concern at the increasing number of disabled people who were unable to secure training and employment at Remploy factories and calling on the Government to remove the present restrictions This year a total stop to new entrants had been imposed and in June only 6196 disabled people were in Remploy He urged the Minister to strengthen the board of directors of Remploy, to get really tough with the Ministry of Supply and other purchasing departments to get them to place contracts with Remploy, to give Remploy a substantial once and-for-all grant for capital expenditure, and to enable Remploy to work more closely with similar institutions for handicapped persons, such as the workshops attached to some hospitals and to those run by some local authorities

Sir Walter Monckton, Minister of Labour, in reply, said that he agreed that this was a human problem, but that could not excuse them from looking at the financial problems which were bound up with it In an ordinary year they placed 120,000 under the D.R.O service In the industrial rehabilitation units they trained about 8400 disabled every year, of whom three-quarters went to work outside and to training courses 4000 people were trained in the Government training centres, and in other sheltered employment there were about 5000 more disabled men For the six months up to January of this year 1000 people who had been in the Remploy category had gone into open employment

One of the most encouraging features of the work was that the numbers of people who were disabled and unemployed were going down In 1948 there were 64,000 people disabled and unemployed on the register Today the figure was 32,000 The number of people registered as unemployed and needing sheltered employment was over 10,000 in 1948, today it was just over 4000 In 1949–50 the average number of workers in the Remploy factories was 3500 For the first time it reached 6000 in 1952–53 and since then it had always been between 6000 and 6600 Today it was 6150 The loss per disabled man employed was still £400 a year Probably a fifth of the employees of Remploy were people of low productive capacity who might be said to be capable of no more than 10% of a normal man's production One had to face that when looking at the figures He fully appreciated the human side of the problem and he was anxious not to deprive anyone of a chance of producing something, but somewhere a line must be drawn For himself he assured the House that he genuinely wanted to help Remploy

Dentists Bill

On July 21 the Minister of Health introduced this Bill in the House of Commons Its provisions are similar to those of the Bill introduced some three years ago which got no further than the House of Lords [1] Its main objects are to give self-government to the dental profession by replacing the Dental Board by an independent General Dental Council, and to permit, as an experiment, the training of ancillaries to extract and fill teeth under supervision

QUESTION TIME

Capital Punishment

Replying to a question asking whether the Home Secretary did not agree that there was evidence of a change of public opinion and a change of opinion in the House of Commons on the question of capital punishment, Major Gwilym Lloyd-George said that in the debate last February[2] he gave, as clearly as he could, the reasons why the Government did not propose to recommend the abolition of the death penalty or the acceptance of the motion for abolition for an experimental period He gave three reasons, and the last was that he was not satisfied that there was a demand for it by public opinion in this country On that day the House of Commons supported [illegible]. He did not think that this was a matter which could be decided on the merits or demerits of any part nor did he think it was a subject which could be question time

Mr Emanuel Shinwell Does not the Home agree that public opinion changes from time to time it might be worth his consideration to ascertain t of hon members?—Major Lloyd George This r which is always being considered. During the las referred to that amending legislation specifically bef to the question of the abolition of capital gave very clear reasons because of which, rightly the Government could not accept the proposition punishment and I have no reason to alter th moment I go further and say that I see no al public opinion since that time

Replying to a question, Major Lloyd George half a pint of beer might be allowed to a at dinner and again at supper at the discretion of medical officer Lieut Colonel Marcus Lipto does the Home Secretary reconcile that with th disclosed at an inquest last week?—Major Ll I do not think that I need enter into that, because n tion of the sort has been available to me It has l able to the press, but not to me The Royal C on Capital Punishment put on record its view th cretion of the medical officer should be indulgently Mr John Rankin Do I understand from t Secretary's reply that no report about this subsequently furnished to him?—Major Ll So far as I can see there is no reason for any rep sort We must rely upon the medical officer, w full discretion in each case There is no reason for which it should be referred to me

Replying to several questions asking the Home to discontinue the practice of posting outside gates a notice of the execution of a death Lloyd George said that the posting of these required by law, but the point had been noted for legislation

Replying to a further question asking what ste taking to prevent a repetition of the scenes whi outside Holloway Prison on the occasion of the ex Mrs Ruth Ellis, he said that the Commissioner had informed him that a crowd of some 250 people f side the prison on the morning of the execution and behaved in a quiet and orderly manner The police crowd on the side of the road opposite to the prison the execution the crowd formed into a queue to read and then dispersed quietly Adequate arrang made by the police to prevent any disturbance, was called for on his part

Mr H M Hyde Would the Home Secretary not these scenes, which occur with nauseating regular anyone is hanged in this country, are a positive d our civilisation? Would not the best way of preve be to abolish the death penalty altogether?

Mr Chuter Ede Has the Home Secretary se ment made by certain teachers of the district children could see the execution, and boasted that seen it? Is there any truth in that statement? I steps be taken to prevent a repetition of such n children of public executions?—Major Lloyd G have looked at that very carefully, and I find no whatsoever for it

Replying to a further question, he said that h prepared to introduce legislation to make un public exhibition of wax effigies of convicted Mr J T Price Does the Home Secretary r British opinion has been shocked and scandalis gross commercialism of certain showmen in put on exhibition an effigy of Ruth Ellis one day was hanged in Holloway gaol? Is this not an ele public life which is degrading Britain in the eye foreign visitors and also demoralising young peop taken into these disgusting exhibitions? Will Secretary reconsider the matter and take some a it?—Major Lloyd-George If public opinion shocked, it would have been better served if the not gone to see the exhibition They need not go not wish to It would be hardly practicable, if indeed to make every departure from good taste in th the subject of legislation

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[1] See *Lancet* 1952, i 363, 649

[2] *Ibid*, 1955, i 410

International Ban on Heroin

ing to a question Major LLOYD GEORGE said that, ds trade considerations the Association of British l Manufacturers and the Association of British ceutical Industry were consulted informally before rnational ban on heroin was imposed As regards considerations, he consulted the Secretary of State land the Minister of Health and the government of n Ireland, and the necessary consultations took ith the statutory bodies set up to advise Ministers ical matters—namely the Standing Medical Advisory tee for England and Wales and the Scottish Standing Advisory Committee

University Salaries

ing to a question Mr R A BUTLER, Chancellor Exchequer said that those responsible for future ments for determining the salaries of the academic f universities had been giving careful consideration matter since it was raised in the House of Commons s statement on Nov 16 1954 He must emphasise e relationship between the governing bodies and ic staffs of the universities was in important respects t from that between employers and employees lationship was unique and he would be sorry to see mpt to change it Its effect was to make inappropriate elopment of negotiating machinery of the normal evertheless it had been helpful to review the machinery ultation.

Jniversity Grants Committee would be ready to receive ntations at any time as to changes in the basic salary ork for the academic staffs of universities from the tee of Vice-Chancellors and Principals or from the tion of University Teachers Thus the association is the committee would have a formal right of approach U G C It would be the duty of the U G C after ing these representations and if necessary elucidating discussion to give a considered reply Before replying G C would, if necessary make a submission to the lor

Committee of Vice Chancellors and Principals would ve full discussions with the association of University s as occasion demanded on general salary questions.

Milk Tablets for School children

ing to a question Mr D F VOSPER said that 91 main schools in England and Wales were using dried milk or blets because satisfactory arrangements could not be r a supply of fresh milk ; 21 of them were known to be ablets in preference to dried milk Mr N N DODDS Minister explain why people in the locality can get ilk and children cannot get it ?—Mr VOSPER : It esire of the Minister that as many schools as possible ve a supply of liquid milk but there are certain small schools to which it would not be an economic pro- to supply such milk. The hon. member will notice ice he asked his last question on this subject there n a considerable reduction in the number of schools a liquid milk supply and that is continuing

Poliomyelitis Research

ing to a question asking the reasons for transferring dealing with poliomyelitis research to the Gambia R BEVINS representing the Lord President of the said that it was not proposed to move to the Gambia the units under the control of the Medical Research working in this country on poliomyelitis The Medical h Council already had laboratories in the Gambia arch in tropical medicine Arrangements had been o send preparations of monkey tissue from there for oliomyelitis work in this country It was also proposed out an investigator to study the possibility of finding of virus occurring naturally among the relatively local population which might be suitable for inclusion nproved form of the Salk vaccine

ply to further questions Mr Bevins said that the of the recent visit to West Africa by a member of the Research Council s staff was not only to investigate ply of live monkeys, but also to find out whether kidney tissue flown to this country was a suitable medium for growing the poliomyelitis virus. The Med Research Council was at present studying the feasib of transporting monkey kidney tissue to this country for as a culture medium for growing poliomyelitis virus arrangements had yet been made for importing live monk from areas outside India but the possibilities were b investigated

Tuberculosis among Irish Immigrants

Dr BARNETT STROSS asked the Minister of Health whe he was aware of the high incidence of pleural effusion progressive primary tuberculous lesions in young I girls who immigrated to Britain and who were free f tuberculosis on entry whether he had noted the l incidence of pulmonary tuberculosis in the Irish born pop tion of London Glasgow Liverpool Manchester Newca Birmingham, and Coventry ; and whether he was aware of fact that they became infected in Britain in most case Mr IAIN MACLEOD replied I am aware of certain studies wh have been made on these subjects but no comprehen statistical information is available about the condition immigrants on entry or about the time of infection could such information be obtained without the imposi of fresh restrictions and controls out of proportion to danger to public health. The same protective prevent and treatment services are available to these as to ot residents in this country

Dr STROSS : Will the Minister agree that that answe not good enough in reality because this very grievous prob is growing with the increasing number of people entering country not only from Ireland but from the West In and from Africa many of whom come from agrarian a and are negative reactors and have no immunity from tu culosis when they enter this country ? Would he theref not at least ask the Irish ministry of health to assist in see that these people are skin tested or given B C G vac treatment before coming here ? If many do not then rece that treatment will the Minister ensure that it is given them when they arrive here ?—Mr MACLEOD If there anything useful in the matter I can do with the I authorities of course I will do it

Clinical Research

Replying to a question Mr JAMES STUART Secretary *State for Scotland said that 4 out of the smaller group* children living at Bridge of Weir Orphan Home inocula in October 1952, with vole vaccine showed late skin reactio strictly limited to the site of the inoculation in the third y after inoculation This was in addition to the 20 child out of the group inoculated in October 1951 mentioned the reply given on Feb 15[1]

Accommodation for Mental Defectives

Replying to a question Mr MACLEOD said that the numb of defectives notified as being in need of hospital care a still awaiting admission on Dec 31 1954 were :

Region	Low grades		Others	
	Urgent	Non urgent	Urgent	Non urgent
Newcastle	203	11	149	357
Leeds	111	60	167	128
Sheffield	328	250	180	205
East Anglia	164	12	91	53
North West Metropolitan	76	32	146	178
North East	105	88	133	241
South East	177	219	31	48
South West	187	141	9	181
Oxford	86	53	76	90
Bristol	35	31	23	47
Wales	107	136	271	493
Birmingham	270	105	113	120
Manchester	187	67	250	94
Liverpool	101	31	131	41
Total	2137	1449	1803	2281

Replying to a further question Miss HORNSBY-SMITH sa that during 1954 1700 mental defectives were received f short term care in hospitals and 401 elsewhere 90 loc health authorities in England and Wales had power in schem approved under section 28 of the National Health Servi Act to maintain defectives in these circumstances

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[1] See *Lancet* 1955 i 453

In England Now

A Running Commentary by Peripatetic Correspondents

Johnnie B, aged 8½, is the oldest inhabitant of our children's ward When he was a few months old, his mother left him on the steps of a residential nursery A few months later he contracted pneumonia and was sent into hospital—it was thought, to die But, thanks to the sulphonamides, he did not He has successfully overcome measles, chickenpox, mumps, and whooping-cough, all contracted in the ward He has no mentality, he makes no purposive movement (save opening his mouth), he cannot see, it is doubtful whether he hears

For many years Johnnie had no visitor His mother had turned her back on him, and there was no-one else to come But about a year ago, the bed next to him was occupied by a boy about his own age who was in for some minor orthopædic business His mother came regularly—we have visiting every day—and soon noticed that nobody ever came to visit the boy in the corner So the next time she came, she brought a little celluloid toy for Johnnie, and for the rest of her son's stay she made a point, every day, of saying a few words to him and stroking his hair for a minute or so

Her own boy is long out of the hospital, but she comes on most Sundays to the bed in the corner, and rarely empty-handed a small toy, a piece of chocolate, a shaped matchbox Johnnie cannot see the toy, cannot understand—even if he hears—her words, and we shall never know if he enjoys chocolate Her visits probably mean nothing to him, but I am sure they are not wasted, and that everybody in the ward is a kinder and nicer person as a result "Inasmuch as ye have done it unto one of the least of these my brethren "

* * *

We know that the human body, though hating and protesting against any abrupt alteration of its functions, seems able to adjust itself to almost anything if the change is gradual Jellicoe is said during the first world war to have immersed himself for increasing periods in cold water with the idea of hardening himself so that were he to experience shipwreck he would be to some extent prepared Happily he never encountered this ordeal, thus depriving himself and us of the opportunity to test the efficiency of his prescription

The heat exhaustion that recently affected some of the athletes at the White City has stimulated sporting journalists to demand that precautionary measures should be taken to prepare our representatives for the high temperatures they will meet next year at Melbourne during the Olympic Games Presumably they have in mind graduated degrees of cooking, baking, and boiling But the matter, it seems, is not as simple as all that Somebody claiming knowledge and experience of the Australian climate warns us that though heat-waves occur, they also have icy blasts, thunderstorms, cloud-bursts—in fact all the vagaries of an English summer It seems hardly practicable to prepare for every sort of weather Moreover, why stop at climate? Why not vaccinate against salmonella, *Staphylococcus aureus*, even *Clostridium botulinus*, the chemicals, and the nebulous toxins responsible for food-poisoning, in a word, a sort of all-comprehending mithridatism?

Which brings us down to earth just ensure satisfactory general health and fitness and take whatever comes

* * *

Like all great ideas it came to me in a flash Having driven my car up one of those super-garages in Town, I was gazing delightedly at the variety of cars displayed Their number-plates showed the range of possible permutations of the alphabet And that reminded me that in New York all doctors' number-plates carry the letters M.D, followed by a number Now, I asked myself, why not go one better and work out full details? Each specialty should have three letters, constituting either a complete English word, characterising the branch, or a well-known, time-honoured set of abbreviations The surgeons should have CUT, and the F R C S's CUT 1 physicians could be allocated NYD Fellow peripatetics might like to help to draw up So far I have thought of pædiatrician, KID analyst, EGO, and geriatrician, OLD We p propose to claim the prefix PBP.

* * *

Nineteen years ago this month I raked out th embers of our last camp fire on the shore of E Tom was packing up the tent, George was ga fully at the cloud patterns across the Lan Dick was fully occupied behind the wall T drying on our names in the Medical Register, carbuncles were fibrosing nicely in divers plac eager world lay waiting

That Arcadian climax of six years' comra academic tribulations was shattered by the exhaust of an M G swirling down the lane A stockings swung over the side and we were to the sweet bondage of medicine and matr lot of queer things have happened since th packed up his tent for the last time in th Desert, George can still see the outline of D in the haze of his Midland factory chimneys. graduated to a thunderbox in Rhodesia I worry whether the Medical Register has lost away is the final coronary, whether there is tim up with the world

The silk stockings have changed into nymph M G has metamorphosed into the sedat a family saloon Matrimony's sweet bondage h the fruits of our labour in the shape of a trio of whose genes have stored some mysterious n wood smoke and fresh bracken The camp on the shore of Elterwater have smouldered o hearts of the next generation, fanned into the breezes of adolescence, and threatening to burn the fingers of our middle age. The fa demanded to be taken camping

From the darkest recess of the lumber unearthed a couple of tents The moths and and the mildew betrayed the neglect of callous disregard for the wind on the heath. I once-white tented little hell, still titled "P was unfolded on the lawn, a wave of nostal across the years I saw it once more pitched o of Devon, on the foothills of Snowdon, in the Sligachan on Skye Strange that those memor linger when the more fantastic bivouacs of thankfully forgotten

The cupboard in the garage yielded up t I burnt my fingers more than *metaphorically* the family how to work the flaming thing Th commentary was almost back to the uninhibited of medical student days The parental example Family Robinson was sadly missing The Qu collected an enormous pile of blankets, eid cushions, upon which I have heaped scorn slipped in a couple of camp beds It is a anyone's iliac crest to nestle fourteen stone o field The family are now heaving it all into th locker of the car, and the back end is down on th The camp fires will be burning again tonight and years are rolling away

* * *

JULY 25

Today is called the Feast of Christopher
The Saint who carried Jesus on his back
To safety o'er the wide torrential stream.
His burden, heavy with the sins of man,
Did tax his strength unto the uttermost
He's now acclaimed the patron saint of all
Who travel on the road, by air and sea,
By car or 'plane or ship or Shanks's way
But many mock him by excessive speed
Their brakes though good cannot reduce their
Until too late and they have maimed a child
Or killed an elder man before his time
And those who walk ofttimes compass their fi
For eyes they have but won't survey the scene
Arise St Christopher and guard our roads!
So when we drink to thine illustrious name
Death will have vanished from our stricken ro

Letters to the Editor

ICAL TREATMENT OF PULMONARY TUBERCULOSIS

wo statements made by thoracic surgeons cent conference of the British Tuberculosis n reported in your issue of July 9 prompt ment

mes Sellors said that when his patients waited nonths for operation 15% did not need oper n their turn came Similar observations have e elsewhere, which suggest that the method of surgical treatment may nowadays be wrong Hicks I have drawn attention to this state of n our paper we did not agree with the trend at that time, to leave decisions entirely to on We tried to make out a case that the should in the first place decide if surgery was Where conservative medical treatment had vourable then the physician we thought t refer such a case for surgical opinion The ing period for chest surgery in tuberculosis, ists almost everywhere, is salutary for some but for others it induces an anxious often state of mind, so that many who remain well ork in the interval As nearly all such patients the care of their own doctors and the chest ff, it is often puzzling to us to know what give when after a long interval during which d X ray improvement has been *maintained* d, we feel that operation is no longer necessary air I believe that as experience grows, there s tendency to leave the decision exclusively to n more and more are chest physicians eliciting on s aid, having already reached their own When they are consulted by a patient who has mmended perhaps two years previously to peration they may frankly state that, in their urgery is not necessary

will advocate precipitate surgery in tuber aving regard to the risks the operative in resection is of the order of 2% Especially ysician guarded when his patient has been egative from the onset and when clinical examinations indicate regression of the disease t times healing during the period of waiting this type of case there can be no guarantee tion of the lesions will not be followed perhaps r by breakdown or spread of the disease ients remain well without operation for long nd *one regrets* the tendency to forget or to the powers of natural resistance

in pulmonary tuberculosis is practically a some surgeons have a relatively short experience ease compared with the well founded experience generations of physicians. If both the physician urgeon would bear some of these considerations Mr Hugh Reid would not again be able to say at the conference that physicians often asked to remove small foci.

ess the waiting lists for chest surgery in sis would be much reduced *if the criteria* and s for surgical treatment were as they should on stricter principles.

l Chest Diseases Clinic
Hull.

LASAR DUNNER

TREATMENT OF HYPERTENSION

should like to underline the warning by ice in his article of July 16 of the dangers of pression following reserpine therapy In a 36 cases treated with reserpine 3 patients became depressed enough to need electroconvulsive therapy and another is having psychiatric treatment. 1 of these patients was receiving reserpine and apresoline together but relapsed (after inpatient treatment) while on reserpine only and had to be given E C T A further 4 patients became moderately severely depressed 1 of these improved when 'Rauwiloid' was substituted for reserpine

These patients were not remarkable for any pronounced fall of blood pressure, but they were all depressed agitated or anxious at the start of treatment The danger of precipitating a depressive psychosis is then very real but can probably be obviated by avoiding treatment of patients who show these symptoms

Apart from Professor Smirk and Dr McQueen also in your issue of July 16 Wilkins[1] has pointed out that agitated depression occurs as a symptom of overdosage, relieved by interrupting treatment A point which has not been elucidated is the relative influence of the drug itself and the effect of repeated hospital visits and blood pressure readings

I hope to report the series in more detail later

Royal Victoria Infirmary
Newcastle upon Tyne

P S TWEEDY

TREATMENT OF INDIRECT INGUINAL HERNIA

SIR,—How very welcome has been Mr MacLeod's condemnation of simple herniotomy for indirect inguinal herniæ in adults (July 16) In the facts he presents he has finally exploded what I have often felt to be a prize example of surgical muddled thinking This is usually expressed in some such words as ' many early indirect inguinal herniæ in young adults require no surgery other than herniotomy because they are congenital "

What is congenital ? The sac ? Everything suggests that this is frequently the case The hernia (i e the symptom producing lesion) ? Surely not. We are all familiar with adults giving a history of a few weeks' swelling in the groin who at operation reveal all the features of what we assume to be a congenital protrusion What process has allowed an empty and symptomless peritoneal sac present since birth to become a troublesome rupture after many years ?

The evidence well reviewed in Mr MacLeod s article suggests that the fault lies in the posterior wall of the inguinal canal and that the series of events beginning with the conversion of a congenital sac into an actual hernia, followed by dilatation of the internal ring and advancing to increasing destruction of the posterior wall are but stages of the same condition If this is the case there is little to be said in favour of simple herniotomy for on logical grounds alone this march of events may well continue after such a procedure allowing recurrence to take place

When repair by simple narrowing of the internal ring is undertaken this may be insufficient to halt the sequence and I would feel that where Mr MacLeod refers to errors ' at the internal ring being responsible for recurrence he should in fact be blaming this upon extension of the fundamental process

His later results confirm what must be the correct conclusion—that attention must be directed to producing the strongest possible posterior wall at the first (and we hope only) operation Possibly the exact method of doing this is of less importance and a personal preference for suture of the transversalis fascia combined with a McArthur type of repair which introduces the minimum of foreign material without gross damage to local musculature does not detract from the claims of other methods.

If the principles of (1) suture of the internal ring and (2) reconstruction *and* reinforcement of the transversalis layer at primary operation for inguinal herniæ are more

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Dunner L., Hicks M. S *Tubercle* 1952 33 306

[1] Wilkins, R. W *Ann N Y Acad. Sci* 1954 59 36

widely adopted, I feel we can look for some improvement in the results, which, as Mr MacLeod shows, leave little room for complacency

Princess Mary's R A F Hospital
Halton, Bucks
RICHARD R L PRYER

THE MERRYGOWHIMBLES

SIR,—Creevey records that among the preparations made to welcome His Majesty George IV on the occasion of his visit to Ireland was a new Royal Stand at the Curragh race course This included a necessary, the seat of which was of a breadth and height to suit the massive royal frame (Since the measurements could not easily be had, a patriotic Irish peer of similar build volunteered to act as a living model) Such hospitable foresight was justified The king had been entertained in the native fashion on the previous evening, and as the horses went down for the start of the first race was "overcome by the merrygowhimbles" and retired to the necessary, from which he emerged only when the racing was over

The Mews
Widdicombe
HARRY HAWKE

DANGEROUS COTS

SIR,—I should like to amplify Mr Staples's remarks (July 16) by pointing out that the 3 accidents referred to all occurred in metal cots with light gauge tubular rods of $^1/_4$ in diameter in the sides The rods were originally spaced $3^5/_8$ in apart, but were of very flexible material which a health visitor was able to separate to a space of $5^1/_2$ in The accidents would not have occurred in wooden cots of the domestic type made with rigid wooden bars at spacings of $3^3/_4$ in

The manufacturers of domestic wooden cots studied the results of the investigations carried out by the Ministry of Health very carefully indeed They were in full agreement that for metal hospital cots made with flexible rods the spacing should be reduced to $2^3/_4$–3 in or even less, because of this flexibility, agreeing with the Ministry's view that further fatal accidents must be avoided at all costs regardless of the possibility of minor accidents occurring

The agreement on metal hospital cots was readily reached on the evidence of the unfortunate accidents which had occurred because of the flexibility of their rods, not on the Ministry of Health's investigations and measurements

When wooden domestic cots with wooden bars were discussed, however (there is no record of any fatal accident in these cots), the only evidence produced to justify a reduction of the bar spacing was the Ministry of Health's figures, which at the time of presentation the Ministry officials themselves suggested were more than suspect In their accompanying memorandum they used such phrases as "Present data must be used with caution," "The mean measurements for each monthly age group differ significantly whether this is a true regional difference or a difference due to technique is difficult to say, but as the differences are greater in some measurements than in others, technique probably plays some part," "*Thus, if the figures are accepted* "

In the bulletin you refer to in your annotation of June 18, Dr Elliott and Mr Hammond stated that the figures showed that the chest depth would prevent all but about 1% of 12 month-old babies squeezing through the bars sufficiently far for the body to hang by the head, and an examination of the figures revealed that this 1% appeared to be exclusively in Birmingham, there being, incidentally, no instances at all in the Queen Elizabeth Hospital Throughout the whole range of the figures produced by the Ministry, it was those from Birmingham which gave most support to the contention that the bar-spacing should be still further reduced, and to practical people it was obvious that the Birmingham *technique* was responsible for this result, not the Birmingham children

The manufacturers of wooden domestic cots were unanimous in considering that such figures, upon the validity of which the Ministry themselves considerable doubt, could not be accepted as so important a change They came to the that in fact, instead of in theory, no 12 mo *could get its chest through the existing spacin* if it could not get its chest through there wa its being caught by the neck with its body bars of the cot

There is no question of the manufacturers flight of their own into the realms of theory" suggest that reducing the spacings further w in a young child, lying on its back, getting i legs entwined between the bars and suffe injuries I have seen a 4 month old child's by getting it caught in a lattice type cord diagonal measurement of something betwee $3^1/_2$ in The prevalence of this sort of injury is why the production of this type of cot side fi 25 years ago

The insistence on the part of the Ministry th sort of risks attach to wooden cots made wi as attach to metal cots made with flexible be accepted by the manufacturers, who might for thinking that such insistence is an atte Ministry to distract attention from its own comings by accusing the makers of domestic of producing unsafe goods—when in fact the that the manufacturers have been remarkabl in providing safe cots free from any type o indeed far more successful than the Ministry

As conscientious, responsible people wh obligation to the public to supply accident-fr they are unwilling to alter their well proven for the sake of providing additional safeguar type of accident which remains theoretical wooden domestic cots are concerned, at th causing minor injuries

R T BAVE
Vice president, Associatio
Furniture Make
London E 3

TREACLE FOR CONSTIPATIO

SIR,—Mr Lang Stevenson (July 23) refers t use of the word "triacle" It also occurs in *Chyldren* by Thomas Phaire (London, 1545 treatment of Terrible dreames and feare n Phaire recommends . "A litle hony to swal lytle pouder of the seedes of peonie, and triacle in a litle quantitie with mylke" He use the word in the modern sense Earlier it compound of drugs used as an antidote to As this usually contained honey the word was transferred to mean treacle In Chaucer's probably still used of a compound remedy, wh why he says, "unless I have *a* triacle"

Bath.
H R E

STERILISATION OF BLANKETS

SIR,—Despite the letter by Dr Blower Wallace (July 2), I still believe that 'Fir the concentration used for sterilising blankets less, does not stain blankets, and is effective a static with a prolonged effect (In our a incorrectly referred to fixanol B) I must ad on re reading our paper that the action of soap ising the bactericidal effects of quaternary compounds is not specifically mentione antagonism of soap is well known, as Dr B Dr Wallace admit We do not wish to detra advantages of '*Cirrasol OD*,' but there is s as fair play The great thing is to convinc people as possible—particularly hospital adm —of the desirability of sterilising blankets

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1 Marsh, F , Rodway, H E *Lancet*, 1951, i

measures in wards treating pillows and with formalin (hot moist and gaseous -clave) and adopting gloves masks, and gowns (together with the M R C technique for dress e aims should come first

et s Hospital
ping FRANK MARSH

AL TESTS OF PASSIVE JOINT SENSE

y personal indebtedness to the clinical test n detail by Sir Charles Symonds (July 16) is sufficient interest to record

ive years ago (1930) I was stricken down by myelitis. On the twelfth day the late Sir Percy idly came to see me I was then extremely ill, die any day and the prognosis was considered hopeless. In spite of this Sir Percy gave me a ological examination I was completely paralysed aist and my answers in regard to sensation were han 50%—i e guess work At the end Sir Percy was to test my big toe and showed me what he to do I shut my eyes while he carried out the Sir Charles Symonds describes My answers were and all were correct When summing up my rcy said I do not know what is to happen to can say is that I can see no absolute reason why not in the end almost completely recover except weakness of the peroneal muscles of your right leg nd encouragement inspired by this statement were it probably an indispensable factor in my recovery nths later the late Dr George Riddoch tested me ess to return to work He used the same tech was lying in bed he did not ask me to get up at the test of the big toe for passive joint sense at my sense of balance was unimpaired and he to return to work in four weeks, stating that he ason why I should not complete my further ten norary surgeon to Bradford Royal Infirmary He ed me that it was upon this test that Sir Percy ad relied in making his remarkable prophecy s before

PETER MCEWAN

ITAL DERMAL SINUSES IN CHILDREN

wish to congratulate Dr Haworth and ary on their excellent article (July 2) The e of these sinuses was forcefully impressed while working as senior surgical registrar at ital for Sick Children Great Ormond Street n taught by Mr Denis Browne to distinguish such sinuses as they describe and postanal He considered that all sinuses should be en first noted I was sceptical about the real o this until I operated on an eight month old it for him

nt had a sacral sinus such as is shown in fig 6 and Zachary s article I found that the tract own through the sacral hiatus which opened high um In order to further trace this track and see s a cystic expansion at the end it was necessary inectomy The tract appeared continuous with the —I think via the filum terminale I divided it it and closed the wound Postoperatively retention veloped and the infant had to be catheterised for When I last saw the infant a few months post there was no evidence of urinary difficulty though l not yet developed (the infant was still less than onths old) The wound healed per primam. Had not been operated on when it was infection would y have ascended and caused either myelitis or

a difference between these sinuses and normal dimples, which are situated closer to the anus used by intra uterine pressure This dimple ctly over the place where one would expect n the fœtal position By folding up a newborn sitting it on its buttocks, it will be seen that his dimple The dimple is an area where there ittle tissue between the skin and the sacral with a resultant loss of skin mobility These dimples are never very deep their bottom can be demonstrated by the manœuvre described by Haworth and Zachary They do not need to and should not be treated

I do not think it is possible to overstress the importance of treating the other type—the true dermal sinus—in infancy In such cases the operation is simple, safe and swift while the complications if the condition is untreated (meningitis pilonidal sinuses neurological dysfunctions) are grave, common and sometimes lethal

I wish to acknowledge my gratitude to Mr Denis Browne for teaching me about these conditions amongst many other things

Washington D C NEVILLE K CONNOLLY

CONN'S SYNDROME

SIR,—Your account[1] of the discussions on this subject at the recent Atlantic City meetings does not indicate correctly what I said about the relation of aldosterone output to sodium and potassium

It is recognised that aldosterone and deoxycortone increase potassium excretion and decrease sodium excretion. There is suggestive evidence that potassium and sodium intake have opposite effects on the adrenal cortex Deane et al[2] as well as Bacchus[3] have previously shown that either high potassium or low sodium intake stimulates activity in the glomerular zone of the adrenal cortex Peschel and Race[4] have noted similar morphologic changes in the adrenal cortex of men after long periods of low sodium intake

At Atlantic City Laragh and Stoerk reported morphologic observations which were compatible with these previous reports. They emphasised the danger of hyperkalæmia after potassium loading in sodium-depleted subjects In observations on several dogs and one patient, a direct correlation was found between potassium intake serum potassium concentration and sodium retaining activity of urine Since the correlation between serum sodium concentration and sodium retaining activity was poor the effect of sodium on the output of aldosterone was considered to be less important Inspection of their data however showed that sodium retaining material was detected only in the urine of animals on low sodium intake or of a patient with severe heart failure but not in controls on normal diet. Under these conditions, heavy potassium loading produced increase in sodium retaining activity of urine extracts while further sodium depletion did not appear to raise the output of aldosterone like material My conclusion from these data was that Laragh and Stoerk were measuring in all instances an output of aldosterone which was already fully stimulated with respect to sodium deprivation but that under these conditions the aldosterone output could be further increased by heavy potassium loads This differed from Dr Laragh s interpretation only in the assessment of the relative importance of sodium and potassium in regulating aldosterone secretion

From observations on normal subjects and patients, our group believe that either low sodium or high potassium intake stimulates the output of aldosterone Sodium loading depresses the normal output of aldosterone Potassium depletion may decrease aldosterone secretion as Singer and Stack Dunne[5] have shown in rats The changes which we have observed after sodium depletion are larger and tend to outweigh the effect of simultaneous potassium depletion

All of these observations suggest that endogenous aldosterone tends to decrease sodium excretion and to increase potassium excretion Which of these two effects predominates may depend on dietary intake renal function and factors which favour the accumulation of sodium in œdema For example in the patient with

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1 *Lancet* 1955, i 1167
2 Deane H W Shaw J H, Greep R O *Endocrinology* 1948 43 133
3 Bacchus H *Amer J Physiol* 1950 163 326
4 Peschel E Race G J *Amer J Med* 1954 17 353
5 Singer B Stack Dunne M P *J Endocrin* 1955 12 130

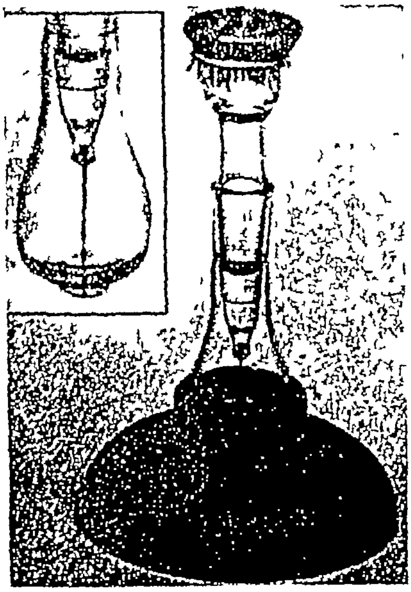
protein depletion or heart failure, a high output of aldosterone is accompanied by retention of much sodium and water in the subcutaneous tissues and serous cavities. When an adrenal tumour secretes an excess of aldosterone in an otherwise normal man, retention of sodium is limited, and the effect on potassium predominates just as in a normal dog given large doses of deoxycortone.[6]

Stanford University School of
Medicine, San Francisco,
California

JOHN A LUETSCHER, JR.

MODIFICATION OF THE HEAF TEST

SIR,—The Heaf multiple puncture tuberculin test is rapidly establishing itself as a reliable substitute for the Mantoux test, and it also has the great advantage of being a "one shot" technique As originally described, however, a platinum loop is used to spread tuberculin solution on to the skin prior to using the Heaf gun. This method thus involves two separate sterilising processes (flaming) and a second implement Another suggested method—a glass rod—is a non sterile procedure A method is now used in this clinic which considerably simplifies and accelerates the test whilst maintaining a sterile technique



The platinum loop has been discarded and no separate implement is used for spreading the drop of tuberculin applied to the arm the terminal plate of the Heaf gun alone is entirely adequate for this and the spreading and subsequent release of the needles can be carried out almost in one continuous movement

An ordinary drop-bottle can conveniently be used for applying the tuberculin, but again this is a non-sterile procedure delivering a drop too large and varying in size On the other hand, a pipette type dropping stopper with rubber diaphragm can be used to overcome these difficulties provided the tip is not allowed to touch the skin and is of a bore that yields a drop just adequate for spreading If a precision type of ground-glass stopper fitting is used the bottle can be used as the permanent container for the tuberculin

The accompanying illustration shows such a bottle made by Mr A. R Ryall, glass-blower to the Postgraduate Medical School of London Standard 'Pyrex' parts are used (B 10 socket and cone with stem) The pyrex glass is strong and can be repeatedly sterilised by boiling Using standard parts means that either can be replaced independently without disturbing the accurate stopper fitting The pipette tip has been made from a small hypodermic needle sealed into the glass tip with 'Araldite' (Aero Research) This has been adjusted in length to reach the bottom of the bottle and provides a small drop of uniform size The bottle is rendered stable, in spite of its small size (8·5 cm high), by making it fit the rubber base that is provided as standard for small glass throat-sprays

This modification of the Heaf test has been acclaimed as a marked simplification of technique by the nursing staff who carry out the majority of the tests in this department

Hammersmith Chest Clinic,
London, W 12

PETER STRADLING

STAFFING THE TRAN

SIR,—Your annotation of July some of the centres could have assumed At least one centre natal blood-tests from every clinical shall be done at the centre, and grouping shall be done even in large hospital laboratories.

If some of this antenatal work hospital laboratories, as it is in generally advantageous. First, the load fusion centre would be reduced and it perform its primary duty—the supply pitals Second, more hospital experienced in blood-grouping and ship in hæmatology of the Institute Technology, the syllabus of which belief, is loaded with blood serology increased experience of technicians at pitals would make their reliable than it is today.

There are some centres which seem to in a hospital knows anything some hospital workers are beginning to these regional transfusion centres patients, since they prefer to spend studying rare and obscure perform their less spectacular and more duty of providing enough blood for

Surely the need is for more as "senior technicians," so that young leave the transfusion service for a year their fellowship of the I.M.L.T. in a return to a position of responsibility in laboratory

The latest proposals of the manageme Whitley Council, if adopted, would nicians out of the service, and offer no or transfusion centres.

Central Middlesex Hospital,
London, N W 10

B.C.G VACCINATION

SIR,—In 1953, when I began using the puncture apparatus for tuberculin B.C.G. vaccination, I used *Old Tuberculin* and B.C.G. 0·5 mg per ml. When drop of O.T. The local reaction which to four weeks was not very degree of allergy produced very version rate was about 60%.

In 1955 P.P.D. (2 mg. per ml.) was used the B.C.G. vaccine was now concentrated A new technique has been evolved interesting information The technique is

B.C.G. vaccine (0·5 mg per ml.) is trifuging 10 ml. down to 1 ml (9 ml. of withdrawn and rejected)

To 2 ml of P.P.D. 0·25 ml of concentrated This mixture is used for testing by Heaf those who are allergic show very definite two to six hours. Non reactors show pricks, and forty-eight hours later these Thus it becomes possible to read the test the is performed

To the concentrated B.C.G. 0·25 ml. P.P mixture is used for M.P. vaccination. The reaction appears in from forty-eight hours depending, it would seem, on the degree of at the time of testing, for it was observed were rare among the children over *9 or 10* presence of the B.C.G. seems to elicit a response degree of sensitivity It occurs to me differences in healing time and local after intradermal injection of B.C.G. different degrees of prevaccination vaccinated.)

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[6] Ferrebee J W, Parker, D, Carnes, W, Gerity, M., Atchley, D, Loeb R F *Amer J Physiol* 1942, 135, 230

uccination test shows conversion in from one to -again depending on the degree of allergy present test

sion rate is 100%. There have been no untoward r 100 children; the skin is never broken and ceration with discharge

R STEVENSON DOIG

)NGEVITY IN A TAPEWORM?

narried woman of 56 has been passing tape nts for 15 years She is employed as a cook ne cooks for people and not for cattle she is r to the public health She never eats raw her personal preference for *saignant* over es a remote chance of reinfection however en no period of more than 3 months in which passed segments In 1949 the persistent shown to be *Tænia saginata* but an attack *mas* failed She is herself somewhat unin the parasite whose existence and occasional arance she accepts but she has recently been o try the mepacrine cure (The head has nd.) The soma seems to keep in step with in tolerance for she has no eosinophilia lem in cestode geriatrics is ventilated in the ome of your readers may have known still orms.

of Medicine
l Infirmary
ester 13

D A K BLACK

DOCTORS AND FIRST AID

r editorial last week is timely It is unfortu too true that many of us are woefully ignorant The general practitioner usually deals ably jured but the more exotic specialist is often ely to think We suggest that the best way ouch with first-aid which is the very bedrock nt, is service with one of the voluntary s. The St John Ambulance Brigade as all organised civic or sporting events will know rovide very wide cover but there is always pansion New members can be absorbed in whether medically qualified or not and the nch, demanding a minimum of twelve hours' and a maximum where the sky is the limit, r volunteers to train new divisions and to o who retire under the age-limit of 65 Medical at least two years' standing are eligible for t as probationary surgeons

ichy we shall welcome inquiries addressed to surgeon and we feel sure that this applies colleagues in other counties

VERNON ROYLE
Commissioner

ROBERT OLLERENSHAW
District Surgeon.

caster's District
nbulance Brigade
Street Preston.

THE DEATH PENALTY

lignor quandoque bonus dormitat Homerus! conceivably be a rational case against capital but the highly emotive language of your icle on the death penalty in *The Lancet* of uite unsuited to its presentation and does not nt it being no more than an incoherent appeal tions. That a collection of men and women praved in their tastes and these further by a like-minded section of the press, should sion of an execution for still more indulgence behaviour outside a prison is no more a nst capital punishment than is the prevalence g an argument against opening shops should seriously be invited to believe that the of Mrs Ellis deprived two children of a ome life is unworthy of your pages and no to your readers' intelligence The pattern es may be glimpsed from the story of the squalid last weeks of their mother's life before she committed the crime for which she has paid the penalty

Normal home life' indeed! It may well be that now only does the possibility of this open before these children

You go on to propose that 'any law which in its enforcement does gross injustice to innocent people *strikes at the whole concept of justice* ' What confusion of thought and what muddled ethics are here It is apparently in vain that the enterprising editors of the Penguin Classics have made a translation of Aristotle's *Ethics* available for half a crown—less than the price of two copies of *The Lancet.*

It is not the law which is guilty of injustice to the innocent in this instance It is the criminal herself who by her crime inflicts injustice upon her children for it is her act that has made them suffer and would have done so for the rest of their childhood even had her sentence been commuted to penal servitude When a footpad robs with violence, is convicted and goes to prison for a long term his innocent dependants—if he have any—suffer grave injustice in the form of distress economic loss the break up of a family circle and public humiliation But is the law to be blamed for this injustice and must the offender—as greatly against his family as against the State—go free and not to prison? In short your article is, I must submit, barren of any rational concept of justice or appreciation of the rule of law

Finally I read that we gild the worst of crimes with publicity Who pray are 'we ? Surely no more than a cynical section of the press which under the fiction of *serving* the public interest"—*surely the most* hypocritical fiction of our time—stirs up the mud and rakes the muck when sordid crimes such as the three you cite have been committed If we were so fortunate as to enjoy a universally high minded press, most of the objections—such as they are—that you urge against capital punishment would vanish But that we should be invited to abolish capital punishment because we have not got such a press (and this is the clear tenor of your argument) is a crazy proposition

The injustice suffered by the innocent from the carrying out of the criminal law comes not from the law, but from the criminal himself and from those who for gain exploit his squalid life and crimes

London W 1

F M R WALSHE

SIR —I think most people and certainly most doctors, feel slightly sick when they read of and visualise what actually happens at an execution The recent hanging of a young woman in the prime of her life was particularly nauseating Is it not time that we doctors, the medical profession unitedly denounced this senseless destruction of life for what it is inhuman barbaric, cruel pointless and vindictive?

Deaths due to disease are tragedy enough deaths due to accident are worse But to think that we can deliberately and cold bloodedly take it upon ourselves to authorise the death of a fellow human being is degrading and disgusting to the worst possible degree There is also the ethical side of the matter How can doctors whether directly as prison medical officers or indirectly as citizens in a democracy, have anything to do with the deliberate taking of human life? Our duty our calling is to prevent death and suffering and no other step can be condoned on any grounds whatsoever I seriously question whether it is ethical for prison medical officers to assist in any way at an execution to be present to certify death or to perform a post mortem examination afterwards. If the authorities insist on carrying out this revolting undertaking then they must do it alone without the slightest help from us

The public conscience has already been partly stirred Unfortunately there are no half measures about death Let us, as a profession do all we can to induce the Government to think again, to go the whole way and abolish the whole filthy business once and for all

Geneva W NORMAN TAYLOR

SIR,—It is surprising that, so far as I know, no study of reactions to executions, using the techniques of Mass Observation, has been published A great amount of material is available, and might include not only views expressed in the general press, but also from your own leading articles As to the execution of Mrs Ellis, I doubt if you are right in saying that "unwholesome excitement was shared by children up and down the country" I have many opportunities of meeting children, at home and elsewhere, and I doubt their interest in the case There are odd characters who may lift their children to read death notices, or take them to shows of relics of murderers, but this merely illustrates the well-known fact that there are odd people

It is urgent that strong restraint be placed on press reports of crime

In the Christie case, many doctors of long experience must have learned much that was new to them, both in physical pathology and in psychopathology Surely it is unnecessary and undesirable to publish detailed evidence in such cases For the expert these matters are to be found in technical works, for the ordinary man they have no value, and are indeed harmful The law has already restricted the publication of certain evidence in divorce suits, and controlled "horror comics" The breakfast table is no place for a refresher course on the abnormal

As to capital punishment in general, it may be that much of the debates that now precede, and follow, every execution arises from a misconception of the function of the courts

Judges have often pointed out that the courts are courts of law, *not* courts of morals The McNaughten rules are really based on moral theology, which assesses human acts on the bases of gravity of the act, knowledge of the agent, and volition of the agent A man can reach no certain judgment on the absolute moral value of the act of another, his judgments are practical and inferential. A court makes a practical judgment as to whether the accused has broken an empirical code, which in general does, but not necessarily, correspond to moral standards If we cease to regard the McNaughten rules as having a moral value, and cease to give to the courts a function, which they themselves disclaim, of making moral pronouncements, then the rules are seen as useful empirical standards, and the courts as the instruments of practical policies

Capital punishment is not a penalty for a moral offence it is a practical decision to remove permanently from the community a person who has made himself unsuitable to continue in it The surgeon who excises a malignant focus makes no moral judgment on its cells, the battery commander who shells an unseen position does not judge the men holding it, the decisions are practical

Again, we cannot really judge of the deterrent value of capital punishment It may be that the execution of a Christie did assist some abnormal minds in achieving repression of certain tendencies, the knowledge of sanctions to be imposed may have a value even at the level of conditioned reflexes It may be that the fact that the community does not accept sexual passion and jealousy as grounds for homicide has a value in maintaining for the whole community its background standards of conduct

Finally it is to be hoped that some alternative to the present use of psychiatric evidence can be found

It is far from edifying to the profession itself, and indeed to the lay public, to see that in most cases of homicide the defence can so often find evidence of psychic abnormality, the prosecution of "normality" 'Blackouts" have long been a jest among doctors they are becoming a byword with the laity It is odd that such evidence is so largely confined
to charges of murder Do forgers, adulter
share pushers not also suffer from these d

I suggest the basic principle in consider
and not only capital punishment, is that
courts of law not courts of morals In t
adultery we are content that the courts
laws designed for the convenience and
community, and not concern themselv
considerations of morality. Why not t
view for murder ?

Todmorden, Lancashire R C

SIR,—If the death penalty is intended
public, then surely no insane person should
commits a murder ? Straffen will rem
threat to children until he dies, whereas
Cristofi, and Mrs Ellis would, had they h
quite possibly have harmed no one afterw
Your leading article, which adduces str
against the belief that hanging is a de
provide the Home Secretary with the evide
is a widespread feeling against capital
What is to be feared is that, if this feelin
be ignored, juries will do as they did wh
the punishment for theft They will refuse

London, S E 12 W A L

SIR,—I should like to congratulate you o
article Surely the term "capital punis
anachronism In an enlightened age the
punishment should be the correction and
individual delinquent It may be that
yet ripe for the complete abolition of the d
maybe the community is justified in
public menace, but having decided that
is necessary the offender should be liqu
most humane method possible—which
not hanging

Among the most macabre features in the
Royal Commission were the details of the th
condemned cell Surprisingly, the witness
eminent psychiatrist) appeared honestly to
procedure was humane Physically the pr
treated—indeed no effort is spared to ensure th
to the executioner in good condition All du
he (or she) is watched by two warders so th
moment of privacy in which to think or pray
calls of Nature Surely reasonable prec
suicide could be taken without this ? With
in the fact that only about 90 sec elapsed be
of the hangman and the drop To effect th
the scaffold is erected immediately adjacent to
cell so that the victim sits for three weeks
which alone separates him from the gallows
be aware of a peep hole through which th
watch him for technical details. By compar
Tyburn seems humane, especially as in the
most of the victims were fuddled with alcohol

After the recent execution of Ruth Ellis,
who made the post mortem examinatio
necessary to draw the attention of the
fact that there was a small quantity of
stomach I had always hoped that
officers contrived to arrange for condem
be doped at the last From the surprise
somebody at Holloway Gaol had had th
give Ruth Ellis a glass of brandy one f
hopes were without foundation T W

Horley, Surrey

SIR,—The ethical basis of capital pun
say the very least, extremely shaky, but
prolonged imprisonment are far less alt
As the law stands, the convicted murderer
to death, but may be reprieved and the

Vhon this happens those of us with vivid and more or less kind hearts do not find its spoiled by the thought of the hideous a of hanging and, being made as we are, of the horror of long imprisonment is soon n the most recent case there is no doubt eople would have been much happier if the ad not been hanged but how would she luring years of prison? Prisoners are still l it is surely the duty of penologists to find of avoiding the degradation that is an art of long imprisonment tering psychological blow to the children nost equally great if they had to remember nother was in prison for murder It is a a that Any law which in its enforcement jury to innocent people strikes at the whole ustice" but even in Erewhon and Utopia ing happened

A PINEY

Medicine and the Law

An Emergency Case

21 London Executive Council considered a 1 a general practitioner had failed to respond emergency treatment of a patient who was st

Mr Z were travelling to work by tube train at when Mr Z suddenly became ill experiencing n the abdomen Mr Z was in a semiconscious en the train stopped at a station Mr Y with the d person supported him into the street Mr Y Mr Z might recover in the open air but as he Mr Z was assisted across the road to the steps e of a pathway leading to the surgery premises ere Mr Z was propped up in a sitting position ang the door bell the door being about eight or

s answered by Dr X and Mr Y explained that en taken ill in the street Dr X (who was in a) offered no advice or assistance beyond telling an ambulance; she then closed the door Mr Y Dr X must have seen Z sitting at the foot of the the path was a straight one He agreed that for an ambulance one arrived within three or

tted that the evidence given by Mr Y as to the r front door was largely true She stated how had suffered a very bad night and had taken ts She was in bed asleep when the bell rang it on a dressing-gown over her night-clothes and er glasses with her when she went downstairs to or She opened the door a little way sufficiently letter from the caller whom she had expected to in. There were however two or possibly three in front of the door from one of whom she a man had been taken ill in the street This er that a street accident had occurred and with a mind she was of opinion that the advice to call was perfectly good and the quickest way of stance; there was an ambulance station nearby from experience that an ambulance would be at bout three minutes. She suggested that it would er nearly as long to go upstairs to get her e was firm in her statement that she was unaware nt was at the foot of the path. As to Mr Y's phone for an ambulance Dr X said that there phones adjacent to the surgery

h the approval of Mr Z made a complaint ive council. The medical service committee at Dr X had failed to comply with the terms of scheme and thus with the terms of service ded that Dr X be cautioned The executive ted this recommendation against which led to appeal to the Minister

Obituary

JOHN BRIAN CHRISTOPHERSON

C.B.E., M.A., M.D. Camb., F.R.C.P., F.R.C.S.

Dr Christopherson the first director of medical services appointed by the Sudan government and the originator of the treatment of schistosomiasis by intravenous injection of antimony, died on July 21 at his home in Gloucestershire at the age of 87

He was born at Batley, Yorks the son of Canon Brian Christopherson later rector of Falmouth From Clifton College he went to Caius College, Cambridge and to St Bartholomew's Hospital After qualifying in 1893 he continued his studies at Vienna. In 1896 he was elected assistant surgeon to the Albert Dock Hospital where James Cantlie was his chief so he was closely associated with the London School of Tropical Medicine in its teething stage and came under the influence of Sir Patrick Manson In 1897 he took the F.R.C.S., but his promising career in London was interrupted by the South African war for which he immediately volunteered He became surgeon to the Imperial Yeomanry base hospital at Deelfontein, and after the war he did not return to England but joined the newly formed Sudan Medical Service, as physician to the inspector-general Slatin Pasha In 1904 he was appointed the first director general of medical services by the Sudan government

In this influential and important position he became closely associated with the Wellcome Laboratory in Khartoum and with Andrew Balfour and Robert Archibald. He was also connected with Gordon College in the early stages. Five years later he resigned his appointment to become director of the civil hospitals in Khartoum and Omdurman There he had access to a great deal of clinical material and became interested in leishmaniasis schistosomiasis and leprosy In 1913 he was elected F.R.C.P.

The outbreak of the first world war again disturbed his career, and he accompanied Sir James and Lady Berry's Red Cross unit to Serbia and acted as surgeon at the temporary hospital at Vrynatcha Banja While there he saw a great deal of typhus, relapsing fever malaria and other diseases which afflicted the harassed and stubborn Serbian armies When taken prisoner by the Austro Hungarian forces by a flick of fickle fortune, he was rescued by his friend Slatin who as an Austrian national had remained in his own country where he happened to be on leave on the outbreak of war On his release Christopherson immediately went to France as secretary to the War Office commission on medical establishment with the B E F This task accomplished he returned to Khartoum at the end of 1916 There he was in charge of three patients with kala azar (leishmaniasis) whom he found were also infected with schistosomiasis. He decided to treat them with intravenous injections of sodium antimony tartrate (tartar emetic) a remedy which had been introduced by Sir Leonard Rogers in 1914 in Calcutta, and which had been used even earlier in dermal leishmaniasis by Gaspar Vianna in Brazil and in kala azar by Di Christina and Caronia in Sicily Christopherson noted with surprise that as the kala azar regressed, so the eggs of *S haematobium* began to disappear from the urine They also became opaque and failed to hatch on being placed in [illegible] The contained miracidia were dead. He follow[illegible] cases methodically until he was satisfied that [illegible] cured of schistosomiasis and that the parent [illegible] no longer active Later he learnt that [illegible] McDonagh had in 1912 injected 23 [illegible] schistosomiasis, contracted during the Boer war, with antimony tartrate, though he had not been able to follow them up in the same systematic manner

On his return to civil life and after his retirement from the Sudan, Christopherson was in charge of the bilharzia clinic of the Ministry of Pensions, where he supervised the treatment of the soldiers who had contracted schistosomiasis during war service For this work he was appointed O B E in 1920 About this time, to the astonishment of his friends, he also began to specialise in pulmonary diseases, and in due course he became a physician to the London Chest Hospital at Victoria Park, where he established a considerable reputation He was also physician for tropical diseases to the Royal Masonic Hospital, and had a busy consulting practice He continued to take a keen interest in tropical medicine and he regularly attended the meetings of the Royal Society of Tropical Medicine and those of the tropical section of the Royal Society of Medicine, of which he was president in 1929–30

In the early 'thirties he retired to his country estate at Lydney-on-Severn, to busy himself with horticulture and country pursuits

P M-B writes "Christo was a charming personality he was of an inquisitive disposition with an active mind Dark, with beetling eyebrows, he spoke with a rather hesitant manner and, on that account, was not a very good lecturer, but he could dissimulate his little stammer with a pleasant and infectious laugh He was a kind soul and a pleasant companion who never spoke ill of any man He was also deeply religious and a good Christian He was a good friend to the Church and for many years medical adviser to the University Mission to Central Africa When roused and when he knew he was in the right he could be firm and tough Usually he won through Christo's name will live long in the annals of tropical medicine and in the hearts of his many friends"

Dr Christopherson married, in 1912, Joyce Eleanor, daughter of the late Dr J A Ormerod

HUGH JAMES McCURRICH

M.S Lond, F R C S, M R C O G

Mr H J McCurrich, senior consultant surgeon at the Royal Sussex County Hospital, died at his home in Hove on July 16 at the age of 64

One of four children of the late John Martin McCurrich, chief engineer of the Bristol and Avonmouth Docks, he was educated at Clifton College and St Bartholomew's Hospital He qualified in 1915 and joined the Army as a combatant, but later served as a captain in the R A M C Invalided on account of trench-foot he resumed his civilian medical career At St Bartholomew's he was house-surgeon to the late Sir D'Arcy Power, and afterwards resident midwifery assistant and demonstrator of obstetrics He took the M B Lond in 1922 and M S Lond in 1923, and became F R C S the same year After further resident appointments at the West London, Putney General, and Royal Masonic Hospitals, he was appointed resident surgical officer at the Royal Hospital, Sheffield From Sheffield he came to Brighton in 1925 as medical superintendent of the Brighton Municipal Hospital, later known as the Brighton General Hospital This was an *admirable appointment, giving full scope to* McCurrich's clinical and administrative abilities To him is mainly due the complete transformation which took place in this institution during his term of office In his Rogers prize essay in 1926 he sketched the development of hospital and public medical service from Saxon days to the present time and he foresaw much of the pattern of development of the hospital service which was to become an accomplished fact twenty years later

After serving two years as surgeon to the Hove General Hospital he was appointed assistant surgeon to the Royal Sussex County Hospital in 1931 He took the M R C O G in 1935, and became gynæcologist to the hospital in 1939 and full surgeon in 1946 He was also consultant surgeon to the Victoria Hospital, Lewes, and he continued to serve for some time as consultant surgeon to the Brighton General Hospital

He served a term as chairman of the Br
of the British Medical Association and w
council of the association He was pr
Brighton and Sussex Medico-Chirurgical
1946–47, the centenary session of the
presidential address was a most valuable
review of the political and social condit
when the society was founded in 1847
effects, the *outstanding medical achiev*
the century which followed, and a brief
society and its reaction to the discoveries of this epoch By a happy thought this meeting was held in the council chamber of the town hall, in which building the first meeting of the society was held in 1847

In 1944 he founded the Association of the Honorary Staffs of the Major Non-teaching Hospitals of England and Wales, being impressed by the need for an association to represent these staffs during the discussions taking place before the passing of the National Health Service Act of 1946 Never a man to be deflected from any task to which he put his hand, he succeeded in putting this
association on a sound basis and he was its f
from 1944 to 1947 and again when the as
its present title of the Regional Hospita
and Specialists Association during 1949–5
could have achieved such a success in the m
professional life He was a member of
and Lewes hospital management commit
formation in 1948 until his death, and
the group medical committee from 19
March

Though so actively engaged in medico-p
he never allowed his professional work t
won the respect and affection of a wide
profession, and both the Royal Sussex Co
Brighton General Hospitals owe much to h
devotion He made many contributions
literature, always interesting and often orig
happy gift of humour His chapter on
procedures in *Pye's Surgical Handicraft* an
the *Journal of the International College of*
year on "A method of restoration of the
damage to the common bile duct" may be
among the more important. Always outspo
less and somewhat impulsive in nature, his
one, for the burden of work which he
enormous and he suffered many discourage
flinching Few men could have carried th
such apparent ease He carried on to the
amazement and admiration of his many fr
many interests outside his profession,
sailing, and he found time for social work at
Boys' Club, of which he was vice-president.

He was twice married, first to Dorothy
who died in 1951, leaving two sons and
who survive him with his second wife,
Shaw

Sussex has lost a great personality in Hu
His stocky figure, ruddy complexion, and
made him outstanding with his clear mind
character he was a leader, especially since
of the health service when so many contro
have arisen He was prominent in the form
Regional Hospitals Consultants and Speci
tion which came to be known in th
"McCurrich's Society"

He was always a fighter, always fair,
friendly An admirable chairman, his pre
Medico-Chirurgical Society of Brighton an
noteworthy It was the jubilee year and h

isted of an admirable history of the society
d reprinted and presented to every member
esented further copies to be given to each
r

n open mind always advancing to new tech
ilmost to his dying day was taking an interest
iffairs. He showed his great courage first
gned from his post as medical superintendent
ton Municipal Hospital on his election as an
rgeon to the Royal Sussex County Hospital
d into private surgical practice This courage
vident to all in his last months when he
s a dying man

G M W

Currich will always be remembered as a
steadfast friend In all relations with his
was invariably a conscientious doctor and
rgeon He was sure of his experience yet
ing an open mind for new ideas from what
r they might come He never made any
erary talent, yet wrote clearly and forcibly
to the point When speaking in public he
ht yet restrained, capable of expressing the
se point of view most effectively He appeared
be complete master of himself and all his
vould seem unthinkable that he should even
concession, advantage or privilege for himself
ct towards himself he was always charitable
Though fully aware of human proneness to
s always willing to look beyond this to the
od in other people, however deeply it might
e buried

t illness he showed an unforgettable example
ourage continuing quietly at work, seeking
o others the good health which he well knew
nied to him When his name is mentioned
will always recall his upright carriage, his
pression his strong confident voice his genial
ur, his sound common sense yet rare and
tleness

C. E D

Appointments

M.B. Warsaw F F A. R.C.S. consultant anæsthetist
H.M.C

, M.D. Camb M.R.C.P I whole-time asst. psychiatrist
Pewsey Hospital Pewsey Wilts.

A M.B Lond., F.F A R.C.S., D.A part time consultant
etics to the hospitals of the Reading H.M C

S M.B. Lond D P.M asst. psychiatrist (S.H M.O)
nt of psychological medicine King's College Hospital.

G., M B Belf. D OBST D.P.H asst M O

WY M D Wales whole-time M O regional blood
n centre Sheffield

F R.C S. consultant orthopædic traumatic surgeon
les and Mid Wales H.M C.s.

M D. Beirut. whole-time asst psychiatrist (S.H.M O)
g Hospital Bridgend Glam.

tory Doctors:

M.R.C.S. Framlingham, Suffolk

I M.R.C.S : Harleston Norfolk

E D M B Wales: Abertillery Monmouth.

B D M.B. Lond City of London

l Hospital Board:

J D, L.R.C.P I whole time senior casualty officer
oyal Infirmary

IARGARET G M.B Sheff. D.M.R. whole time asst.
ist to the Leeds (A) and (B) groups

E M D Glasg D.P.M whole time asst psychiatrist
O) Stanley Royd Hospital Wakefield

rths, Marriages, and Deaths

BIRTHS

—On July 21 at the South London Hospital to Joan
Wells) and Derrick Brewerton—a daughter

Notes and News

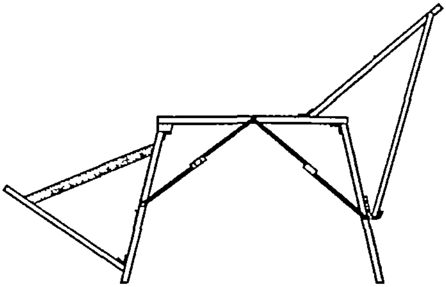
PROTECTION AGAINST RADIATION

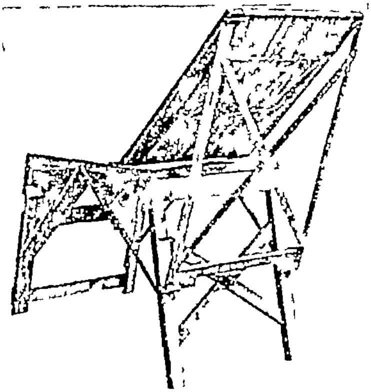
The rapidly increasing range of radiation sources due to the development of artificial radioactivity and the introduction of supervoltage therapy have necessitated wider and fuller regulations for protection against radiation now published in a supplement of the *British Journal of Radiology*[1] Reports by six subcommittees of the international commission cover the permissible dosage for external radiation and internal radiation protection against X rays of up to and over two million volts protection against neutron and proton particles, and the disposal and handling of radioactive isotopes. Protection in X ray diagnostic departments and against X rays from apparatus for non medical applications are also discussed in full. No department which deals with any form of radiation should be without this supplement

A FOLDING-CHAIR

The folding-chair shown in the accompanying figures was designed for a person with two stiff hips who was unable to sit in any ordinary seat or chair One disadvantage of an ordinary wheel chair is that it is usually impossible to stow it inside a car s luggage boot. But when, as in this case the person can walk a little there are many occasions when having arrived by car the need is only for a seat with a back sloping at an angle of about 140

Wood was chosen for this chair because there were doubts about the most comfortable angle and proportions, and some trial and error seemed likely The measurements were very much the same as those of a wheel-chair The chair collapses into a space of 17 × 27 × 5 in. and is then easily carried in one hand.





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[1] Recommendations of the International Commission on Radiological Protection *Brit. J Radiol.* 1955 suppl no 6 Pp 9° 10s 0d

The legs, seat frame, and back frame are of $^3/_4 \times 1^1/_2$ in timber, and all joints are morticed, except those of the leg cross bracing which are tenon joints The four hinged stays are of $^1/_2 \times ^1/_8$ in steel, and they "break" inwards towards the leg unit main hinges But to make them fold evenly with the chair units, each stay *must* be hinged at its own centre point and it must also be attached (by large screws or bolts to the outside of the seat and leg units) at points equidistant from its respective leg-unit main hinge

The support for the back rest is of aluminium L channel of $^1/_{10} \times ^7/_{10} \times ^7/_{10}$ in, cross braced by a $^1/_{10} \times ^7/_{10}$ in aluminium strip riveted to it The wooden bar across the bottom of this unit rests on two curved supports of $^1/_8 \times 1^1/_2$ in aluminium, but as the back legs fold in first these supports swivel in on their single screws so that the front legs (mounted on a wood strip of compensating thickness) can then fold in flat The top attachment point is a spindle welded into a slot in a small steel plate screwed to the back The back and seat frames are covered with camp chair canvas, and the five ply foot-rest is supported by webbing straps A three ply head rest (6 × 14 in) is held firmly between the cushion and the back canvas

The result may not be a work of art, but it is an extremely useful and adaptable chair The designer aims to add arm rests

University of London

The title of professor emeritus of pathology in the university has been conferred on Prof J H Dible on his retirement from the chair of pathology at the Postgraduate Medical School of London

University of Leeds

Dr Stephanie Leese has been appointed lecturer in child psychiatry The title of reader in medicine has been conferred on Dr Deryck Taverner, senior lecturer in medicine, and the title of reader in epidemiology on Dr C W Dixon senior lecturer and chief assistant in the department of preventive medicine and public health

University of Edinburgh

On July 20 the following degrees and diplomas were conferred

M D—D I McCallum *A F Phillips †T G Wilson

Ph D in the faculty of Medicine—‡Zakaria Ibrahim El Darawy, Jean D Garven B M Hobson, ‡W N S Law A K Lough ‡L W Macpherson Dababrata Raymahasaya, Lilly C G Thomson

M B Ch.B—P J Adams, Ademola Oyekanmi Aderemi, Frank Albert Recht, D P Anderson Elizabeth H Angus J B Arnot D M Bachop, T J Bailey, Elsie T Ballingall, C A Biagi, G I Biggam, J W Black Diana R E Bridgford, C J Brigimen I D Brown T R Brown, Lorna M. Browne, T A. S Buist Marjorie A Caie, Aileen A Calder, D F Cameron, Joan M. Cameron, Anne L Campbell, Sheena W Campbell J R G Carrie, L F S Carrie, Bessie J Catton Kenneth Chapman, E D Colterjohn Elizabeth M Connell (with honours), W C Constable Margaret H Cooper A W Craig D McI Craigie H A Crispin I H Currie G M Daniels R E Dixon Isabel E Dobie, J F Donald R W Douglas Donald Dow, Derek Doyle, Christina F J Ducksbury G H Ewing J S Fleming, W D McE Forbes R L Frew June Garden, P J Gillies, R B J Goldie, A M Grier, T O Grundy, I C Guignard, Elizabeth L Handasyde, R A Harkness W C Hartley (with honours) E W Horton, E C A Huckett, G F Hunter, N W Imlah Alastair Jamieson, M G Kerr J F Lamb W I Lamont, J A Laurenson, J R Ledsome, D I MacG Linklater, A L Linton, J McK Lonie, Elizabeth M. McM Love I A McClure Rosemary McCredie M E McCullough, D W Macdonald A W McKenzie H M Mackenzie, L B McKenzie F I Macnaughton, J T A Manley Valerie J Marrian, L V H Martin, Beatrice Marwick J M Melville Mary S Merrie, Ian Michie J A Milligan, Elona I Moir, S T Morton J S Munro C D Musk D O Oliver, D L Owen W G Paterson P N Paterson Brown Margaret E Paul G E Paveley George Philp, D D Pottinger R N Reeve, Margaret A Robb Sheila I B Robertson, P F Roe, C M. D Ross, Audrey H Rundle S R Scott Margaret H Seath Olumuyiwa Seriki, J C M Sharp G J M Slawikowski I McD Smith, T H M Stewart G B Sturrock, Ann M H Sutherland G R Sutherland (with honours), I A G Sutherland Elizabeth A Taylor, J R Taylor, H S Tinniswood, John Upton Audrey P Ward D M Weir R F Williams J McI A Willox, S W Willox Elizabeth H Wilson, Marjorie A Wright, J H Yeoman

D P H—J W Bringan, Joan Campsie, L J Charles, Autar Singh Sethi, W A Simpson, J D Stewart, J G Thomson

D T M & H—Maung Galay H A S Joseph J D Macgregor A C N Millar David Penman Chitranjan Prasad, Uma Shankar Prasad Singh Sebastian Zacharias

*Awarded gold medal for thesis
†Commended for thesis
‡In absentia

Institute of Research for the Prevention of Disease

On July 22 Lord Boyd-Orr, F R S , officially opened the new of this institute at 29, Upper Duke Street, Liverpool

Royal College of Obstetricians and Gynæc

On July 22 Mr Vincent Massey, P C , C.H., Corner (Baltimore) were admitted to the ho

On July 23 a meeting of the council was Arthur Gemmell, the president, in the chair Read was elected president, and Prof A M Victor Lack were elected vice presidents

The following officers were re elected

Hon treasurer, Mr A C H Bell, hon lib McNair, hon secretary, Mr I MacG Jackson, the museum, Mr R A Brews hon treasurer As council Mr John Chesterman hon treasurer regional council, Mr J E Gleson

The following officer was elected

Hon treasurer Canadian regional council Mr G

Professor Claye and Mr C H G Macafee Sims Black professors for 1956

The following were elected to the members

H McK G Agnew, M M Baskin, Lokenath Bh A G Bond, E P Campbell, Tuck Kwong Cho J W G Evans R W Forman, Meenakshi Ghe L M Jacks J D C Lyons John MacVicar, Mr Mary Phillips Israel Rocker J P Roux, A. H. Sacks, I R Saunders Muriel J Scudamore H C D Smith, R McN Thomson, R F Zacharin

Medical Research Council

The council has made the following travell 1955–56

Rockefeller Travelling Fellowships in Medicine

Dr R M. Acheson, medical registrar Radcliffe I

Dr G L Le Bouvier, assistant bacteriologist, Laboratory Colindale, London

Dr A W M Smith, medical registrar, Royal burgh

Dr W H J Summerskill, registrar and tu Medical School, London

Dr J Vallance Owen senior medical registrar Postgraduate Medical School, London

Eli Lilly Travelling Fellowships in Medicine

Dr J C Davis lecturer in pathology Liverpool

Dr P A G Munro, demonstrator in anatom Cambridge

Dr F I Ross assistant, Medical Unit, Univ pital Medical School, London

Lederle Travelling Fellowship in Medicine

Dr J D Judah, senior lecturer, Department of University College Hospital Medical School, Lond

Alexander Pigott Wernher Memorial Travelling Fel

Dr R Hinchcliffe, officer in-charge of the acoustics laboratory

French Exchange Scholarships in Medical Scien

(In association with the Centre National de la Recher

Dr I M Duguid, lecturer in anatomy, Aberdeen

British Hospitals Contributory Schemes (1948)

This association will hold its annual confere and 30 at Caxton Hall, London, S W 1 Mr I Minister of Health, will speak and Mr L. Ha the hospitals benefit fund of Western Austr address on the new Australian health service

Biochemical Journal

Dr A Neuberger, F R S , is resigning from ship of the editorial board of this journal committee of the Biochemical Society Mr A G Ogston, D PHIL., F R S , as his editorial office will be transferred from the of Medical Research at Mill Hill to the Lis Preventive Medicine, Chelsea Bridge Road From Sept 1, communications should be Esq , M A , B SC , secretary to the editorial journal, at that address

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CORRIGENDA *Rheumatology*—In our p 34) of the European Rheumatology Congres of definite or probable rheumatic heart diseas school children, reported by Dr P van der been stated as 2 4 *per 1000*

Meat Pies—The sentence beginning in the the second paragraph of this article last week read "380°F for forty minutes appears salmonella in a 4 oz pie"

The order of the Brilliant Star of Zanzibar conferred on Mr R H Purnell, F R C.S E., speci department of Zanzibar, and the order (fourth Young, formerly medical officer in the department

DVERSE CEREBRAL EFFECTS ANÆSTHESIA ON OLD PEOPLE*

P D BEDFORD
M.D Leeds M R C P
NT PHYSICIAN TO THE COWLEY ROAD HOSPITAL, OXFORD

ell established that the human brain is extremely lo to short periods of vascular insufficiency le 1939, Hoff et al 1945, Corday et al 1953) cerebral circulation of many elderly patients is becoming defective (Himwich 1951), it is not ig that the remark, "He s never been the same operation" is often heard in geriatric practice ll known, too that in elderly people transitory nal states often follow operations under general sia but it is not so widely appreciated that ementias and even permanent catastrophic mental ient may occasionally be the aftermath

vestigate the part played by operations under anæsthesia in the development of dementias in rly I have scrutinised the records of 4250 patients e age of 65 seen in the Oxford geriatric unit at Road Hospital in the five years ending in June aving particular attention to their histories Of 250 patients (of whom 3300 were inpatients and ainder outpatients) 1193 had undergone some n under general anæsthesia within the previous years (i e at or over the age of 50) In no less e third (410) of these cases the near relations or alleged that the patient had never been the ice operation Although careful analysis showed tement to be entirely unjustified in 290 cases here were nevertheless 120 left in which there was -facie case for further study

enor of the allegations in the lesser degrees of n was uniform :

never been able to write a decent letter since "
become so forgetful since
can t be trusted to go out shopping since
s lost all interest in the family since
never read a book through since
used to be so tidy but now he s neglectful and sloppy ibits
an t concentrate on anything since
s become childish and unreliable since
not been able to attend to the business since
just not the *same person since*

these lesser degrees of dementia are distressful arly in patients of higher intellectual and social and they may be incapacitating to one whose s and work demand protracted mental effort and ration : thus the difficulty experienced by a don in concentrating over a book and the impair memory sustained by a practising surgeon after otomy proved *so disabling that neither* was continue his vocation I am here concerned only with those cases of extreme dementia in he patient became virtually a human vegetable the 120 prima facie cases there were 20 such s of extreme dementia 18 of which were operated o under my supervision so that I was able to their mental state before and after operation these 18 extreme cases that this contribution is

Method

ing to analyse cases of dementia associated with o episodes such as accidents and surgical opera e must allow for two obstacles. First the patient s y may be unreliable because of his dementia : he is either quite unable to give an account of himself or gives a story upon whose accuracy no reliance can be placed Secondly, relations and friends tend to blame any dramatic incident, such as an operation or an accident, for the dementia which has in fact been a slowly progressive intellectual degradation, antedating the operation or accident This is a natural tendency The old person had been suffering a mental decline so gradual as to have gone unnoticed by those with whom he lived Defects which to an outsider would have been obvious signs of dementia had to his intimates been merely the old person s idiosyncrasies The accident or surgical operation then necessitates his removal to hospital and in these different surroundings (or on his return home after the interval) his oddities foibles and idiosyncrasies are seen afresh and in their true light as manifestations of intellectual deterioration But he was apparently well before going to hospital and now he is not hence the incident is blamed, albeit falsely for the dementia

In an attempt to overcome these difficulties the following methods and criteria of selection of cases have been followed :

1 Personal observation of patients both before and after the operation or incident, with particular reference to their intellect, memory and habits, and their ability to fit into their environment No patient has been included who was not under my own care both before and after the operation.† All the patients were either in hospital at the time operation became necessary or had previously been in hospital or were attending as outpatients for some intercurrent condition and I was following them up closely in an investigation to assess the value of routine aftercare in a geriatric unit

2 Careful questioning of all those caring for the patient before and after the episode—relations friends, neighbours doctors and nurses. Almoners checked their statements when necessary

3 Selection only of those patients who were judged to be mentally entirely normal old people before their operation.

4 Selection only of those cases in which the deterioration of intellect personality and performance after operation amounted to gross dementia.

5 Full clinical investigation and follow up of all patients, and post-mortem examination of those who died

6 Rejection of cases shown post mortem to have suffered macroscopic cerebral infarction, however long ago

The chief reasons for such stringent criteria are first, that retrospective analysis of such cases is extremely fallible and secondly, that detailed psychometric testing was not attempted A complete inquiry would call for personal observation accompanied by detailed psychometric testing before and after operation of *all* elderly patients requiring surgery—so as to eliminate sampling bias—and this would entail a very large scale investigation Here therefore I have concentrated on only one group—the unequivocal cases showing the grossest degree of dementia

The 18 cases which satisfied the criteria outlined were all followed up until they died The group comprises 10 men and 8 women aged 67–97 years the average age being 80

Representative Case histories

Case 1 —An intelligent old man of 87 was a retired estate manager who still did a full day s work as assistant manager of a newsagent and tobacconist s shop

He was first admitted to hospital after a cardiac infarction from which he made a good recovery He was mentally alert and well informed and made intelligent conversation While he was in hospital it was noted that his prostate was enlarged and that he suffered from dribbling of urine and increased frequency of micturition. He was referred for surgery and meanwhile he returned to work Immediately before his operation, four months later, he was noted to be a well preserved man of sound intelligence and good physical condition His blood urea was normal

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* on a communication to the Association of Physicians reat Britain and Ireland in May 1953

† In the paper read before the Association of Physicians (Bedford 1953) 8 patients were included whom I had not observed before operation. These have been omitted from the *present paper*

Prostatectomy was performed under general anæsthesia After the operation he was confused, restless, and noisy and was given paraldehyde, hyoscine, and morphine without effect He was readmitted to this hospital on the 6th post operative day His blood urea was normal but he was doubly incontinent, confused, disorientated, and mentally inaccessible He was unable to recognise his relations and did not know even his own name He sat dull and torpid by the hour, making no movement until stimulated, and unable to perform even the simplest of occupational therapy tasks He could walk only with assistance and needed help in dressing and feeding There were no abnormal neurological signs

He remained in this benighted plight until his death fourteen months later from bronchopneumonia

Case 2 —A retired engine fitter, aged 79, was remarkably well preserved for his years On his retirement at 65 he had opened a newsagent and sweet shop and had done extremely well, largely because of the interest he took in his customers, and his very pleasant manner His business expanded, and he had finally handed on to his son three flourishing shops, over one of which he retained active managerial control He had been treated for four months, first in hospital and then as an outpatient, for osteo arthritis of the right knee which had troubled him for about a year

He was admitted as an emergency with a strangulated inguinal hernia which was repaired under general anæsthesia Before the operation he gave an excellent account of himself During the operation he collapsed , his blood pressure fell to 80/60 mm Hg for about ten minutes and was then restored to its normal 150 80 On recovery of consciousness, four hours later, he was stuporose and doubly incontinent There was rigidity of all his limbs and bilateral extensor plantar responses Two days later these abnormal neurological signs had disappeared but his mentality showed no change He was doubly incontinent and mentally inaccessible He was torpid and required to be fed He was unable to walk

Over the next month slow but very limited improvement took place He remained mentally inaccessible and doubly incontinent but was able to feed himself and to walk a little with assistance He lived for two and a half years and, until he died of bronchopneumonia, his condition remained unchanged He would sit quiet and torpid in a chair, doubly incontinent and always confused He was unable to conduct any conversation, nor could his interest be maintained for more than a few moments at a time He did not know his relations, and did not even know his own name

Case 3 —A clergyman, aged 73, had formerly travelled the world He still read extensively and was most interesting to talk with his memory was good, and he told his stories in a most diverting way He was wont to say, " I am not the man I was—I think really it is my slowness in picking up new points " , he had full insight into this defect

Three months before admission he had developed pain and hæmaturia which proved to be due to benign prostatic hyper plasia associated with a diverticulum of the bladder Detailed investigations having shown no contra indication to surgery, prostatectomy was performed under general anæsthesia Preoperatively he was given 'Omnopon,' hyoscine, and atropine , the anæsthetic was sodium thiopentone for induc tion, followed by trichlorethylene and oxygen Post operatively he was given morphine

There was delay in recovery from the anæsthetic but when consciousness returned some eighteen hours later, no abnormal neurological signs could be made out His mentality, how ever, had suffered catastrophically He was doubly inconti nent, unaware of his surroundings, and mentally inaccessible Later, he would sit torpid and unmoving in the ward, unable to converse with his fellows or his relatives Although he knew his own name, he did not know his former friends and relations His blood urea, electrocardiogram, and blood-pressure were normal

Over the next six months, bladder control improved to some extent, but his mentality did not recover He was still incontinent of fæces and often of urine He remained silent and morose, with no interests whatever, sitting for hours at a time in solitude He neither read nor conversed, and was unable to perform even the simplest of physiotherapeutic tasks His replies were monosyllabic and often irrelevant he did not know where he was, nor the day, nor th did not know the names of the Royal Family, nor half crowns there were in a pound He would c commands but remained a human vegetable fifteen months after operation, of a coronary th

Case 4 —A woman, aged 73, first came under c sciatica, from which she made a full recovery an intelligent, active person who took a keen i everyday affairs She looked after her husband a her housework and shopping without assistance

She was knocked down by a motor car, sustai only injury a fracture of the neck of the right fe was no loss of consciousness, and on admission t she remembered her accident and gave a detailed herself Her fracture was pinned, under general On recovery she was confused, disorientated, incontinent She was given morphine and s barbiturates, but her dementia failed to improv drawal of the drugs Her blood urea, e and blood pressure were normal There were no po chest complications and no abnormal neuro

Her fracture united soundly but she remain demented She was doubly incontinent and mental sible She could feed herself with assistance but able to walk unaided Though she would respond commands and seemed to know her own nam unaware of her surroundings and did not relations, who were shocked at the change in her next twelve months she made some slight improv was looked after at home by her family , but sh doubly incontinent and would sit in a chair most doing nothing and taking no interest or part in th on about her She remained grossly demented death, fifteen months after her accident, following thrombosis

Case 5 —A retired bookmaker, aged 72, had of 60 operated a small cotton mill, which he had considerable profit six years before Since his ret had lived with his son in Oxford but he had qui doing nothing He had financed his youngest general goods store, which had prospered to the the son now owned two shops, one of which the pati supervised He had first come under our care previously with bronchopneumonia, from which rapid and complete recovery He was an inte active man—mentally normal in every way—and time of his admission to hospital, with a strang inguinal hernia, had continued at work.

During the operation his blood pressure fell to levels for about fifteen minutes, but was restored t 140/80 mm Hg Recovery from the anæsthetic for eighteen hours, during which period his limbs and his plantars bilaterally extensor The abnor logical signs disappeared within thirty six hours remained confused, stuporose, doubly incontir mentally quite inaccessible Some improvement over the next five or six weeks in that he became himself, could be sat out of bed, and walked with He would respond to simple commands and seemed his own name, but he was unable to recognise his rel remained unaware of his surroundings He eighteen months after his operation with no furthe ment in his mentality Death was due to bronc

Case 6 —A woman of 82 lived in a municipal elderly people She had been in hospital five months with a cardiac infarction from which she had ma recovery She was an intelligent and kindly voracious reader and fond of an argument convalescence she was very helpful with the othe and the ward sister found her a valuable addition She did excellent occupational therapy

While walking in the street she fractured the right femur by tripping over the kerb On ad hospital she gave a good account of herself, and no contra indication to surgery her hip was p general anæsthesia

On recovery she was confused, irrational, inc demented She was given morphine, barbitu paraldehyde with no improvement, but thereafter for long periods There were no postoperative c cations , her blood urea, electrocardiogram, pressure were normal , there were no abnormal o remained in an advanced state of dementia until three months later from bronchopneumonia and She was doubly incontinent unaware of her ngs, and unable to recognise her former intimates.

Discussion

above summaries details of physical examination ia and post mortem examinations have been mitted because the 18 cases showed no significant s

lly anæsthesia comprised preoperative medica ually with omnopon gr $^{1}/_{3}$ or morphine and hyoscine gr $^{1}/_{150}$ or atropine gr $^{1}/_{100}$) with sodium thiopentone intravenously and tion with nitrous oxide and oxygen ether and or trichlorethylene and oxygen In many cases, where the abdominal cavity was opened holine chloride dihydrate ('Scoline') or a muscle-relaxant was given.

gy of post mortem material has not proved n this series for all the patients were of very l years In old age it is extremely difficult to gle histologically the changes specifically due to tates from the changes due to diffuse cerebral disease For example although degeneration hippocampus (Sommer's sector) and of the cells of the cerebellum is seen after acute anoxic it is not pathognomonic and the association e senile degenerative changes makes it impossible o the whole of any damage seen to an anoxic

INCIDENCE

the five year period 251 (6%) of the 4250 underwent a surgical operation under general ia while under my personal medical super and of these 251 cases 18 (7%) satisfied the outlined above and comprise the group from o typical case histories recounted above have wn But 7% cannot be construed as a proper of the risk involved for not all the 251 were l old people' before operation moreover, the tion at risk' (4250 patients) was not a repro sample of the aged population as a whole ases of extreme dementia must represent nearly urvivors of major cerebral catastrophes suffered he course of *all* the operations under general ia carried out in the five year period in this a of which Oxford is the centre An undeter ut small number were also admitted to mental (Duffield 1954) But any attempt to relate the to the 4250 patients studied or to the 3300 ns would give an entirely erroneous impression pisodes as are described above must be extremely on The vast majority of patients of all ages ng surgery in this area are sent home after n and convalescence is presumably normal. ley Road Hospital receives most of the patients long term medical treatment for postoperative tions The number of operations performed neral anæsthesia in this area during the five iod runs into many hundreds of thousands but cases of gross dementia following operation have n and of these only 18 patients have satisfied ria for inclusion in the group described here other hand the catastrophe is so grave that the must be regarded as serious These 18 cases establish that the allegation He's never been e since his operation is sometimes true and irreversible gross dementia is occasionally the h of surgical operations under general anæsthesia ly people

CAUSES OF DAMAGE

f the many factors entailed by the term 'opera er general anæsthesia' have been eliminated by the methods and criteria of selection used The remaining ways in which damage can occur can be grouped as follows

1 *Cerebral circulatory failure* including anoxia, anæmia (deficiency of nutrients other than oxygen) stagnation (accumulation of metabolic waste products) or cerebral arterial or venous thrombosis.
2 *Drugs*
3 *Cerebral metabolic disturbances* including toxæmia and pyrexia, vitamin deficiency and dehydration and mineral depletion.

Fat embolism cannot be seriously entertained as a factor here; for though it is by no means uncommon after extensive soft tissue injury or fractures of long bones it is extremely rare after fractures of the neck of the femur which are the only traumatic cases in this series (Robb Smith 1941, *Lancet* 1952a)

Cerebral Circulatory Failure

Corday et al (1953) give the causes of "cerebral vascular insufficiency" as *shock* due to hæmorrhage coronary disease trauma, and surgery and *lowered blood pressure states* due to sympathectomy or sympathetic block, antihypertensive drugs cardiac surgery, carotid sinus stimulation and spinal anæsthesia Pulmonary embolism dehydration and mineral depletion (Allison 1952) and severe infections such as pneumonia (Bedford to be published) may also cause cerebral circulatory failure.

Heymans and Heuvel Heymans (1951) and Heymans and Delaunois (1951) have shown that the sino aortic pressoceptors are the chief reflex mechanisms by which blood pressure homœostasis is achieved These reflexes may be abrogated under anæsthesia and by drugs such as barbiturates and the hypotensive methonium compounds

The posture of the patient during and after operation is of considerable importance, but its significance is insufficiently appreciated The way in which cerebral circulatory failure can be caused by modern techniques can be judged by considering a routine suprapubic prostatectomy With the patient in the Trendelenburg position an extra dose of a muscle relaxant is given to facilitate the insertion of the final sutures. The patient is then brought rapidly to the horizontal position for return to the ward on a stretcher and in the ward is often propped up in bed In two such cases (not included in this series) the systolic blood pressure remained at or less than 60 mm Hg for more than thirty minutes after return to the ward but was rapidly restored to normal by intravenous methyl amphetamine hydrochloride ('Methedrine') and transfusions. These patients suffered no adverse sequelæ but in a third patient (again not included in this series) whose systolic blood pressure forty five minutes after return to the ward was discovered to be less than 60 mm Hg resuscitative measures failed. He died a day later in a decorticate state and necropsy showed no abnormality other than pulmonary œdema (Hughes 1954)

Cerebral circulatory failure may cause brain damage by anoxia anæmia (deficiency of nutrients other than oxygen) or stagnation (accumulation of metabolic waste-products) (Courville 1939 Hoff et al 1945, Heymans 1950, Himwich 1951) Hoff et al (1945) hold that these factors produce different histological pictures Arterial or venous cerebral thrombosis is also a well recognised complication of prolonged hypotension (Collier 1934) and must be regarded as a manifestation of cerebral circulatory failure In this series, the cerebral circulatory failure may have occurred during anæsthesia or in the immediate postoperative phase before recovery of consciousness but not before nor afterwards (for such cases would have been excluded.

Anoxia may result from depression of the respiratory centre by drugs such as morphine and hyoscine (given before and after the operation) or during the course of anæsthesia (being caused by the anæsthetic itself, for the skill of the modern anæsthetist is above reproach), or during and after the operation as a result of pulmonary complications (aspiration collapse, infarction, pneumonia, &c) In anoxia in the immediate postoperative phase it is an inevitable hazard of operation under anæsthesia, the risks of unconsciousness being similar to those caused by apoplexy and the like In all the cases described here, the dementia was manifest as soon as the patient recovered from the anæsthetic, so anoxia occurring afterwards was not a factor in this series

Because the adult brain depends entirely on the aerobic production of energy from glucose, it is extremely vulnerable to anoxia This contrasts with the tolerance to anoxia of the brain of the newborn, because of the persistence of anaerobic glycolysis as a source of energy in the neonatal nervous system (Himwich 1951)

The occasional catastrophic effects of anoxia during nitrous oxide anæsthesia have been vigorously emphasised, by Courville (1939) and Bourne (1952) among others Yet in spite of the condemnatory evidence nitrous oxide is still widely used

Drugs

Quite apart from the anoxia they may cause by depressing the respiratory centre, such drugs as barbiturates, urethane, morphine, hyoscine, and other potent analgesic, hypnotic and anæsthetic agents, may have a specific action on the central nervous system—probably by inhibiting enzyme activity (Mansfeld and Tyukodi 1938) Himwich (1951) postulates twin effects (*a*) synaptic depression resulting in impairment of nerve activity, and (*b*) diminution of cerebral oxygen uptake

Bromides are well known to cause confusion as part of an organic cerebral reaction, probably by a toxic biochemical effect

Nevertheless morphine, atropine, hyoscine, and barbiturates are still prescribed routinely (and therefore indiscriminately) as preoperative and postoperative medication, whether the patients are young or old, and without knowledge of the individual's sensitivity to them (I have even seen them used to control the very confusion they themselves have caused !) It does not seem to be realised that they can do serious harm to old people, and that their routine use for every patient is therefore unjustified

In old people transitory confusion is almost a normal concomitant of illness (Bedford 1954) It is usually a non-specific, non-localising manifestation of disease or disturbance, often entirely remote from the brain Hence when we are faced with confusion in old people, we should give much thought to its cause, and the circumstances in which it developed Narcotic and potent analgesic substances should be administered only when specifically indicated, and they should be limited, as far as possible, to such drugs as paraldehyde and chloral, which depress the respiratory centre least

It is axiomatic, too, in good anæsthesia that the oxygenation of the blood should be kept up to normal levels and that the amount of anæsthetic given should be the least required for adequate effect

Cerebral Metabolic Disturbances

Toxæmia and pyrexia (such as occurs in cystopyelonephritis following prostatectomy) render the brain more susceptible to anoxia by increasing its basal oxygen consumption (Himwich 1951) This may well be a potent factor in the development of dementia following prostatectomy

Vitamin deficiency can be "conditioned" by antibiotics or by the severe vomiting and anorexia which may follow anæsthesia Wernicke's encephalopathy is a known thiamine deficiency disease, and other dementias may perhaps be due to similar causes

Dehydration and mineral depletion commonly follow operation under general anæsthesia, and are now well recognised causes of confusion and of an organ reaction pattern in old people (Allison 1952) may be direct, on cerebral metabolism, or indir result of the secondary circulatory failure they

Corday et al (1953) showed that although th of "cerebral vascular insufficiency" may be r if the cerebral circulatory failure is of brief irreversible damage can occur, depending on the and on the duration of the failure Allison (195 that, though the effects on old people of toxæmia, urinary infection, bromides, morphine, barb vitamin deficiency, dehydration, and alkalosis ar reversible, those of anoxia and hypoglycæmia and often are, irreversible

The factors just discussed are only one elem problem (the "seed"), the other being the (the "soil")

THE SOIL (THE AGED BRAIN)

The brain at all ages is extremely vulne anoxia it is estimated that the cortical neuro supragranular laminæ do not survive more minutes of anoxia It may be asked therefore damage seen in the elderly is not also seen in people In this connection three points are w

1 The state of the patients described here is similar to that of young people surviving several of cardiac arrest

2 No attempt has been made in this series degrees of mental impairment less than gross In the young these may well be ascribed to a and in the old—almost certainly—to "senility

3 The extent of mental recovery which damage to the brain is a function of (*a*) the damage, and (*b*) the ability of the remaining cortical cells to receive and pattern the new engrammata implicit to re-learning and re- elderly have everything against them, for de arterial disease reduces cerebral blood flow 1951) and their ability to learn new skills (Welford 1950) Hence the effects of insults young appear to withstand with impunity extremely serious in the old The falling-off of gence" with age is inexorable, and the su of some of our elder statesmen and professional be explained only by assuming that their "in level" was originally so high that even a co reduction leaves them well above the normal general population

The "decorticate" state following cardiac more than a few minutes is paralleled by the (with or without focal neurological signs) follow repeated minor cerebral trauma encephalopathy, punch drunkenness) How cut examples of the dementing process affect people may be wrongly ascribed to "psy causes" is exemplified by the following case

A woman of 33 was formerly a comptometer She is the wife of a busy and successful dentist mother of two young children She was a vivacious good conversationalist, and a competition bri Besides being a competent housewife, she used secretary to her husband

Five years ago, a fingernail was avulsed in the theatre under general anæsthesia (thiopentone nitrous oxide and oxygen) Recovery was dela was detained in hospital for thirty six hours

After the operation she was withdrawn and lost She was forgetful and was no longer able to play was faulty at adding up simple sums of money and was no longer able to help her husband with Now, after five years, she is much better, but she as compared with her former self She says, "I what's wrong, but it seems that my mind is fo 'before taking' picture in Horlick's advertisement

This patient was thought to be suffering from psychoneurosis of mixed anxiety and hysteria One wonders, uneasily, how common such cas much so called neurotic illness derives from the f brain damage following operation under a. This concern is shared by other physicians 1953)

ral of the cases in this series shock and sus potension occurred during the operation and quent cerebral vascular insufficiency' must be d an important factor in the dementia which

Quite apart from operations and anæsthesia, ypotension can itself be followed by permanent ain damage 5 cases of gross dementia follow ive acute hæmorrhage from the intestinal or inary tract have been recorded, and gross following sustained hypotension due to cardiac or pneumonia has also been observed (Bedford blished) Other observers too have reported ation between cerebral symptoms and the cardiac infarction (Bean and Read 1942 Cole rman 1952 *Lancet* 1952b), and between perma n damage and sustained hypotension (Bromage day et al 1953 Hampton and Little 1953)

ver shock occurs—whether during operation or sult of cardiac infarction pneumonia hæmor —it is rightly regarded as a grave complication g urgent correction Nevertheless, hypo urgery is still being recommended as a means ng a bloodless field for the surgeon In my he evidence that sustained arterial hypotension ously and permanently damage the brain makes nsive surgery unjustifiable in people of any age- d particularly in the elderly Its advocates say rolled hypotension differs from shock in that it cause vasoconstriction and therefore does no They say too that a systolic blood pressure of Hg or over is safe But in fact harm can and ue The onus lies heavily upon them to prove r technique is free from risk and here it is not o quote survivals for the patient s mental state matter of grave moment both to himself and his

Until such proof is forthcoming, this practice e condemned

ing this I do not decry the use of anti hyper drugs or even surgery, in cases where arterial sion and the attendant vascular changes are es the cause of symptoms. In such cases, of the high blood pressure often leads to nent, both objective and subjective But even ondition and especially in elderly subjects, the hypotensive drugs may sometimes be deleterious sionally *catastrophic.*

THE SEED AND THE SOIL

d emphasise that no single factor nor combina actors, nor even all the circumstances inherent eration under general anæsthesia, can be incrimi the direct cause of the dementia which followed ses described above For although 18 patients serious brain damage many thousands of other who underwent surgical operation under general ia did so without any ill effect whatever Corday 53) showed that in the production of irreversible damage in monkeys in which cerebral vascular ncy' was induced one of the factors was an al one Allison (1952) noted that in a majority ses of general metabolic disturbance the cerebral were reversible and the damage only rarely nt

tastrophe does not seem to be a direct function aesthetic used nor of the severity nor duration potensive state nor of the extent of hæmorrhage of any single extraneous factor which has so far luced The soil rather than the seed must hold anation there must be an individual suscepti in idiosyncrasy—to one or more of the factors concerned in operation under general anæsthesia which determines the occurrence of the brain *damage* This idiosyncrasy is both rare and unpredictable But if nothing can yet be done to detect such idiosyncrasy this makes it all the more necessary to avoid the *factors* which may 'trigger' the damage in the unduly susceptible person

Conclusions

If these premises be admitted the following conclusions should be acceptable

1 Operations on elderly people should be confined to unequivocally necessary cases

2 Premedication and postoperative medication should not be a routine matter Narcotic and potent analgesic drugs should be administered only when specifically indicated They should be limited as far as possible to the drugs (e g paraldehyde) which depress the *vital* centres least.

3 During and after operation under anæsthesia, it is important that the blood pressure hæmoglobin con centration and oxygenation of the blood should be kept at optimal levels.

4 'Hypotensive surgery' is absolutely contra indicated for the elderly The effect of posture on the blood pressure of patients given muscle-relaxant drugs must be appreciated and carefully observed.

5 In the elderly, even more than in the young, the complications of surgery under general anæsthesia must be carefully anticipated, guarded against, and treated—especially dehydration and mineral depletion vitamin B deficiency states (complicating vomiting and treatment with antibiotics) the pulmonary complications of uncon sciousness, and postoperative toxæmia and pyrexia.

6 When postoperative confusion appears in old people much thought must be given to its cause and the reason for its precipitation The vicious circle—hypnotics confusion more hypnotics—must never be allowed to develop

Summary

The occurrence of dementia in old people following operation under general anæsthesia has been investigated.

Evidence is presented which indicates that this complication in its lesser degrees of severity is not rare. 18 case-histories of extreme dementia are cited.

The various factors which may precipitate this cerebral disaster are discussed

Precautions in relation to operations on the elderly are suggested.

I am indebted to Mr T E Gardiner H.M Coroner for Oxford for permission to publish cases coming under his jurisdiction, and to Dr W Ritchie Russell, Dr P M Daniel and Dr F D Bosanquet for much valuable assistance discussion and advice

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SERUM-SICKNESS AND LOCAL REACTIONS IN TETANUS PROPHYLAXIS

A STUDY OF 400 CASES

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> "It must be admitted that, in the heat of the emotional battle provoked by propaganda for and against prophylactic inoculation, there has been a tendency on the part of the medical profession to turn a blind eye to unfortunate individual complications of procedures which have the indisputable sanction of social value"—Miller and Stanton (1954)

Although Park (1913), Rutstein et al (1941), and others have dealt with the incidence of serum reactions in large series of injections of diphtheria antitoxin and antipneumococcal serum, there are few reports on their incidence after injections of tetanus antitoxin This is strange because this antitoxin is used not only by the general practitioner but also by casualty officers in every *hospital in the country*

The most comprehensive account of reactions following administration of tetanus antitoxin is that of Laurent and Parish (1952) Mishkin (1949) and Fischer (1951) estimated the incidence of serum sickness at about 15% of all cases in which the antitoxin was used Walsh (1952), on the other hand, said that such reactions were uncommon, and Newell and McVea (1940), from an analysis of 500 cases receiving antitoxin, concluded that they were seldom serious Of these 500 cases, 59 (11 8%) had a reaction of some kind, 22 (4 4%) being generalised reactions of the type called serum sickness by von Pirquet and Schick (1905) Of these 59, 18 (30%) had previously had serum, compared with 94 (18 8%) of the whole series of 500 Rackemann (1942) endorsed the advice of Newell and McVea that all patients with a break in the skin should receive a prophylactic dose of tetanus antitoxin but emphasised that they should always be warned that possible sequelæ may occur and told to report them for prompt treatment

Laurent and Parish (1952) classified the reactions in four main groups but omitted those listed by Newell and McVea as the commonest—namely, local reactions at the site of the main injection and/or at the sites of the sensitivity test dose

The Present Investigation

Many of the above reports were written before the introduction of modern methods of refining the serum, and I thought it would be useful to ascertain the present incidence of reactions in a really large series of cases given tetanus antitoxin in prophylactic doses The material here presented covers all cases receiving antitoxin (*a*) during two years in a county town hospital in a rural area where tetanus is relatively (Conybeare and Logan 1951), (*b*) during two y general hospital in an industrial borough, during one year in a London teaching hospital ever possible, the patients were asked to retur noticed any reaction, local or general, but some attended their own doctors when reactions and others went to other hospitals nearer their places of employment Where a doctor reporte treated such a reaction, it has been included in th Reactions treated after injections given in other (41 in all) have not, of course, been included. figures given are minima, though probably t fall far short of the true totals

TABLE I—NUMBERS OF INJECTIONS AND REACTIONS

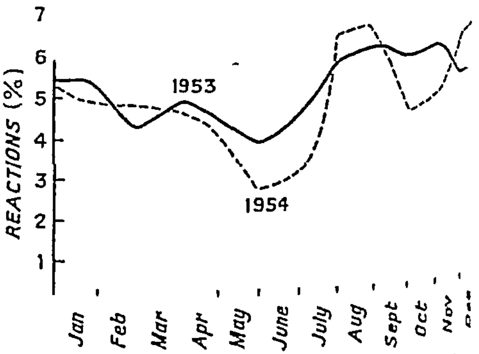
Hospital and period	Total no of cases treated in casualty	No of tetanus antitoxin injections	Reactions	
			Number	Percentage
West Kent General Hospital Maidstone				
January–December 1953	8015	1510	69	4 6
January–December, 1954	9274	1818	91	5 0
St Nicholas Hospital Plumstead				
January–December, 1953	9048	1263	72	5 7
January–December 1954	10 181	1560	80	5 3
St Thomas's Hospital, London				
January–December 1954	21 054	1429	89	6 2
Total	58,472	7580	401	5 3

In these three hospitals 7580 injections were tered to 4820 males and 2751 females, of ages from seven months to eighty-four years the majority were young adults There were 40 reactions, 266 in males and 135 in females I have classified them as follows

Group	Reaction	Number
I	Anaphylactic shock	2
II	Local reaction at site of test or injection or both	99
III	Serum sickness	19
IV	Local anaphylaxis	—
V	Thermal reactions	1 (1)
VI	The rarer reactions such as "serum neuritis" and other neurological complications	1 (1)

The incidence rose steeply in July and remained high till the end of the year (see figure) shows that reactions were commonest in child off gradually as age advanced

An effort was made to exclude any of local reaction following injection The (as well as the needles) were sterilised be injection, and all the usual precautions, such as cleansing of the skin, were enforced The came from three different sources, but in the in which the source and the batch number there was no evidence that any batch caused more reactions than the others In a trial sera toxins from two different sources, each giv patients the incidence of reactions was prac same



The Reactions

Anaphylactic Shock

In the first of the two cases of "anaphy symptoms came on immediately after the and, though the patient recovered, they were dramatic to remain firmly in the minds of all nessed them In the other they were less inten delayed for an hour

Case 1—A B, aged 17, who worked in the hosp sustained a slight cut on her finger with a mea was given a test dose of 1 minim of serum intra showed no reaction, local or general After thirty was given the full prophylactic dose of 1500

TABLE II—REACTIONS IN RELATION TO AGE

oups rs)	No of injections	Reactions	
		Number	Per cent
9	1174	110	9·4
19	1427	88	6·2
9	1730	89	5·1
19	1220	54	4·4
19	923	30	3·3
59	930	25	1·0
+	470	5	1·1

immediate reaction, but an hour after returning to became faint and dizzy She was immediately back to the casualty department where she was be pale and sweating with a pulse of 80 weak but Her blood pressure was 100/50 and the face and ro slightly blotchy

s given 5 minims of adrenaline solution (1 in 1000) ularly At this time her respirations were 20 per nd there was no dyspnœa Temperature 99°F She given antihistaminics by mouth Three hours later pressure was 135/90 but she had a generalised urti h, and felt feverish and hot temperature 101 F given a further 5 minims of adrenaline and was to the ward

ay she was better in herself the temperature had to 99 2°F but her legs felt jelly like The rash ed by the second day and she was discharged ater when the cut on her finger had quite healed ped burning and itching at the site of the injection ration and erythema. She was given further anti s by mouth *and the rash and irritation had cleared days. Inquiries revealed no personal or familial* asthma or hay fever or other allergic states, and never had a serum injection. A month later she the casualty department with a similar super and not unnaturally made it clear from the that the was not having that burning injection n"

present series of 7580 prophylactic injections 's antitoxin 362 patients were positively known had one or more previous similar injections, and hese had an anaphylactic reaction A *further* nts stated that they thought they had had such and there were no incidents in this group aockemann (1942) emphasises the extreme rarity anaphylactic reaction in man Laurent and 1952) do not discuss its incidence but state ous authorities estimate the number of deaths cause at 1 in 50 000–200 000 administrations Parish (1954) adds that contrary to the usual naphylaxis is observed more often after the tion of horse-serum than after subsequent ones patients usually give a history of asthma eczema, or some other allergic manifestation y or acquired. According to the usual criteria ylaxis however the reactions cited by Parish roperly be called *protein shock*

ctions at Site of Injections

as the commonest kind of reaction, occurring quently on the sixth to seventh day after (table III) and consisting in local œdema es involving the whole of the upper arm or leg) and urticaria, with burning and itching of the skin about the site of the puncture and often involving the sensitivity test site also In some cases the rash tended to come and go but most resolved with three or four days anti histamine therapy

Case 2—*C.D* aged 16 cut his finger with a Scout knife The wound was dirty and required two sutures. As a test dose of antitoxin caused *no reaction he was given 1500* units of tetanus antitoxin He had never had asthma or any allied condition and did not know of any serum injection Eight days later there was a diffuse hyperæmic area around the injection site on the right arm It was very itchy It had begun on the previous day as a number of red spots which irritated him intensely These had become a diffuse swollen red lump on the arm in which there was a steady ache He had no swollen lymph nodes and no fever and felt well in himself After four days treatment with antihistaminics the whole local lesion had disappeared.

Though it is easy to dismiss a local reaction as of little importance it was very often a source of irritation and annoyance to the patient for several days Moreover in 53 cases it proved to be the forerunner of a full serum sickness reaction

TABLE IV—SYMPTOMS AND SIGNS OF SERUM-SICKNESS FOLLOWING INJECTION OF TETANUS ANTITOXIN

—	Following prophylactic dose	Following test dose	Total
Urticaria	182	10	192
Pyrexia	106	8	114
Lymph-gland enlargement	72	4	76
Œdema of face	38	2	40
Albuminuria	12	1	13
Malaise	78	5	84
Vomiting and stomach upset	10	—	10
Giddiness and fainting	6	—	6
Swelling of injected arm	*45*	—	*45*
Joint pains	15	—	15

Serum-sickness

The syndrome of serum-sickness, first described by von Pirquet and Schick (1905) covers a wide range of reac tions. The mildest form is probably a local reaction with a small rise of temperature Further symptoms may be malaise, glandular enlargement (not necessarily confined to the region of injection), and headaches But the full picture of the serum-sickness includes a rash—usually urticarial with weals and erythema—which may be widespread (limbs trunk or head) or local In 1 case there was an intense rash on the face but nowhere else except on small zones around the injection and test dose sites Table IV shows the main features of serum sickness in 192 cases

Joint pains are said to be common but in this series, *despite diligent inquiry very few examples were found* Cohen (1955) states that 50–60% of patients with serum sickness show evidence of arthritis usually after other signs have appeared but in the present series, out of 192 cases of serum sickness (of which 108 had an advanced picture with an intense rash pyrexia and general malaise) only 15 (7%) had joint pains These involved the knee hip elbow wrist and temporo mandibular joint von Pirquet and Schick (1905) put the usual incidence of joint pains at about 1% and concluded that 'joint involvement is not a frequent symptom in serum sickness.

TABLE III—PERIOD AFTER WHICH REACTION FOLLOWED INJECTION

—	Period between injection and reaction																		
	Hours	Days																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
ness (19°)	6	6	9	10	5	13	17	39	31	23	15	3	7	2	2	1	3	–	1
ions (05)	—	16	5	4	3	15	31	48	39	14	11	15	1	1	2	–	–	–	–

Other features of this syndrome are œdema of the face, vomiting, and, less frequently, albuminuria (table IV)

The reaction is caused by precipitins developing before the antitoxin administered has disappeared from the body It may even occur—and in this series did so in an additional 10 cases—after a "positive" sensitivity test dose of 1 minim It may be evident as soon as two hours after the injection (the so called *accelerated* form) or may not appear until as long as twenty six days later (the *delayed* form) the variation in this series being from three hours to eighteen days The peak figures are found on the seventh to ninth days (table III) Mishkin (1949) holds that the reaction is commonest in normal persons who have been sensitised by a previous injection of serum, and that it may be expected in about 50% of those who have had such an injection In the present series, of the 909 persons who were known to have had previous injections or thought that they had had one 52 (5 7%) had serum sickness, against 2 5% in the series as a whole

As with local reactions, prompt and energetic treatment with antihistaminics usually led to cure in two to four days, but the condition sometimes lingered as long as twelve days Cohen (1955) says that recovery from joint pains takes two to five weeks and that this symptom has not been affected by antihistaminics von Pirquet and Schick (1905), on the other hand, stated that joint pains disappear quickly In the 15 cases in the present series, antihistaminics were the only drug used and all the patients were free from general and "arthritic" symptoms within ten days

Case 3 —E F , aged 17, had a small cut on his right index finger, which required sutures After a test dose which evoked no reaction he was given 1500 units of antitoxin Seven days later he had a generalised urticarial rash with abdominal pain Temperature 103°F No glandular enlargement and no joint complications Erythrocyte sedimentation rate normal, white cell count 4700 per c mm (eosinophils 10%) There was clinical enlargement of the heart but radiography showed this to be within normal limits and his electrocardiogram was normal Blood pressure 120/70 mm Hg His temperature remained spiky and rose to 104°F five days after admission He was maintained on antihistaminics His rash reappeared intermittently, but he was discharged on the tenth day after admission and was perfectly well at follow up two weeks later

Local Anaphylaxis

Laurent and Parish (1952) describe local anaphylaxis (analogous to the Arthus phenomenon in animals) as a very rare reaction consisting in swelling, induration, and later sloughing, of the skin and subcutaneous tissues and even of the muscles It was not seen in this series

Thermal Reactions

The thermal reaction is a sudden pyrexia, with a chill or rigor, occurring within half an hour of an intravenous injection In 1 case in the present series (treated by the patient's doctor, who transmitted the details) there was pyrexia of this kind suggesting that the antitoxin may have been inadvertently injected into a vein

Rarer Forms of Reaction

Besides joint pains, a number of other rare complications have been reported as accompanying serum sickness Of these, "serum neuritis" is the least uncommon Involvement of the cerebral, and spinal nerve cords, optic and aural nerve disorders, and polyneuritis have also been reported The neurological complications are reviewed by Miller and Stanton (1954) In the present series they are represented by only 1 case in which there was peripheral neuritis of the Erb Duchenne type

Summary and Conclusions

Analysis of 7580 cases in which tetanus antitoxin was given for prophylaxis shows that in 5 3% the injection was followed by some form of reaction The commonest form was a local reaction (2 7%), but serum-sickness was seen almost equally often (2 5%)

The incidence of reactions was highest in ch diminished with age It was higher in the of the year than in the first

Some of the 401 reactions were severe require admission to hospital, and even was nothing more than erythema and itchi injection sites the irritation and annoyan was usually out of all proportion to the origin

Thus, in spite of improvement in the purifying and refining the serum, the problem reactions is still an important one both for for patient

In all casualty departments there should rules laying down, for casualty officers, dressers, the procedure to be adopted before ing tetanus antitoxin

All patients should be asked whether previously had an injection of serum and, if they had any kind of reaction Inquiries sho be made about asthma, hay fever, or othe disorders in the patient or his family

The patient must be warned about the react may occur and told that if he has any of them return for treatment In the present series th were treated with antihistaminics and appeared within four days None lasted twelve days

I wish to thank Dr H J Parish for his genero encouragement in the preparation of this article, Harper, Dr F J Power, and Mr R H Boggon for to publish the hospital figures, and Sister H Sister D P Edwards, and Sister K M Woodb invaluable coöperation I am indebted to the staff of St Thomas's Hospital Medical School assistance with the references

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RESPIRATORY CAPACITY IN T NEONATAL PERIOD

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THE amazing fact that the organs of the infant work immediately after birth raises th of the capacity of these organs

It is well known that in the newborn infant is shallower and much more rapid than th adult It is also known that the baby req oxygen per weight unit than the adult Ho lung satisfy the special requirements of th period ?

The total volume of the lung has been dete several methods, which show that in medium it is on the average about 120 c cm (E Obviously the lung does not consist entirely of tissue , and for present purposes we have to proportion of it consists of bronchi, blood other non parenchymatous tissues iethod of determining this is fairly simple t cast of the bronchial tree using Marco resin al (Tompsett 1952) was weighed and the volume d as follows

the cast	15 5 g
avity of the resin	1 [illegible]
ime of the cast	11·0 c.cm.
extrapulmonary part trachea and main calculated as cylinders	[illegible] 5 c.cm.
Total	9 [illegible] c cm.

ood vessels are of approximately the same calibre ronchi bronchi and vessels together occupy 5 c cm or 25% of the pulmonary volume The likely to be too small for the walls of the tubes septa are not included The true figure is nearer 30% than 20%

ver the error involved in calculations of this is clear that a considerable part of the infant's ry volume consists of non respiratory tissue alculations have shown that in the adult s lung parenchymatous portion is much smaller—only Thus in comparison with the adult the infant is handicapped by the large proportion l space' in its lung

ther factors which handicap respiration in the iod of life are chiefly anatomical—above all the ition of the chest In the young infant the ribs iys in the position of deep inspiration being il because the liver is large the diaphragm is Hence inspiratory expansion of the chest is limited respiration is shallow and the infant quent inspirations in order to supply itself with As it is incapable of inspiration deep enough ase its intake of air to any great extent on may easily become deficient

re some mechanism to compensate for this y? We hope first that the trachea is extra v wide relative to the lung volume and thus requent inspiration easier The width is most when comparing the calibre of the trachea to the lung volume) in the newborn infant and t In the infant it does not exceed 5–6 mm the lung volume is about 120 c cm the ratio hea is about 20/1 In the adult the width of hea is on the average 15 mm and the lung is about 3000 c cm in medium expansion The nding ratio therefore is 200/1 The difference infant and adult becomes more evident if we these ratios If the adult s ratio applied to the its trachea would be only about 0 6 mm. in , while if the infant s were applied to the adult iea would be 15 cm across! The infant needs rachea for its shallow inspirations and the adult well off with a trachea 15 mm in diameter he is capable of deep and forcible inspiration

lly the pulmonary structure favours the infant. ius (the respiratory unit) of the newborn infant occupying less than 1 c mm whereas that of lt is much larger Lungs composed of small ovided that these are well differentiated have respiratory surface per volume unit than lungs ge acini Actually the acini in early infancy are e and this diminishes the advantage which could rom their smallness But calculations show that iratory surface per kg body weight in the infant third of what it is in the adult; and it would ess if the infant were fitted with large pulmonary

Conclusion

ing of the young infant contains proportionally dead space' than the lung of the adult The respiratory capacity is at a low level and its on is far less flexible than the adult s.

newborn infant the volume of the individual (tidal air) is small (about 20 c cm) and frequent inspiration is necessary to supply the large amount of oxygen required Deep inspiration however is anatomically impossible and this keeps the infant near the danger zone of respiratory insufficiency These limitations should be taken into account in the management of infants, whether sick or healthy

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PHENTOLAMINE IN THE DIAGNOSIS AND MANAGEMENT OF PHÆOCHROMOCYTOMA

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MANY reviews (Graham 1951 Aranow 1952 De Courcy and De Courcy 1952 *Annals of Internal Medicine* 1953, Symington and Goodall 1953 Cahill 1953 Kvale et al 1954) and case-reports of phæochromocytomata have been published in recent years. The purpose of presenting three further case reports is to emphasise the usefulness of adrenolytic agents, and of phentolamine in particular in differentiating these cases from essential hypertension and in controlling the blood pressure during surgical removal of the tumour

Diagnostic Tests

Only a minority of all cases of phæochromocytoma present with the classical symptoms of paroxysmal hypertension, pallor, sweating tachycardia and apprehension the proportion in reported series varies from a quarter (Goldenberg et al 1950 Smithwick et al 1950) to a third (Green 1946) The majority run a persistent hypertension mimicking essential or renal hypertension the true cause of the elevated blood pressure often being unrecognised Hence the necessity for diagnostic procedures to differentiate this curable form of hypertension from other hypertensive syndromes and for a simple *screening test which can be applied to all patients* presenting with hypertension The various methods employed have recently been reviewed by Goldenberg (1954) Only the use of adrenolytic drugs in cases with persistent hypertension will be discussed in this paper

Piperoxane (benzodioxane) was introduced by Goldenberg et al in 1947 as a simple test for hypertension due to circulating catechol amines (adrenaline and noradrenaline) Although false negative and false positive tests with this substance have been reported its value as a pharmacological screening agent is established Unfortunately, unpleasant side effects such as tachycardia flushing palpitations, headache dizziness, and apprehension are common We have seen more serious consequences including acute pulmonary œdema and hypertensive encephalopathy in patients with essential hypertension and these have been reported by other workers (Drill 1949 Green and Peterson 1950 Wilkins et al 1950)

Dibenamine is a powerful adrenolytic drug which has been employed as a test substance in cases of phæochromocytoma (Spear and Griswold 1948 Bartels and Cattell 1950) It has the disadvantage of having a lengthy action and also causes an unexplained fall of blood-pressure in cases of essential hypertension (Haimovici and Medinets 1948)

Phentolamine, 2-(*N*-*p*-tolyl-*N*-[*m* hydroxyphenyl]-amino methyl) imidazoline, ('Regitine,' 'Rogitine,' 'C-7337'), which is a derivative of tolazoline, was introduced by Maier in 1948 It was successfully used by Grimson and his colleagues (1949) to control the blood-pressure during operative removal of a phæochromocytoma, and adopted as a diagnostic agent (Longino et al *1949*, Emlet et al *1951*) It is the best of the adrenolytic agents at present available although false negative tests, which are rare (von Euler 1953, Goldenberg 1954), and false positive tests (Grimson et al 1951, Emlet et al 1951, Gifford et al 1952, Goldenberg 1954, Ross 1954, Bernstein and Rosenberg 1954) have been reported False positive tests have also been reported when the drug is given intramuscularly (Gifford et al 1952) and when it is given during barbiturate sedation or thiocyanate administration (Soffer 1954) and in *uræmia* *Positive, or doubtfully positive tests must* be regarded as an indication for a bio-assay of urinary pressor amines, the bio-assay remaining the most certain method of diagnosis until reliable chemical methods for the estimation of circulating catechol amines are available

Phentolamine can, of course, be used for purposes of a diagnostic test only in the presence of sustained hyper*tension* *Barbiturate medication must be avoided during the preceding twenty-four hours* Ideally, the test should be performed in a quiet side ward The patient is recumbent, with only one pillow An intravenous infusion of normal saline is set up Blood-pressure readings are taken at intervals of one minute until a steady level is obtained 5 mg of phentolamine methanesulphonate is then injected into the rubber tubing without the patient's knowledge, blood pressure readings are continued at one-minute intervals A positive response is an immediate (within two minutes) drop in both systolic and diastolic pressures The suggested criterion of a positive response is a fall of 35/25 mm Hg (Gifford et al 1952), but in our three proven cases of phæochromocytoma the blood pressure has fallen from hypertensive to normal levels (see figs 1–3) In cases of essential hypertension there may be either a slight rise or a slight fall of blood-pressure 5 mg should be the maximum intravenous dose, 10 mg may cause a fall of blood-pressure in cases of essential hypertension

The action of phentolamine is somewhat that of piperoxane, lasting for from several several hours The fall in blood pressure in a test lasts for at least five minutes, wherea caused by piperoxane may be very fleeting advantage of phentolamine is the absence of symptoms experienced, although like cause a pronounced tachycardia We have no tered untoward rises of blood pressure after phentolamine, nor have such been recorded

The phentolamine test can be carried out in th or outpatient department Although desirable, essential for a saline drip to be set up, the injected directly into a vein, provided that the blood-pressure is allowed to stabilise after the the needle The urine of patients with pos should then be sent (with 50 mg of ascorbic as a preservative) to a centre where the bio- performed

Tests with adrenolytic drugs are not sp phæochromocytoma, they merely antagonise th line and, to a lesser extent, the noradrenaline being discharged by the tumour at the time of Goldenberg and Aranow (1950) point out that hypertension due to pressor amines may lead to damage and persistent "essential" hyperten *is not affected by adrenolytic agents,* and give rise to false negative tests Such cases but the possibility should be borne in mind, in elderly patients

We have encountered one false positive phentolamine in a case of malignant hyperten this case a piperoxane test and a subsequent amine test were negative The urinary pre excretion was within the range found in essenti tension (below 150 µg per day [Moulton and W 1955]) No phæochromocytoma was found at

Management of Cases of

The treatment of phæochromocytoma surgical removal of all tumours secreting amines Except in cases where secondary already occurred, removal of the tumour or tu restore the blood-pressure permanently to Before the introduction of adrenolytic agents th tive mortality was high, the dangers being a

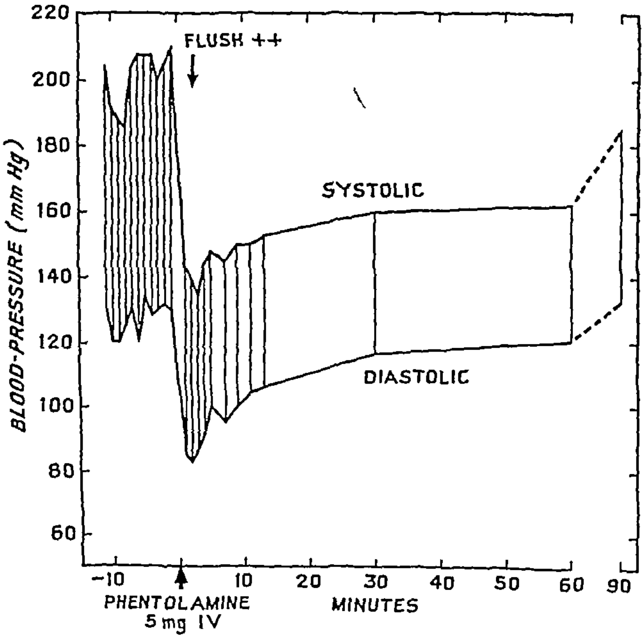

Fig 1—Phentolamine test in case 1

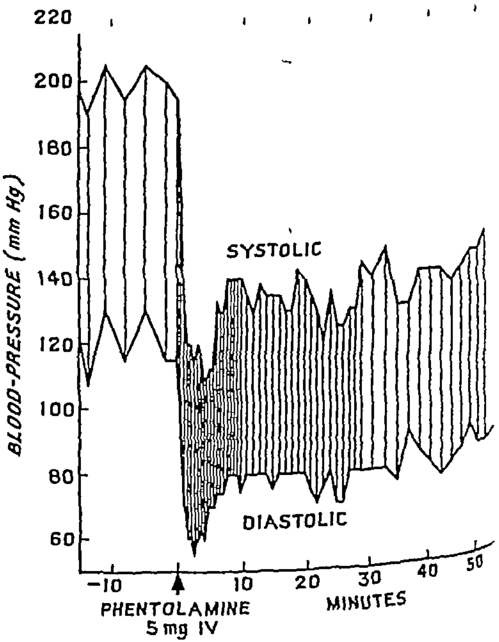

Fig 2—Phentolamine test in case 2

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o been used for this purpose (Iseri et al 1951)

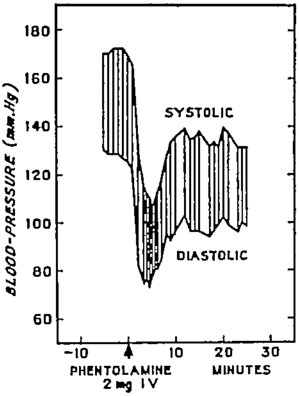

Fig 3—Phentolamine test in case 3

action of dibenamine is too lengthy for it to be
uring operation, whereas the phentolamine has a
ely short lived action but since the duration is
e and may be prolonged thus interfering with
uent pressor therapy it is advantageous to inject
e as possible during operation Adequate pre
ve medication care in positioning the patient
inimal handling of the tumour will reduce the
lytic requirements

operative management two additional persons are
d in the theatre—one to take blood pressure
s, the other to organise the pharmacological
of the blood pressure A cut down intravenous
n should be set up for the use of the physician
% glucose running in very slowly to keep the vein
A second bottle, containing noradrenaline 4 mg
e in 5% glucose runs into the same needle but is
off The setting up of such an infusion apparatus,
will conveniently deliver phentolamine glucose
drenaline at will is essential The use of glucose,
than physiological saline, as the vehicle will
e the risk of pulmonary œdema. Phentolamine
hould be given before the induction of anæsthesia
pressure readings should be taken at intervals of
nute during operation Supplementary doses of
lamine 2–10 mg according to the sensitivity of the
are given when the systolic pressure rises above
m Hg The operator should give warning when
about to handle the tumour and again five
s before he is ready to clamp the adrenal vein
ientolamine should be avoided after this unless
ely necessary since the blood pressure may fall
idly when the vein is clamped After the tumour
en removed the blood pressure is maintained by
of intravenous noradrenaline, the drip rate being
d to maintain a systolic pressure of not below
n Hg As much as 100 μg of noradrenaline per
may be required (see case 2) Failure of nor
line to maintain the blood pressure in the post
ve period and a rising pulse rate strongly indicate
g and demand re-exploration of the operation site

ssive administration of phentolamine during the
part of the operation may interfere with the
eness of the subsequent noradrenaline infusion
enylephrine should be available to combat acute
nsion which does not respond to noradrenaline
n (1951) had to resort to Pitressin in one of his cases. When bilateral tumours are removed adrenal failure must be guarded against both cortisone and hydrocortisone should be available in the theatre.

The patient is slowly weaned off the noradrenaline during the early postoperative hours, but it may be twelve or more hours before it can be stopped finally Physiological saline is run in to keep the vein open Close watch must be kept on the blood pressure after the noradrenaline has been discontinued and a nurse should be specially detailed to take, and chart, blood pressure and pulse readings at fifteen minute intervals for the twenty four hours after operation In case 1 the blood pressure fell suddenly two hours after the noradrenaline had been discontinued and the drug had to be given for a further five hours before the blood pressure was maintained unaided

The anæsthetic problems of this operation have been discussed by Apgar and Papper (1951) and by Papper and Cahill (1952) The danger of using atropine in premedication in that it potentiates the pressor response to noradrenaline and increases the tachycardia has been pointed out by Barnett et al. (1950) This can be avoided by giving the first dose of phentolamine before premedication The value of giving phentolamine before induction of anæsthesia is illustrated in case 2, where the pressor response to anæsthesia is well shown (fig 5)

Curare has a histamine-like action for muscle relaxation gallamine or succinylcholine are recommended Ether has been reported to act as a provocative agent to the tumour (De Courcy and De Courcy 1952) Bartels and Cattell (1950) advocate the use of cyclopropane but it would appear wise to avoid this because of its specific adverse effects upon cardiac rhythm in the presence of excess circulating adrenaline (Garb and Chenoweth 1948) Tracheal intubation is desirable in view of the risk of accidental opening of the pleura.

Phæochromocytomas are bilateral in 10–20% of cases Although the tumour may be localised by presacral oxygen insufflation aided by tomograms, a small tumour is not always displayed by this method Failure of the blood pressure to fall when the adrenal vein is clamped or a transitory fall followed by a return to the previous level indicates that a second tumour is present and every endeavour must be made to find it In such cases the effect of a further dose of phentolamine may strengthen the view that another tumour is present. In view of the possibility of the presence of bilateral adrenal tumours or aortic paraganglionomata surgical approach through the anterior abdominal wall has been advocated by Colston (1948) and by Kvale et al (1954) In our cases the easier lumbar approach has been used the other adrenal would be inspected through a second lumbar incision if there were indications, as discussed above for believing that a second tumour was present.

Case records

Case 1—A housewife aged 32 was admitted to hospital on May 12 1954 in the tenth week of her first pregnancy She had had headache and attacks of exhaustion and sweating for five years, and mistiness of vision for two weeks. She had felt well until 1948 when aged 25 she began to feel run down This she attributed to various worries and stresses but in April 1949 she began to get what she called exhaustion attacks in which she experienced a horrible funny feeling somewhere between her chest and abdomen associated with the blood leaving my brain and my hands' her hands and face went very pale with simultaneous pounding in her chest and in the back of her head which seemed to shake the whole body; she felt nauseated but did not vomit; she did not sweat nor have goose flesh during the attack Each attack of which she experienced three to four every day lasted two to three minutes, and was followed by a sense of extreme exhaustion. An attack might be brought on by standing for a long time—e g in a queue—by kneeling upright by lying on her left side by exertion or by laughing After the first two years the attacks became less frequent and less severe and were reduced to one daily Since 1949 she had noticed embarrassing sweating in hot or crowded places, which would necessitate frequent wiping of her neck Her pregnancy had not caused any subjective disturbance, apart from anxiety associated with a slight vaginal hæmorrhage in the seventh week No other member of the family had similar attacks

On examination she was mentally normal. There were no signs of cardiac enlargement or decompensation The skin was warm and moist The thyroid was slightly and diffusely enlarged The fundi showed gross papillœdema with very pronounced macular stars, fluffy soft exudates, and scattered hæmorrhages The aortic second sound was louder than normal, there was a soft apical systolic bruit, and the blood pressure was 220/144 mm Hg The uterus was palpable above the pubes Neither kidney was palpable, and no "attack" was produced during abdominal examination There was a trace of albumin in the urine, and glycosuria up to 1% She ran a persistent evening temperature of 99°F

Investigations—Radiography of the chest confirmed that the heart size was normal A catheter specimen of urine showed 0 1 g per litre of albumin, and 10 pus cells per $^{1}/_{6}$ field, culture was sterile Her renal function, judged by an incomplete concentration and dilution test, blood urea, and urea clearance, was within normal limits The hæmoglobin was 99% and the white blood cell count 12,000 per c mm (polymorphs 78 5%) The basal metabolic rate was +24% The glucose tolerance test (50 g glucose) was abnormal, the fasting level was 120 mg per 100 ml, rising to 235 mg in one hour, and dropping to 65 mg at two hours Intravenous pyelography showed that the kidneys were normal in size and shape, with the left one rather low An intravenous phentolamine test (5 mg) produced a fall of blood pressure from 210/130 to 140/82 mm Hg in one minute (see fig 1) Bio assay of urine showed that it contained 2–3 µg of pressor amines per ml—equivalent to an output of 3000–5000 µg per day (normal less than 150 µg per day) The noradrenaline adrenaline ratio was approximately 4 1 Presacral oxygen insufflation (Dr C J Hodson) showed a soft tissue mass about the size of a large walnut, lying above the right kidney, the upper pole of which was slightly blunted by the mass

Operation—On May 24, 1954, the right adrenal gland was explored through a lumbar approach and a phæochromocytoma weighing 50 g was removed by Mr B J Harries (anæsthesia thiopentone, gallamine, gas, oxygen, and pethidine, by Dr A T G Robertson) The patient left the ward with a blood pressure of 170/110 mm. Hg. Af phentolamine, before induction of anæsthesia, it fell t The highest systolic pressure reached during handl tumour was 280 During this phase intravenous in tion of phentolamine (to a total of 55 mg) was con required, judged by the blood pressure Five minu all the vessels were tied off, the lowest level of 9 recorded, and meanwhile the noradrenaline drip started At first, as much as 40 µg of noradren given per minute, but the rate was reduced to 10 minute in twenty five minutes, and the drip was c thereafter, with one short intermission, for about at an average rate of 6 µg per minute The total noradrenaline administered was 2 6 mg (see fig. 4

Histological examination of the tumour confirm was a phæochromocytoma Kidney and musc specimens were normal

The *postoperative course* was uneventful apart from phlebitis of the right saphenous veins, where the inf been administered, and spontaneous abortion on 1954, of a macerated fœtus, which had probably for about three weeks A postoperative glucose test (50 g glucose) showed a fasting level of 98 ml, rising to 140 mg at thirty minutes, 120 mg at and 80 mg at two hours Postoperatively no excess o amines in the urine could be detected by bio-assay June 29 she was discharged to convalescence In F 1955 she had a blood pressure of 140/90, her fund arterial tortuosity and arteriovenous nipping only was again pregnant

Case 2—A dental technician, aged 26, was a Whittington Hospital with a mild respiratory inf Jan 14, 1954, under the care of *Dr A L Jacobs* found to have a blood pressure of 180/130 mm. about six years he had been aware of palpitations and sweating, and even in cold weather he always felt raised blood pressure had been found when he was from the R A F in 1948, and hypertension was when he applied successfully for a job as a fi British Railways later in the same year In all ot however, his health was excellent, and his previous history and family history contributed no information

On examination he was a fit young man of good and average intelligence Clinical examination

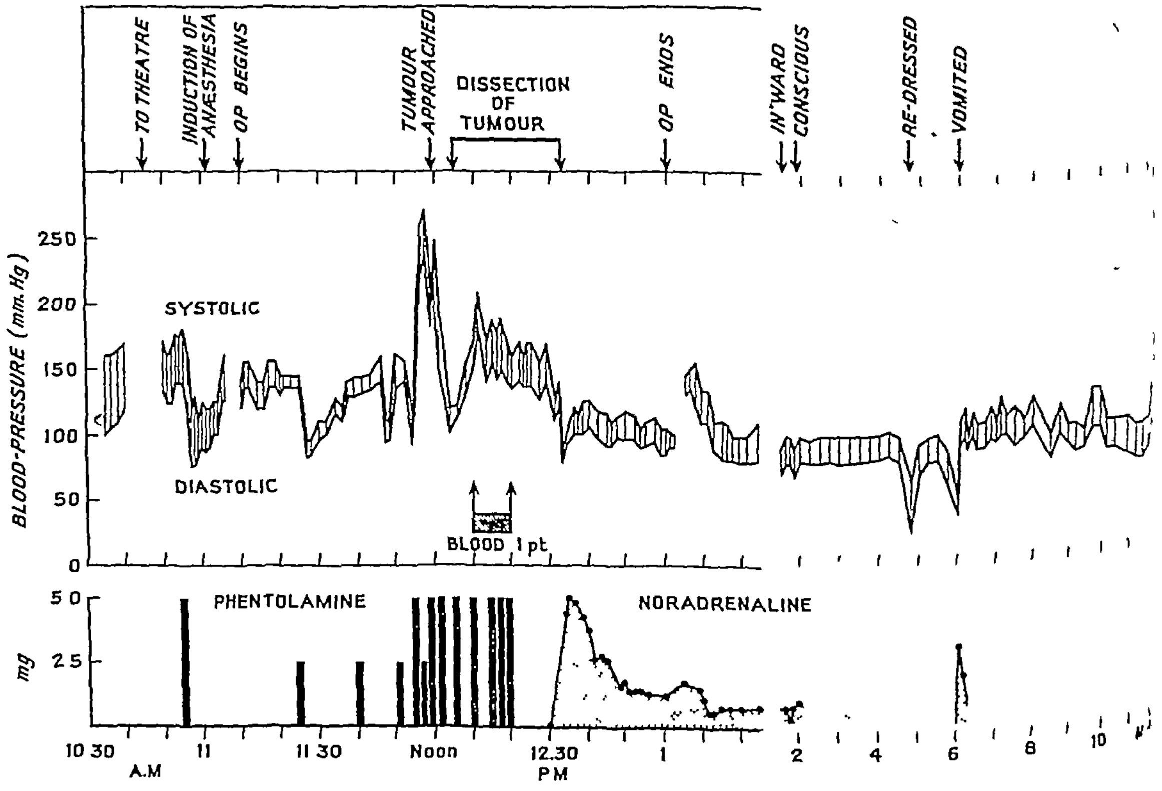

Fig 4—Blood pressure record during operation in case 1

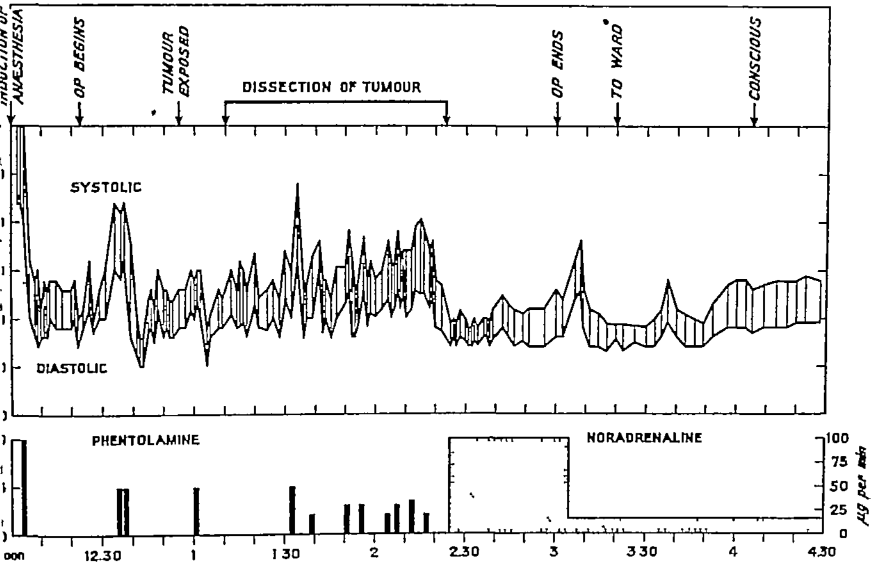

Fig 5—Blood-pressure record during operation in case 2.

ality except his blood pressure which during the course al weeks varied between 210/160 and 170/100 mm Hg occasion it was found to be 150/80 this was the reading before operation Although no paroxysmal ms or sudden changes in blood pressure were observed ssure did vary over a much wider range than is usual sential hypertension. The optic fundi were normal. raphy of the chest showed no cardiac enlargement e contained protein and hyaline casts. His tempera- ermittently rose to 99 F His excessive sweating was ed by finding his pyjamas soaked with perspiration on er of occasions

tigations—The hæmoglobin was 110% and the white ell count 11 400 per c.mm. (polymorphs 67%) The rea was 20 mg per 100 ml. with a urea clearance f normal The urinary specific gravity range on a ration and dilution test was 1020–1000 Intravenous aphy showed a good excretion on both sides with no ity of the calyces. Some of the symptoms suggested etabolism sweating palpitations feeling of warmth, slight fever the basal metabolic rate was +45%. features were consistent with a phæochromocytoma. roxane test was therefore carried out but caused an icant fall of blood pressure Phentolamine on the hand caused a striking and sustained drop (fig 2); as some flushing of the face and a feeling of faintness other side-effects. Specimens of urine were sent to F Burn at the Radcliffe Infirmary Oxford, and to the l unit at University College Hospital, for estimation catechol-amine content The very high values of per twenty four hours, and 5000–7000 µg per twenty were obtained and the diagnosis was thereby con

In order to localise the tumour Mr W W Davey out a perirenal retroperitoneal oxygen insufflation diographs including tomographs clearly demonstrated l mass, about 6 cm. in diameter in the region of the uprarenal gland

tion—On June 10 1954 the tumour weighing 105 g cessfully removed by Mr W W Davey Anæsthesia H Belam): thiopentone succinylcholine chloride oxide oxygen and pethidine the blood pressure was led by phentolamine and noradrenaline (fig 5) During on of anæsthesia there was a sharp rise of pressure was readily controlled by phentolamine 5 mg intra ly Additional small injections of phentolamine were given to prevent any further rise but the patient appeared very sensitive to it and just after the rib resection the systolic pressure fell below 100 mm Hg; the noradrenaline drip was run for one minute and raised the pressure adequately Control was now maintained with smaller injections of phen tolamine and the total amount used during operation was only 24 25 mg When the tumour was finally clamped off the noradrenaline was re-started and the drip had to be run rapidly at approximately 100 µg per minute until the end of the operation forty minutes later to maintain the systolic pressure over 100 The rate was then slowed down; for the first twelve postoperative hours noradrenaline was given at approximately 16 µg per minute and this kept the systolic pressure around 130 For the next seven hours the rate was further reduced to about 6 µg per minute without a fall in blood pressure; and then nineteen hours after operation it was discontinued.

The *postoperative course* was uneventful apart from a little wound sepsis the patient was free of symptoms and expressed pleasure at feeling cool for the first time for several years His blood pressure was 120/70 and showed no variations while he was in hospital Five months later in the outpatient department it was 140/80 In April 1955 the urinary excretion of pressor amines was normal.

Histological examination verified that the tumour was a phæochromocytoma.

Case 3—A married woman, aged 22 had a sister who had previously died of malignant hypertension due to a phæochromocytoma the case reports of the two sisters are given fully in the accompanying paper (Kelsall and Ross 1955) Briefly she had a four year history of sweating but had had no attacks of pallor palpitations, or headache She had been admitted to hospital four years previously in congestive cardiac failure Hypertension had first been noted two years ago when admitted to hospital with acute appendicitis. A piperoxane test had been performed on this occasion but was negative A month before the present admission she had been admitted to another hospital in acute left ventricular failure A phentolamine test on this occasion was positive

On examination at University College Hospital she was a nervous apprehensive young woman with a warm, pink moist skin. Her blood pressure fluctuated from 230/140 to 140/110 mm Hg She had glycosuria on one occasion only (urine tested six times a day) Bio assay of the urine for pressor

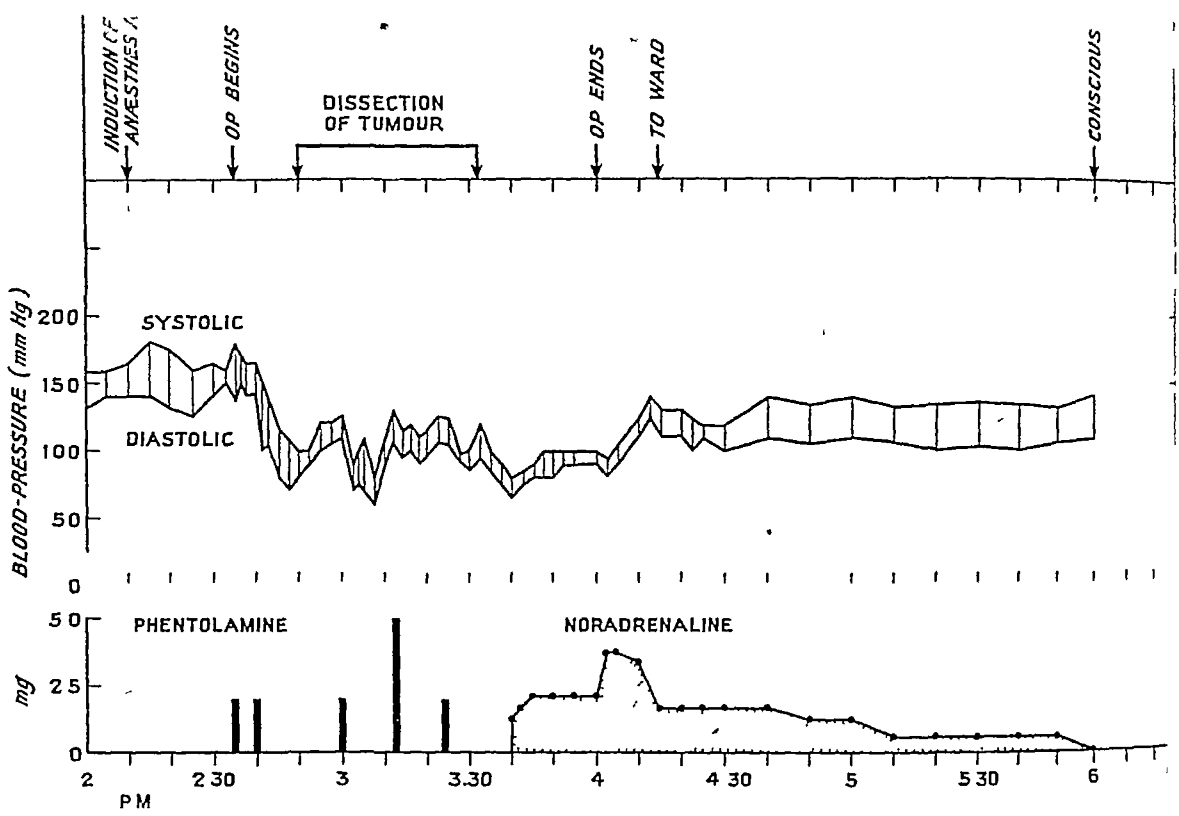

Fig 6—Blood pressure record during operation in case 3

amines showed an excretion equivalent to 3 4 mg per day, appearing to consist almost entirely of noradrenaline A test dose of phentolamine 2 mg intravenously resulted in a fall of blood pressure from 170/130 to 110/75 within three minutes (fig 3)

Operation—On Dec 16, 1954, a phæochromocytoma, weighing 45 g, was removed from the right adrenal by Mr B J Harries under thiopentone, gallamine nitrous oxide, and oxygen anæsthesia (Dr A T G Robertson) The blood pressure readings during the operation are shown in fig 6 Handling the tumour had very little effect on the blood pressure, which did not fall when the adrenal vein was clamped Very little noradrenaline was required to maintain the systolic pressure above 100 mm Hg, and the noradrenaline was stopped two and a half hours after the tumour had been removed (fig 6) Fourteen hours later the blood-pressure fell from 120/90 to 90/70 mm Hg, and the pulse-rate rose from 88 to 140 per min A blood transfusion was started and noradrenaline re started, but even at a rate of 40 µg per min noradrenaline had no effect on the blood pressure The simultaneous administration of 100 mg of hydrocortisone intravenously in one hour had no effect on the pressure The patient was very pale and cold, but had a rectal temperature of 104°F Internal bleeding was suspected and she was returned to the theatre to reopen the wound, but died during the induction of anæsthesia

At *post-mortem examination* 2 pints of blood was found in the peritoneal cavity, together with a large retroperitoneal blood clot The bleeding point was the adrenal vein, from which the ligature had parted Another phæochromocytoma, 1 cm in diameter, was present in the left adrenal gland.

Discussion

In each of these three cases the diagnosis of phæochromocytoma was suggested from the history, supported by the phentolamine test, and confirmed by bio assay of the patient's urine for the presence of pressor amines

The administration of phentolamine during operation greatly facilitates removal of the tumour Case 2 (fig 5) illustrates the pressor response to the induction of anæsthesia which can occur in these patients, and which can be prevented by the previous administration of phentolamine The injection of relatively large amounts of phentolamine (55 mg in case 1) did not a
interfere with the pressor effect of intraven
adrenaline infused during the later stages of the op
although this has not always been so in some
cases

Close watch is necessary on these patients d
early postoperative period, since the blood pres
fall suddenly and unexpectedly some hours after
adrenaline infusion has apparently become unn
(case 1) For this reason the cut down drip s
kept running for twenty-four hours after operat

Patients with hypertension due to a phæ
cytoma have a potentially excellent prognos
tumour is removed The diagnosis should
considered, and steps as described above taken to
it, in all cases of hypertension, particularly
persons and in those who perspire profusely
accuracy in diagnosis may reveal that this co
not nearly as rare as is still supposed

Summary

The intravenous phentolamine test is a sim
safe routine method of differentiating phæo
cytomas from other forms of hypertensive
Since false positive and false negative results
should be used as a screening test in conjunct
bio assay of the urine for pressor amines

The effectiveness of phentolamine in co
excessive elevation of the blood pressure during
removal of the tumour is illustrated by three cas

Our thanks are due to Dr A. L Jacobs, Dr E. E
and Prof M L Rosenheim, under whose care the c
admitted, to Dr A R Kelsall, by whom case 3 was
to the surgeons, Mr B J Harries and Mr W W D
the anæsthetists, Dr A T G Robertson and Dr O
who conducted the surgical management of the c
Mr R Moulton and Mr D A Willoughby, who
the pressor amine bio assays, to the clinical
recorded the blood pressures during operation,
Mr V K. Asta for the figures

References at foot of next column

ILATERAL PHÆOCHROMOCYTOMA IN TWO SISTERS

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ILIES in which phæochromocytoma occurs in than one member are rare We have found only recorded instances (Hyman and Mencher 1943 as and Howard 1947 Lohmann 1950, Roth et al.

Investigation of the family history of case 3 in ries reported by Helps Robinson and Ross (1955) led that her sister had died nine years previously alignant hypertension due to bilateral phæochromo ma. These two patients are described here in l.

Case records

se 1 —A young woman aged 18 was admitted to the Herts Hospital on Nov 3 1950 with a history of ive sweating and loss of energy for three months and ng of the ankles for one week She was in congestive c failure Her temperature was 99°F and she was ing profusely Her pulse rate was 116 per min. pulse r The heart was enlarged there were no murmurs, triple rhythm was present The blood pressure was 0 mm. Hg The retinæ were normal. The urine con l a trace of protein. The erythrocyte sedimentation was 9 mm. in the first hour (Wintrobe) The electro graph was normal. She was treated with digitalis and lates and the pyrexia, sweating tachycardia, and signs of heart-failure subsided within a week The proteinuria also disappeared and she was discharged on Dec 13 1950 with a tentative diagnosis of acute rheumatic carditis

Sweating reoccurred for a few weeks in the summer of 1951 after the receipt of distressing news, but otherwise she remained well until January 1953 when she was admitted to the Peace Memorial Hospital Watford with acute appendicitis. Her blood pressure was found to be 220/130 mm Hg This was the first time that hypertension had been noted She was complaining of no symptoms of hypertension; but the blood pressure remained elevated slight cardiac enlargement was present and the retinal arteries were now thin and tortuous The urine contained no protein or abnormal deposit an intravenous pyelogram was normal and the blood urea was 30 mg per 100 ml The white blood-cell count was 12 950 per c.mm (polymorphs 76%) The diagnosis of phæochromocytoma was considered, but a piperoxane test (14 mg intravenously) produced no significant fall in blood pressure and after an intravenous injection of 0 05 mg of histamine the blood pressure did not rise She was kept under regular observation, but continued to remain free of symptoms up to her last attendance in June 1954 except for some sweating during June 1953

On Nov 23 1954 she was admitted to the obstetric unit of St Paul's Hospital Hemel Hempstead. She was four months pregnant Dyspnœa had started eight days previously and had rapidly increased, and sweating had occurred during the past three nights. Her blood pressure was 210/170 mm. Hg she was sweating profusely and was in acute left ventricular failure Her condition appeared extremely grave and her blood pressure did not fall after injection of hexamethonium bromide but she improved greatly on treatment with digoxin and oxygen and on Nov 24 she was fit for transfer to the West Herts Hospital In view of the sweating it was decided to reinvestigate the possibility of phæochromocytoma. An intravenous injection of 5 mg phentolamine reduced the blood pressure abruptly from 220/140 to 120/70 mm Hg, the level then rising slowly to 150/110 mm Hg one hour later Estimation of the urine for pressor amines gave a strongly positive result. The patient was therefore transferred to University College Hospital on Dec 6 1954

At University College Hospital the patient had pyrexia up to 99 4 F and a tachycardia of 90–120 per min with normal rhythm. There was left ventricular hypertrophy and apical presystolic triple rhythm. Her blood pressure fluctuated between 230/140 and 140/110 and was not increased by pressure in the flanks. The fundi showed tortuosity of the arteries, arteriovenous nipping and one small hæmorrhage in the left eye Electrocardiography showed left ventricular preponderance

Investigation showed a white blood-cell count of 15 600 per c.mm with normal differential count The blood urea was 24 mg per 100 ml and urea-clearance 93% The glucose-tolerance test was normal. The basal metabolic rate was not investigated. The urine contained 2 g. per litre of albumin and she had glycosuria (¹/₂%) on one occasion Her urinary pressor-amine excretion was 3400 µg in twenty four hours appearing to consist almost entirely of noradrenaline Test doses of hexamethonium, 10 mg intravenously followed by 25 mg intravenously resulted in a fall of blood pressure of only 10/10 mm Hg A test dose of phentolamine 2 mg intravenously caused a fall of blood pressure from 170/130 to 110/75 Intravenous pyelography revealed no abnormality Presacral oxygen insufflation (Dr C J Hodson) outlined a mass overlying the upper pole of the right kidney this was better defined by tomography No tumour was demonstrated on the left side

At operation a tumour weighing 45 g was removed from the right adrenal gland by Mr B J Harries. The course of the operation is described in detail by Helps et al (1955) (case 3 fig 6) Histological section of the tumour confirmed that it was a phæochromocytoma. The patient died of hæmorrhage on the day after operation Another phæochromocytoma weighing 19 g., was found in the left adrenal gland at necropsy

Case 2 —A girl aged 14 sister of case 1 was admitted to the London Hospital on Nov 1 1945 under the care of Sir Horace Evans. She had noticed mistiness of vision for two months and headache had been present during the preceding week She was found to have bilateral papillœdema with extensive retinal hæmorrhages and exudates. There was persistent tachycardia varying between 100 and 128 per minute and the blood pressure fluctuated between 120 90

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and 160/120 mm Hg No other abnormality was found on clinical examination The urine contained a small quantity of protein The cerebrospinal fluid was under a pressure of over 300 mm H_2O and contained 1 cell per c mm and 40 mg of protein per 100 ml The blood urea was 45 mg per 100 ml

On Nov 21, 1945, she was transferred to Chase Farm Hospital, and the blood pressure was then found to be 200/130 mm Hg On Nov 26 right thoracolumbar sympathectomy and division of the right splanchnic nerves was performed by Mr D W C Northfield Her condition was satisfactory at the end of the operation but deteriorated later, the blood-pressure falling to 90/70 mm Hg, and despite treatment with oxygen, coramine, and intravenous infusions of saline and plasma she died on Nov 27

Post-mortem examination revealed bilateral phæochromocytoma, the right adrenal gland weighing 66 g and the left 34 g A pneumothorax was present on the right side, with complete collapse of the right lung The left ventricle was hypertrophied The kidneys were normal

Very little is known of the family history of these two sisters The mother died of pulmonary tuberculosis when the children were infants, and all trace of the father has been lost There were no other siblings There is no known family history of other endocrine disorder or of neurofibromatosis

Comment

In three of the four previously recorded instances of familial phæochromocytoma the tumours have been bilateral, in the one exception (Lohmann 1950) only one adrenal was explored at operation In three of these four families there was a high incidence in the family of a second endocrine disorder—either thyrotoxicosis or diabetes mellitus In our patient's family no other endocrine disorder has been discovered, but details about the parents are lacking

Our thanks are due to Prof M. L Rosenheim and Mr B J Harries for permission to report case 1, and to Sir Horace Evans and Mr D W C Northfield for permission to report case 2

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MALIGNANT PHÆOCHROMOCYTOMA WITH FUNCTIONING METASTASES

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SECRETING metastases from endocrine tumours are rare Histological similarity of a secondary deposit to the primary tumour does not prove similarity of function, metastases should be present at a site where aberrant endocrine tissue is not otherwise found, and the secretory function should be proved by the presence of the appropriate hormone in the metastases and their secretions

Secreting metastases have been described in tumours of the thyroid (Seidlin et al 1946), the parathyroid (Gentile et al 1941), the adrenal cortex (Simpson and Joll 1938), and of the islet cells of the pancreas (Wilder et al 1927)

Phæochromocytomata have often been reported to be malignant on slender evidence Some were bilateral adrenal tumours, and others were considered malignant because tumour cells were found in the veins of the tumour Several cases were thought to be malignant on the histology of the primary tumour alone, the microscopic appearances of even a beni chromocytoma may be very pleomorphic In review of reported cases Symington and Good accepted only 7 as definitely malignant, an might be added the case of Belkin et al (1953

The number of cases of malignant phæochrom in which the blood-pressure was raised after r the primary tumour was even smaller

Bannon and Allen (1952) described a man, age a persistently raised blood pressure of 184/126 and with some readings up to 250/100 mm. Hg, the pressure fell after removal of a phæochro but rose again to 200/120 mm Hg two days lat was radiographic evidence of metastases, and t pressure was reduced by 'Dibenzyline,' an adre noradrenaline antagonist He died seven months tion, but no post mortem examination was perf only evidence that the metastases were from t chromocytoma was that the blood pressure wa by dibenzyline

Thorn et al (1944) described the successful rem phæochromocytoma, with fall in blood pressure in aged 40 Chamovitz and Fanger (1949) later rep in this same patient hypertension developed afr after operation She died two years later, and revealed a recurrence of the tumour and a m mediastinal glands which was histologically simi original tumour and gave a weakly positive rea chromaffin stain There were also changes of seve disease in the kidneys

The third case is that of Belkin et al. (1953) A 59, with paroxysmal hypertension had a ph removed, after which his blood pressure becam Three years later there developed radiographic e pulmonary metastases, a deposit in a rib and a pleur Although his blood pressure varied between 130/80 a mm Hg, he did not apparently have paroxysms tension He died eight months after evidence of was first found Post mortem examination reveal mass in the right adrenal area, which was the original tumour Abdominal lymph nodes were and there were also deposits in the liver and lungs, a had histological appearances indistinguishable fro the original tumour An extract from the adren was found to contain the equivalent of 1 5 mg. of per g of tissue It is unfortunate that the extrac pared from the adrenal site since this may ha recurrence of the primary tumour rather than a true deposit

The case described here is interesting paroxysmal hypertension persisted after rem phæochromocytoma, and that metastases we to be functionally active

Case-report

A previously healthy man, aged 46, was ad Westminster Hospital in April, 1953, because o month history of attacks of weakness, tightness in and occipital headache, in the severer attacks his swollen so much that he had had to remove his coll There were no abnormal signs, and routine four ho pressure readings between attacks varied betwe and 150/80 mm Hg

Fifty-one attacks were observed during his first in hospital In an attack he became pale and sweat neck veins were engorged up to 5 cm above the m storm, the thyroid gland appeared to enlarge, a occasion a bruit was heard over it, his neck swel times by as much as 1½ in in circumference The full and usually slower than normal, and his bloo rose to between 170/70 and 205/125 mm. Hg Th lasted between ten and fifty minutes

Intravenous pyelography showed a large right tumour A twenty four hour specimen of urine 880 µg of pressor amine, of which 720 µg was nor and 160 µg adrenaline * (Hamilton et al. (19 that the maximum excretion in patients with nsion was 100 μg in twenty four hours, expressed as naline)

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* The method of urinary extraction was that of von E Hellner (1951), and the assay was performed in the an rat (Hamilton et al 1953) Only the free, not the co amines were estimated

operation May 19 1953—An encapsulated tumour of a grapefruit (weight 480 g) was dissected out from ht adrenal gland During operation two paroxysms ertension were easily controlled by intravenous amine and a noradrenaline infusion was given to act the fall in blood pressure following removal of the

The microscopical appearances were those of a romocytoma and showed no features incompatible diagnosis of a benign tumour

ress—In the first three weeks after the operation the a four hourly blood pressure readings remained ged varying between 120/70 and 140/90 mm Hg occasions however extra readings were taken because found to be pale and sweating although apart from a eeling of fullness in his chest he had none of his previous oms his blood pressure was 190/90 mm Hg on the casion, and 220/110 mm. Hg on the second Nine days peration another twenty four hour specimen of urine mined and found to contain the equivalent of 300 μg adrenaline During the next six weeks two further s of urine were collected, and these contained the lent of 500 and 400 μg of noradrenaline The persistently radrenaline excretion in the urine as well as the inter t hypertension, suggested that there was still an nal source of pressor amines in the body It was re considered justified to search for a possible second romocytoma

nd operation July 25 1953—The left suprarenal area pected through a renal incision a laparotomy was then ned and the other recognised abdominal sites of primary romocytomata were explored but no evidence of r tumour was found

ress—The patient's blood pressure at this time varied n 130/80 and 235/160 mm Hg and he was occasionally l to be pale and sweating although he had no subjective ances as in the attacks before his first operation nained well until October 1953 when he began to ain in his left shoulder Radiographic examination l an osteolytic lesion of the left clavicle Further aphic evidence of metastases was found in the ribs left tibia and lungs. In December 1953 a twenty our specimen of urine contained the equivalent of of noradrenaline and at this time his blood pressure casional peaks up to 240/150 mm Hg although most gs were within normal limits. He sweated profusely of the time particularly when his blood pressure was

His condition gradually deteriorated and he died on 7 1954

ortem Examination

nsive metastases were found in the ribs, sternum lungs pleura mediastinal glands and liver The left l gland was normal, and on the right side the cortex rmal but no medullary tissue was found There was left ventricular hypertrophy of the heart. The kidneys tion were quite normal apart from slight thickening of erent arterioles

ological appearances of metastases in the liver and ph node were for the most part identical with those of imary phæochromocytoma but one nodule was even differentiated than the original tumour

g of metastatic tissue (mostly from the liver and the rom pleura) were examined and found to contain of pressor amine of which over 90% was noradrenaline metastatic tumour tissue contained therefore nearly g noradrenaline per g of wet weight which is well the range found in primary phæochromocytomata

Discussion

is patient presented at first the typical features of a n phæochromocytoma The enlargement of the id gland during paroxysms of hypertension has described before Hamilton et al (1953) suggested it was due to vascular engorgement although they no bruit such as was present in this case After tion the patient had further paroxysms of hyper on but only in the first two did he have subjective rbances and even these were quite unlike his erative paroxysms

is case demonstrates paroxysmal hypertension in n with multiple metastases from a phæochromocytoma that had been removed and had not recurred locally The presence in the metastases of noradrenaline in quantities well within the range found in primary phæochromocytomata and the high urinary excretion of pressor amines indicated that these were functioning metastases

Most pathologists agree that it is often impossible to distinguish a malignant from a benign phæochromocytoma Estimation of pressor amines in the urine is therefore of value not only in the diagnosis of a phæochromocytoma but also in prognosis Although our patient was virtually symptom free after operation the amount of noradrenaline in his urine was still well above normal. We suggest that routine use of this test after removal of a phæochromocytoma would demonstrate the presence of abnormal adrenaline and noradrenaline secreting tissue. If in the absence of clinical or radiographic evidence of metastases the quantity of pressor amines in the urine is found to be raised it would seem reasonable to search for a second phæochromocytoma If no second tumour is found, a guarded prognosis should be given since dissemination may already have occurred

Summary

A case of malignant phæochromocytoma is reported in which paroxysmal hypertension persisted after removal of the primary tumour Metastases were found post mortem to contain noradrenaline and these must have been actively secreting since the urinary excretion of pressor amines had remained high

A persistently increased quantity of pressor amines in the urine after removal of a phæochromocytoma suggests either the presence of a second primary tumour or that the original tumour was malignant and had already metastasised *Routine postoperative use of this test is* advocated

We wish to thank Dr S P Meadows and Sir Stanford Cade for permission to publish this case and Dr A D Morgan who performed the post mortem examination.

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REVERSAL OF MALIGNANT HYPERTENSION DUE TO ECTOPIC PHÆOCHROMOCYTOMA

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THIS case is reported because it presents a number of unusual points of interest The mode of onset was that of malignant hypertension and the usual clinical features of phæochromocytoma were absent The tumour was ectopic and was only discovered on laparotomy after bilateral lumbar exploration had revealed normal adrenal glands Before and between operations the blood-pressure was controlled and symptoms relieved by continuous or intermittent intravenous piperoxane (benzodioxane) therapy over a total period of fifty hours Finally, the malignant hypertension was reversed with return of the blood pressure to normal, and histological changes were not found in the kidney

Case-report

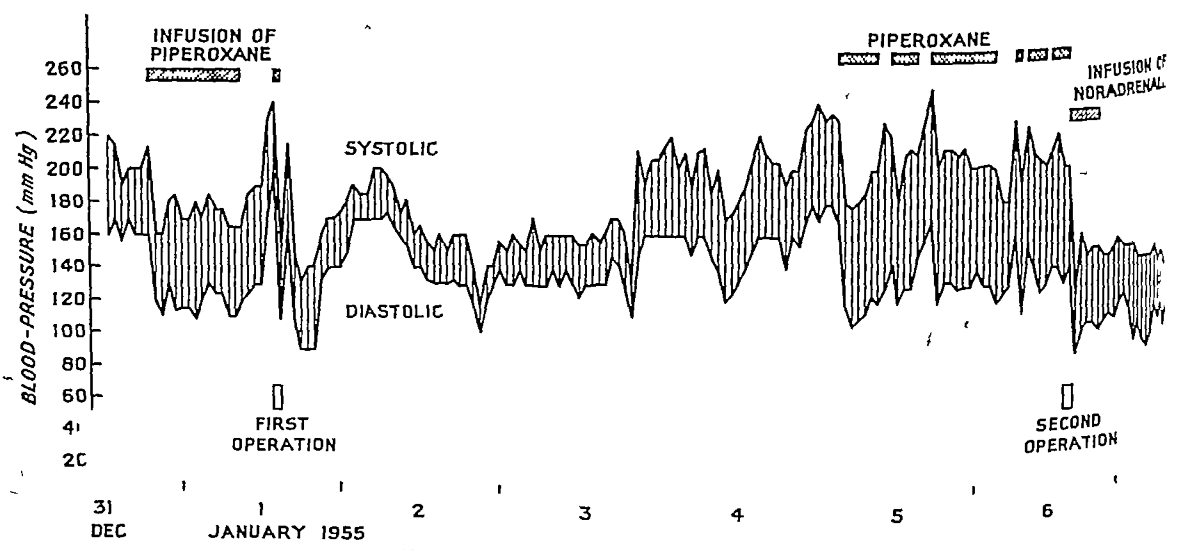
A merchant seaman, aged 20, was admitted to the London Hospital on Dec 30, 1954 (L.H record no 47433/54) He was said to have had meningitis at the age of 10 after two head injuries sustained within a period of a few days and since this illness he had had occasional mild frontal headaches There was no family history of hypertension but his mother suffered from migraine In September, 1954, he began to have severe headaches at any time of day, usually after excitement or while lying down The headache started at the occiput and spread over the vertex to the temples, it was somewhat eased by standing up At first there were remissions of several days, but for the last six weeks the headache was more or less continuous At times he had experienced " a funny feeling " for about an hour before the onset of the headache when he felt depressed and was conscious of pulsation in his head In November he noticed failing vision. The deterioration was progressive and after two weeks he was unable to recognise people Early in December he had a severe epistaxis and was admitted to hospital in Canada He was found to have a raised blood pressure (170/120 mm. Hg) The optic discs were blurred and exudates were seen in both fundi The urine was concentrated (specific gravity 1032) and contained albumin Phæochromocytoma was tentatively diagnosed and a piperoxane test performed the blood pressure fell from 230/140 to 160/80 mm Hg in twenty seconds, rising subsequently to 190/130 mm Hg He elected to return to England for treatment, and on the journey home he had continuous severe headache which was only partially relieved by codeine and barbiturates He had lost about $1^1/_2$ st in weight in three months Since the age of 3 he had passed urine up to three times every night although micturition by day was normal, there was no change in the frequency of micturition during the present illness There had been no faints or fits and he had not sweated excessively

On examination the predominant features were intense headache and almost complete blindness The skin was very pale, but there was no pallor of the mucous membranes There were numerous small brown pigmented patches in the skin of the trunk, but no other sign of von Recklinghausen's disease There was some photophobia but no neck rigidity The pupils were widely dilated and reacted normally to light and on accommodation The pulse was regular, rapid (120 per min), and large in volume The apex beat was $^1/_2$ in. outside the midclavicular line and the aortic second sound was very loud The blood pressure was 230/160 mm Hg Examination of the eyes revealed bilateral pap
without measurable swelling of the discs, there we
fluffy, pale, yellow-white exudates and a few small
rhages on both sides No abnormality was found
chest or abdomen The thyroid was not enlarged a
was no tremor or sweating

Investigations—The urine was moderately
(specific gravity 1025) and contained albumin (
There were occasional epithelial cells and very
red cells in the centrifuged deposit Blood urea 33
100 ml Hæmoglobin 17 g per 100 ml , white ce
per c mm (neutrophils 8200, lymphocytes 2000, m
300) Radiography of the chest showed no
the heart did not appear enlarged Intravenous pye
was not very satisfactory owing to gas and fæcal
and excretion was poor on both sides There was no
deformity of the calyces on either side The shado
right kidney appeared normal, the left kidney co
seen on the plain films, but tomograms showed it
normal size A piperoxane test was strongly pos
blood-pressure falling precipitously from 210/170 to 8
Hg after only 10 mg of the calculated test dose (
had been given intravenously By contrast, the blood
was not affected by hexamethonium bromide (25 and
intramuscularly)

Treatment and Progress—The patient continued
severe headache despite analgesics, the only period
being during the piperoxane test He was the
piperoxane by continuous intravenous infusion (200 a
500 mg per litre), the rate being adjusted to ma
blood pressure at a moderate level (see accompany
This required 30 mg per hour at first, but over a
fourteen hours tolerance developed until three ti
amount was needed Bilateral adrenal explorat
therefore undertaken (Jan 1, 1955) through separ
incisions, but no tumour was found While the left
was being approached there was a severe rise in th
pressure, which was controlled by intravenous
piperoxane A biopsy of the right kidney was taken
operation the blood-pressure remained about 160/130
and the pulse rate was about 110 per min. Pr
continuous sweating occurred, and after forty-eight h
blood pressure rose to 220/160 mm. Hg and pers
this level with return of severe headache Continu
venous infusion of piperoxane was started again on
(see figure), the rate being adjusted to keep the
pressure below 140 mm Hg The amount require
this gradually increased The diagnosis of phæochrom
seemed to be in little doubt despite the negative r
exploration This was confirmed by the reports (Jo
the estimations of catechol amines in plasma and urin
were as follows

(1) *By fluorimetric assay*—Plasma adrenaline 6·
litre whole blood, noradrenaline 20·4 µg
whole blood (about four times normal) Urin



Blood pressure readings in a case of phæochromocytoma ne 244 µg in eighteen hours noradrenaline 1400 µg eighteen hours (about twenty times normal)

, *bio-assay*—Urine (six specimens): noradrenaline 3 µg per ml

ew of these findings laparotomy was performed itely and a tumour was found deep to the inferior ric vessels and duodenojejunal flexure lying in the tween the left renal vein and the aorta While this ig removed the blood pressure was controlled by the of piperoxane When the vessels were ligated the essure fell rapidly to 140/85 mm Hg and nora e (4 mg per litre) was substituted for piperoxane in The noradrenaline infusion was adjusted to keep d pressure at about 140/100 mm Hg For the first urs after operation the requirement appeared to it 10 µg per minute after which the rate was y diminished. The infusion was discontinued hours later, the blood pressure remaining at about mm. Hg

quent progress was satisfactory apart from an attack intestinal obstruction on Jan. 14 which required the of adhesions The blood pressure fell gradually to nm Hg and there was no return of headache The owed progressive improvement although on discharge spital (Feb 3) there were still some exudates around s and maculæ. Albumin was last found in the urine s after the second operation. When last examined 7) the blood pressure was 120/80; there was con e impairment of vision but the optic fundi were apart from residual retinal sclerosis

logical Examination—The *tumour* was an encapsulated nass, 5 × 4 × 3 2 cm. weighing 35 0 g with the ristic histological features of phæochromocytoma. ound to contain 45 µg per g adrenaline and 151 µg oradrenaline

scopically the *renal biopsy section* showed no evidence iolar or glomerular necrosis and apart from slight r thickening there was no histological *abnormality*

Discussion

patient did not show the characteristic features æochromocytoma There were no paroxysms of nsion with sweating tremor palpitation and The recent development of malignant hyper presented a problem of diagnosis which was because of the severity of the symptoms Intra pyelography seemed to exclude unilateral renal The alternative diagnosis was chronic nephritis inimal renal impairment or malignant essential nsion The severe fall in the blood pressure after test dose of piperoxane was the one finding supported the diagnosis of phæochromocytoma ositives are not uncommon but are seldom so The one certain diagnostic test is the estimation rinary catechol amines Unfortunately there was d method available to us at the time of this s admission and because of the urgency of the ms exploration was undertaken before chemical ation of the diagnosis could be obtained This ongly emphasises the need in suspected cases of romocytoma of a rapid and reliable screening ch as has now been described by Moulton and hby (1955)

this diagnosis is established by chemical tests nour may be localised by presacral air insufflation bly with simultaneous pyelography) or by aorto Apart from the obvious risk of a lumbar a in the presence of an ectopic phæochromocytoma aphy has the disadvantage of requiring a general tic Presacral air insufflation is therefore pre and in the present case might have been valuable e finding either of an ectopic tumour or of normal t would have been a clear indication for the nal rather than the dorsal approach

venous infusion of piperoxane over a long period arently not been recorded In the present case this procedure proved invaluable in controlling th headache and lowering the blood pressure during th period of investigation If phentolamine had bee immediately available it would have been more suitabl as its action is longer and it produces fewer toxic effect (Emlet et al. 1951) It was essential to use a relativel short-acting adrenolytic drug so that the anticipated fal in pressure after removal of a tumour could be promptl controlled by the infusion of noradrenaline This precluded Dibenzamine and Dibenyline,' both o which antagonise the action of noradrenaline for a considerable period (Haimovici 1951, Bannon and Alle 1952)

With estimation of the blood pressure at short intervals varying from one to twenty minutes according to the response, infusion of piperoxane was easier to control than had been expected Toxic effects such as dizziness, palpitation and malaise were noted only at the start of the infusion and were probably due to the rapid fall of pressure There were no other untoward effects although a total of 3770 mg of piperoxane was given over periods of fourteen and thirty six hours. Increasing tolerance to the drug was noted throughout each infusion Since supplies were limited it became necessary to give it intermittently the infusion being maintained with saline in the intervals; tolerance was noted to decrease during these intervals.

Phæochromocytoma is one of the rare extrarenal lesions which give rise to hypertension, and the blood pressure can be restored to normal by removing the tumour Although the hypertension is characteristically paroxysmal it may become persistent and occasionally the picture of malignant hypertension is produced The blood pressure may remain high after operation especially when the features of malignant hypertension have developed The mechanism of this persistent hypertension is obscure and if its nature could be determined light might be thrown on the pathogenesis of other forms of chronic hypertension Comparison may be made with the hypertension produced experimentally in rats by clamping one renal artery Wilson and Byrom (1941) and more recently Floyer (1951) described evidence that persistence of hypertension after removal of the clamped kidney was associated with secondary hypertensive lesions in the opposite kidney and these findings have been adduced to explain persistent hypertension after removal of a single diseased kidney in man Persistent hypertension after removal of phæochromocytoma might similarly be due to hypertensive vascular lesions in the kidneys. Hence renal biopsy findings in such patients are of particular interest. Peart (1954) reported the absence of arteriolar necroses in renal biopsy sections from two cases, although malignant hypertension had been present before operation and the blood pressure remained high after removal of the tumour The evidence from the present case is of only negative value. No arteriolar necroses were found in the kidney section, and the blood pressure returned to normal after removal of the tumour The absence of arteriolar necroses in a biopsy section is not inconsistent with the clinical diagnosis of malignant hypertension such lesions may be extremely scanty when as in this case, malignant hypertension is diagnosed in the early stages

Summary

A case of malignant hypertension due to an ectopic phæochromocytoma is reported Symptoms were controlled before operation by prolonged intravenous administration of piperoxane Removal of the tumour was followed by a fall in the blood pressure to normal

We should like to thank Prof Clifford Wilson for permission to publish this case and for his interest and advice We also

express our gratitude to Dr H Weil Malherbe of Runwell Hospital, Essex, and Mr D A Willoughby of University College Hospital, London, for the estimations of catechol amines

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OPTIC NEURITIS FOLLOWING ISONIAZID THERAPY

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Sutton and Beattie (1955) reported a case of optic atrophy following isoniazid therapy for pulmonary tuberculosis The symptoms presented about 10 days after isoniazid therapy was started, and they grew more severe during the two months that he received isoniazid and *p* aminosalicylate (P A S) Toxic neuritis due to isoniazid was tentatively diagnosed, and had progressed to optic atrophy two months later

The following case supports the view that isoniazid may occasionally provoke an optic neuritis, and also that this change may be reversible if the drug is discontinued after symptoms appear

An Indian, aged 59, was admitted to hospital with a radiological abnormality in the right lung, suggestive of a carcinoma He was a non smoker and a teetotaller Bronchoscopy was normal but the sputum contained tubercle bacilli Treatment with streptomycin 1 g daily and P A S 15 g daily was started on Feb 19, 1955 P A S was discontinued on March 4 because of persistent flatulence, and thereafter the patient received streptomycin 1 g daily with isoniazid 200 mg daily

On March 29, 25 days after the isoniazid treatment began, he complained of mistiness of vision On April 18 examination of his eyes showed that he had a slight refractive error Visual acuity was 6/36 in the right eye and 6/60 in the left, and he was unable to read print There was no colour loss He had a bilateral central scotoma The fundi were normal Wassermann and Kahn tests had previously been reported negative A diagnosis of bilateral optic neuritis was made and on April 25 isoniazid was discontinued, streptomycin and P A S being given as before

On May 9 visual acuity was R 6/36, L 6/24 There was a loss of each temporal field involving the blind spot shown on the Bjerrum screen On May 23 visual acuity was R 6/18, L 6/18, he read R Jaeger 6, L Jaeger 10 Optic discs, and peripheral and central fields, were within normal limits On May 29 his visual acuity was R 6/12 (emmetropic), L 6/18, with −0·25 D S −0·50 cyl 110° = 6/6, and he read with the addition of +2 50 D S (R & L) J 4 each eye Central visual fields again were normal

The development of optic neuritis 25 days after the exhibition of isoniazid, with subsequent improvement despite late withdrawal of the drug, supports the contention of Sutton and Beattie that isoniazid may be a toxic agent As the complication is fortunately rare, an idiosyncrasy may be the precipitating factor

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Reviews of Books

Midwifery by Ten Teachers (9th ed London Arnold 1955 Pp 607 32*s* 6*d*)—“Ten Teach first published in 1917, and this edition will be as its predecessors, first because most of the Londo hospitals are represented among its distinguished c secondly because the book is designed for the st young practitioner, and thirdly because its high maintained Mr Clifford White, Sir William G Frank Cook, and Mr Arthur Bell have retired fr of contributors and the new edition is under th of Mr Frederick Roques assisted by Mr John B Mr Joseph Wrigley Mr Stanley Clayton, Mr Gwillim, Mr Thomas Lewis, and Mr Briant Eva contributors For the first time the sections deal newborn are written by a pædiatrician, and Dr Hart's three chapters are an asset to the book.

Clinical Neuro-surgery—Volume I of the of the Congress of Neurological Surgeons held in V is not only a record of the meeting but also a trib Geoffrey Jefferson, F.R.S., and papers by him on the of the brain, trigeminal neuromas, and compres optic pathways by intracranial aneurysms occ hospitable pages The editor in chief is Dr R Thompson (London Baillière, Tindall, & Cox 19 61*s* 6*d*)

Health and Welfare Services Hand book London Hadden, Best & Co 1955 Pp 40 Mr John Moss again offers a compact guide to and welfare services provided by central and local Much new legislation has passed under Westmins since the first edition appeared seven years administrators at their desks, around the comm and on the bench will be grateful for his careful rev

Glaucoma—In September, 1954, the Council national Organisations of Medical Sciences took t tunity offered by the International Congress of O logy in Montreal to hold a symposium on this sub invited research workers, including a physiolog chemist, a pharmacologist, a pathologist, and a to join clinicians in evaluating recent advances in of primary glaucoma The proceedings of the now appeared under the editorship of Sir Stewart D who contributes a stimulating introduction Blackwell Scientific Publications 1955 Pp 300

World of Learning (6th ed London Europ tions 1955 Pp 1026 £5)—The editors mod Montaigne's phrase and compare their work to other men's flowers and only claim the string t them as their own But in a reference book o the string of accuracy and revision that binds is very important Each edition is carefully chec each a section is singled out for special attentio year the countries of the Far East have been cho academic distinction

Canadian Cancer Conference—Volume I proceedings of the first research conference orga National Cancer Institute of Canada, which was held Harbour, Ontario, in June, 1954 The editor is Dr F (New York Academic Press London Acade 1955 Pp 443 70*s* 6*d*)

Cassell's Family Doctor (London Cass Pp 286 20*s*)—Most doctors look askance at a of this sort, but it meets a natural and not un demand, and if it helps our patients to form a just picture of their ailments, and does not scare, mislead them, we should at least view it with a Unfortunately this book falls short of these Though it may rarely alarm, it will seldom thinking, because the lay reader will be unable essentials from the inessentials and irrelevancies they are mingled This criticism applies equally symptoms, signs, and remedies This is probably despite revision, too much remains of belief and current at previous publication in 1928 New wine have been put into old bottles

THE LANCET
DON SATURDAY AUGUST 6 1955

Anæsthesia in the Elderly

olution of *antibiotics together with immense*
in anæsthetic technique, have enabled
to operate on elderly patients who formerly
ve been inoperable In the aged, excellent
ow follow prostatectomy the relief of the
ted hernia and the pinning of a fractured
cite but a few examples Yet among these
by which many elderly patients are restored
ty, can be perceived from time to time a
ly unhappy failure not directly attributable
rgical mishap

259 of this issue Dr BEDFORD reviews an
series of elderly patients who had under
ration under general anæsthesia and he
in detail 18 patients (with an average age
ith whom he was well acquainted Before
all 18 were normal yet after operation under
næsthesia they showed the grossest degree
ntia " Dr BEDFORD is at pains to exclude
series any patients whose preoperative
state was under the slightest suspicion,
those whose postoperative mental state,
npaired, did not amount to extreme dementia
reby he makes the more impressive his
n that general anæsthesia is in itself
ly dangerous to the ageing brain He takes
oint out that such episodes as he describes
extremely uncommon, but he shows that we
o take account of minor degrees of mental
nt which may escape clinical notice and yet
real social and intellectual disability This
particularly serious for the professional man
pite his years, would otherwise *still be capable*
ting and useful activity

ere any clues to the cause of the damage ?
FORD suggests that the possible causal factors
rouped under three main headings (1) cerebral
(2) the effect of the drugs administered, includ
næsthetic agent itself and (3) cerebral meta
turbances comprising enzyme, mineral, and
defects There is no precise information on the
f cerebral anoxia in an elderly person during
nor are there any valid comparative studies
to the effects of induced hypotension. A
owever, it might be expected that hypotension
operation would adversely affect the ageing
Again maintenance of adequate cerebral
tion is most important for the elderly patient
ems to be established that the adult brain
entirely on aerobic metabolism for the
on of its energy The rôle of drugs adminis
operatively is similarly undecided, but there
nce for the view that the respiratory
nts including morphine and hyoscine may
neural synaptic function and *also diminish*
oxygen uptake A more disquieting thought
nitrous oxide itself may have very serious
n the nervous system In a letter this week Dr BOURNE who has previously commented on the dangers of this anæsthetic agent,[1] gives us a strong hint about the grave effects of nitrous oxide even on young nervous tissues It is not entirely clear whether nitrous oxide was *administered in all the* cases of postoperative dementia described by Dr BEDFORD, but apparently it was often used As regards disturbed cerebral metabolism, ALLISON [2] has drawn attention to the influence of dehydration and mineral depletion in the *production* of cerebral disorder, and the plunge into vitamin B deficiency, as in Wernicke's encephalopathy or in pellagra, may be precipitated by the vomiting and anorexia resulting from general anæsthesia

Whatever the precise rôles of these exogenous factors, the most important point which emerges from this study is the particular vulnerability of aged cerebral tissue to the effects of anæsthesia. This problem of the ageing cells should prove of special theoretical interest to the clonalists, but meanwhile certain of Dr BEDFORD's practical conclusions are worth re-emphasising Thus if an old man is to part with his prostate the operation should be ordered with the utmost care After a preliminary period of administration of large doses of vitamins and *essential minerals he should be given a preoperative* dose of paraldehyde rather than morphine His general anæsthesia should be brief, light, devoid of nitrous oxide, and accompanied by generous oxygen intake No effort should be spared to maintain his *normal* blood pressure, and his hydration should be adequate The patient's reason may be at stake

Gamma-globulin against Infective Hepatitis

MEASLES is characterised by a high attack rate in unsalted communities, and by a typical clinical illness in all affected, and since the incubation period is relatively long it is possible to isolate, observe and apply prophylactic measures to contacts It has been known for some years that antibodies for the measles virus are present in a concentrated form in the gamma globulin of plasma from adults, which can be used for prophylaxis As soon as they recognised this, STOKES and his colleagues, of Philadelphia, *and others in the U S A investigated the value of* human gamma globulin as a prophylactic in other virus diseases in which the virus was thought to circulate in the blood stream and an incubation period of fourteen to twenty-one days or more was the rule Among these were mumps chickenpox, and infective hepatitis The value of gamma globulin in the prophylaxis of mumps and chickenpox has not yet been clearly determined, but there now seems little doubt that it helps to control infective hepatitis

STOKES and NEEFE [3] started in 1944 with a dose of 0 15 ml per lb body weight in children in a summer camp and others [4] used 10 ml doses for Servicemen. In 1945 HAVENS and PAUL,[5] in an outbreak in a closed community administered 0·06–0 12 ml per lb, and confirmed the results of STOKES and NEEFE In succeeding years the Philadelphian team[6,7] investigated the value of smaller and smaller doses down to 0 01 ml per lb body-weight, usually in outbreaks in institutions for children or young adults In most investigations liver function was investigated in treated and controls, and it was found that, though all doses down to 0 01 ml per lb greatly reduced the clinical severity of hepatitis, measured by jaundice, with a dose of 0 01 ml per lb there was little reduction in the incidence of hepatitis of some degree, measured by liver-function tests The protective effect of gamma-globulin was also demonstrated in the few adults exposed in these communities In 1954 the use of gamma-globulin was extended to family contacts by ASHLEY[8] and HSIA et al,[9] with apparently remarkable reduction in the familial secondary-attack rate Similar results have now been reported by BARONDESS et al[10] after injection of 659 persons during an outbreak in a combined rural and urban community in 1951 and 1952

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[1] Bourne J G *Lancet* 1954 ii, 705
[2] Allison R S *Brit med J* 1955 ii 1286
[3] Stokes J Neefe J R *J Amer med Ass* 1945, 127 144
[4] Gellis S S Stokes J Brother G M Hall W M Gilmore H R, Beyer E, Morrissey R A *Ibid* 1945 128 1062
[5] Havens I Paul, J R *Ibid* 1945 129 270

Here, then, is a definite advance in the control of an infectious disease which can be not only a great nuisance but also serious, particularly for patients under stress or poorly nourished To be effective, gamma-globulin, made by the method of KEKWICK and MACKAY,[11] should be injected not more than seven days after exposure, in a dose of 0 04 ml per lb body-weight Opinions may still differ about the persons to whom it should be administered, but most agree that it should be given in particular to the pregnant woman and to the unhealthy child Some workers would like to protect in this way other adults, including nurses in training-schools where the disease may be endemic The incubation period in infective hepatitis covers quite a wide span—fifteen to forty days—but in general the gamma-globulin is likely to be most effective if given less than seven days after exposure Cases of hepatitis have occurred up to seven or eight days after injection By analogy with measles the passive protective effect would be expected to decrease about the fifth week, but observations by STOKES and his colleagues[12] on the use of gamma-globulin in nurses in institutions where hepatitis was endemic suggested to them the additional possibility that in this disease subclinical infection may develop under cover of waning passive antibody, with consequently prolonged immunity

Against so-called serum or transfusion hepatitis ordinary gamma-globulin, and also that prepared from the plasma of those convalescent from the disease, has proved ineffective, even under experimental conditions in people with known times of exposure to known strains of virus It is still uncertain how far this failure is due to the fact that usually different viruses may be responsible for the two conditions, and how far to the different mechanism of reproduction of the virus and production of damage in the serum disease It is, of course, possible to cause serum or transfusion jaundice by the injection of blood from cases of infective hepatitis, a cases one or even two injections of ordina globulin at an interval of three weeks mig the disease or reduce its severity But ca sort are few, and there are probably mor ways of curtailing their number Such mainly from the use of large plasma pools or more donors), and pools should be re plasma from eight to ten donors[13] T producing serum-hepatitis by injection globulin is negligible

Phæochromocytomas

PHÆOCHROMOCYTOMAS are tumours of adrenal medulla and organs of Zuckerka stain brown with chromic acid.[14] They a benign, though elsewhere in this issue Dr his colleagues report a most interestin malignant phæochromocytoma with functio stases Usually they are unilateral and nc but Dr KELSALL and Dr ROSS on p 27 the fifth recorded instance of familial ph cytoma, each of two sisters had bilatera The organs of Zuckerkandl are less co site of the tumour than the adrenal on p 275 Mr RICHARDSON and his describe such a case

Zuckerkandl's organs are found in fœtus and young children in close relation to the largest being at the origin of the inferior artery Normally they begin to degenerate months of extra-uterine life,[15] and dege usually complete by the age of 6 years[16] Co phæochromocyte precursors migrate into th suprarenal medulla WEST et al[15] found tha adrenal medulla and organs of Zuckerkandl noradrenaline only, but in the first 2 birth the amount of noradrenaline in th decreased and adrenaline could be demonstrate at the same time noradrenaline, and to a gre adrenaline, increase in amount in the suprare is evidence that in adult life some of the chrom the adrenal medulla secrete adrenaline and adrenaline,[17] but the different cells are separ vated and are under control of different a hypothalamus[18]

Noradrenaline differs in its pharmacolog from adrenaline It exerts a greater vasopr than adrenaline, by constricting the ves muscles as well as in the skin and viscer adrenaline dilates the muscle arterioles PEAR that noradrenaline was liberated in the h the sympathetic nerve-supply to the cat's stimulated, and so confirmed VON EULER'S that noradrenaline was the chemical tran sympathetic nerve impulses[20]

Phæochromocytomas are functioning which secrete noradrenaline and, to a le adrenaline FRAENKEL[21] first described t syndrome, which typically consists of of hypertension, sweating, headaches, There is hypertensive retinitis, and standing cases the kidneys show vascula characteristic of malignant hypertension. T is occasionally found in association wi

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6 Stokes, J Farquhar J A Drake M E, Capps, R. B, Ward, C S, Kitts A W *Ibid*, 1951, **147** 714
7 Capps R B, Bennett, A M. Stokes, J *Arch intern Med* 1952, 89, 6
8 Ashley, A *New Engl J Med* 1954, **250**, 412
9 Hsia, D Y Lonsway, M Gellis, S S *Ibid*, p 417
10 Barondess, J A., Drake, M E Bashe W J Stokes, J, King, H U, McCroan, J J, Murphy, W J *Arch intern Med* 1955 95 633
11 Kekwick R A. Mackay, M E *Spec Rep Ser med Res Coun, Lond* 1954 no 286
12 Stokes, J J Farquhar, J A Drake, M. E, Capps R B, Ward, C S, Kitts, A. W *J Amer med Ass* 1951, **147**, 714
13 *Lancet*, 1954 i, 1328
14 Henle, J *Z rat Med* 1865 **24** 143
15 West, G B Shepherd D M, Hunter, R B *Clin Sci* 1953, **12**, 317 See *Lancet*, 1954 i, 3
16 Zuckerkandl, E *Anat Anz* 1901 **19**, 97
17 Eränkö, O *Nature, Lond* 1955 **175**, 88
18 Folkow, B, von Euler, U S *Circulation Res* 195
19 Peart W S *J Physiol* 1949, **108** 491
20 von Euler, U S *Acta physiol scand* 1946, **11**, 1
21 Fraenkel, F *Virchows Arch* 1886, **103** 244

tosis[22, 23] As more cases have been brought
; it has become clear that the clinical picture
always characteristic For example, there may
istent hypertension, sometimes of the malignant
-[26] and in view of this ROSENHEIM[27] screens
severe hypertensives for phæochromocytoma
other hand in at least one case no hyper
was ever observed[28] Other symptoms and
re caused by some form of vasomotor disturb
fever and increased basal metabolic rate
nally there are associated endocrine dis
hyperglycæmia and glycosuria are not
non Retention of urine has been reported
cases[29, 30] Phæochromocytoma has been
at necropsy in elderly patients who have died
her causes
o are laboratory and pharmacological tests
presence of the tumour The laboratory tests
are generally regarded as the more reliable
in estimating the urinary excretion of catechol
—that is, noradrenaline and adrenaline The
f these substances in the urine roughly parallels
the tumour itself Unfortunately the method
rate, and is difficult to carry out except where
facilities and skill are available Recently
r, MOULTON and WILLOUGHBY[31] have
ed a relatively simple bio-assay technique
can be used as a screening test and which in
hands has given neither false negative nor
positive results EVANS et al[32] classified
armacological tests as provocative and
olytic ' In the former paroxysms of
ension are induced by histamine, tetraethyl
nium bromide or methacholine but false
e results are not uncommon and where
ult is positive the hypertension may be severe
ossibly dangerous Adrenolytic tests involve
g the blood pressure by adrenaline antagonists
s piperoxane, dibenamine or phentolamine
xane has the disadvantage that it is toxic
some cases of essential hypertension may
e serious hypertensive crises[33, 34] Nevertheless
IDSON et al report that piperoxane controlled
pertension in their case both before and during
on and this accords with the experience of
[35] Dibenamine causes long-continued hypo
in cases of phæochromocytoma and may
e a fall of blood pressure in patients with
l hypertension[36] Phentolamine was first
n this country by HAMILTON et al[37] and
KNOX and SLESSOR[23] found that it modified
mptoms without relieving the hypertension
ed by histamine and that it was extremely
effective in controlling paroxysms of hypertension during surgical removal of the tumour On p 267 of this issue Dr HELPS and his colleagues describe their experience with phentolamine in the diagnosis and management of patients with phæochromocytoma and conclude that it is simple and safe to use in diagnosis, but false positive results have been reported[38] especially when the patient is also receiving barbiturates[39] or during anæsthesia[40]

The symptoms are dispelled by removing the tumour Certain anæsthetics, including chloroform ethyl chloride, and cyclopropane are contra-indicated[41, 42] since they may cause ventricular arrhythmia in the presence of excess circulating adrenaline Medical treatment during and after operation falls into two phases *first the administration of adrenolytic drugs to control the hypertension which results from positioning the patient, handling the tumour and clamping off the blood supply*, and secondly, the intravenous infusion of noradrenaline to combat the profound hypotension which results from suddenly cutting off the excess circulating noradrenaline and adrenaline The hypotensive phase persists for some hours after operation, since noradrenaline and adrenaline depress the transmission of vasotonic impulses through the sympathetic ganglia and these take time to recover

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Annotations

COALMINERS CALORIES

AFTER a lapse of half a century calories have come into their own again During the 'twenties and thirties vitamins and minerals held the field and few nutrition workers had a thought to spare for the humble calorie But shortages of food during and after the war of 1939–45 forced people to turn their attention to calories and the effects of insufficient food were studied experimentally and in the field With the return of plenty and a rise in the standard of living there was an inevitable tendency to eat too much and during the past five years the problems of overnutrition and obesity and their *effects on health and longevity have occupied many* minds A Medical Research Council report on the expenditure of energy and consumption of food by miners and clerks[43] has brought us round in a full circle to the subject in which Atwater was so interested over fifty years ago—the calorie intake and output of normal men

Atwater's only method of measuring energy expenditure was his human calorimeter inside which the subject lived and carried out his various activities Although much valuable information was obtained with this machine its use was obviously limited to activities which were possible inside it and such exercises as lumbering[44] playing cricket[45] or hewing coal were out of the question Nevertheless Atwater made a great *contribution in establishing that oxygen consumption* could be used to measure energy expenditure and subsequently energy expenditure was measured more or

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hien A S Mansuy M M. Littman D S *Amer J Med*
14 318
r J Slessor A *Lancet* 1955 i, 700
n D M *J Amer med Ass* 1946 131 1260
enberg, M., Aranow H Smith A A Faber M *Arch.*
rn Med. 1950 86 823
i H. J O *Brit med J* 1951 i, 140
nheim M. L *Ibid* 1954 ii 1181
y M U *Ibid* p 314
et A J Blacket R. B Deporter A E Sanderson
A Wilson, G M *Clin Sci* 1950 9 151
I I M. Cohen H *Lancet* 1951 ii 270
ton, R Willoughby D A. *Ibid* July 2, 1955 p 16
s J A Rubitsky H J Bartels C C Bartels E C
r *J Med* 1951 11 118
V A *New Engl J Med* 1949 241 777
nan H R. *J Amer med Ass* 1950 144 830
O C Hall, J Hall R A *Lancet* 1953 i 973
ovici, H Medinets H L *Proc Soc exp Biol.*, N Y
67 163
lton M, Litchfield J W Peart W S Sowry G S C
Heart J 1953 15 241

[38] Grimson K S Emlet J R. Hamblen E C *Ann Surg* 1951 134 451.

[39] Soffer A *Med Clin. N Amer* 1951, 35, 335

[40] Gifford, R. W Roth G M. Kvale W F *J Amer med Ass* 1952 149 1625

[41] Papper E M Cahill G F *Ibid*, 1952 148 14

[42] Harrison, B L Seward E H. *Brit med J* 1954 i 107

[43] Studies on Expenditure of Energy and Consumption of Food by Miners and Clerks Fife Scotland 1952 By R. C GARRY R. PASSMORE GRACE M WARNOCK and J V G A DURNIN *Spec Rep Ser med Res Coun Lond* 1955 no 289 H.M Stationery Office Pp 70 5s

[44] Lundgren N P V *Acta physiol scand* 1946 13 suppl. 41

[45] Fletcher J G *Lancet* 1955 i 1165

less "in the field" by means of the Douglas bag A Douglas bag, however, is cumbersome to carry about in a room, let alone "in the field," and it is filled very quickly during active work The recent revival of interest in energy expenditure has been prompted by the introduction of the Kofranyi Michaelis respirometer This instrument, devised by members of the Max Planck Institut für Arbeitsphysiologie at Dortmund, is a dry gas meter which is worn like a haversack It records the volume of the expired air and simultaneously ejects a sample of this air into a rubber bag The respirometer weighs less than 7 lb , and almost any kind of muscular work can be done by a person wearing it

If an adult is not gaining or losing weight it can be assumed that over a period of weeks or months his energy intake balances his energy expenditure Thus a person's total energy expenditure over such a period can be assessed by measuring his calorie intake, but this gives no indication of how the energy is expended, or of how closely the intake and expenditure balance from day to day Garry, Passmore, Warnock, and Durnin [45] set out to get some information about all this Nineteen miners and ten clerks employed at a colliery at Buckhaven in the Kingdom of Fife were investigated A continuous record was made of the nature and duration of every activity of these men both at work and at home From time to time the oxygen consumption at the various activities was measured with the Kofranyi-Michaelis respirometer, and all the food the men ate was weighed

It is no new discovery that manual labourers need more food than sedentary workers Cato knew this in 200 B C "Rations for the hands 4 modii of wheat in winter, and in summer $4^{1}/_{2}$ for the field hands The overseer, the housekeeper, the foreman and the shepherd should have 3" [46] The miners expended energy equivalent to an average of 3660 calories a day, and the clerks 2800 calories This difference was entirely due to the energy expenditure at work (1750 and 890 calories a day respectively) The two groups spent exactly the same number of calories on their spare-time activities The calorie intakes differed by approximately the same amount, but the proportions of the calories derived from protein, fat, and carbohydrate were about the same in the two groups There was no suggestion that the miners obtained the additional energy they required from carbohydrate foods , they ate one and a half times as much bread as the clerks, but the clerks ate more buns, cakes, and biscuits Both miners and clerks had far more alcohol on Saturday than on any other day of the week

It was found that the miners spent 38% of their time underground sitting about This was generally because of a breakdown in the mechanical haulage system, and if the mechanisation had been more reliable the men would have had the opportunity of using their muscles more The metabolic cost of the various mining activities—hewing, loading, and timbering—was about 7 calories a minute, but the mean rate of energy expenditure during the entire underground shift was only 4 3 calories a minute

None of the miners taking part in this investigation had energetic recreations They spent their spare time eating, dozing, reading, and playing with their children Taking the week as a whole, both at work and at home, the miners spent two thirds of their total time and more than one third of their total energy lying or sitting This is very reminiscent of the findings of Widdowson, Edholm, and McCance,[47] who made a similar investigation on Army cadets These young men, who were alleged to be spending lives of tremendous activity, were found to spend $9^{1}/_{4}$ hours a day sitting and $8^{1}/_{3}$ hours in bed Their energy expenditure at these two activities amounted to nearly half of the total Hewing coal and learning to be a soldier are very hard work, but the hard not last as many hours each day as many p supposed

Coal mining is clearly a more profitable wa to expend one's calories than some. A Buckhaven produced about 6 tons of coal a d presumably provides a good deal more heat calories Hutchinson,[48] who, during the interested in rearing rabbits for food, wore a every day while he was collecting the weeds the rabbits were fed After seven weeks he rabbits and analysed them, and he found th average each rabbit provided 550 calories T he had expended in collecting the weeds to rabbit amounted to 1022 calories

AMENITIES IN THE MENTAL HOSPI

IN 1948, when the distinction between vo municipal hospitals melted overnight, King Hospital Fund for London possibly felt Samaritan balked of his patient But not There were still many things a voluntary b give which the Exchequer could never afford, hospitals to help which had never enjoyed th of a wealthy and liberal friend Since 1949, t politan mental and mental deficiency hospitals outside which take a substantial number of from London, have come under the Fund's wa matter of 27 mental and 9 mental deficiency containing some 60,000 beds By the end of nearly £134,800 had been given to 31 of these 36 and the Fund then set up a subcommittee, pres by Sir Ernest Pooley,[49] to consider their existing and needs, and advise on the most effective giving them help

The subcommittee have now reported[50] factors are prominent in the situation of the (1) the legacy of old and often gloomy bui (2) in contrast, the fundamental changes taking the whole attitude towards the mentally ill, an treatment—social as well as medical The aver our mental hospitals is well over fifty years, original custodial intention appears in the p design, the vast and overcrowded wards, and th of any lockers or other receptacles for patients sions or clothing "In some hospitals," the re "the patients' clothes are still rolled into b tied to their beds at night, since no storage provided for them" Overcrowding is of unknown in other hospitals The original bathing, and toilet facilities were considered and inadequate even by last century standards hospitals they are still unchanged today Kit catering, despite grants amounting to some £2 the Fund, still need attention [51]

The average cost of provisions in mental h 16s -18s 2d , and in mental deficiency hospitals 1 per patient per week, as against 24s 9d -26s 9d per hospitals—an average difference of 9s (or more th This is largely accounted for by the fact that far l in mental hospitals on milk, meat, fish, fruit, veget even groceries

The subcommittee estimate that to bring the of food up to that of general hospitals an add per head per week is needed They add that per head per week is needed They add that and healthy food is important to build up the condition not only of voluntary patients but of able bodied men and women doing outdoor o

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[46] Cato, M De agri cultura Chap 56 c 200 B C London 1934

[47] Widdowson E M , Edholm O G McCance R A Brit J Nutr 1954, 8, 147

[48] Hutchinson, J C D *Ibid*, 1947, 1, 231

[49] The other members of the subcommittee were th Malcolm McCorquodale M P , Mr O N Chadw Dr W Rees Thomas, Sir Wilson Jameson, Mr and Miss M. M Edwards

[50] Report of the Subcommittee on Mental and Mental Hospitals in the London Area King Edward's Ho for London, 10, Old Jewry, London, E C 2 1955

[51] See Hawes, D G H *Lancet*, 1955, 1, 1214

o need a full normal diet. Grants from the
better equipment together with expert advice
catering committee can do much but the
the report hope that in addition, official policy
it the 'gradual stepping up of expenditure on
in mental hospitals to a level comparing less
ably with that prevalent in other hospitals.'
h a cause as this needs no advocate it speaks
A mean and sparing diet for the mentally ill
last legacy from the days of starvation and
is a cure for madness Why should the
up be gradual?

grants towards the improvement of catering
has in the last few years spent over £17 000
mmodation and equipment for occupational
and over £80 000 on recreational social and
al facilities for patients (such things as recreation
ema projectors, bowling greens tennis-courts,
ds, and shelters) and on ward amenities (such as
wireless installation mattresses, lockers and
The subcommittee emphasise the importance
grants especially to promote occupational
They also mention the value of television
disturbed and confused patients and mental
the patients interest and attention are
and the nurses—often too few in number—are
ch time and effort Some £17 000 for recrea
other amenities for staff has also been well
r many mental hospitals are far from centres
unment and the staff must often make their
ations The problem of finding and keeping
ssened where they are helped to enjoy their
me Grants for objects under these various
the subcommittee point out could rise to
o heights and cannot be expected from
funds

for major schemes have also been suggested to
mmittee and they draw the attention of the
hree

roposal to set up an occupation centre at Goodmayes
o prepare patients thoroughly for their return to
unity and help them to adjust themselves to it
be in a new building containing rooms for printing
light metal work pottery basketry and typing
work, and also a lecture-room where films could
a library and reading room a conference room, a
room, and a kitchen where women patients could
in domestic arts. The centre would also serve
ospital for patients living at home This might
ients to be discharged earlier than would otherwise

a proposal for a social centre at Warlingham Park.[52]
spital the patients, who mingle freely already have
in the grounds. The plan is to make a village
ith shops, hairdresser bank library and café so
ients are living in as normal an environment

a scheme to provide a community centre and day
nked with the psychiatric outpatient department
Hospital[53] This hospital with quite inadequate
which has to serve a rapidly growing population
ave the largest psychiatric outpatient clinic outside
The proposal is to buy a large roomy house and
r the many social and therapeutic activities of the
day hospital

ommittee recommend to the Fund for con
all three schemes and suggest that an
of not less than £250 000 spread over three
ld be spent to great advantage in the mental
–£100 000 on these major schemes, and £150 000
y grants of the kind the Fund has been giving
They express their belief that 'no more urgent
be made on the Fund at the present *time nor*
in keeping with its purpose and worthy of its

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[52] *Ibid* 1954 ii 953 964

[53] *Ibid* 1955 i 608

A UNIVERSITY HEALTH CENTRE

THE first annual report from Darbishire House[1] describes the beginnings of an experiment in which a health centre has been set up by the University of Manchester sponsored by the Nuffield and Rockefeller Foundations and staffed by four doctors who practise from the centre building The intention is that the work of the centre shall be broadened by stages and that later the school clinics and the personal health services of the local authority shall be brought in The present report however relates to the function of the general practitioner section and deals with the work accomplished and difficulties overcome during the year of running in

Much has been said of the value to the family doctor of immediate access to laboratory and X ray diagnostic *aids and the four partners in this venture record the use* they made of these services as provided in the centre building After a year of general practice with laboratory and radiological help they wonder how they managed without it in all their previous years of work The range of investigations requested has been wide, and the report emphasises the advantage of having a technician who not only carries out the test but also takes the sample either at the laboratory or at the patient's home The radiography *is limited to 'straight' films* and the 26% abnormality rate on all films would compare interestingly with that in a hospital outpatient department The nursing at the centre is undertaken by nurses seconded from the District Nursing Service and where possible, nurses from the centre attend patients at their homes This fusion of the nursing and practitioner services is an important part of the experiment in method

The authors of the report admit that the first year has been one of adaptation of the ideas of the individual to the function of the team They state categorically that the help of ancillaries does not diminish the amount of work done by the doctor but raises its standard. We had no idea of the incidence of anæmia in our practices Hæmoglobins of less than 60% are common and the patients have often been anæmic for so long that they accept their poor state of health as normal Whatever other lessons may be learnt in the administration and function of a health centre—and Darbishire House will have much to teach in future—it already seems clear that neither the patients of this centre nor the doctors who staff it would willingly revert to their earlier conditions of treatment and of practice

PHOSPHORAMIDE TREATMENT OF CANCER

EVEN the best of the chemotherapeutic agents used in neoplastic disease are only palliative With many—for instance, mustard gas derivatives—the side-effects are so severe as to cause hesitation in prescribing them when carcinomatosis is advanced and benefit likely to be short[2] For this reason recent reports on phosphoramide therapy are of great interest

Observations on rats[3-5] indicated the potential value of triethyl phosphoramide in neoplastic disease Clinically it brought about improvement in various reticuloses and also some relief in two patients with carcinomatosis after radical mastectomy for cancer of the breast[6] Bateman[7] now records her experiences with N N N' triethylene thiophosphoramide. This substance seems to be valuable in the palliation of carcinomatosis from the breast and ovary, and possibly in the treatment of some tumours of the central nervous system It may be administered directly into the growth or by intramuscular, intravenous, or intra-arterial injection, it may also be injected directly into any of the body-spaces Its great advantage is its lack of toxicity, its chief disadvantage is its selectivity, for it seems to be of little value against growths of other tissues The results are necessarily difficult to judge, and the trial is uncontrolled, but Bateman claims improvement in 80% of the cases treated In a second paper Bateman et al [8] describe the effects of intracavitary injection of the same substance and also, in two cases, of a similar substance—N (3 oxypenta-methylene), N′, N′ diethylene phosphoramide—for the control of neoplastic effusions This trial, too, was uncontrolled, and again good effects were seen chiefly in breast and ovarian growths Control of pleural effusion, lasting from one to nine months, was obtained in 10 out of 17 patients, and decrease of ascites in 5

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[1] Darbishire House Health Centre first annual report By H W ASHWORTH M.B. H M. DAVIE, M B H GOLDIE, M B. and K. J LUXTON L.R.C.P

[2] See *Lancet* 1955 i, 440 Larionov, L F Khokhlov A S Shkodinskaja L N, Vasina O S Troosheikina V I Novikova M A *Ibid* July 23 1955 p 160 Annotation, *Ibid* p 184

[3] Crossley M L Allison, J B Parker R P Kuh E. Seeger D R *Proc Soc exp Biol*, N Y 1953 83 438

[4] Personeus G Halliday S L McKenzie D Williams J H *Ibid* 1952 81 614

[5] Sparks S J, Stevens M. L Landes M. J Halliday S L. McKenzie D Williams J H *Blood* 1953, 8 655

[6] Shay H Zarafonetis C. Smith N Woldow I Sun D C. H *Arch intern Med* 1953 92 628

[7] Bateman J C *New Engl J Med* 1955 252 879

From these results it seems that we have a powerful new palliative drug for the management of some cases of advanced malignant disease Because of its selectivity it is unlikely to be widely useful Radioactive gold [9,10] is still the treatment of choice for most malignant effusions, and in carcinomatosis from cancer of the breast hypophysectomy, and now implantation of radon seeds into the pituitary gland,[11] are giving very promising results There remains ovarian carcinoma—a rather uncommon but highly malignant tumour—in the treatment of which the new substance may perhaps deserve a trial

PRESCHOOL CHILDREN IN HOSPITAL

THE joint committee which is surveying the health and development of a national sample of children has now described a study of admissions to hospital in the preschool period [12] This report, dealing with the hospital care given to 4663 children during the five years from their birth in the first week of March, 1946, is a mine of information for clinicians and administrators alike

In the first year of life the main causes of admission were found to be congenital malformations, digestive diseases, and lower respiratory infections, while at ages 2–5 tonsillectomies accounted for 25% of the admissions and bacterial infections for a further 10% Children from large families or overcrowded homes proved more likely than others to be admitted or readmitted for infections Hospitals should be disconcerted to learn that at least 3 9% of the children admitted contracted an infection during their stay in hospital that 10% of the admissions during the five years were to adult wards, and that over 30% of the children were admitted to wards that allowed no visitors The committee found that the annual rate of admission during the first five years was 53 per 1000 children, that nearly half the children who went to hospital stayed for a week or less, and that only a third stayed for longer than a fortnight

Although it is now widely believed that there is a decreasing demand for children's beds, there is a dearth of reliable information either to substantiate this belief or to indicate what number of beds should be provided The report does not provide a complete or up to date
picture, but it certainly fills in some of the
results of admission to hospital in the early
in this group are to be assessed in a follo
which is to be published later—but not,
much later

WARTS

THE incidence of virus warts in the general
is unknown Many cases are never seen by
most of the reported statistics are derived fr
groups such as patients attending skin
departments Among these, common warts a
for 10% of the new attendances and plant
a further 5%, but such figures probably
impression of the relative incidence of the
since advice is more likely to be sought for
plantar warts. Much of our knowledge of th
logy of warts is therefore based on clinical

The East Anglian branch of the Society
Officers of Health has investigated the preval
and plantar warts among school children in F
A survey of 13,432 children in 107 schools
with the cooperation of the department
ecology at Cambridge University The
plantar warts was 6 5 ± 0 7 per 1000, that
other situations was 9 71 ± 0 20% The preva
two forms was clearly related While girls su
as commonly as boys from plantar warts
equally affected by warts in other sites In
the prevalence of warts in all sites increase
but local geographical differences in prevalc
convincingly demonstrated Plantar warts
did appear to be commoner in the large singl
than in co educational establishments The
of this report is that "measures designed
plantar warts are illogical and are unlikely
unless their scope be extended to include
types usually an impracticable procedure"

Lyell and Miles [2] have drawn a distinct
warts with and without microscopically
inclusion-bodies In practice, however,
regard plane, plantar, venereal, and vul
manifestations of the same infection Fr
plantar warts necessitates seeking and t
relatively more numerous warts on other ar
patients and their contacts This may seem
Few general practitioners have the time to
and hospital outpatient departments alrea
disproportionate amount of time on this
task Venereal warts are readily cured with
but the treatment of warts elsewhere than
usually amounts to primitive local destructio
biotic influences warts, and few reliable
have been recruited to the National Health

The most useful treatment of common
carbon dioxide snow, which can be applied
largest It seems a pity that this treatment
widely used by those who first see cases of
group of people, for it would almost certainly
high general incidence

Why girls' feet are peculiarly susceptible
warts is a mystery unsolved by the East An
It would be ironical if the cause were the
standard of hygiene expressed in more freq
with bathroom floors School doctors sho
to tell us whether girls' schools are bett
with washing facilities for use after gym
games Perhaps a higher grade of detective
be needed to decide whether boys use
more or less eagerly than their sisters

Surgeon Vice-Admiral Sir REGINALD B
general of the Royal Naval Medical Service
1934, died on July 27, at the age of 83

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[12] An Account of Hospital Admissions in the Preschool Child By a joint committee of the Institute of Child Health (University of London) Society of Medical Officers of Health and Population Investigation Committee Issued from the London School of Economics and Political Science 13 Endsleigh Street W C 1

[1] *Med Offr* July 29, 1955, p 55

[2] Lyell A., Miles, J A R *Brit med J* 19

Special Articles

ATION EXPERIENCES AND MENTAL HEALTH

A Statistical Study

HOWELLS   J LAYNG
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ANT PSYCHIATRIST   ALMONER
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it years much interest has been focused on the a between separation of child and parents and quent development of delinquency and emo turbances in the child It is generally con hat a history of separation is common in children

esent investigation was undertaken to find ncidence of separation in a random sample of children attending a child psychiatric clinic and control group of healthy school children The are living at home and the separations are bout by the normal happenings of everyday life group is a mixed group of emotionally disturbed quent children and will be referred to as the group

roup contained 37 children and the two groups e as similar as possible The sexes in the two re nearly equal there being 19 boys and 18 girls ntrol group and 20 boys and 17 girls in the group The average age in the two groups was ately equal—i e 6 5 years in the control group ears in the neurotic group The questionnaire ras employed The parent was asked for details casion that the mother father or child had been n home for a night or more until the child s day

Results

ures of the separations in the school control l the neurotic clinic group have been tabulated e compared and considered from three angles— he number of children involved in separations er of occasions of separations and the total of the separations The length of each separation nsidered and a study of separations in children year of age follows In addition the parents on the effects that the separation had on the way from home are briefly analysed Finally of the child when the mother was away from nvestigated

Separated from Mothers

shows the number of children who have been from their mothers This has entailed either er or the child leaving home In both groups under the age of one year is uncommon

NUMBER OF CHILDREN SEPARATED FROM THEIR THERS AND THE NUMBER OF SEPARATIONS

	Under 1 year		Under 2 years		Under 5 years	
	Children	Separations	Children	Separations	Children	Separations
p	2	3	14	18	[illegible]	71
n over 2 days	[illegible]	[illegible]	14	18	[illegible]	59
n over 6 days	[illegible]	[illegible]	14	17	[illegible]	49
up	3	4	17	[illegible]	[illegible]	60
n over 2 days	[illegible]	3	11	18	[illegible]	53
n over 6 days	2	3	12	15	[illegible]	46

About a third of the children in both groups under the age of two have been separated from their mothers for more than two days This indicates that in only a third of the neurotic group could separation from mother have influenced the neurosis and in fact no more of the neurotic group than of the control group have been thus separated By the age of five approximately three quarters of the children in both groups have been separ ated from their mothers, and about two thirds of the children have had a separation of one week or more There is no significant difference between the two groups in this. By the age of five there were 5 children in the neurotic group who had experienced no separation from the mother Analysis of a similar table which showed the number of children who have been separated from their fathers revealed no significant difference between the two groups More fathers are separated from their children in the first year than are mothers

Number and Duration of Separations

The number of separations from their mothers of chil dren of all ages was similar in both groups and few occurred to children under the age of one year (table I) Analysis of a similar table indicating the number of separations from father revealed no significant difference between the two groups

There is an appreciably greater total duration of separation from both mother and father in the neurotic group but a small number of cases of long duration account for the difference A small number of long separations from the mother were due to the illness of the mother

TABLE II—EACH SEPARATION FROM THE MOTHER CLASSIFIED ACCORDING TO LENGTH

Length of separation	Under 1 year		Under 2 years		Under 5 years	
	Control	Neurotic	Control	Neurotic	Control	Neurotic
0–2 days	0	1	0	4	12	16
3–6 days	0	0	1	4	10	7
7–27 days	2	[illegible]	13	9	42	[illegible]
1–3 months	0	1	3	6	6	8
3–6 months	0	0	1	1	1	5
Over 6 months					0	1

Length of Separations

Table II classifies the length of each separation, and is the more revealing table

Of the 74 children only 5 were separated while under one year for more than three days from the mother only 1 for more than one month, and none for more than three months Under two years there were 3 separations of more than one month in the control group and 5 in the neurotic group In each group, 1 child was separated for more than three months. Thus the number and length of the separations from the mother are small in children under two years in both groups and there is no significant difference between them

With children under five years, there is again no significant difference between the two groups in the length of separations, except for periods of more than three months but there was 1 separation of such length in the control group compared with 6 in the neurotic group (involving 5 children) Of these long separations, 3 lasted over four months, and 1 over six months. With 1 exception the separations of over three months were due to the mother s illness

There is a similarly greater proportion of long periods of separation from the father in the neurotic group Separations from the father of less than three months, in children under five are more common in the control group (78 separations as against 48 in the neurotic group) In the control group, however only 2 children were separated from the father for over six months, compared with 7 such long separations (affecting 6 children) in the neurotic group The causes of these long separations in the control group were that the father was serving in the Forces and later there was a break in the marriage. The causes in the neurotic group were: in 3 cases fathers were serving in the Forces, in 2 cases the marriage broke down (in 1 the separation being for five years), and in 1 case a death caused a separation of five years, and in 1 case the child was transferred to the care of the children's officer because of the mother's illness.

In children under one year there were in the two groups 6 occasions of separation from the mother, only 1 being caused by the infant's illness and admission to hospital; 3 such separations were caused by the mother's illness, 1 by a relative's death, and 1 by moving house. During these 5 separations the infants were cared for by two grandmothers, two sisters in law, and one friend. The mothers reported no ill effects from the separation in children cared for by relatives and friends; there was adverse comment on the one instance of hospital admission.

Child Away from Home

Mothers of both groups were asked to reply to the following question: "Can you comment on the general effect that leaving home had on him on the various occasions?" The replies given by the mothers were divided into three categories: (1) no effect or no comment; (2) harmful effect; (3) separation enjoyed and the child happy. No comment meant that a child appeared unchanged, and the mother did not observe either a positively harmful or enjoyable reaction to the separation.

The control-group mothers commented on 37 out of 47 occasions of separation: 25 of these comments were unfavourable comments and 12 favourable. In the neurotic group the mothers commented on 25 out of 45 occasions: 11 comments were unfavourable and 14 favourable. In the two groups combined, out of 92 occasions of separation there were 62 comments, of which 36 were unfavourable and 26 favourable.

It is clear that separation does not necessarily lead to harmful effects, and in 61% of the total the separations were enjoyed or did not give rise to comment. The parents were not asked how long the harmful effects lasted. The general inference of the replies is that they were temporary effects, and only 3 replies suggest that more permanent effects ensued. In another paper it is hoped to describe the effects produced by the separations and to study them in more detail.

Care of Child

In considering the care of the child when the mother is away, the two groups may be taken as a whole. It appears that parents make the separation as little traumatic as possible, and residential care is uncommon. The child has gone to relatives and friends on 58 occasions, he has stayed at home with the father on 22 occasions, and experienced institutional care on only 4 occasions, 3 of these being caused by the mother's illness and 1 by the birth of a sibling.

Discussion

The major finding of the investigation is the striking similarity in the pattern of separation experiences in the two groups, as well as the equally low incidence of separation in both groups. Separations from the mother under the age of one year were rare in both groups; there was only 1 separation of over a month in the 74 cases and only 5 of over three days. In both groups two thirds of the children under two had not experienced separation of more than two days from their mothers. One third of the children, at the age of five years, had not experienced a separation of over a week from their mothers. The findings in the two groups relating to the child's separation from the father agreed in the same way.

These findings support our clinical impression that in the great majority of children mental ill health springs from processes arising from being with their parents rather than away from them. It might be suggested that the neurotic process is set up in a child by a separation which would le child unharmed. At the time of the sepa ever, the mothers noted as many favour to separation in the children of the n the control group; and unfavourable commoner in the children of the neu uncommon in clinical practice to be a onset of a neurotic disturbance to a separ indeed, from time to time a planned s effective therapeutic measure in a neurot That separation experiences in early childh essential precursor of mental ill health in a pointed out by Lewis (1954b), who, bringing well as clinical experience to bear on a h group of children admitted to a reception cluded that "separation alone did not s harmful than some other kinds of privation

The differences that do exist in the pa separation experiences are minor. The difference relates to the length of separation. do not agree about the minimum length of period which is likely to cause damage. Sp (1946) believe "that there is a qualitative a period of three months after which reco if ever, completed." Lewis (1954a) takes t two years as a period of "temporary" sep period of two years as a period of "lasting" Bowlby (1951) takes six months as a period separation. Burlingham and Freud, quoted (1951), state that "whenever it is more [separation of a day's length] they tend emotional ties, revert to their instincts and their behaviour." We accepted the very of one day.

The main difference between the two the neurotic group there were a greater periods of separation from the mother lasti months—6 occasions as compared with 1. Th involved only 5 children and they were all o old. These long periods of separation in th group were caused by the illnesses of the mo was only one continuous period of months, and this occurred in the neurotic position is similar with separations from while the two groups differ very little, then proportion of long separations from father m group; again they affect only a small In the 7 periods of separation from the f more than six months, 2 were due to a br marriage, 1 was due to the mother's illness, 3 absences in the Forces and 1 was due to dea The first two of the factors involved in the may relate to the emotional state of the pa third factor may be related with less certa

It is important to relate these long separa causes, and it is significant that the min between the two groups reflect on the q parents. In the case of the mothers the d accounted for completely by the greater illness among the mothers in the neurotic gro certainty, the longer separations from fa neurotic group reflect on the quality of the mothers of the neurotic group children rarel child if he was admitted to hospital, wherea of the control-group children always did. T group fathers, when ill, were away for the fathers of the control group of children. quality or inadequacy of the parents of children is significant. Such parents not greater tendency to become ill for long per create emotional disturbances in their childr separation arising from the mother's illness strain for the already disturbed child m n his substitute parent than in his natural history of long separation, in the few instances urs in a neurotic child should not be assumed ot cause of the disturbance since the emotional may have taken place before the separation aration and disturbance can be consequences inadequacy In our experience the parental springs from a parental neurosis

however, a small group of children in the who have a permanent break from their a lengthy temporary break which is spent in As such children are relatively accessible been the subject of many studies which have ed in a masterly manner by Bowlby (1951) lren however do not suffer from separation y suffer from deprivation of affection resulting equate substitute mothering or deprivation m adverse home experiences before the

ildren enduring adverse home environments y gain from separation from their parents is not synonymous with deprivation Separa me to mean being deprived of normal home ut reference to the fact that the home life of lren is already far from normal and the from a true home A good natural home is n any other home A good substitute home is n a bad natural home The number who gain ation is not known and they are less conspicu he ill placed children who come to the notice nous child welfare agencies Nevertheless, as aid some children do suffer if deprivation is a e of separation, and it is of great importance e this danger by retaining a child in a good never possible and placing him in a good home when separation is inevitable It would us, however to imagine that by solving the f this small group of children who suffer long we would greatly influence the general f mental ill health in children for the great of disturbed children suffer from being with ts

writers have disagreed about the age at which experiences greatest deprivation consequent ration Bowlby (1951) in summing up the mphasises the importance of deprivation under three or four years, and the vital importance of ear : deprivation occuring in the second half t year of life is agreed by all students of the be of great significance and many believe true also of deprivation occurring in the first

that only 2 children in the control group and in the neurotic group could have experienced n through separation from the mother in the The care of the child while mother was away adequate only 1 experienced a separation of onth. Of the 37 neurotic children 34 had d no separation in the first year By the end nd year two thirds of the neurotic children had ienced separation from their mothers for more days and they had not suffered any worse in ct than the children in the control group No port ill effects in a child for a separation of two der up to two years of age. By the end of the a third of the neurotic group had not experi separation of more than a week from their and they had not suffered more in this respect ren in the control group By the end of the fifth urotic children had experienced no separation There is however a small number of children urotic group (5) who experienced a separation ree months between the second and fifth year ed with only 1 child in the control group This fact need not have causal significance in the mental health of the child It probably reflects upon the inadequacy of a small group of mothers of children between these ages, the separation experience and the mental ill health of the child springing from the same source

While it is clear that separation experiences do not, in the majority of emotionally disturbed children, appear responsible for the further emotional disturbances, it can still be maintained that children even healthy children can suffer by separation. In both groups, a minority of children did suffer from the separations they experienced Such harmful separation is, however compatible with subsequent mental health The mothers' comments suggest that the upsets, when they occur are usually temporary It appears that the child returning to its warm accepting home, repairs the damage done Sometimes the separation trauma may be an additional factor in an emotional disturbance already set in motion by a disturbed relationship with the parent Clinical experience suggests that the disturbed and insecure child suffers most initially from separation experiences, but he may still in some cases gain from the separation experience when fortunate in his substitute parents. Both Bowlby (1951) and Lewis (1954a) agree that in estimating the effects of separation cognisance must be taken of such factors as the mental health of the child before separation preparation for separation quality of substitute care during separation contact with parents during separation, and the quality of his reception on his return to the home There is every reason for making unavoidable separation as little traumatic as possible for all children

The Day Foster-home

From the foregoing it must be accepted that mental ill health in the child in most cases springs from emotional deprivation while at home with the parents and that there may need to be a revaluation of the measures taken to help such a child The child's state of mind may be helped by any measures which improve the parental state It can be influenced also by the introduction of another adult into the home when this adult gives emotional support to the parents and directly to the child When neither measure is possible a decision will have to be made about the desirability of removing the child from the home The step of arranging care away from home will sometimes be essential for the child's mental health An official worker will however often be presented with three difficulties (1) reluctance of the parents to be parted from the child (2) the difficulty in finding suitable care away from home and (3) the high cost of substitute care These factors have caused us to experiment with another measure—the reduction of the emotional trauma by the calculated separation of the child from the parents for as long as possible during the day and what we term day foster care. The infant has care in a day nursery a young child attends the nursery school at as early an age as possible the older child attends a specially selected school with a carefully selected staff—i e., a day school for maladjusted children Pursuance of this policy would be a tragedy for the child if the substitute care is not offered by a warm accepting understanding adult who is able to give individual attention Experience of a small number of problem families suggests that this will often be the method of choice in offering help to the child

Summary

A group of neurotic children and a control group of healthy children were compared as to their separation experiences under five years of age The separation experiences of the two groups were found to be very similar and the differences were minor

There was little separation of the child from his parents in the first two years and there was no significant difference between the two groups

It is suggested that most disturbed children suffer emotionally from being with their parents Deprivation springs most commonly from inadequate parental care

Long separations from mother and father, when they occur, are often due to the inadequacy of the parents

Though separation may cause suffering for the child, it does not, in most cases, lead to mental ill health

Most children did not suffer harm from separation and some enjoyed and benefited from it

When separation from the mother is inevitable, parents reduce the emotional trauma as much as possible by making use of a relative or friend

Day foster care is put forward as a means of preventive psychiatry

We are glad to acknowledge the help of the Ipswich Education Committee and four Ipswich head teachers in the collection of the control, group the constructive criticism of Dr G Leighton Davies, the late Dr W Pawlik, and Miss M Davies, B.A , and the assistance of Miss E Ward in the preparation of the manuscript

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AGUECHEEK'S DISEASE

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"Our classical authors have the right to all the interpretations they allow of That is why they are so rich"
—ANDRÉ GIDE

THE character of Sir Andrew Aguecheek (Shakespeare 1602) has achieved popularity in the field of drama through his pathetic eagerness to please, albeit frustrated by obvious intellectual limitations An actor undertaking this part interprets the keynote of Sir Andrew's personality as a fervent desire to cut a dash which is aborted by stupidity, cowardice, and social gaucherie (Denison 1955) This "knight, dubbed with unhatched rapier and on carpet consideration," may be no more than a topical portrait of a shallow fop, and the possibility that his eccentric behaviour, emotional lability, and restricted vocabulary could be ascribed to organic disease has not been considered previously So astute were Shakespeare's observations, however, that his creation of Aguecheek may have anticipated by more than three and a half centuries a case report of the syndrome of chronic dementia in liver disease due to intolerance of nitrogenous substances

Recently there has been increased awareness that nitrogenous material derived from portal vein blood may exert a toxic action on the central nervous system Construction of a portacaval anastomosis in the dog (Eck 1877) may permit neurological disorder in response to protein feeding (Hahn et al 1893) and this phenomenon of "meat intoxication" was elaborated by Balo and Korpassy (1932) Similar alterations of consciousness and neurological abnormalities related to the intake of nitrogenous substances in the human subject were reported by McDermott and Adams (1954) as a sequel to a portacaval "shunt" operation Moreover, patients with hepatic cirrhosis may experience transient nervous disorder after taking large quantities of dietary protein, urea, or ammonium salts (Phillips et al 1952), and it has been confirmed that toxic nitrogenous material may reach the brain by passing through a diseased liver or portal systemic collateral vessels (White et al 1955) Sherlock and her colleagues (1954) described a group of patients with cirrhosis of the liver and exten circulations in whom personality changes logical disorder dominated the clinical pictur years (chronic portal-systemic encephalop patients showed gross intolerance of nitro stances, and they improved when the intake was restricted

The diagnosis of the syndrome in its c therefore rests on the *demonstration* of personality changes *allied to liver* disease relationship of neurological deterioration protein or other nitrogenous material in the of these factors demands critical considera Aguecheek can be admitted as the p condition

The deportment of Sir Andrew through has been attributed to the vacillations of a mind, but this is hardly compatible with in society, his encouragement as a suitor fo Olivia, and his attainments as a musician Sir Toby Belch, commending the virtues of claims that Sir Andrew

> "plays o' the viol de gamboys, and sp
> three or four languages word for word
> the book and hath all the good gifts of
> (*Twelfth Night*, Act

It is more likely therefore, that Sir Andrew reflects the inadequacy of a recently deran The contrasting panache and poltroonery organic dementia, but occasional insight is

> "I am a fellow o' the strangest mind i'
> world,"

comments Sir Andrew (Act 1, Sc III), a complains

> "for many do call me fool" (Act 2, Sc

It is difficult to establish that Sir Andr from liver disease, but his violent alcoholi provide ætiological support for the deve cirrhosis and move Maria to accuse Sir Toby Sir Andrew is

> "drunk nightly in your company" (Ac

Furthermore, Sir Toby himself comments

> "For Andrew, if he were opened, and y
> find so much blood in his liver as will
> clog the foot of a flea, I'll eat the rest
> of the anatomy" (Act 3, Sc II)

The relative ischæmia of the cirrhotic liv 1907) emphasises the significance of this syn

It remains only to relate the mental intolerance of nitrogenous substances Af firmation of the diagnosis is implicit in the of Sir Andrew himself

> "Methinks sometimes I have no more w
> a Christian or an ordinary man has, bu
> am a great eater of beef, and I believe th
> does harm to my wit" (Act I, Sc III)

I am most grateful for the advice of Mr Mil who is currently playing the part of Sir Andrew at Stratford

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AL ENDOWMENTS IN SCOTLAND

l report of the Scottish Hospital Endowments n has now been published[1] The commission, chairmanship of Sir Sydney Smith has made te schemes reallocating the endowments from individual hospitals to hospital boards of nt at the introduction of the National Health 1948 The total value of the endowments the schemes is about £13 000 000 with a total ome of some £477 000

chemes are in operation Their effect has been just over £100 000 (21 8% of the total income) ttish Hospital Endowments Research Trust r small funds to the five regional hospital nd to ensure that every board of management owment income of not less than £2 5s per bed vments Research Trust was set up in January the endowments transferred to the trust the t came from the Western and South Eastern om which endowments producing over £30 000 ere transferred in each case Endowments £11 000 a year were transferred from the egion, and the corresponding figure for the tern region was £9500

mmission s schemes allocated funds ranging) to £2000 per annum to the five regional oards. These funds are intended to enable the meet expenditure within their regions which sonably be met from Exchequer sources or funds of any one board of management for expenditure on regional conferences, staff pecial surveys and inquiries The commission d the regional board funds as a source from endowment income of a board of management pplemented in special circumstances

mission decided that funds expressly given for such as the endowment of beds or the erection gs, now the responsibility of the Secretary of uld be available for general purposes On the l there were a relatively small number including the founding of prizes for nurses which they should be continued for their original purpose. took the view that as far as possible endow uld be retained in the same general area in y were given and that boards of management able to use the funds on behalf of any hospital non under their control

ION OF ENDOWMENTS WITHIN THE FIVE HOSPITAL IONS (FIGURES REPRESENT ANNUAL INCOME)

	Total funds (£)	Funds (£) transferred to				Transferred funds as percentage of total
		Other boards of management	Regional hospital board	Research trust	Total	
	8084	3801	403	—	4351	53 8
ern	32,025	0200	1000	0572	10 802	3[illegible] 4
	55 503	7082	1008	11 006	19 096	34 4
ern	150 003	17,437	1608	39 705	58 730	38 8
	211 022	14 551	[illegible]003	30 958	84 511	40·0
	477 597	77 311	0011	100 331	183 553	38 4

mmission suggests that the position might be after ten years experience of the working of mes

lars of reallocation of endowments within the tal regions are summarised in the accompanying

---

ent of Health for Scotland Hospital Endowments of the Hospital Endowments Commission. H.M. ery Office Pp 28 1s

JOINT CONSULTANTS COMMITTEE

Meeting with Chairmen of Hospital Boards

ON July 19 representatives of the Joint Consultants Committee, led by the chairman Sir Russell Brain met the chairmen of the regional hospital boards in England and Wales, primarily for the purpose of seeking the coöperation of the chairmen in the promotion and maintenance, in the interests of the hospital service, of close and harmonious relations between the boards and the senior medical staffs of the hospitals

Sir Russell Brain in thanking the chairmen for receiving the Joint Consultants Committee pointed out that the need for such a meeting was in itself strong evidence for the claim he was putting forward. It was necessary because there was no way in which the medical staffs of hospitals in the National Health Service whom the Joint Committee represents, could put their views before the chairmen of regional boards collectively or before any individual regional board The Joint Consultants Committee urged the regional boards to agree to the appointment of medical advisory committees to the boards, which should be more comprehensive and representative of hospital staffs in the regions and of a more uniform pattern than those in existence

Such medical advisory committees had proved so successful in the teaching hospitals that their establishment was now recommended for hospitals throughout the health service They enabled planning to be carried out with the help of the collective knowledge and wisdom of those who were doing the work, and they gave all consultants a sense of responsibility for new developments

The only gap that remained to be filled was at the regional board level Regional boards had been left free to make their own arrangements for medical advice with the result that there was a wide disparity in the effectiveness of their medical advisory committees, and one board had no comprehensive committee at all The rest fell broadly into three groups

(1) Medical advice might be obtained solely or mainly from the medical members of the board. This was unsatisfactory because the medical members were few and could not represent adequately the broad spectrum of medical work in the region.

(2) The addition of a few nominated members to the medical members of the board did not provide an adequate answer

(3) The best arrangement was that which had been adopted by those regional boards which had set up comprehensive medical committees some of whose members had been appointed after consultation with medical bodies.

The ideal medical advisory committee must be large enough to be reasonably comprehensive Some of the members should be appointed by or after consultation with other medical bodies to which they would feel a sense of responsibility The medical committee should not merely deal with matters referred to it by the board but should be able itself to take the initiative by referring matters to the board. Finally it should meet often enough to be effective

The Joint Consultants Committee recognised that some variability of pattern might be required to meet the different circumstances of different regions Nevertheless there should be considerable uniformity

Sir Russell said that the committee fully appreciated the good work which was being done by medical members of boards and by their medical advisory committees. Indeed it was their hope that the boards with the best would be able to persuade their colleagues to follow their example The committee wished only for increasing coöperation between the consultants and the regional boards which they believed would be in the interests of the service

The chairmen of the boards undertook to give consideration to these representations.

Public Health

AN UNUSUAL EPIDEMIC

A L Wallis
M.B Edin
GENERAL PRACTITIONER

This is a preliminary report on an epidemic of an acute upper-respiratory-tract disorder in a rural practice about five miles from Carlisle, Cumberland Sporadic cases were first noted in January and February, 1955, a large number occurred in March and April, and a few are still appearing

The clinical features as they emerged soon made a recognisable syndrome, which appeared to be a new one The main features were conjunctivitis, which might be unilateral, pyrexia up to 104°F, malaise, sore throat, dry cough, and enlarged cervical lymph glands Convalescence was marked by severe listlessness which persisted for several weeks Some of the patients affected had had influenza at the end of 1954, and several of the children had already had measles and rubella

LABORATORY FINDINGS

Investigations on about 60 cases were carried out at the Public Health Laboratory, Carlisle No abnormal total or differential white blood-cell counts were obtained, nor were any abnormal cells discovered The Paul-Bunnell test was consistently negative, as were routine complement-fixation tests against influenza viruses A and B Q fever, psittacosis, the lymphogranuloma venereum group of viruses, and mumps v and s antigens Some sera were tested and found negative for toxoplasmosis Bacteriological examination of throat swabs and fæcal specimens was undertaken when warranted by symptoms and signs, these, too, proved negative

Paired acute and convalescent sera with throat washings, conjunctival swabs, and fæcal specimens are being investigated at the Virus Reference Laboratory, Central Public Health Laboratory, Colindale So far the first few specimens examined have been negative for antibodies against the "adenoidal-pharyngeal conjunctival" (A.P C)—otherwise termed "acute respiratory disease" (A R D)—group of viruses

ILLUSTRATIVE CLINICAL RECORDS

Household 1—This consisted of a farmworker, his wife, and three daughters aged 12 years, 9 years, and 20 months At intervals of about one week during April, 1955, beginning with the mother, symptoms of this infection developed in the whole family, with the exception of the baby who was apparently unaffected

The father had a mild reaction with watering eyes and a feeling of weakness for a short period The mother found her eyes watering and becoming itchy, and her right eye became pink Malaise, headaches, occasional waves of dizziness, and nausea ensued, with sore throat and harsh irritating cough There were also stiff neck, muscular pains in the legs, general tiredness, and depression. On examination there were no abnormal signs in the chest or abdomen The fauces were injected, and there were red areas under the tongue with pustules in the centre Glands of the cervical lymph chain were enlarged

The disorder next developed in the 12 year-old daughter She felt tired and listless, the eyes watered and became pink, and headache, stiff neck, and sore throat followed Mild sweating occurred at night There was a hard dry cough, but no abnormal signs in the lungs The sore throat and pink eyes settled in a couple of days, but watering of the eyes and a feeling of debility persisted for three to four weeks

A similar picture later developed in the 9-year old child, with severe faucial injection and conjunctivitis

Household 2—This consisted of a farmworker, his wife, a daughter aged 6 years, and a son aged 5 years

Severe conjunctivitis, worse on the left side, developed in the mother in April, 1955 This was accompanied by headache and pains up the back of the neck There was severe nausea, dizziness, general tiredness, and also a
and dry cough The cervical lymph glands w
The eye lesions and sore throat settled slowly
night, but lassitude continued for four to five we

The two children complained of headache,
throat, and stiff neck, from one week after the
mother's symptoms There was slight dry
or three days from the onset they tended to be
to lie about the house but were back to normal
weeks

The father was unaffected

Household 3—This family consisted of a
wife, and two children—a schoolboy and a
daughter

The disorder developed first in the father,
before Easter, with sore throat and pains in the
and legs He felt feverish and had a harsh couch
in bed for a week because he felt exhausted. He
only after he had returned to work, when
He was then still easily tired was depressed, and
palpable cervical glands

Within a fortnight after the onset in the fath
syndrome developed in his wife and two childr
had a severe attack with a temperature of 10
watering painful swollen eyes, a hard irritating
general prostration The cervical lymph glands
and tender The acute phase lasted a week and
by debility and lassitude lasting for five to six
were no abnormal signs in the lungs

During the mother's illness the daughter
and tired and had a poor appetite, this lasted
fortnight

Watering eyes, sore throat, and a stiff neck
enlarged cervical lymph glands developed in the
cough was present, but no abnormal signs in the
noted He recovered after about a week.

GENERAL OBSERVATIONS

All age groups and both sexes were aff
The incubation period appeared to be
ten days Severe cases showed the following

1 An acute phase comprising conjunctivitis,
harsh dry cough, and palpable cervical lymph
pyrexia up to 104°F This phase lasted for abo
ten days

2 A subsequent phase of debility, lassitude
depression lasting for up to four weeks

Patients with mild attacks were commonly
households where there had been acute
common laboratory investigations have bee

CONCLUSION

The clinical picture of cases in this outbrea
that ascribed in the U S.A to the A P C. group
(Bell et al 1955, see *Lancet* 1955)

I thank Dr D G Davies, director, Public He
tory, Carlisle, and Dr K W Newell, of the
Health Laboratory, Colindale, for their
investigation

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Lancet (1955) 1, 289

Child Guidance

An attempt to secure more systematic clas
cases seen, and results obtained, at child gu
was made in 1953 by the National Associatio
Health It was evident that in dealing with the
disorders of children the diversity of compla
individuality of each problem were even grea
adult psychiatry

In his recent annual report on the work of the
child guidance unit Dr A K Graf, the
speaks of the difficulty he has encountered
group the cases referred to him For purpos
fication it was necessary to reduce each case to
problem—the diagnosis recorded being the fi
appeared most important or significant, The

show that during the year behaviour problems actors in the environment—mainly home or were about equal (20) to those where the diffi uld be explained by constitutional or tempera ctors arising within the growing child himself oblems arising out of backwardness (absolute e) were slightly less numerous (17) and equal largest single habit disorder—namely bed Psychosomatic disturbances were diagnosed in while 19 cases could be classified as belonging ore serious psychoneuroses

of the referred cases the parents could be reassured ing was wrong with their child from our point of the complete absence of psychotic disturbances ery reassuring picture of the mental health of the school child.

ally most of the referred children were of com hool age and the peak year for referral was nine the time when the educational strain of preparation econdary schools selection examination begins to f felt. The number of junior and secondary school eferred was about equal but the preponderance of ment in boys as compared with girls (there were oys referred) is significant in view of the fact that lults the female cases of nervous breakdown pro-

Poliomyelitis

In England and Wales notifications of poliomyelitis in the week ended July 23 numbered 177 (paralytic 93, non paralytic 84)—an increase of 57 on notifications in the previous week. In London and the South East Region there were 31 paralytic and 48 non paralytic cases (including 9 non paralytic cases in Willesden, from which no paralytic cases were notified) Barnsley and Stepney—the only notable foci—are quieter

The position is still about average for the time of year The momentum of the curve of notifications is about the same as in 1947 and 1952 , it is slower than in 1950 and 1953, but faster than in 1948 1949 1951, and 1954 The proportion of notified non paralytic cases is unusually high and this is having an inflationary effect on the totals

Outbreak at London Teaching Hospital

In the outbreak of glandular fever at the Royal Free Hospital London, the total number of cases at midday last Tuesday amounted to 86 (59 nurses, 3 patients, 24 others), compared with 74 a week previously [1] Of this total 4—a doctor, a nurse, and 2 domestic workers—had recovered and were back at work. The outbreak seems to be waning there were 4 new cases between last Saturday and last Monday, and none on Tuesday morning

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[1] See *Lancet* July 30 1955 p 244

Personal Papers

MALE HOMOSEXUALITY

present wave of interest in male homosexuality on most concerned has little opportunity of g his point of view and there is indeed a dearth mation about the average homosexual—the it is, that neither parades his state nor falls hands of the police Perhaps the views of one ion might be of interest at the present time

PREVALENCE

uses difficulties. The world is not divided as ople seem to think into heterosexuals, whose elings are all for the opposite sex and homo- whose feelings are all for the same sex The port—which, whatever its demerits is the only e objective study of the subject—as well as nal experiences of interested persons, indicates ng adults there is a continuous gradation from rently completely heterosexual, through the to the apparently completely homosexual. ften strongly denied by educated Englishmen is much to suggest that the horror' of ality is largely a middle-class attitude and s a protective mechanism against the acceptance ised or unrecognised homosexual tendencies. no reason why the Kinsey figures for the varying of homosexual behaviour in American males t be roughly applicable to this country though s have stated that homosexuality is more England than in America The Kinsey figures, nyone interested should consult, claimed that 5000 adult males interviewed 37% had had at experience with another male person, involving m, between adolescence and old age 25% inued to have such experiences for a period of three years between the ages of 16 and 55 % had had no other sexual experience in their could be regarded as exclusively homosexual sake of argument we accept this figure of 4% evalence of real homosexuals, then there are 000 male homosexuals in England and Wales l male population over the age of 15 in 1948 ated at 16 331 000)

ÆTIOLOGY

e degree of bisexuality with a predominant nal component is to be regarded as normal the question is not why the direction of the sexual impulse is reversed, but why in some people the homo sexual component predominates over or appears to obliterate, the heterosexual one In this I believe that early psychological environment is all important Genetic endowment may be concerned but there is no evidence for this In the absence of obvious physical changes the endocrines appear to have nothing to do with the direction of the sexual impulses and contrary to popular opinion most homosexuals are indistinguish able physically from their fellows

I believe my own state can be accounted for by early environment This opinion is based partly on objective evidence and partly on analytical findings

I was the youngest of a large family and it was well known that my father wanted a daughter I strongly suspect that my mother conceived and bore me against her will for my earliest memory is of waking in the night to hear my father in a great rage threatening to thrash her if she would not do something he wanted.

I believe that I was not only an unwanted child as far as she was concerned, but also something of a reproach a continuing reminder that she had failed to do what it was her duty to her husband to do for ours was a sternly puritanical family in which duty meant more than love I believe that the same sense of duty made my mother treat me with over solicitude but with little love and I grew up insecure over dependent and enuretic

One other incident is worth recording A brother remembers that I was once as an infant left lying on a couch while the family had a meal Some time later it was noticed that I was playing with an erect penis. My mother picked me up and hurried me out of the room In view of the family attitude to such matters it is likely that stern measures were taken on that and any subsequent occasion to root out the devil that would have been thought to have taken possession of me At any rate I grew up believing that sexual feelings of any kind were wicked and abominable and I well remember at the age of about 15 or 16 stoutly maintaining to the amuse ment of my school fellows that the preliminaries to pro- creation took place during sleep at least among decent people Absurd guilt over sexual feelings plagued me through out adolescence It was never dispelled by confessions to a priest but it has been greatly reduced by psycho-analysis.

How this kind of environment led to homosexuality is a matter for speculation but I believe it is really quite simple My mother never loved me and her over solicitude appeared to me as a sham To this day I have never been able to feel any spontaneous love for a woman nor in spite of objective evidence to the contrary and years of analytical exploration of the feelings concerned have I ever been able to feel that any woman could ever love me No intellectual conviction or objective demonstration can alter this almost instinctual feeling Any show of affection from a woman is a sham, an act, and probably a trap But I do not believe there is anything endocrine or inborn about this I believe it can be fully accounted for by the emotional environment of early childhood The enuresis which ceased at puberty is not difficult to fit into the picture

Another person in the same circumstances might have developed differently, but I do not think I ever had any choice in the matter in any ordinary sense of the term Nor, I think, did my unfortunate mother I have no doubt she did her best for me, as for her husband and the rest of the family It was not her fault that her sense of duty made her bear children she did not want and could not love I know that, for the latter part of her life at any rate, she was an unhappy woman, and I do not think any of her children showed her, or were capable of showing her, more than a kind of dutiful solicitude Thus are the difficulties of the parents visited upon the children

What passed for love in our family was really approval —something that was bartered for good behaviour Looked at from this point of view, I can only be grateful that I have *at times and for periods* been capable of feeling something that transcended all this, something that for the time being made the world a different place and myself a different person, even though the object of my love was biologically inappropriate If I am sure of one thing in this difficult matter, it is that it is better to have known only homosexual love than never to have known love at all The real problem is why one's ability to give and receive love should be sharply "canalised" to one quite inappropriate kind of partner

TREATMENT

My own analytical treatment extended over a period of sixteen years, with one or two unavoidable intervals It occupied some 2500 hours and cost some £4000–5000, which, with income tax at standard rates, meant earning £8000–9000 I mention this to show that treatment of this kind may be a considerable undertaking—not to discredit psychiatrists who, in my opinion, were considerate in this matter and earned their fees

During the time of this analysis many things happened I can never know how far they were due to the analysis, for I can never know what would have happened in those sixteen years without the analysis For one, after remaining celibate till my middle thirties, I engaged in physical homosexuality This greatly complicated my life, but, as my previously moral behaviour was due almost entirely to the lack of courage to do anything else, it is arguable that it was an advance I even achieved physiologically complete intercourse with a woman, who at least had a strong liking for me, but I have no desire to repeat such a sordid experience Many people do not realise that the homosexual may have feelings of this kind about heterosexual activities but not about homosexual ones

Other things have happened Homosexuality has become increasingly less satisfactory, but heterosexual behaviour remains as difficult as ever I have also learnt from the inside what quite severe depression is like, and have come out of it, bereft however of many of the interests and enthusiasms which used to help to make life worth living Plainly, analytical treatment has not been for me an unqualified success, but worse might have happened without it Further, I can well believe that it might sometimes alter the balance between homosexuality and heterosexuality and so achieve a cure, particularly in a young person But this kind of treatment is at best uncertain in its results, is necessarily long and expensive, and could not be provided for more than a tiny fraction of the 650,000 estimated male homosexuals in this country One is therefore a little disturbed to hear it said that homosexu
cured if only they wish to, and by state
psychological treatment is available in prison
likely to benefit from it If the recent large-
cutions (sometimes of a dozen or more men
that have been taking place in various p
country [1] continue, the number of homosexuals
young homosexuals) in prison is likely to ri
wonders how much treatment they will get

THE LAW

I suppose that most adult male homosexual
that part of the law which makes physical
between consenting male adults in private
is an unnecessary interference with their priva
They know that the same is not the cas
females, nor between males in many European
They may know that Section 11 of the C
Amendment Act, 1885, which created the
of indecency between adult males in private
to the Act at the last moment and was passe
virtually without discussion in Parliament [2]
almost immediately dubbed the *Blackmailer*
And they may believe also that, if detection w
how suddenly made 100% effective and the p
prescribed were imposed on every male who
offended in this respect, something like two-th
male population would be supporting the other
in prison

But the overriding argument for a change
is that it is a necessary preliminary to any re
the subject There are concerned some thre
of a million adult males in all walks of life, m
unmarried Some have made better adapta
others The majority guard their secret ch
to the length when necessary of joining in th
ridicule of the "queer" Only a minority
peculiarity or fall into the hands of the police
psychiatrists For all of them life is compl
may be a burden I believe that little ca
for the present generation (except that a ch
law could make things less complex without e
children or offending against public decenc
what of future generations? If homosexual

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1 The following cases, for example, were rep
News of the World on the dates stated

June 13 1954 12 borstal inmates aged 18 to 2
Newport, Mon 10 given prison sentences of from si
months

May 30 1954 17 men prosecuted at Taunton 8,
given prison sentences of from one to four years
suicide in his cell a few minutes after being sentenced

Dec 12 1954 14 men prosecuted at Barnsley, Yo
24 to 52 given prison sentences of from nine months to
Jan 30 1955 13 men prosecuted at Taunton 8,
given prison sentences of from three to twenty-one m
also sentenced to three days, the sentences to run c
for attempted suicide

2 Extract from foreword, by Sir Travers Hu
The Trials of Oscar Wilde, edited by H Monte
(London William Hodge 1948), p 5

> Now Oscar Wilde was accused of offences unde
> of the Criminal Law Amendment Act, 1885 Until th
> into force on 1st January, 1886, the criminal law was
> with alleged indecencies between grown up men o
> private Everyone knew that such things took place i
> only punished acts against public decency or condu
> the corruption of youth The Bill in question entitle
> make further provision for the protection of women
> suppression of brothels and other purposes,' was in
> passed in the House of Lords without any reference t
> between males In the Commons, after a second rea
> comment it was referred to a committee of the whole
> committee Mr Labouchere moved to insert in the B
> which ultimately became section 11 of the Act crea
> offence of indecency between male persons in public
> Such conduct in public was, and always had been, p
> common law There was no discussion except that
> asked the Speaker whether it was in order to intro
> stage a clause dealing with a totally different class o
> that against which the Bill was directed The Speaker
> that anything could be introduced by leave of the Hou
> was agreed to without further discussion the only amen
> being one by Sir Henry James with the object of i
> maximum punishment from 12 to 24 months, which w
> to without discussion

y due to early environment, should not its
studied and if possible be brought into the
he hope that some at least might be prevented
ure ? The first difficulty is of course the public
to these matters of which the law is but a
Until both are changed it is difficult to see
h advance can be made That public opinion
whipping boy of existing homosexuals is of
rtance than the possibility that its attitudes
erpetuating homosexuality by preventing any
tigation of the subject That possibility should
ive pause for thought

Medicine and the Law

Prefrontal Leucotomy

n accepted risk of prefrontal leucotomy that a
sense of responsibility and social values may be
This was stated in evidence before the Bristol
tes during the trial of a man charged with
cigarettes.[1]

oused, who was aged 63 had admitted stealing
ettes from his employers but the case was
d for a medical report after a probation officer
that the man had become irresponsible after
ng the operation four years ago He had pre
been an excellent worker with twenty-eight
one job but three months after he had left
his employer had to discharge him as unsatis
His wife had divorced him, and since he was
robation last year for stealing sweets he had
y been found wandering about Bristol with no
lress.

resumed proceedings after hearing medical
the magistrates imposed a fine of £4

Parliament

Hospital Building Programme

House of Commons before the adjournment
ummer recess Mr R A BUTLER, the Chancellor
xchequer, announced that his appeal to local
es for restraint covered hospital building
ther capital developments, but the Government
intend to create uncertainty or run the risk of
essential work as they might if they embarked
ngement of those programmes

Clean Air Bill

House of Commons on July 20 Mr DUNCAN
Minister of Housing and Local Government,
d by Mr JAMES STUART Secretary of State for
and other Ministers, presented this Bill to give
the principal recommendations of the Beaver
ee It will not receive a second reading until
nt reassembles in the autumn The main
s are as follows

ission of dark smoke from any chimney will be pro
ut the Minister may by regulation grant exemptions
led periods for such operations as soot-blowing and
g of boiler fires. It will be a defence to prove that the
of dark smoke was solely due to the lighting up of a
rom cold ; to a mechanical failure which could not
y have been prevented ; to the impracticability of
suitable fuel ; or to the *unsatisfactory nature of the*
nd the impracticability of modifying it at reasonable
last provision will lapse after seven years

furnace (other than a domestic furnace) may be
unless it can be operated continuously without
any smoke Users of existing furnaces (other than
furnaces) must take all practicable steps to minimise
ion of grit and dust *All new furnaces which burn*
l fuel or solid fuel in big quantities must be equipped
grit and dust

uthorities are empowered by order to designate
ontrol areas where the emission of any kind of
m the chimney of any *building (unless specifically* exempted) will be prohibited. Such orders will require confirmation by the Minister In these areas, occupiers of private dwellings are to receive grants towards the cost of adapting or replacing their grates and stoves, so as to enable smokeless fuel to be used

The maximum penalty for industrial offences under the Bill is a fine of £100 and for a private dwelling in a smoke-control area £10 The Government believe that full coöperation will be received in carrying out the Bill from both local authorities and the public without the compulsion of heavy penalties.

Immigrants and Tuberculosis

In the House of Commons on July 27 Dr BARNETT STROSS drew attention to the problem of tuberculosis among immigrants of rural stock who had poor immunity against the disease They came to our great cities and large towns where the risk of infection was high and where the stress of adjustment to a new life was severe About 20 000 immigrants came each year from Ireland about 10 000 a year from the West Indies It was significant that the death rate from tuberculosis per 100 000 in Liverpool and Glasgow was 57 and 72 7 respectively *whereas in Leeds and Bristol the rate was 37 and 38* He believed that there should be a committee of representatives principally medical from Eire and the United Kingdom to consider how tuberculosis in migrants could be prevented ; or if present or developing, detected and treated as early as possible Effective liaison was needed between the medical services of Britain and Ireland as regards exchange of case-records and X rays. In Ireland, he suggested there should be chest radiography or tuberculin testing of intending migrants with B C G vaccination of negative reactors. Migrants should be advised to attend at mass radiography units when they came to Britain, and they should do so at six-monthly intervals for the first two years. In Britain liaison officers should be available in the great cities so that migrants could be followed up at their places of work, worship and entertainment Perhaps the Minister would consider a pre-employment X ray and tuberculin test for all handling food and drink

Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health said that she would not like it to be thought that this problem was seriously jeopardising our progress against tuberculosis. All the facilities *of this country s health services were at the immigrants* disposal She agreed that health services and conditions in their own countries varied and that this gave a certain appeal to the idea of a *cordon sanitaire* to prevent the entry of people who might be infected Some two years ago the Central Health Services Council considered whether action should be taken to ensure that immigrants should be free from the disease The Standing Tuberculosis Advisory Committee to which the matter was referred, expressed the view that the position was not a serious menace to the health of the country An inquiry showed that the number of immigrants entering with active tuberculosis was small The problem had been of particular concern to the North West Metropolitan Regional Hospital Board because a quarter of the cases discovered in the survey were within its region Most of them were either Commonwealth citizens or citizens of the Republic of Ireland, over whose entry into the United Kingdom there was no statutory control Any measure to implement a health check on such citizens would need legislation The small minority of foreigners could be checked when coming from abroad but even that would mean setting up at the 61 ports where there were already port health authorities a new medical check to pass many thousands of people through a fine net, in order to trace a small number of infected people. The Government felt that on balance this was not justified

A high percentage of those who came from Ireland were adolescent girls, the most susceptible of all the groups The Government did not think that a permanent committee was necessary, because there was close liaison between the officers of the Ministry of Health and the Republic of Ireland It was not for this country to lay down what *Eire* should do about testing immigrants. The solution lay, she thought, in close coöperation in areas where there was a dense concentration of these people between regional hospital boards medical officers of health and mass radiography units.

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1 *Manchester Guardian* July 28 1955

In England Now

A Running Commentary by Peripatetic Correspondents

WHENEVER I travel in a non-smoking compartment I am impressed by the number of my fellow-passengers who chew peppermint, chocolate, liquorice, or just plain boiled sweets As a change from the anxiety-causing papers on the incidence of bronchial carcinoma among smokers and non-smokers would someone please start an investigation into the prevalence of dental caries among non-smokers and smokers?

* * *

Feeling rather pleased with myself at having obtained a peripatetic fellowship, I walked briskly into the Embassy, determined to get the small matter of a visa settled as quickly as possible I did not get further than the entrance hall A receptionist (male) asked me coldly for my passport He looked at the photograph and then at me—a suspicious look that was not unjustified since my photograph resembles that of a wanted criminal "Have you three photographs?" he asked I had not, but could bring them later "No use" he replied I argued half-heartedly, but that look of suspicion had been too much for my spirit I made one last effort "Do you think I shall get any further next time?" I asked with as much sarcasm as I could muster "You might," he replied without enthusiasm I bolted for the door

My next visit was more satisfactory I was ushered into a waiting-room, already full, and presided over by an efficient-looking secretary, typing into what looked like the latest of electronic typewriters After about twenty minutes I found myself sitting in front of a desk labelled "Vice-Consul" I signed a document outlining my political beliefs and promising that I would not attempt to overthrow the government of the country I was visiting I produced numerous letters from the university where I was intending to work, and these were studied in great detail Then came the next shock Although I was only going for a year I must have a blood-test and a medical examination Could these be done at my own hospital? No, I must go to one of the centres designated by the Embassy for the blood-test, and then report back for a medical any morning between 9 and 11 I managed to get my Kahn done the same afternoon, and was obligingly let off the one-guinea fee I asked the technician what happened to the money she collected, and was told that it went into the research funds of the hospital—a worthy end, I thought, for the wages of sin, and wondered whether I ought to pay my guinea after all

I arrived at 8 45 for my medical, hoping to be back at the hospital to meet my chief at 10 The waiting-room was swarming with children and people of all nationalities, it was much too small Nothing happened for an hour and a half except that a secretary called out the numbers with which we had been issued I was sixteenth, but we had only got as far as twelve when a miracle happened A doctor whom I knew entered the room, and he recognised me He took me into his office and explained that he was one of the medical officers who carried out the examinations Within fifteen minutes I had had my medical and a mass X-ray, and was on my way out I asked him how long I would have had to wait in the ordinary way, and he said that I would have been lucky if I'd been out by 1 P M. I did not stay to see if he was exaggerating

I returned the same evening to collect, as I fondly imagined, my visa This time I felt like an old hand as I took the lift to the fourth floor I was staggered when I was told that my chest X-ray was not satisfactory and that I would have to return the next day for a full-size film Could I bring one from the hospital? Emphatically no, that was not allowed My wife and I spent a sleepless night wondering whether all those little symptoms could really amount to tuberculosis or was there a patch of pneumonitis which would explain the recent cough By the morning I was resigned to three months in bed, writing papers which I hadn't had time for in my normal life When I reached the hospital I had a film taken which showed a small calcified nodule at one apex This sort of thing was always happening, the radiologist assured me, but when I asked him how the would take it, he looked gloomy and said he di

However, I went back to the Embassy at I had been told to report at 3 The little on the fourth floor was full to overflowing sit on the stairs At 3 45 the whole mass of suddenly vanished—I never discovered by terious command—leaving about six of us required to be re-X-rayed We hung about on the others had been there all morning and myself listening coldly to the medical history who had had two-thirds of his stomach ulcers—eight in all, one attached to the "I remembered nothing about the operation days later," he said, "Kept me alive by treatment you know, into the veins," he his arms He would have shown me his scar been more enthusiastic He never discovered a doctor Eventually this long history was the nurse She had a message from the say that I should bring along a full size hospital, and they would then decide wheth have a visa

It is now a month since I first applied for I can only conveniently get away on one day I have spent a small fortune in bus fares, and ing whether I really want to leave England Perhaps I am a little bitter, but Menotti has opera about this sort of thing, and I don't only one who has suffered Perhaps I could my experience to those indignant members Institutes who write to the *Times* about the ful" delays in hospital outpatient departm

* * *

It is with mixed feelings that I announce from the ranks of your regular peripatetic corre Keats's inspiration may, or may not, have the fever of tuberculosis, but there is no doubt was engendered by the feverishness induc train journeys to meet appointments com found the outward journey best, when a *candidata* seemed to add fluency to my pen all inspiration has gone since that momentous I tickled the committee's fancy and was cal the committee room, leaving the others to their coats and hats, make all haste home knows, perhaps write a scintillating peripate way

* * *

Robert, aged 6, asked a visitor if he was on The visitor replied that he was not "Oh, well," "of course, Daddy isn't a proper doctor, practice"

* * *

The old doctor was away, so my waiting leavened with a sprinkling of his old faithful year-old stumped in He had walked four mi going to walk back He wanted a supply of white 'uns" for his turns I gave him a box of phenobarbitone tablets which he opened and minutely After a pause he raised his head, a beady eye, and asked "They be senile baint' um?"

* * *

DEBILITY

Debility, debility, she's only got debility,
An unrewarding patient for a doctor whose abili
Deserves a better outlet for his diagnostic skill
Than a peevish panel patient who's just vaguely
In vain to hope biopsy will reveal upon complet
Some deeply hæmatoxophyl calcareous concretion
If she'd picked up kala azar in the wilds of Tim
Or contracted psittacosis while fire watching at
Or developed empyema, sprue, or Addison's d
There might have been some fun in treating any
She might have chosen typhoid or glomerulone
Aphasia, acromegaly, acute encephalitis,
Her deficiency of platelets might conveniently
Suspicion of a thrilling thrombocytopenic purpu
She might have brought off triplets after treatme
But no—insufferably dull—she's only got debili

Letters to the Editor

TAL GAS AND CEREBRAL PALSY

have evidence (to be published later) that 000 and 5000 dental surgeons in the United have known patients remain in coma after From this large number I have got into touch re 70 They have given me detailed reports on tion The following notes are based on a few ports, which illustrate the main points in the es

ror dental officer to a city corporation writes ne past few weeks we have had, to us, the alarming of several patients being very slow to recover from remaining in a stupor for a considerable time— tes The patients are adults and children, and the is nitrous oxide and oxygen

n at a dental school describes the case of a healthy 35: ' The anæsthesia was quite uneventful and on lasted for perhaps two or three minutes The owed none of the classical signs of anoxia at any nere was not the slightest difficulty in induction or o Following the anæsthetic the patient remained still for about twenty minutes when she started every minute or two This continued for about two r which she stopped screaming to become on ery violent She was sent home in charge of her d afterwards related that she could just vaguely having some soup during the evening Next e was quite normal.

aged 3³/₄ was anæsthetised with nitrous oxide and the extraction of one tooth. The anæsthetic was ly uneventful and very brief It was 1³/₄ hours showed the least response to attention from the l that was very drowsily

f 27 was being anæsthetised with nitrous oxide and ylene with 5% oxygen for the extraction of one uddenly became slate grey and twitched suggesting The whites of the eyes turned up and I thought goner reported the dental surgeon. This was r coma.

pping girl of 18 was given nitrous oxide and the removal of a few teeth Instead of recovering ne went into hysterical [sic] convulsions each lasting minute followed by about five minutes of what ormal sleep During the attacks it took the com ts of myself anæsthetist sister nurse and two restrain her It was about 2 hours before she ufficiently to leave

-old boy was given nitrous oxide and oxygen for ion of one tooth. Breathing almost ceased pulse at flutter Artificial respiration instituted with k colour of skin returned immediately but remained continuation of oxygen flow Artificial respiration n administration was continued for 1¹/₂ hours. time had elapsed the patient's breathing and pulse rmal but he was in a coma

the patients recovered fully but some were not ip and it is not known what became of them vn to have suffered cerebral damage

was a healthy child of 4¹/₂, who was anæsthetised us oxide and oxygen for the extraction of a single ooth The anæsthesia was brief and was given by a led and experienced in this work For seven days mained in deep coma For a month after this she like an imbecile and then slowly recovered th a personality change

nd was a healthy child of 6 who was anæsthetised us oxide and oxygen for the extraction of five deci h. This child did not recover and now eighteen er remains mute spastic and incontinent

idence suggests that some of the cerebral herto unexplained may in fact be the result gas May I ask any of your readers who come h a case to kindly communicate the details to

s Hospital
n, S.E.1

J G BOURNE.

STAFFING THE TRANSFUSION SERVICE

SIR —Dr Discombe's letters are always interesting and stimulating It is particularly unfortunate therefore that his letter last week contains some inaccuracies and questionable suppositions

The Sheffield blood transfusion laboratory is one of those which performs all antenatal tests for the region covered by its hospital board.

These tests were centralised at the request of the regional advisory committee in pathology On administrative grounds it was felt that the extra staff would not be easily obtainable in hospital laboratories and that the influx of such a volume of routine and generally non urgent work was inappropriate to clinical laboratories already working to capacity investi*gating hospital patients* On technical grounds it was realised that adequate stocks of antisera and control cells could only be available at a very limited number of centres.

Dr Discombe states " If some of this antenatal work could be left to the hospital laboratories as it is in my area it would be generally advantageous' Facts and figures to support this would be of interest In this region eight to ten laboratory workers (students juniors, and technicians) investigate about 1500 antenatal samples each week. The economy of bench space staff and sera, compared with multiple smaller units is obvious Recent *advances can be rapidly assimilated, and immune rhesus* antibodies are found at the rate of 1 in every 122 new specimens grouped (New specimens are all those from unselected pregnant women who have never previously been grouped whether primigravidæ or multigravidæ) It is to be hoped that Dr Discombe will let us have the evidence to confirm that his suggestions would be techni*cally and economically advantageous*

At each of the 40 hospital blood banks throughout this region there are laboratory staff (qualified or otherwise) who have had part of their training at the transfusion centre and who are responsible for both the ABO and rhesus grouping of their hospital cases They frequently not only detect the presence of immune or irregular antibodies in the sera of such cases, but proceed to identify them correctly Dr Discombe falls into the error of assuming that laboratory workers cannot become experienced in blood grouping unless they perform routine antenatal testing and that such work will improve their cross matching technique There is of course little relationship between the two The facilities available for teaching the principles of blood *grouping work to those concerned are of far greater* importance Unfortunately these facilities are still woefully inadequate in many parts of the country Certainly limitation of the activity of those centres which wish to do more than act as a blood factory will not assist them in their staffing problems

Nobody can disagree with Dr Discombe's statement that the syllabus of the Institute of Medical Laboratory Technology is loaded with blood serology There is nothing in your annotation of July 16 to which he refers to suggest otherwise There is indeed far more than is required by the general hospital blood bank worker I trust he will acknowledge however that very few of the I M L T examiners outside the transfusion centres examine a candidate on more than a small part of the blood serology syllabus This is one of the difficulties facing the institute in their attempt to standardise the level of their final examinations

In view of Dr Discombe's implied criticism of the ability of the transfusion service to supply blood I suggest that he obtains from his regional transfusion officer the Ministry of Health statistics showing the percentage of blood issued to hospitals which is returned unused Before criticising the transfusion centres for their study of rare and obscure antibodies he should pause to realise that their ability to provide him with blood of known antigenic structure for use in his hospital depends on the possession of such sera This, of course, is yet a further argument for close association between transfusion centres and the investigation of antenatal specimens Dr Discombe's letter reflects the attitude that the regional transfusion centre is no more than a factory producing unlimited quantities of blood on demand, as a dairy produces milk The idea that it may be able to do anything else as well as, or even perhaps a little better than, a hospital laboratory has apparently not occurred to him

Regional Transfusion Centre,
Northfield Road,
Sheffield, 10

C C BOWLEY

SIR,—We are glad that you have drawn attention in your annotation to the difficulties of technical staffing, and we heartily endorse Dr Prior's view (July 23) that the recruitment problem in departments of clinical pathology is likely to become serious if realistic adjustments are not made in the salary scales by the Whitley Council It is our view that the most important need is a considerable and significant increase in the salaries of student and junior technicians Their present reward is below subsistence level, at any rate in the London area, unless they live at home, and it is often quite unrelated to the skill and responsibility of their work In the past ten years the volume and complexity of work in clinical laboratories have increased enormously, and as a result the nature of the technician's work has changed

For example, a good student technician of two years' standing may, if adequately trained, be expected to carry out all the complex techniques of blood grouping, cross matching, and antibody detection For all this his net income at 18 years of age is £160 per annum, and he can only expect to increase this by less than £2 a week by the time he is 21 The legal responsibility for this work admittedly lies with the hospitals, but the safety of the individual patient depends essentially on the quality and integrity of the technician

We have lost good male student technicians because they have found it impossible to make ends meet even when unmarried They have therefore taken relatively unskilled, but better-paid, jobs such as selling insurance or testing ice cream It is often suggested, as Dr Prior indicates, that the low salaries should be tolerated initially because the eventual prospects are relatively good, but this is clearly no longer true

It is for two reasons, essential that the present anomalous situation should be recognised and remedied First, gross underpayment merely because the job is interesting and satisfying is morally inexcusable, and secondly, even a satisfying job will sooner or later cease to attract individuals of adequate quality and an essential service will suffer

Louis Jenner Laboratory,
St Thomas's Hospital
London, S E 1

J L PINNIGER
G WETHERLEY-MEIN

SIR,—With reference to your annotation of July 16, I wish to point out that this institute introduced in 1947 a final examination in hæmatology and blood transfusion technique to meet the specific needs of technical staff in blood-transfusion laboratories At that time we were assured by representatives of the Blood Transfusion Service that our intermediate examination was well within the compass of junior technical staff in that service Experience has not borne out that statement, and at the request of the Blood Transfusion Service we are considering what changes can be made to meet the needs of its technical staff

Your annotation suggests that promotion in pathology laboratories is more rapid than in those dealing with blood transfusion, but the regulations of the Whitley Council for the Health Services are equally applicable in both types of laboratory It is true that there has been a migration of technical staff from the Blood Transfusion Service, but similar conditions are also pathology departments, particularly in the the Midlands

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9, Harley Street, London, W 1

CLINICAL PITFALLS IN THE ELD

SIR,—In Dr Vine's interesting and provocative article (July 16) one opinion —namely, that "functional dyspepsia and p tion are comparatively rare in the old" dyspepsia, possibly, but my impression is ulceration in the elderly is not at all rare

Monroe,[1] reporting on 7941 persons over th found that 6 4% had peptic ulcers, Smith[2] 1785 necropsies, found that gastric and duod were the cause of death in 5 2%

I thought it might be interesting to figures, by age groups, of persons admitted ulcer 255 cases of gastric or duodenal admitted to this hospital in 1954, divided into as follows

Age (yr)	< 51	51–60	61–
Number	125	62	35
			133

The diagnosis of peptic ulcer in patients seldom in doubt, this is not always true seen as outpatients or at home Therefore inpatients only are given here As a sudden hæmatemesis is commonly the first ancy of peptic ulceration in the elderly, a tale of should not lightly be dismissed

City Hospital,
Nottingham

WILLIA

NEUROSECRETION IN PREGNANT LACTATING RATS

SIR,—Bargmann et al[3] have emphas the neurohypophysis and in some hypot there is a substance known as "neurosecret which can be stained selectively with hæmatoxylin-floxine of Gomori[4] This subst probably the vehicle of the antidiuretic Recently it has been supposed that there is a ship between this neurosecretory material oxytocic and vasopressor principles[5] To inv rôle of the neurosecretory material during logical conditions (pregnancy, parturition, and in which antidiuretic and oxytocic factors to be involved, we have examined the hy neurohypophyseal system in normal, pr lactating rats We stained serial sections of hy and of neurohypophysis with chromalum hæ floxine

In normal rats the neurosecretory material the ganglion cells of the supraoptic and pa nuclei It was in the form of small granules hand, it was more abundant along the fibres of the and paraventricular neurohypophyseal tracts amount of this material has been demonstrated in lobe of the hypophysis During the first, secon weeks of pregnancy no difference could be ob amount of neurosecretory material in the gan hypothalamic nuclei but in the neurohypophys third week of pregnancy there was an increase secretory material and an enlargement of pitu as cellular mitosis During the first week of l

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1 Monroe R T Diseases in Old Age Cambridg p 181
2 Smith, G S *Lancet*, 1950 1, 24
3 Bargmann, W, Hild, W, Ortmann, R Schiebler *neuroveg* 1950, 1, 233
4 Gomori G *Amer J Path* 1941, 17, 395
5 Hild, W, Zetler, G *Dtsch Z Nervenheilk* 195

nglion cells a reduction of Nissl's substance and) of giant cytoplasmic vesicles In the neuro the neurosecretory material was clearly reduced. sm and nucleus of the pituicytes was enlarged, was present During the second and third week the neurosecretory material in the fibre tracts and erior lobe of the hypophysis showed a gradual he pituicytes were still large while the mitoses disappeared

sults show that, during the second half of and above all during the first week of lactation, hanges in the hypothalamic neurohypophyseal ut our knowledge of the activity of this system cy and lactation is insufficient to suggest a nterpretation of our observations. Further eded to decide whether the changes reflect in the content of antidiuretic and oxytocic n the hypothalamic neurohypophyseal system er they can be connected with disturbances in nce during pregnancy and with milk let down tation.

t of Pathological Anatomy
of Milan, and Depart
atomy University of Kiel

Bruno Malandra

TAX ALLOWANCES FOR WHOLE TIME SPECIALISTS

ne Whole Time Consultants Association gave en and oral evidence to the Royal Commission on and was the only medical organisation to do inal report, presented to Parliament in June forbidding document of 480 odd pages worthy but the relevant part for whole time officers d under the heading Expenses (chapter 5,)

that defines deductible expenses is expressed for the two schedules under which assessment

ule D —Section 137 of the Income Tax Act 1952 a list of items the deduction of which is not to be The first item is the one that is relevant for the pose It is expressed as follows: Any disburse penses not being money wholly and exclusively laid ended for the purpose of the trade profession or By this elliptical method the Act declares that all o deductible which are laid out or expended wholly ively for the purpose of the trade profession or and are not otherwise proscribed as falling within various special heads of expenses that are listed in

Schedule E rule is found in paragraph 7 of the ninth the Income Tax Act 1952 It is more familiar rule 9 of schedule E in the Income Tax Act 1918 follows: If the holder of an office or employment necessarily obliged to incur and defray out of the e thereof the expenses of travelling in the perform duties of the office or employment or of keeping aining a horse to enable him to perform the same to expend money wholly exclusively and neces- he *performance* of the said duties there may be from the emoluments to be assessed the expenses rily incurred and defrayed

mmission after full consideration of the evidence l came to certain conclusions

the schedule D rule for deductible expenses is y and we have no alternative to recommend

the form of rule 9 schedule E is calculated to *narrower allowance* for expenses than that provided hedule-D rule and that although there are a great loyments in which its operation creates no hardship ere are no debatable expenses there is a number to ils to do justice There is no good reason for treating expenses less generously than schedule D expenses, the limited extent that some *difference* of treatment in the nature of the two kinds of income

mmission considered that the best solution was mend the re wording of rule 9 on less restricted lines The wording proposed would allow the deduction of " all expenses reasonably incurred for the appropriate performance of the duties of the office or employment This brings the wording of rule 9 into closer conformity with the wording of the schedule D rule and removes many genuine causes for complaint

The council of the Whole Time Consultants Association feels that its activities on behalf of its members have been directed to good purpose If the recommendations of the Royal Commission are implemented by Parliament many of the present grievances of whole time consultants in regard to the expenses allowance in income tax assess ment will be removed The recommendations as outlined would not appear to damage the interests of part time consultants in any way

A A Cunningham
Hon. secretary
Whole Time Consultants Association.

45 Lincoln's Inn Fields
London W C.2

ENEMAS

Sir —In your annotation of July 30 you state that *to evacuate the rectum, the enema need consist* only of one pint of plain warm water ' I have sometimes found that this amount of fluid was distressing to patients over the age of 75–80 Recently experiments have been made with enemas of smaller volume in a number of elderly patients whose bowels were difficult to stimulate. My results show that 4 oz. of a 5% solution of calcium chloride can form a very effective enema for this type of case

London, S W 16

Trevor H Howell.

Sir,—I protest ! Since when has the plural of enema ceased *to be enemata* ?

Infrequently employed it may be but rectal adminis tration of a sedative (e g paraldehyde) may be extremely useful besides being more humane than intramuscular injection One might also mention bromethol (Avertin ') which is administered rectally though now less used than it deserves. Perhaps you considered unworthy of mention the simple enema as a stimulant in obstetrics—and the barium enema

London S.W 10

R. Kelson Ford

MESTINON IN MYASTHENIA GRAVIS

Sir —We were very interested at this unit in the account by Dr Churchill Davidson and Dr Richardson of the use of Mestinon (pyridostigmine bromide) in myasthenia gravis.[1]

Their findings run almost parallel with ours. (We also have worked on the assumption that 1 tablet [15 mg] of neostigmine is the equivalent of 1 tablet [60 mg] of mestinon)

Case 1 —A housewife aged 34, deaf mute Eight years history of severe myasthenia mainly bulbar Built up to 27 tablets of neostigmine per day When stabilised on this dosage was without warning switched to a similar number of mestinon tablets. The patient volunteered that she was stronger on the new tablets and clinically in fact she was improved To verify this, several days later she was switched back to neostigmine and within forty-eight hours was confined to bed Reintroduction of mestinon resulted in an active ward life

Case 2 —A housewife and trained nurse aged 48 Six years history of myasthenia affecting mainly the skeletal muscles Examination revealed considerable disuse atrophy of skeletal muscles, and she was a semi invalid When admitted to this unit she was having 30 tablets of neostigmine and in addition three intramuscular injections of the drug per day She was started on 30 tablets of mestinon and soon improved, becoming much more mobile She also volunteered that abdominal discomfort was much less, though she added that she felt brighter on the neostigmine In this case there is no doubt that mestinon converted what was at first considered a hopeless surgical risk to a good risk. (This has subsequently been confirmed)

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[1] Churchill Davidson, H C, Richardson A T *Lancet* 1955 i 1123

CASE 3 —A housewife, aged 50 Four years' history of severe bulbar and skeletal myasthenia Whilst a patient here she passed through three well marked phases (*a*) on neostigmine 2 tablets two hourly and atropine p r n she had considerable intestinal colic and almost intractable diarrhœa, (*b*) on an equivalent number of mestinon tablets and atropine she was greatly improved with only minor abdominal discomfort, and (*c*) on the same dosage of mestinon and belladonna spansules she led a fairly active ward life and was free of abdominal discomfort

CASE 4 —A housewife, aged 28 Seven months' history of myasthenia, mainly bulbar Well controlled on neostigmine 2 tablets two hourly Trial of mestinon, in similar dosage, showed no appreciable change, either subjective or objective Operation subsequently revealed a thymoma

CASE 5 —A housewife, aged 54 Fifteen years' history, mainly bulbar weaknesses Main complaint was of dysphagia She states that on neostigmine 2 tablets two hourly, swallowing is much easier than on an equivalent number of mestinon tablets No other differences

Thyroid Clinic and Department of
Endocrinology New End
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M J LANGE

SLIPPED FEMORAL EPIPHYSIS

SIR,—In these days when all the medical journals are concerned at the superabundance of papers for publication it is unfortunate when those who write in them do not consult what has already been published Your annotation on this subject in your issue of July 30 refers to no work before 1949, 7 of the 13 references being 1953–55, yet this annotation gives nothing additional to that given in *The Lancet* of Jan 7, 1933[1]; it omits certain very important features and makes other statements which are open to criticism

The patient who suddenly develops severe pain in the hip joint and on X-ray examination shows complete dislocation of the epiphysis certainly has acute features, but it will usually be found that there has been discomfort for some time—even as long as a year There seems to be little justification for classifying such as acute and chronic In my article I drew attention to the fact that radiography may show disintegration of the metaphysis before there is any slipping I have reported this pre-slipping stage on a number of occasions, some weeks before slipping has occurred, and I have indicated the need to ascertain the cause of the metaphyseal changes and the need for protection during what is but a temporary condition It is better to prevent than to treat what could have been prevented It is even better than your advice "It may be better for the patient to await the onset of arthritis before submitting to a radical operation"

I do not agree with the necessity for comparison with standard radiographs to judge if slipping has occurred, when that is necessary it would be advisable to call in the services of someone who knows the radiographic appearances of the normal Without the animal experiments employed by Harris, I showed that not all children who slip the epiphysis are overweight, not all show endocrine disturbance, or even a small pituitary fossa, but that any condition which brings about disintegration of the metaphysis, be it trauma, disease, endocrine, or any condition which induces so called renal rickets, can be the exciting factor Usually this factor acts for a period, and rest during this period may prevent slipping—better than any of the operative measures indicated

Trauma does not immediately bring it about You do not see it after the severe manipulation sometimes used for reducing a congenital dislocation You do not see it following severe trauma—it is the femoral neck which breaks, not the epiphysis which slips

The metaphysis which has been destroyed by slipping readily disappears and fusion takes place The question of avascular necrosis depends on the trauma which forced the epiphyses, be it accidental or surgical—it is
the disturbance in vascularity of the epiph
leads to later arthritis when anatomical re
has been forcibly obtained

These and many other features can be
serial radiological study of cases—there is
use animal experiments

Birmingham

JAMES F BR

THE UTER AND THE UTERUS

SIR,—During a recent visit to Africa, a fa
to my attention which may help to throw
etymology of the word "uterus."

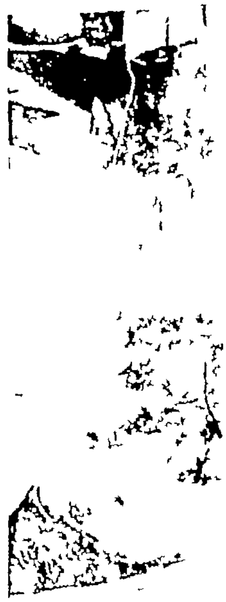
The meanings of the Greek names for this or
known, and were explained as early as the first
by a writer of the Soranus school Thus it wa
because it is the mother of the fœtus, *μήτρα*
it causes menstruation at measured times, *ὑσ*
occupies the lowest part of the intestines, *δ*
it brings forth brothers

The meaning of the word uterus, however,
It was used by classical authors such as Horace
Virgil (70–19 B C), and Juvenal (A D 60–140) to
"womb" and "belly" It is possible it is der
Greek word *ὑστέρα*, but it was suggested by W
that a connection might exist between it and th
which means a bag or bottle made of an
particularly a bag of goatskin, and which
this sense by Cæsar (100–44 B C) and Virgil

Such a connection seems quite reasonable,
Palmer, professor of comparative philology at
pointed out to me the parallel relation which e
the Gothic word *balgs*, meaning a leather sack
English, *belg*, which gives us the New English, b

A similar relation between uterus and uter h
been rejected by leading Latin etymologists,
Meillet, for example, give no support to this conte
dictionary published in 1951[2]

When visiting the Central Sudan early th
conducted round the famous gum market at El O
of the province of Kordofan, by Dr Cyril Elgood, consulting physician to the El Obeid Civil Hospital, and watched the sacks of gum being unloaded from the camel trains These sacks were large bags made from goatskin, being in fact the *uter* of the Latin authors Their shape bore a remarkable resemblance to that of the uterus, there being a narrow neck, a triangular cavity, two cornua, and a convexity corresponding to the fundus Prof G L Daly, professor of obstetrics and gynæcology at University College, Khartoum, who was also in the
party, took the accompanying photograph o
bag The similarity between the shape of the
shape of the *uter* is obvious, and it is possible th
was known in Roman times and formed the
connection between the two words



It is true that the uterus was inaccurately
Galen (A D 130–200) as a result of the prohibition
of the human body in the second century A.D
little doubt that in earlier centuries, following the
of Herophilus (335–280 B C) and Erasistratus (3

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[1] Brailsford, J F *Lancet*, 1933, i, 16

[1] Wood, F A Classical Philology Chicago 1912,
[2] Ernout, A, Meillet, A Dictionnaire étymologique
latine Paris, 1951, vol II, p 1330

shape of the uterus was recognised and would
ve been known by the authors quoted above at the
f the Christian era. Indeed an anatomical descrip
oy a writer of the Soranus school during the first
is remarkably accurate and confirms that the
of the uterus was known at this time and no great
eded to appreciate its resemblance to that of the
g

t, therefore on the basis of this evidence that
ction between uterus and *uter* as originally
by Wood is correct

lesex Hospital,
worth.

C W F BURNETT

IE BEST NUMBER OF PATIENTS

certain branches of medicine especially in
e there is not enough hospital accommodation
ne it is necessary to decide whether to treat
ents exceedingly well or a greater number with
skill and a cure rate which falls short of 100%
er I am assuming that the cure rate in hospital
reater than that in patients not admitted
I

blem is well illustrated by obstetrics. A certain
ay have an average perinatal mortality for
veries of 5% A hospital dealing with a
ble number of patients of the same com
y be able to reduce this figure to 3% Should
ital decide to treat twice as many patients
ncreasing its accommodation or its running
appreciably the perinatal mortality for its
may rise to 3 5% or even 4% and the problem
administration is how best to adjust the intake
s to do the greatest good to the community

riterion is the least number of deaths in the
s a whole then the solution can be found by
ical analysis, or the problem can be solved
ally by calculating the totals for various
onditions

mple if a hospital restricts its patients to 1000
year and thereby obtains a perinatal mortality of
s would be

1000 hospital deliveries at 3 % = 30
1000 home deliveries at 5 % = 50
80 babies

2000 hospital deliveries at 3 5% giving a total loss
babies Even at 4% the loss would only be the
at from restricting admissions

he arithmetic is taken further and the cost of
hospital deliveries are added together it may
be found that the pursuit of perfection results
ed expenditure, for a slightly *increased* number

ulate the best number of patients

the total deliveries per year are N and that a
pital will handle K of these
also that the perinatal mortality for home deliveries
that the comparable figure for hospital deliveries
where k is an irreducible minimum and Q is a
r which when multiplied by K, reflects the reduced
of hospital treatment as the number of cases
increased
mate values for England and Wales, from the best
nowledge would be:

$$h = 5\% \quad k = 3\%$$

equal 1% if the number of patients handled were
number under ideal conditions, but clearly Q will
hospital to hospital and each establishment should
an appropriate value for itself Q indexes the
perfection ratio
l number of deaths would be

$$D = \left(\frac{N-K}{100}\right)h + \frac{K}{100}(k + QK)$$

ntiating to obtain a minimum value for D:

0 $(-h + k + 2QK)$ which is minimum when $K = \frac{h-k}{2Q}$

If K is made equal to this number $\frac{h-k}{2Q}$ then the perinatal mortality for the hospital $k + QK$ becomes

$$k + Q\frac{(h-k)}{2Q} = \frac{h-k}{2}$$

Or in words the choice of the best number of patients is independent of the total number of deliveries in the country and is the value which *increases* the perinatal mortality of the hospital to the half way point between hospital perfection and the rate for home delivery For the figures cited above it would be 4%

I am not unmindful that factors other than fœtal mortality may influence hospital practice. The patient is free to choose her maternity hospital and any drastic changes in routine may reduce the number of applicants for admission The establishment of correct infant feeding and adequate postpartum convalescence are necessary, but the decision as to which part of the treatment is the most essential and the most difficult to provide at home is a matter for reflection

Obstetric Unit,
University College Hospital
London.

C N SMYTH
Nuffield research assistant

GENERAL PRACTITIONERS AND LOCAL AUTHORITY CLINICS

SIR —It is doubtful whether either the health staff of Northampton County or your readers are not convinced that we need a much greater integration of the work of different parts of the National Health Service One could wish that Sir Selwyn Selwyn Clarke whose address you published on July 23 had spoken with his authority as a principal medical officer of the Ministry of Health to those in charge of the N H S

In St Pauls Cray an excellent new county-council clinic building has just been opened by the Minister of Health In it the Kent County Council is running traditional local authority clinics but most of the local family doctors conduct maternity and baby clinics for their patients in their own premises which nearly all the mothers attend We have suggested that the doctors be allowed to hold their clinics in the new building this would do much to integrate their work with that of the county health workers. This has been firmly rejected by the K C C A recent letter from the county medical officer quoting the chairman of the health committee says It is not possible to reopen the matter of general practitioner facilities.

We have had many interviews with officials and councillors we have a bulky file of correspondence not only with the county council but also the local council the B M.A and even the Minister of Health This last consists of a letter asking if we could meet him when he came to open the new building as we had not been invited to be present No reply has yet been received Had we met him we would have told him of our efforts and would have suggested that it is now time for the Minister to put pressure on this backward county council

P A L CHAPLE
L M FRANKLIN
J D PAULETT
E TUCKMAN

St Pauls Cray,
Kent.

BY ANY OTHER NAME

SIR —Observer error in the examination of radiographs of the chest is discussed in your leading article of June 18 and subsequent correspondence

In making searches among patent specifications or among registered trade marks to see whether there is any published material which is relevant to any question in those fields the searcher has a problem which is similar to the examination of radiographs—namely, the problem of examining a large amount of material much of which has to be discarded but some of which has to be con sidered carefully in detail I have learnt to separate the task into two operations, as I have found that the mental attitude required to sort the large mass of material is incompatible with the mental attitude required for careful examination The solution to the problem is really one of mental discipline—one should not try to do two different things at once

My first operation is, therefore, to separate the material into two groups—"obviously of no interest" and "to be examined more carefully" I have found that this preliminary sorting operation can be carried out very quickly and with little error (as shown by results)

The technique is first to scan the material rapidly and always to err on the side of putting documents in the "to be examined" category if one has any suspicion I have found that one can quickly learn to spot "something" even if one does not quite see what the "something" is One may also see a lot of "somethings" that are not there

The second stage of examining the material carefully can then be carried out in a more reflective frame of mind, when one has reduced the amount of material to manageable dimensions and the pressure of time is no longer blunting the critical faculties One may even repeat the operation at a second stage, if the first sorting has still left a great deal of material to be looked at

London, S W 10   R F HASLAM

THE DEATH PENALTY

SIR,—I write to assure Sir Francis Walshe, whose letter you published last week, that there is a rational case against capital punishment, but that the premises are not necessarily those which would be approved by Aristotle

1 The destruction of one member of society by the rest, after due ceremony and deliberation, constitutes a suspension of an ethic which those very members of society are trying to uphold

2 Can this be said to strengthen the ethic? Can this promote its establishment in Society?

3 Ethic is not given to us from some hypothetical source, nor does it grow on trees, nor in philosophical systems It is slowly built up in society by the *ethical* activities of society It is continually being suspended by individuals for their own purposes, and for this they are frequently punished

4 Punishment is generally successful when conducted within the framework of the ethic—deprivation (robbery) punished by deprivation of that extension of property we recognise as "liberty" But when it is conducted in defiance of the ethic, there is a generally depressing effect upon the ethical activity of society

5 To return to (1) When punishment involves the suspension of the ethic—that is, of the sanctity and preservation of human life, without which there is no ethic—society is mutilating itself twice over once for the crime of the murderer, in which society plays its part unseen in the early years of the murderer, and again for its own crime of murdering the murderer, where it conducts the crime in full view of itself, with every possible histrionic aid, as a terrible warning to itself

The second, more terrible, mutilation, is not necessary It is *not* rational it is barbaric

Brailsford, Derbyshire   J J HAMILTON

SIR,—Surely the central point about the question of the death penalty is whether it deters from murdering All responsible people feel that it would deter them, especially perhaps Home Secretaries, judges, policemen, and others who have the public safety in their charge But that gives rise to a fallacy, such are the highly emotional circumstances in which murders are committed and so obsessed are the minds of murderers that it is doubtful whether this natural fear ever operates in deterrence The Howard League, I recall, produced a mass of evidence showing how in those countries which had abolished capital punishment there h increase in the amount of capital crime—w one would expect—and I suggest *The Lan* adding another logical argument to its splend appeal if it brought these figures up to date the death penalty deters from murder there ca valid to be said for this grisly, irreparable which, repeated two or three times a mont year, degrades us all

Beckley, Rye, Sussex   C G I

SIR,—The letter of Sir Francis Walshe will find whole-hearted support from a large profession My only regret is that this letter it is in such superb English, and with such argument, has not been quoted, in extenso, press

Rural Rheumatism Centre,
Chipping Campden,
Gloucestershire   C. B

SIR,—Your leading article of July 23 will widespread support in the medical profes are, however, some considerations of another should be stated

1 Beyond the bald statement that a murd condemned to death there is not the slightest nee publicity The prevailing obsession with employed to increase newspaper circulations, immoral than a judicial hanging

2 The words "punishment" or "penalty" no place in the treatment of the criminal A operating does not "punish" a patient who from a duodenal ulcer In the vast majority criminal is impelled to commit his crime by forces outside his control. He is, therefore, cap treated and sometimes cured of his criminal

3 The choice of treatment must depend upon and state of development of a moral sense W immature, treatment may involve imprisonme flogging, just as one smacks a child when it dangerous act) Where the criminal has no moral a true psychopath he should be regarded as dangerous to society, and quietly and humanely

It is human personality and not life itself paramount importance, and, while we ar fostering and developing the former, we ar necessity of regarding the latter as sacrosanct

Bath   E R M

SIR,—May I add one point to the many varied correspondence which has followed y hensive leader Is it not possible that Ruth suicidal urges and wanted to die? By the which she gave her evidence at trial (in s excellent legal advisers) she made it very d the court to do anything other than find her g

Another case has occurred recently (at l which, according to the press reports, the main objective in killing his perfectly inn was to satisfy his own suicidal urges by judic At trial, he insisted on pleading guilty, and h die was granted by a benevolent State Thus penalty, far from being a deterrent, may act incentive to murder

In Sweden, and some of the other countr disgust, the suicide rate is higher than here without realising it, in our usual blundering being more humane than our apparent enlightened neighbours

J F

Manchester

SIR,—The language used for condemning an judicial death penalty is so much stronger th condemning the daily slaughter of innocen roads

F D

London, W 1

Notes and News

OYAL MEDICAL BENEVOLENT FUND

nnual meeting of the Fund on July 28 Lord Webb ras re-elected president Mr F A Juler hon and Dr Reginald Cove-Smith hon secretary Boggon and Dr W D W Brooks were elected mittee of management as new members.

unts for the year show that expenditure exceeded income of £49 000 by £2200 in grants and annuities. t was met from the capital account which now o nearly £500 000 Dr Cove-Smith in his report hat the Fund derived its money from a few channels m the bulk of the profession. He asked all members nlist at least one new subscriber this year The the Fund is 1 Balliol House Manor Fields London,

ACCIDENT PRONENESS

ies of reports published by the Industrial Health Board between 1926 and 1940 E Farmer and nbers described their efforts to establish the relation n psychological tests to recorded accidents. The s to gain some idea of the measurable psychological volved in accident proneness, with the ultimate aim g tests to help in selecting workers for dangerous s These reports now out of print are summarised Medical Research Council memorandum [1]

A FRENCH TOUR

May 1954 members of the International Hospital made a study tour of the hospitals of France Dodd, B COM. has put together his notes and s of the visits and copies may be had from the ospitals Contributory Schemes Association (1948) don House Bristol 1 (10s post free)

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y of Oxford

16 the degree of B.M was conferred on the following

nderson Robert Scott H M Holden, David Fairbairn rley, Julian Viner C P McEvedy J I H Hadfield on Marcel Kinsbourne W G Rhys Jones, J T Buffin, Thomas W S R. Craig Margaret A. Mitchell Molly ora M Sykes Mary Keene H B Griffith M. J D Macaulay W S Sykes, * D G Penington J A

* In absentia.

University Belfast

7 the following degrees were conferred

H Livingston, G O. Patterson (with high commen E. Donnan, Arthur Jones Margaret A. Lynas, Beatrice Benjamin Steinberg Vera A. Sullivan

R. F Whelan.

O *B.A O*—Marjory H Boyle M. T Harrison, Williams R. M. H Pinkerton with second-class Mabel G Adams Mary C Armstrong Ronald N E. C Bamford, J A Best Jean M. W. Bolt ldwell, E. S Cathcart, S. D Clarke W A Cobain, ett, H B Coulter H J L. Craig R. B Crossley H Davison Gurna M. Dick, Alys E P Donnan glas D C Doyle P E Elwood Maureen Gilpin, W F rena Gryglaszewska A. B Hamilton, D S Hamilton Hawe Samuel Hyndman E. M. Johnston J A Kennedy lerman F M. Kivlahan C J H Logan A G McComb IcKelvey W H McKinley, Vera A McNeice Olivia T Kissundath Mahabir J R. Marshall J C Mernan Milligan Aileen P Musgrave B A Nixon J W G J O'Donnell Joan S. Patterson John Price M. R. N Russell F G Sheehan R. McC Slater, F E. Spence B Thompson, Frances M. Vint, Kenneth Watson I T D S Wilson Mary D Young

ty of Dublin

rd of Trinity College has decided to appoint full ssors of medicine and surgery in the school of physic t is to bring about more direct and formal coordina various aspects of clinical teaching and to further search It is hoped that appointments to these be made before the end of this year

Royal College of Physicians of London

At a comitia of the college held on July 28 with Sir Russell Brain the president in the chair the following fellows were elected officers for the ensuing year:

Censors F J Nattrass Ernest Lloyd J St C Elkington, Sir Horace Evans *Treasurer* W G Barnard *Registrar* Sir Harold Boldero *Harveian librarian* Sir Charles Dodds *Assistant Registrar* M. I A. Hunter *Library committee* F H K Green A. W Franklin W R. M Drew Sir Geoffrey Keynes *Finance committee* W N Mann J S Richardson, W E Chiesman

The following were elected examiners:

Panel of examiners for the membership examination: G F S Ward Terence East, Donald Hunter, J Forest Smith, L B. Cole J L Livingstone A C Hampson M. E Shaw E R. Cullinan, Sir Henry Cohen, Robert Platt A M. Cooke, E R. Boland T C. Hunt Robert Coope J C. Hawksley F P Lee Lander W D W Brooks, J R. H Towers J G Scadding Horace Joules, C H Stuart Harris, F Avery Jones Alan Kekwick. *Chemistry* W L G Gent PH.D R T Williams D.SC. *Physics* C B Allsopp D.SC. H F Cook PH D *Materia medica and pharmacology* R. S B Pearson, C. J Gavey, J F Dow J M. Robson R. S Stacey Miles Weatherall *Physiology:* W R. Spurrell, Eric Neil. *Anatomy* Frank Goldby *Pathology* F A. Knott T F Hewer J W Litchfield G D Hadley *Medical anatomy and principles and practice of medicine* B E Schlesinger A W Spence S J Hartfall R R. Bomford Kenneth Robson, T E Gumpert Arthur Willcox Una C Ledingham, W N. Mann, J F Stokes A D C Bell F Dudley Hart *Midwifery and diseases peculiar to women* Andrew Claye J H Peel J D S Flew D B Fraser R C Percival.

The following lecturers were appointed:

Dr J Crighton Bramwell (Harveian orator) Dr W Phillips (Bradshaw lecturer) Dr F Avery Jones (Lumleian) Dr J R. Ellis (Goulstonian), Dr A C Frazer (Oliver-Sharpey) Sir Maurice Bowra (Lloyd Roberts) Dr I de B Daly (Bertram Louis Abrahams) Dr F T G Prunty (Humphry Davy Rolleston), all for 1956 Dr G W Pickering (Croonian) Dr C F T East (FitzPatrick) Dr R. M. B MacKenna (Watson Smith) for 1957

The Gilbert Blane medal for 1955 was awarded to Surgeon Lieutenant-Commander W H B Ellis for his thesis on Physiological and Psychological Effects of Deck Landing the Baly Medal for 1955 was awarded to Prof A. L. Hodgkin for his services to physiology and his work on the conduction and excitation of nerve fibres and the biophysics of the cell membrane; and the Murchison scholarship for 1955 was awarded to Dr A W McKenzie

The following having satisfied the censors board were admitted to the membership:

Abdur Rauf Ahmad, M.D Punjab R. M. Bannerman B.M Oxfd J P. Bingle B.M Oxfd, Captain J N Blau, M B. Lond, R.A.M.C E V Cox M B. Durh W G Dewhurst, B.M. Oxfd H R. Elphick, M B Melb J B Foster, M B Durh B A. Frith, M B. Sydney D D Gibbs B.M. Oxfd M. W Goldblatt M.D Belf E E Hannah M B N.Z. C W H Havard B M Oxfd Saroop Chand Jain, M.D Lucknow T H S Kirkland M.D Sydney, Richard Leigh L.R.C.P H E. D Lloyd, M B Camb S G McAlpine M B. Glasg J R A. Mitchell, M B Manc. E A Nieman M.B Lpool R. A Parkins M B Lond B W Pay M.B Camb L H Pell M.B. Lond. Annette B Rawson, M B Lond P W Richmond, M B. N.Z. Harold Scarborough M.B Edin. A G Shaper, M.B. Cape Town, Lieut J. D H Slater M.B. Camb R.A.M.C I D Thomas, M B Sydney Norendradas Jayaratnam Walloopillai M.B Ceylon.

Licences to practise were conferred on the candidates named in this week's report of a meeting of the council of the Royal College of Surgeons as having gained the M.R.C.S., and on the following:

B M. G Clarke Alan Gibbons Janet Goodall N A. Waring

The following diplomas were granted jointly with the Royal College of Surgeons:

D.A.—Raghubar Prasad Badola Elizabeth R Bakirgian, Pauline W Balmer Dipali Banerji Lucie Bass Edith M Beecher Bryant Marion Berry A J Booth T D Bourke G M. I Boyes, Katherine P Boyle B J Brandstater R C Brookes J R Brown R. A. Browne Daphne Burkinshaw, T V Campkin Mercedes D Carrel, P A. Caswell, Anne W Christie K J Covell, Eileen M Cox D C Craig Agnes M. S Curry Margaret F Darling, D D Davies Eileen Davis W G Dawson, B E G D Dias G W Duckworth P G Dunbar C. J R. Elliott C D H Elton Robert Erskine-Gray Jean C Farrell, M. S. Flinn, Grace M S Forrest I A Foster Margaret J Francis Stanislaw Kazimierz Ganczakowski B F Gates, J H S Geggie Ann M. Haines, Jessica M. S Hamilton Lelia Harris Khwaja Saeed Hasan Mary P Hegarty J W Herries, D C Hodgson, J D Howard, B G Jackson, Cecily Jennings S P Jessman, D M. Jowell P D Kempthorne Dina B Langrana Shinmen Liu, Patricia M Lumb, K G Lupprian, Judith Lyne Irene M McAndrew R. M A McClelland Andrzej Mackiewski B L V McLaughlin Jocelyn P Mandelstam W L Mathie M R. Mellot N J Micklem D D Miller Prabhat Kumar Mitra K J Moran, D H Morris Hilary L. Morss Balaram Mukhopadhayay Mary I Murray J M. Myles Margaret M O'Donoghue K H Oldfield Denis Ollivere Teresa R. O'Rourke-Brophy Joseph Ozinsky C I B Parry, Margaret Patterson Joan K Perkins G F M Pierce A I Pitcher Yee Kit Poon, Marion I Record M. G Rolfe Florence D R. Samarasinghe C D Sanders Isabel R Schooling, J I Shanahan, B R. J Simpson, D W Smith T J Stanton D C C Stark Thomas Thomson Valerie A I Tucker Florence V I Turple Charles Waller Christopher Walsh Anne T Whelan, Joan A. Whelan, Helen White, Clare L. Wildeboer, Stella M. Wilson Shelagh R. Wimhurst D A Wright Kathleen G Wright W J Wright J V I Young I M E. Youngman

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[1] Research Council memorandum no 31 Psychological for Accident Proneness and Industrial Proficiency: a ary of reports nos. 38 55 68, 71 and 84 of the Industrial Research Board By F G CHAMBERS H.M. Stationery 1955 Pp 30 2s

D C H—Denise Hull

D.L O—Kandaswamy Balakrishna, Pradyot Kumar Basu, P J Briggs R A Crook Charles Dausie, Chandra Coomar Dey, Naji Ahmad Hamdi, Ruth M Jackson, Akkasetty Subbarangasetty Kantha Rajasetty, J C Ryan Ahmad Samad, Jack Sunderman, H N Waller, R A Williams G J A Wilson

D I.H—G C Acres John Attard, Sailendra Kumar Bose, G C R Carey, W W Cowen D H S Griffith, W T Jones Jogindar Singh Khurana S J Krister E H Lamb J O G Lockyer, D M O Lowry P O M McGirr J W Murdoch W P Nelson Hla Kyaw Pe T A I Rees Ahmed Mostapha Riad, G L Ritchie N D Wayne

D M.R D—N H Aldridge L J du Preez David Edwards Shirley E Eutrican W C Heron Kazi Shamsul Huque, Catherine V Krafft Omar Bin Din, W M O Purcell Arun Rattarangsi M J Ryan M M Schechter Jogendra Prasad Sinha G C Stavrakis

D M R T—H D Batt P F Bodkin, T B Browin, J C Courtney, Hazel L Davidson Hung Chiu Ho Youssef Nasrallah I M Shulman A J Ward

D O—Hamid Hamdi Almosulli, Sheik Nascer Bakhsh, G G Bisley J P Berger I L Bradfield, M I Garber J K Hart, Anna M K Little C J Louw George Mangan, Krishna Swami Mehra P A Pittman G G Powell, Jagdish Raj Sethi, Bakshi Ram Shukla Yamuna Dagadoba Uzgare, Alphonsus Walsh

D Path—Leonard Bernstock, D A L Bowen Moses Levene Leslie Michaels, N E Rankin, P D Roberts, T P Telfer T A White

D Phys Med—B G B Christie M L Fearnley, J H H Glyn J B Morrison D C Symington

D P M—W J Abel A P Baker, Rosalind I Bearcroft, M H Beaubrun W G A Begg M C Berg, Neville Berlyne I A Cameron J M Collins, W J H Collins P S Cook, S I Davidson Ralph Emery K J Fisher W L Flanagan, Mary E Forrester A J Graham Mounir Khalil Ibrahim Margaret R Inglis, Friedrich Kratter Narcyz Luklanowicz P I G Quinn P H Rogers H K Rose David Sherret B H Vawdrey, G G Wallis, P J F Walsh, Hilda R Webber, Rodney Wilkins

D P H—W F Adams F M Backett, Victor Blackman, Santi Bhusan Gupta Choudhuri Anuprasad Purshotam Dikshit J F Epsom G M Hazelle J F B Hill H M Hugh Monica Kerrigan Patricia Martin Attar Singh Nagpal J L D Roy C M N Williams

D T M & H—G M Antal, Kamaluddin Barkatullah, Rakhur Krishnlengar Bhagavan R G Bird Dwijendra Nath Bose Bakir Ali Musbah Dajani Nirmalendu Das, Shirley L Ferris, Angela Guest Hafiz Mohammad Saadullah Hamidi, C F Hansford, R D Harland G F Harris, H A Karrach Bashir Hasan Khan, A M Kissaun Kwasi Assoku Kwarko Ramchandra Dattatraya Lele, Bruce McMillan M G Mayor J S Morner, Bhim Prasad Mozoomdar, C A M Murray J E Noble, S G Phillips B A Rapier, D G Richter Levin C W Savile, Allan Scott Jagdish Narain Singh, K D B Thomson Ravi Shanker Trivedi John Twomey Dorothy M Wreford Smith, S H Wydell

Marc Daniels Memorial Lecture—Mr and Mrs Daniels have given to the Royal College of Physicians and the Medical Research Council a donation to found a lecture in memory of their son, Dr Marc Daniels The first lecture will be given by Sir Geoffrey Todd on Thursday, Jan 12, 1956

Royal College of Surgeons of England

At a meeting of the council on July 28, with Sir Harry Platt, the president, in the chair, Dr Loyal Davis (Chicago) was admitted to the honorary fellowship of the college A Moynihan lectureship was awarded to Prof Henry M Weyrauch (San Francisco) The Hallett prize was awarded to Dr B J Dooley (Melbourne) Handcock prizes were awarded to M A. Harper (Birmingham) and J L McClure (London) A diploma of fellowship was granted to Mrs R H M Adams Diplomas of membership were granted to the following

Ezekiel Adewumi Bolaji Adenuga P L Aston, D W Atherley, Joan W Baker, E E P Barnard, D G Barrowcliffe, G C Bates J A Beal J C Bell R B Bennet J W Bennett D H Black T N Blades, G R Bonner Morgan, P K Bridges, A D Broadhurst J M G M Brookes P F R Cantin, J H Clark, R S Coltman D W Daly Eileen M. Darwood, J M P Davies, T G G Davies, R B de Saram, K S Dicto-Spiff D A Earnshaw O N Eccles R. G B Evans S E A Ewa, Ekpo Edet Eyo, C O Farrow, Michael Fostiak, Denis Gardner Elizabeth George, C J Gibbs, Max Goldblatt J D Goode, A J Gray P F Gray, Elizabeth L Green Joan M Gunn, Sheila P Hancock, Abdul Afyz de Moronke Hardy R G Hardy, M A Harper, J P Hawe, L P Henry, Rachel S L Hood, I D Hudson, Millar Oboada Adafo Jaja, H H John, P McF O Jollie Jocelyn O P Kerley, J G King, John Landon, Rhona Lindup F E Loeffler, Doreen A Lowman, W J E McKee Joan M Mantel, Annabel J M Mason, Una K Merrill Stanley Middleburgh R C Morgan Robert Nall, H J L Nicholls, G D Officer, Mary J O Sullivan, T R A Otolorin, Rosemary J Owen, D J Palmer P H I Parsons, Margaret R Paton, G M. Petrie, T T Phillips Mary S Plumbly Raymond Radford, David Read, D W I M Sandilands Betty V Scott, Neville Sender Ian D Smith, J D Soleye K M Tankard Keith Thomas Edgar Wallace, M S Warwick B N Williams, Mary C Wood, R T C Worsley, Peter Wright

Other diplomas were granted in accordance with the lists which appear in this week's report of a comitia of the Royal College of Physicians

Royal Society of Tropical Medicine and Hygiene

At a meeting of this society to be held at Manson House, 26, Portland Place, London, W 1, on Thursday, Aug 18, at 7 30 P M, Sir Philip Manson Bahr will show a coloured film and coloured stills of wild animals and birds in East Africa

Royal College of Physicians of Edinburgh

At a meeting of the college held on July 26, w Davidson, the president, in the chair, the fo elected to the membership

F I Wright B P K Ryan, L Abelheim, G C A A Brash, O P Malhotra L G G Jones L J A K Ghosh, H G Dixon, B K Banerjee, K K Ker G C Willis, H A J Reay R W Smithells, C Baligh Ur R Qureshi, Moinuddin Khan Sandozi, G I Schneideman G M A Turner, J M. McKenzie, T J A Rundle, W G Tolleson J Duber V G W Mahmood J G Foster, S Sinha, R Shabtai, P J E P Thomas

Royal Institute of Public Health and Hygi

Sir Ernest Rock Carling will deliver the H at the institute, 28, Portland Place, London, W 6, and 7 at 5 P M His subject is to be Radiologica

Blair Bell Medal

At the opening of the British Congress of Obstetr cology in Oxford last week, Sir William Gilliatt, pr Royal Society of Medicine, presented the Blair B Dr Leonard Colebrook, F.R S, for his researches during childbirth

International Symposium on A

This symposium is to be held at the Ma Minneapolis, on Sept 7, 8, and 9, under the of Dr Ancel Keys Further particulars may b Dr Robert B Howard, 1342, Mayo Memoria of Minnesota, Minneapolis, 14.

Regional Planning and Development

An *international conference* is to be held at Be London, from Sept 29 to Oct 2 to study and scale regional developments such as river va reclamation schemes and community developm Further particulars may be had from Mr 45, Northcote Avenue, London, W 5

Nutrition Society

The Scottish group of this society is holding a in Aberdeen on Saturday, Sept 17, on chole metabolism in relation to diet and disease The include Dr R P Cook, Dr H W Fullerton, Rannie Further particulars may be had fro Thomson, department of midwifery, Unive School, Foresterhill, Aberdeen.

British Medical Association

The Sir Charles Hastings prize (£75) and the C Hawthorne prize (£50) are offered for the best essa by general practitioners, and the Nathaniel Bi prize (£100) for research in hospital practice (£50 and £25) are also offered to provisiona practitioners and medical students Further pa be had from the secretary, B M A House, Tav London, W C 1

ADDENDUM—The folding chair described in last week (p 257) was designed by Mr E H. Tr

Appointments

CONNELLY, W J, L R C P E, D.P H deputy M.O.
school M O, Rotherham
CRAWFORD, J A, L R C P I, D P M part time c
psychiatrist to Birmingham child psychiatry cl
EVANS, A T G M R C.S, D O M.S ophthalmic surge
and North Westmorland and Dumfries and Gall
HALL, T E M B Lond, D P M whole-time senior
trist Saxondale Hospital Radcliffe-on Trent
STEWART T S, M B Manc, F R C.S F part-time co
surgeon, Hereford and South Worcestershire gr
WATTERS, N M M B Glasg whole time asst. o
Rotherham, Mexborough and Worksop areas for
school-clinic duties

East Anglian Regional Hospital Board:
BRUCE R A, B M Oxfd, M R C P senior reg
medicine, Cambridge area chest clinic
NAFRAWI A O, M B Cairo surgical registrar, G
and Gorleston Hospital
ORWIN, A., L R C P E registrar in psychiatry F
Addenbrooke s Hospitals
ROWLANDS, B C, M B Lond F R C.S consult
Peterborough hospital group
VALI, M A M B Bombay, F R C.S orthopaedic re
and East Suffolk Hospital

HYPERKINETIC SYNDROME IN EPILEPTIC CHILDREN

CHRISTOPHER OUNSTED
D.M Oxfd D C H
SEARCH ASSISTANT IN PEDIATRIC NEUROLOGY
HE OXFORD REGIONAL HOSPITAL BOARD

OGICAL *excess of energy is often found in*
lren with mental defect and brain injury, and
e particularly common when epilepsy is also
Affected children present major social and
oblems Their ceaseless activity and destruc
ursts destroy the physical and emotional
f their homes, and render them intolerable in
institutions There are grounds for supposing
umber of hyperkinetic epileptics has increased
d will continue to do so
or is based on a clinical and social study of a
yperkinetic epileptic children followed over a
ars. The etiology and evolution of the syndrome
ed An account of the epilepsies and electro
raphic (E E G) findings is given the treat
management of the children and their families
ed A brief note on the nature of hyperkinetic
is added with the aim of showing that such
may usefully be analysed in terms derived
oncept of attention

he Sample

re 70 children in the sample They form a
unselected series of all over active children
ulsive disorders presenting at clinics for
th convulsive disorders of all types The
opened in 1949 and closed in 1954 All were
sonally All were followed up until January

ecutive personal series of 830 children pre
h convulsive disorders 68 became over
l incidence of roughly 8% The sample was
n three general hospitals serving distinct
of rather different composition (Oxford
nd Northampton) the incidence of the
mong children presenting with fits was closely
e three centres

The Pattern of Behaviour

hological pattern shown by this group of
the features commonly recognised in brain
ildren All the children were grossly over
t he majority also showed the following signs

ibility
tention span
atter on the test results when given formal
ests.
sion of mood with euphoria as the abiding back

ve outbursts
son or absence of spontaneously affectionate

shyness.
fear

ranged from high normal to idiotic levels
ormalities when combined with intense over
tained for months or years made these
olerable in schools or ordinary hospitals
for their parents and siblings emotional and
oblems of a serious and intractable nature
ing case abstract describes the evolution of
e following pneumococcal meningitis and
es certain problems of management

MONTAGUE
was the son of healthy intelligent gentlefolk
ent service He had one elder brother Careful inquiry revealed no relatives with convulsive disorders. His father and brother were ambidextrous

The child was healthy until he was 7 months old He then developed a cold and after ten days became fretful and drowsy Four days later he had two generalised convulsions, the second of which continued for four hours until it was arrested by intramuscular sodium amylobarbitone on admission to hospital

Lumbar puncture gave a cerebrospinal fluid (C.S.F) containing many pneumococci and intensive treatment with intrathecal and intramuscular penicillin was given together with sulphadiazine and phenobarbitone On the third and fourth days of treatment convulsions recurred and were focal on the right side Exploration for subdural effusions was made through burr-holes, but none was found After the fifth day progress was rapid and the child was discharged after a month and was clinically healthy An E.E G made at the end of treatment showed no specific abnormalities.

He made normal progress on return home At 1 year he was standing crawling and saying words. At the age of 18 months his progress was maintained he now appeared to be left handed

At the age of 2 years 2 months he began to have right-sided brief minor motor seizures at frequent intervals Two months later he became over active Before each of these focal seizures his excitement increased for a day or two after each seizure his speech was slurred for twelve to twenty four hours. He was treated successively over the years with the following anticonvulsants (*a*) phenobarbitone up to gr $1^1/_2$ daily (*b*) phenobarbitone and Epanutin' (*c*) Mesantoin' both alone and with phenobarbitone, (*d*) Primidone ('Mysoline) All these drugs were pushed to the limit of dosage but none controlled his seizures

His over activity was first noted as pathological at the age of 2 years 4 months. His mother at this time regarded him merely as an exceptionally lively child No comment was made to her but the family doctor was warned the children s almoner was notified and the *mother was encouraged to return to the clinic as often* as she wished Two months later the child s behaviour began to disrupt family life He was noisy explosively aggressive unmanageable and disobedient euphoric and active throughout his fourteen hour day Spontaneously affectionate behaviour had stopped In the clinic his rapidity of movement was about twice the normal for his age and his attention switched from objective to objective at intervals varying from twenty to fifty seconds He was soothed both at home and in the clinic by pouring water rhythmically from bucket to bucket.

From that time his behaviour has remained unchanged in gross pattern though his aggressiveness and euphoria has varied from time to time He was 5 years and 7 months old when last seen, and the intensity of his hyperkinesia was beginning to wane His attention spans had lengthened His play was complex and well organised at times He remained affectionless

E.E.G studies (sleeping and waking) made at the age of 4 years 6 months showed numerous isolated spikes, and generalised spike-and-slow wave complexes occurred in short *paroxysms, higher in voltage over the* right hemisphere, increased by drowsing and by stroboscope A slow wave discharge of variable frequency focused in the left anterior temporal area

The family s response to this child s illness illustrates certain points that will be considered later, and is therefore briefly outlined

When the child was $2^1/_2$ the mother recognised that his behaviour was pathological and she asked for advice She was given *an explanation of the child s symptoms* based on a mechanical *model* She was led to see the way in which her *feelings towards the* child might alt towards extreme *and non rational* absorption in him She was advised to alternate care of the child between herself the father *and her own mother* she was to take *frequent short holidays* and to pay special attention to her other child

When the child was $3^1/_2$ she reported feelings you said that I would have him now for a moment but I granny have him regularly" (The child's behaviour was better in his grandmother's house and his fits there were less frequent) The mother was now markedly aged, the father, tense, the brother, ashamed

When the child was 4 the family were posted abroad to an appointment demanding a full social life On the urgings of friends the parents considered placing the child in an institution, but it was clear that they would in fact feel unable to part with him They talked freely at frequent visits revealing strong feelings of guilt and a desire to make some propitiatory sacrifice All attempts to give them insight into their feelings were scrupulously avoided instead they were encouraged to find some practical way of compromise The solution finally reached was that they employed as companion a single lady, devoted to children and eager for travel The mother and companion shared the care of the child between them

This solution has worked reasonably well Both ladies are devoted to the child, but neither is exhausted The mother has recovered her good looks, the father has made a successful tour, the elder brother appears to be a stable personality accepting the situation maturely

The Nature of the Mental Disorder

INTELLIGENCE

Intelligence tests were applied to the children, and in many cases a battery of tests was used including tests for the brain injured The results will not be discussed at length The series is arrayed in tables IX and XI, and it will be evident that, although the majority of the children were intellectually retarded, the syndrome was compatible with normal intelligence The intelligence quotients did not measure the gravity of the mental disorder

As might be expected, children tested on scales such as the Stanford Binet showed a wide scatter on the test results The features of distractibility and perseveration were evident in the test situation Except in those with specific speech defect, verbal scores were often well in advance of the general score.

The laterality of cortical dysfunction was not related to intelligence (table IX)

THE SIGNS OF THE SYNDROME

The first sign was tirelessness in play The mother's report was usually phrased "he is on the go all the time," or "he never stops running from morning till night." Soon euphoria became evident, together with aggressive outbursts and lack of concentration When the syndrome was established the following pattern was found

The child was ceaselessly active In all situations activity was maintained at a constant level The normal wide spectrum of possible rates of activity was narrowed Each segment of play was brief

Restraint evoked violent anger Rage outbursts were evoked by trivia, and although fierce, were brief, usually lasting from one to five minutes The transitions from euphoria to rage and back were abrupt, behaviour in this modality, as in others, showed changes in step-function form

Assaults were common For example, one 4-year-old boy attacked his father with a bread-knife inflicting a deep wound, then, as the mother said, "he skipped away laughing as usual"

In the majority spontaneously affectionate behaviour disappeared as the syndrome developed, returning again in those children in whom the syndrome regressed

Euphoria was constant. (In this context it is interesting to note that in some of the children smiling and laughing appeared as integral parts of minor seizures. Two children, who had frequent minor temporal-lobe seizures, ended each attack with a *fou rire* One mother described the laughter as "horrible", another said "he sounds so jolly that we all join in, we can't help it.") The signs of euphoria were highly sensitive to small doses of dextro-amphetamine sulphate (see ow)

Perseveration on simple common

The children showed a water that was curiously made use of this fact in the clinic While the mother was giving her flit rapidly about the room, baskets,' tearing up notes, evading the nurse's pursuit with th wing three-quarter. We found was turned on, all this would stop the child would spear across to stand, entranced, switching the off in rhythmic sequence.

Shyness and fear were absent. Th is silent in the clinic, often burying lap when addressed, he is a and reserved in the face of a strang hyperkinetic child is brash, he ahead of his mother and darts object that catches his eye.

The normal child is responsive to *stern countenance, the hyperkinet* to threats

Even those children with normal be taken out on the road without reins were often employed One ch moving bus while his mother was the fare. Another rushed down brook and was reached by his moth neck deep in the water Three injured in traffic accidents.

Though fearless, and apparently of immediate impulse, some calculation in their rudeness. One fundoscopic examination with a until the face of the unsuspecting above him, and then he would spit eye which was unprotected Other signs of disregard for social playing with dejecta, public and pica were relatively common B universal, however, and 8 of the ventional social behaviour in spite symptoms of the syndrome in

Sleep was characteristically monly reported that the than their brothers and sisters.

RESPONSE TO DRU

Anticonvulsants

Mental symptoms were not directl vulsant drugs Phenobarbitone aggressions and over-activity. In 2 of phenobarbitone was followed the syndrome

Complete suppression of seizures appeared to initiate the syndrome in children the syndrome regressed so were suppressed Frequent da over a period, occurred in many developed syndrome.

Regular intensive anticonvulsa plainly necessary because of the dan ticus, a complication which, if hours, is fatal (Whitty and Taylor

Dextro amphetamine

These children showed a dextro-amphetamine sulphate 40 2 clear cut reactions were shown; was a reversal of symptoms resultin sive reaction, in 9 cases symptoms Of the remaining 4 cases the other 3 showed no gross change *ressive reaction*.—One child aged 5 years who had been euphoric and was intensely for more than a year without remission was ng of dextro amphetamine orally at 9.0 A.M. M he sat down and became abruptly, still M he began silently to weep and his usual s replaced by a grey pallor He remained motionless and weeping for four hours and ed over a period of two hours, to his habitual nd energy

s of a closely similar type were evoked in 27 g single oral dosages of 2.5, 5 and 10 mg iformly regarded the depressive state as less ian its converse, and they could seldom be persist with a trial for more than three days

essful reaction.—The response to dextro ne was good in 9 cases. The best response was a child aged 5 years 10 months who had antly over active aggressive and cruel for He had had salaam seizures daily over a ears but at the time of the trial these had nission for eight months The following are es evident after three weeks on dextro ne 2.5 mg thrice daily (They seem in fact curred quite abruptly on the second day of

e treatment	*During treatment*
and cruel to sib	(i) Friendly
d cat.	(ii) Strokes cat
lent	(iii) Obedient.
nc demonstrative n	(iv) Hugs mother and father
not be left with r a moment	(v) Can be trusted to remain alone without supervision for more than half an hour
hyperkinetic	(vi) Energetic at the upper limit of normal
	(vii) Shy
tion switching (Span 10–[illegible]5 sec.)	(viii) Attention switching absent (Spans of normal length and elasticity.)

ough rather less, improvement was seen in dren All those showing a good response had nission of epilepsy for more than four months of their trial

hole amphetamine has failed, in our hands, to ie excellent results obtained by Oettinger others

THE DEFECTS IN ATTENTION

ttempt crudely to quantitate the defects of he following technique was evolved

l was released in a clinic side-room containing mber of objects—wooden spatulæ, an old tin, ome paper a couch with blankets &c The irse, and doctor stood silent and made no ns. Each activity made by the child was the duration of each line of behaviour was bservations continued for five to fifteen each visit. The conditions of test were varied by making the test in more complex its. The results may be briefly summarised syndrome was fully established the defect of ehaviour showed the following components:

neous play was fragmented into unconnected

uration of each morsel of play was called the an Attention-spans were brief (usually ten to ls) At any given test the duration of spans around their mean value

inations between successive attention-spans were is phenomenon was called attention switching

ctivities within each attention span were self activity was precise and well coordinated.

rd tactics such as building a tower of bricks or ree spatulæ were performed at about $1^1/_2$–$2^1/_2$ eed of a normal uninhibited child.

Here is a segment of a record on a 5 year-old boy

Runs to couch climbs via chair puts head on pillow says: I'm in bed laughs; reaches out to blanket (11 sec.)

Rolls off couch (unhurt); darts to 4 spatulæ on floor arranged in a square picks up each in turn dropping each immediately; breaks one spatula (8 sec.)

Runs to door opens; shuts opens shuts opens and peeps out shuts turns key; withdraws key reinserts key half opens door (10 sec.)

Runs to table picks up book leafs rapidly through (no pauses); leafs through again and laughs; tears out page; looks at page; says 'It's a Robin Redbreast on a shovel' starts to put page back into book (12 sec.)

Attention switching was the last sign in the syndrome to appear and the first to remit

REMISSIONS

Remission or marked amelioration in the behaviour disorder had occurred in 19 children by the end of observation Control or remission of seizures preceded remission in 17 children Short spells (two to six weeks) in hospital induced temporary remission or amelioration of both seizures and behaviour in a number of children the remission was usually maintained for about a month after return home and relapse then occurred

Ætiological Factors

SEX

Males appear to be peculiarly liable to develop hyperkinetic behaviour in association with epilepsy Among the 70 children in the sample 55 (79%) were boys.

A sex ratio by itself is no safe measure of the ætiological weight of sex (Ounsted 1953) The ratio found has therefore been compared with controls in three ways

(*a*) The sibships from which these children were drawn are arrayed by sex in table I The affected children have a ratio of 330 males per 100 females, but the sibships from which they are drawn have a ratio of 111 males per 100 females

TABLE I—THE SEX RATIO OF AFFECTED CHILDREN AND OF THEIR UNAFFECTED SIBLINGS

Group	Males	Females	Total
Hyperkinetic children	55	15	70
Normal siblings	53	82	135
Totals	108	97	205

Sex ratio of whole sibships: 111 males per 100 females
Sex ratio of hyperkinetics 330 males per 100 females

(*b*) Within the over-all personal sample of children with convulsive disorders from which these hyperkinetic children were drawn there were 47 children with gross permanent hemiplegia A number of these hemiplegic epileptics were also hyperkinetic The hemiplegic group as a whole may be used as an example of brain injured epileptic children and the sex ratio here may be compared with that of the hyperkinetic group The figures are presented in table II. There is a significant excess of males in the hyperkinetic group (336 males per 100 females) as compared with the hemiplegic group (123 males per 100 females)

TABLE II—THE SEX RATIO OF HYPERKINETIC AND HEMIPLEGIC CHILDREN COMPARED

Group	Males	Females	Total
Hyperkinetic epileptics	55	15	70
Hemiplegic epileptics	27	22	49
Totals	82	37	119

$\chi^2 = 8.14$
Sex ratio of hyperkinetics 336 males per 100 females
Sex ratio of hemiplegics: 123 males per 100 females

(c) The ratio in the hyperkinetic group was also highly significantly greater than the sex-ratio found in the overall sample of children with convulsive disorders (135 males per 100 females)

Male sex seems, therefore, to be an important factor in the genesis of hyperkinesis per se This aetiological contribution is not due simply to an especial proneness of males to develop convulsive disorders in general, nor to any special proneness of males to acquire epilepsies associated with gross cerebral damage (cf Alstrom 1950)

GENETIC ENDOWMENT

There are at least four ways in which genetic endowment might contribute to the genesis of this syndrome

1 By a direct genetic determination to the syndrome itself
2 By a direct genetic determination to an epilepsy, with the syndrome as a secondary effect
3 By a genetic determination to some anatomical or biochemical perversion from which both the epilepsy and the behaviour disorder stem as secondary effects of common root
4 By a genetic determination to a particular physical habitus which provides a physique suitable for the evolution of the syndrome

These four possibilities are not mutually exclusive, nor do they cover all the possibilities of genetic influence

The sample has been analysed genetically as part of an appraisal of the role of genetics in the convulsive disorders (Ounsted 1955) The results of this analysis may be briefly summarised No relative within the kinships of the affected propositi was found to be similarly psychotic Out of 135 siblings 2 had gross mental defect and in 1 the defect was probably of simple genetic origin A further 4 siblings showed mild mental retardation

The pattern of risks, for various types of convulsive disorder, to the siblings of children with hyperkinesis was compared (1) with the pattern of sibling risks for children with chronic epilepsy of all types, and (2) with the pattern of sibling risks for children with minor temporal lobe seizures, associated with E E G foci of spike discharge in one or two temporal regions The pattern of risks is similar in all three groups

It appears from these tests

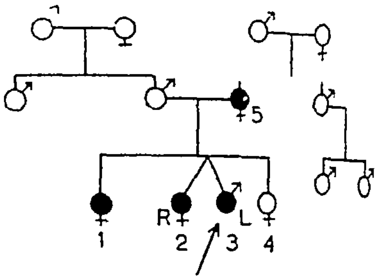
1 That there exists no direct genetic predisposition to hyperkinesis
2 That genetic predisposition to manifest convulsive disorders in early childhood may play an indirect part in the genesis of the syndrome
3 That no one specific type of genetically determined epilepsy is especially prominent in these children

The following abstracted case history illustrates this conception

Case 2 —Claud

The pedigree of this child is shown in the figure The patient is a boy and is one of a pair of oppositely-sexed dizygous twins 5 members of the family have had epilepsy The affected members are the propositus, his dizygous twin, his younger sib, their mother, and a maternal first-cousin All 5 affected members had a similar epilepsy All had grand-mal, generalised seizures of frequent occurrence, the attacks began in the first or second year of life and in all cases went into full remission within two years of onset All five had their seizures mainly during sleep between 2 and 5 A M After remission of their epilepsy all affected members except the propositus showed normal physical and mental development

The propositus had his first fit at the age of 8 months and thereafter had grand-mal attacks at night, two to four times a month, until the age of 17 months So far he accorded with the familial pattern, his mental progress was normal At the age of 17 months, having a mildly feverish upper-respiratory infection, he had one of his usual seizures but on this occasion passed into status epilepticus which was controlled with difficulty after seven hours



Pedigree in case 2 Reproduced from the *Eugenics Rev* by courtesy of the Editor

After this attack he was mentally nor months but then became increasingly active sive and by the age of 2 years 3 months h hyperkinetic syndrome in classical form. his twin and his mother He showed no affection He was brash and cruel. He His attention-span ranged between twent seconds His energy was reckoned at abo normal level At this age he was noted to be (and in this was unique in his family)

His seizures went into remission with primidone, the last seizure occurring of 2 years 7 months By 3 years he quieter and his attention spans were of norm elasticity At 4 years, though still energetic to be a normal child and his intelligence norms for his age except that his speech was 3-year level He remained left-handed

This pedigree strongly suggests the sim transmission of a dominant gene of hig generating an epilepsy of specific clinical patient, however, was the only affected family and the only member to have a epileptious The relation of his epileptic ge behaviour disorder seems to have been indir

PHYSICAL HABITUS

Physical habitus is not easily assessed i children, and somatotyping was not observations recorded are therefore merely

The large majority of the children had faces, short necks, square chests, and solid heavy muscular development in the limbs

TABLE III—AGE RELATED TO THE FIRST FIT CEREBRAL INSULT, AND THE ONSET OF H

Age at	Ye		
	1st	2nd	3rd
1st major cerebral insult	45	8	[illegible]
1st seizure	32	13	9
Onset of hyperkinesis	13	12	16

an impression of marked mesomorphy with mentally normal epileptic children

As the children in this series were years during which they were chronically the heavy muscular development and the facies seemed to become progressively mor The affected children were initially diverse but after a number of years some of th closely alike that observers commented like twins

These observations are mentioned only possible that physical habitus in the secondary to their hyperkinesia rather genetically determined physique The decided were somatotyping repeated from the onset of the syndrome for a period

AGI

yperkinetic syndrome is a disease of early
d

le in the series is arrayed to show the age at the
or cerebral insult the age at the first fit and the
o onset of hyperkinesia

were 69 children in whom the presumptive cerebral insult could be dated In 45 (65%) ary insult occurred within the first year and in the insult occurred within the first 5 years.

rst seizure (which often coincided with the nsult) could be dated in 69 children 32 children id their first seizure in their first year and within their first 5 years of life

volution of hyperkinesia was usually insidious riod of months or years Onset dates were less re, but were usually reliable to within 3 months. s dated in 69 children 13 (19%) became over their first year 41 (59%) were affected within 56 (81%) were affected before they were 5

lgures show that the evolution of the syndrome sociated epilepsy is characteristically completed first 5 years

HE NATURE OF THE PRIMARY INSULTS

ebral insults which seemed to have set in train tion of the syndrome were varied but the nvolved some acute episode Birth injury of a

ABLE IV—NATURE OF THE PRIMARY INSULT

and encephalitis	12
malformations	7
tosis fœtalis	2
n	18
auma	1
fantile hemiplegia (presumed due to vascular	
	4
ular accidents	4
uding status epilepticus	21
	1

gross type seemed to be responsible in 18 ute intracranial infection was the initial insult s cerebral vascular accidents occurred in 8 21 cases the epileptic fits themselves were as giving the initial insult—in 19 children in of a bout of status epilepticus (table IV)

e relations between the primary insult the d the onset of over activity were inconstant It is uncommon to find a lag shorter than one reater than three years between the insult and of over activity 62% became hyperkinetic iteen months

is, gross birth injury and status epilepticus ntil recent years a high mortality The n of chemotherapy and powerful anti s has reduced mortality sharply but has at ime increased the numbers who survive with brains This fact seems likely to have been for an increase in the number of brain eptics

The Nature of the Epilepsies

es of seizure were encountered The majority had more than one type of seizure (table VI)

TABLE VI—INCIDENCE OF VARIOUS TYPES OF EPILEPTIC SEIZURE (MANY CHILDREN HAD TWO OR MORE TYPES OF SEIZURE)

Nature of seizure	Number of affected children
A *Nature and laterality of major seizures*	
Generalised grand mal	44
Left-sided grand mal	18
Right-sided grand mal	18
Nocturnal grand mal	23
Status epilepticus	22
Febrile convulsions	*18*
B *Nature and laterality of minor seizures*	
Salaam attacks (akinetic fits)	17
Temporal lobe seizures	12
Generalised minor motor seizures	13
Left-sided minor motor seizures	6
Right-sided minor motor seizures	7
Myoclonic seizures	[illegible]
Smiles laughter and chuckles during minor seizures	6

Grand mal attacks occurred in 56 (80%) In 20 all the seizures were generalised but in the remainder some were focal

The number of children having left sided and right sided major seizures was the same, 18 had right sided and 18 had left-sided attacks. In 5 of these children febrile seizures occurred alternately on the left and on the right (This syndrome has recently been discussed by Liberson [1953] who has suggested ' febrile alternating convulsive hemispheropathy as the diagnostic label)

Bouts of status epilepticus were common occurring in 22 children In a number of children a bout of status epilepticus occurring after chronic epilepsy had been established seemed to be responsible for the conversion from normal to abnormal mentality

Minor seizures occurred in 47 children salaam attacks (akinetic seizures) in 17 minor temporal lobe seizures in 12 focal minor motor seizures in 13 (6 on the left and 7 on the right) generalised minor seizures in 13 frequent myoclonic attacks in 7 (nocturnal myoclonic attacks excluded) Pure petit-mal seizures were not seen

Suppression or remission of seizures for periods longer than six months, had occurred in 45 of 69 children at the time that the data were coded for analysis. This does not measure adequately the severity of the [illegible] for the duration of treatment was variable In [illegible] the data are arrayed to show the duration of the [illegible] in three ad hoc groups—the children in remission, the children who have died and the children whose [illegible] continues

Among these 45 in remission, 12 had [illegible] than four years, 17 for more than a year [illegible] than a year In the uncontrolled [illegible] have had seizures for more than four [illegible] a year and none for less than a year [illegible] as a whole 53 (77%) had epilepsies [illegible] a year

The course of the [illegible] response to anticonvulsants [illegible] disappointing

TIME RELATIONSHIP BETWEEN THE FIRST MAJOR INSULT AND THE [illegible] HYPERKINESIS

		Less than 1 mo	1 to 6 mo	[illegible]	[illegible]	[illegible]	[illegible]
g between first insult and onset of	Numbers of cases	4	14	[illegible]	[illegible]	[illegible]	[illegible]
lag between first fit and onset of	Numbers of cases	3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

the data was insufficient for accurate dating [illegible]

TABLE VII—DURATION OF THE EPILEPSY IN 69 CHILDREN

Group	Duration from first seizure							Totals
	Less than 1 mo	1–12 mos	To 2 yr	To 3 yr	To 4 yr	To 5 yr	More than 5 yr	
Epilepsy in remission for more than six months	7	9	7	0	1	6	6	45
Epilepsy not controlled	0	0	2	5	3	4	8	22
Died	0	0	2	0	0	0	0	2
Totals	7	9	11	14	4	10	14	69
	16		25		28			

The children were treated with phenobarbitone alone in the first instance next with phenobarbitone combined with a hydantoinate (epanutin or mesantoin), next with primidone alone, finally with primidone combined with a hydantoinate Courses of aureomycin (chlortetracycline) were also used in a number of cases

Remission rarely occurred with phenobarbitone, and the use of the drug was limited when it became clear that it could enhance both over activity and aggressive out bursts Primidone either alone or in combination with a hydantoinate proved the most effective and least toxic remedy Primidone seemed to be effective against both major and minor seizures, including salaam attacks

In a small number of children suppression of seizures coincided with worsening of behaviour, but this effect was counterbalanced by the larger number of children in whom unrestrained seizures led to bouts of status epilepticus and to worse behaviour

Sodium amylobarbitone given intramuscularly controlled status epilepticus, and there was no death from this complication in the 22 cases in which it occurred

In general, then, these children had severe protracted epilepsies Focal seizures, salaam attacks, and bouts of status epilepticus were prominent

Electro-encephalography

The practical difficulties of E E G work prohibited adequate examination of the whole group On 21 children no satisfactory record could be made 49 children gave technically satisfactory records A group of 20 children had serial records made repeatedly over a period of years, and from this group more reliable deductions are possible

The outstanding features of the polygrams are shown in table VIII In several children more than one major abnormality was found 6 children gave normal records but each of these was tested only once All the 20 children on whom repeated records were made showed a gross abnormality sooner or later, initially 3 in this group gave normal records

The spike and slow-wave or spike and-wave variant is a formation associated with salaam seizures and other epilepsies springing from subcortical foci showed this formation in 14 the pattern was g in 6 focal (usually in one or both temporal reg defined focal spikes were found in 22 children these the spikes were located in one or b regions, the remainder were evenly scatter the occipital, parietal, and frontal areas paroxysmal slow-wave discharge were less occurring in 7 children Taking the whole together, there were 17 in whom the major anomaly arose from the temporal areas

Of the 20 children subjected to repeated only 2 did not show either the spike and wave or a focal temporal lobe discharge on at least records The 2 heretics showed generalised 2- high-voltage slow-wave paroxysms combined discharges in their left precentral areas evidence from repeated records shows a not superficially evident The significance of t deserves no emphasis, but one may note common patterns—the spike and slow wave and the temporal foci—are not necessarily might represent alternative E E G expres functional perversion of a common (One might speculatively anticipate that would involve, perhaps, thalamic reticular hypothalmus, parts of temporal lobe such as dala, and possibly certain other tem possibility is mentioned here because perver system is also suggested by the pattern of disorder in these children—in particular by shown to amphetamine, the phenomena of hyperkinesis and of attention switching the affective behaviour, and the response to deprivation)

TABLE VIII—PRINCIPAL E E G FINDINGS IN 49 CHILDREN (SOME CHILDREN SHOWED MORE THAN ONE ANOMALY)

A	Generalised spike and wave variant	14	20
	Focal spike and wave variant	6	
	Focal temporal lobe spike discharge	12	17
	Focal temporal lobe slow wave discharge	5	
	Focal spike discharge from other areas	11	13
	Focal slow wave discharge from other areas	2	
	Generalised slow wave paroxysms	9	
	Random spiking	4	
	No gross anomalies detected	6	

B On 20 children repeated records were made over periods of 3 or more years
- (i) None of these children gave normal records
- (ii) 18 children showed either temporal foci or the wave and-spike variant or both features
- (iii) The 2 remaining children showed left pre-central spike foci and generalised paroxysmal slow activity

TABLE IX—INTELLIGENCE QUOTIENT RELATE LATERALITY OF CORTICAL DYSFUNCTIO

Group	I Q 0–39	I Q 40–
Children with left hemiplegia	1	1
Children with right hemiplegia	3	4
Children with left focal E E G discharge	3	4
Children with right focal E E G discharge	1	3
Children with established left handedness	4	10
Children with established right handedness	3	5

Laterality

Cortical function was clearly abnorma children The question of whether the le hemisphere is especially involved, or wh hemispheres are equally at risk, is of inter the neurophysiologist and to the neurosurge examined the matter in four ways by con evidence

1 From unselected hemiplegic epileptics
2 From focal clinical seizures
3 From focal E E G discharges
4 From dominant handedness

Hemiplegia —In an unselected group of with epilepsy and hemiplegia there were 1 showed the hyperkinetic syndrome Of the triple disability 6 had a left-sided and 8 a hemiplegia Of the 34 who lacked hyperkine left-sided and 21 a right-sided hemiplegia and right hemiplegia were almost equally com hyperkinetic epileptic hemiplegics Among hyperkinetic, right-sided hemiplegia was r common, but this increase was not of statis cance on our figures

—RELATIONSHIP BETWEEN THE CHIEF E.E.G. FEATURES AND HANDEDNESS

E.E.G.	Left handed	Right handed	Untestable	Totals
discharge	10	2	1	13
l discharge	4	7	2	13
l left focal dis-	3	3	0	6
l discharges	2	4	5	11
nomalies	1	3	2	6
nade	7	7	7	21
	27	26	17	70

seizures —As has been shown (table VI) focal l occurred equally on either side (18 on the left ne right) Minor focal seizures were equally on the left and on the right

lsed E E G abnormalities —Tables IX and X e distribution of major E.E.G disturbances the two hemispheres 13 children had disturb nonstrably focal in the left hemisphere, and 13 ilarly affected in the right hemisphere It is t, by this test also, the hemispheres are equally

lness —Dominance for skilled manual acts could ed to one or other hand with reasonable cor 53 children Special observations were made on t at each visit during attention span timing were asked to observe and report on handedness visit The main points of interest were:

ost exactly half the group were left handed (27 of 53)

dedness appeared to be unrelated to the degree of llectual deficit Nor was intelligence related to the ality of hemiplegia clinical focal seizures and of l E E G disturbances (tables IX and X)

ough the distribution of intelligence scores was not ed either to the laterality of lesions, or to lateral inance speech defect was more common among the handed After excluding all hemiplegics there was a group of 10 children in whom a defect of speech grossly disproportionate to the general intellectual : 7 of this group were left handed

lren showing lateralised E.E.G disturbance showed a ked tendency to exhibit dominance in the ipsilateral l (table X, boxed figures) Of 12 children with left l foci 10 were left handed; of 11 with right sided 7 were right handed

this evidence it seems reasonable to suppose hemispheres are equally at risk for focal lesions l dominance as shown by handedness appeared n either hemisphere so those factors of genetic nt and social training which determine handed ormal children are here overruled

TABLE XI—INTELLIGENCE QUOTIENTS

I Q	0–39	40–69	70–89	90 and over	Total
f children	15	20	19	16	70

Parental Reactions

pædiatric commonplace that the mother of a afflicted child shows a fiercely defensive o the outside world The fact that our patients developed and on occasion regressed under on permitted some observations on the nature aces, and management of this parental attitude o of their repugnant behaviour the affected evoked strong devotion from their parents. ntal devotion increased as the child s behaviour ed and in 60 of our 70 families it assumed a istic pattern (Excessive parental devotion is case suitable for inscription in clinic notes for are sharpish and apt to read what is written upside down, as they give the history We have therefore been compelled to employ the grim neologism ' hyperpædophilia to record this parental attitude)

The excessive demand for care and attention imposed by the children s behaviour evoked in the parents a corresponding hypertrophy of parental devotion The parents withdrew from society and from the pursuit of normal pleasures Thus one mother stayed with her child, within doors, by day and night without break for two years She arranged for a neighbour to do her shopping and for her husband to take the other children out to church and school. Her visits to the clinic were made in a hired car with the child swathed in a blanket these visits were the only occasions on which she left her home The child was cruel, dirty and affectionless

Another mother whose hyperpædophilia had resulted in much marital dysharmony, was persuaded to take a day trip by coach to Brighton Two reliable relatives were called in to stay with the child A new dress was presented for the occasion by her husband. Her agitation was obvious on the morning of the outing and in fact she halted the coach after 10 miles of the journey and returned home directly She explained Something came over me and I knew in my heart I must not leave him

Hyperpædophilia had undesirable consequences of three types

1 *The family* —The mothers were physically and emotionally exhausted Secondary results were neglect of other children and marital dysharmony Fathers and siblings were emotionally disturbed and withdrawal from society with a sense of rejection occurred Sacrificial spending of money on quacks and patent medicines was common

2 *Conflict with medical and school authorities* was common Any blunt offer of institutional care was resentfully rejected I won t let them put him away was the usual response to which was often added we can t bear to part from him ' A suspicious and resentful attitude to medical and social workers was usual Spells of institutional care proved highly beneficial to the children but were difficult to obtain until this parental attitude had been modified

3 *The affected child.*—Both the behaviour disorder and the epilepsy appeared to be nourished by hyperpædophilia. When the child was placed in emotionally neutral surroundings both fits and behaviour improved only to relapse after a period at home (The relief of epilepsy by maternal deprivation is common in mentally normal epileptics.)

Management of the social and medical problems demands the coöperation of many services—the family doctor the school and public health services and the psychiatric and pædiatric services Happily such coöperation grew up spontaneously in the present study around a special pædiatric clinic for epileptic children

The general management of the child and his family is essentially the same as that commonly employed for any other chronic mental disorder

The parents confidence had to be earned by listening to all they had to say Criticism is not useful Explanation in terms of simple models both of the fits and the behaviour helps to relieve panic

Guilt and ambivalence in the parents required simple measures of guidance but attempts to increase insight proved valueless in the present study Practical assistance with housing domestic help and holidays were valuable

Early diagnosis was essential for effective management and was facilitated (*a*) by following up all children with severe convulsive disorders (*b*) by timing spontaneous play at each visit and (*c*) by trial doses of dextro amphetamine

Short spells of a month in hospital or at hostels were arranged for a number of children These holidays were acceptable to parents who rejected more permanent institutional care These breaks gave parents a needed rest and often produced a transitory remission in the child The use of hospitals on a short stay basis was obviously an economy Skilled paediatric almoners proved indispensable and often the most important members of the medical team

Some families required no management One large family, consisting of a coalman, his wife who was a charwoman, and six children, made the best adjustment found in this group The affected child was an idiot, having seizures both daily and nightly, and showing grossly deteriorated behaviour The family shared out the duties of guardianship evenly, and each played his part loyally for four years Once a week the family took the child to the chapel of a Spiritualist sect so that he might "receive the Spirit" by the prayers of the congregation None of the self-punishment found in other families was evident, the normal children showed a steady gentleness to the affected child which evoked respect

The parental responses are those found in epilepsy in general (Pond and Bidwell 1955 Ounsted 1955), with a hypertrophy of symptoms evoked by the energy of the child's disorder

Discussion

Physiological over activity is efficient in that the rate of energy production is tightly linked to the speed at which goals are achieved in a phrase "the harder you work, the quicker it is done" Pathological over activity is inefficient in that there is a high rate of energy production without a corresponding increase in the rate at which goals are achieved

Over activity may involve emotional, physical, and mental systems equally, as in some manic states, in thyrotoxicosis and in chronic anxiety Dissociation may occur the aimless laboured writhings of congenital choreo athetosis may conceal a calm and purposive intellect, the ceaseless muscular jerkings of Sydenham's chorea gravis may be accompanied by a schizoid shallowness of affect (Ounsted 1950)

Our patients exhibited a global hyperkinesis which was physiological in its muscular efficiency and pathological in the nature and number of its goals

The extensive literature on mental disturbances in epileptics has recently been reviewed as to cognitive functions by Fulsom (1953) and as to personality deviations by Pruyser (1953) The consensus of opinions suggests that cognitive defects stem from brain-damage rather than from seizures per se, and that the idea of a single definable "epileptic personality" sprang from the study of selected samples

Goldstein's accounts (1936, 1939) of the response to brain injury, and in particular his concepts of catastrophic reactions, flight, and the simplification of environment, illuminate the nature of the hyperkinetic syndrome But Goldstein's holistic philosophy generates insights which seem æsthetic rather than scientific Critchley (1953) has discussed the whole problem with great subtlety

The pattern of mental disorder seen in our patients had much in common with that described by Mayer Gross and Guttman in the global dementia of diffuse cerebral disease in adults Our patients also showed features described by Rorschach and his followers as part of the "epileptic personality"

Psychodynamic schools conceive epilepsy itself as a relief or discharge of specific tensions Szondi (1947) suggests that suppressed aggression is released in this way, other workers consider that libidinal or masochistic drives are involved

The psychodynamic analysis is essentially expressed in verbal metaphor, and contrasts with, and is complementary to, the cybernetic approach, which employs statistical synthesis and mechanical analog works of Walter (1953) and Ashby (19 accounts of adaptive behaviour and its de objective mathematical form

The concept found most useful for underst patients' behaviour was that of "attention 1890, 1912, Jung 1954) Borrowing, and posit certain terms formulated by Ashby (1952), attention thus

> An organism or real machine making serial to an environment of specified variables that environment The organismal and variables engaged form a system An atten measured by the duration of such a syst physiological conditions an attention-span achievement of the goal of a given line of

In our patients the attention span show objective characteristics—namely, brevity, and an abrupt end point

Attentive behaviour towards an env appear lazy, or, as in our patients, over-ener quality may be called the brilliance of atte brilliance of attention may be measured by of standard tactics (Tactic in this sense preselected coherent morsel of behaviour such a tower of bricks) Our patients show thre the brilliance of their attention

1 That brilliance was excessive

2 That their spectrum of brilliance was nar

3 That their brilliance of attention was in inappropriate to the environment In fact the steadily over active regardless of environmental or else deeply asleep

Attentive behaviour at any moment m complex or a simple environment This fa called the scope of attention The scope of measured by the variety of environments engaged simultaneously during adaptive Our patients showed a defect in the scope in that their whole attention was engaged line of activity—ignoring dangers, threat Similarly the scope of their attention to environment of memories and sensations w in that they lost their ability to modify c to conform with social training and previo Their lack of spontaneous affection, their fearlessness, and their rage outbursts may in these terms

In a complementary manner attention ex ment The deployment of attention may be the number of *organismal* variables (or employed simultaneously in adaptive beha

A normal child exhibits a wide deployment A 4-year old playing with her teddy bear the toy with touch, sight, and kinæsthet simultaneously sing a lullaby, walk about and have within the fringe of her attention of her sister towards the sweet tin, the of the nanny preparing tea, the warmth of the cheek, and the scent of a hyacinth A brain in the same environment shows exclusive the sensations involved in each of a series of his several cortical subsystems are, as it wholly active or wholly still

The concepts proposed are crude but hav tage of providing a simple objective appro in the clinic Mechanical models, provided feed back mechanisms, display attentive beha may be measured in terms of span, brilliance deployment as defined

Hyperkinesia in our patients was of affecting all aspects of cortical functions seems plausible to suppose that the disord l perversion of one of the arousal systems These have been described by Magoun Jasper Hess, and others and have been reviewed in a detailed between the major authorities at a recent m (Delafresnaye 1954)

perience affords no ground for assertions but rvations suggest involvement of a system l with the maintenance of cortical activity with cephalic basis. *The defects in attention suggest* al nexus is subcortical The natures of the and of the E E G discharges suggest that ig lesions involving subcortical centres and the stem were present The responses to amphet ord with this view

gross anatomical deficit seems unlikely to be le for the following reasons. There was a al and inconstant time lag between cerebral l the evolution of the syndrome. Both the loci lic and discharging lesions and establishment of handedness was random between the hemi Neurological signs of chronic focal cortical ere absent in the majority The symptoms missions.

kinesia and epilepsy can and usually do, exist ntly of one another In our patients it seems at the systems subserving the two deviations me common cerebral territories and also showed features in that they required a period of n from insult to clinical exhibition and showed a dependence of the immaturity of the child for ntenance

investigation of similar cases might provide to the structure of attentive behaviour

Summary and Conclusions

ries of 70 children with fits and hyperkinesia d

affected children formed 8% of a large l series of children with epilepsy and other disorders

sex is a significant ætiological factor

syndrome usually evolves from primary insult tablishment of epilepsy within the first five life.

pisode of acute organic cerebral *insult appears* cessary initiating factor

insults form a heterogeneous group

tic endowment plays no direct part in the but may operate indirectly through genetically d epilepsies

dical habitus tends towards mesomorphy

common varieties of epileptic fit are found, tit-mal Focal major seizures, salaam seizures oral lobe attacks are common

tus epilepticus occurred in 22 children cerebral uring status epilepticus appeared to *initiate or* o the mental disorder

midone ('Mysoline') was the most useful anti t tested

ctro-encephalograms tended to show either the -slow wave pattern, or temporal lobe foci or

laterality of cortical dysfunction is not related k of hyperkinesia The left and right hemi vere equally often affected as shown by a focal seizures, E E G foci and dominant ss

lligence was unrelated to the laterality of sions.

dedness tended to be ipsilateral to the site of E.E G disturbance

16 Speech defect was more common in the left handed

17 The crucial anatomical nexus for the cerebral system responsible for the hyperkinesia may be sub cortical

18 The nature of the disorder is described and illustrated

Some intellectual defect is common but not invariable Hyperkinesia is constant. The energy level is inelastic and insensitive to the environment Changes in behaviour tend to occur in step-function form Rage outbursts are common intense, and brief Spontaneously affec tionate behaviour ceases Euphoria is constant and is sensitive to dextro amphetamine Perseveration in cyclical play is common. A curious attraction to running water is described Shyness and fear are absent The children are inattentive to dangers social training, and to their own persons. Sleep is profound

19 Anticonvulsant drugs though essential, do not relieve the behaviour disorder and may cause exacerba tion

20 Amphetamine produces an improvement in a quarter of the cases and a depressive reaction in two thirds of the cases Sensitivity to dextro amphetamine is valuable as a diagnostic test in early cases

21 Hyperkinesia is usually rated as double the speed or energy level of the normal child in the sense that standard tactics are accomplished in half the normal time

22 Attention switching occurs when hyperkinesia is most intense it is the last sign to appear and the first to regress

23 Attention spans are brief and inelastic

24 The content of an individual attention span is self consistent activity is precise and well coördinated

25 Parental attitudes assumed a characteristic pattern to which the term hyperpædophilia is given

26 Hyperpædophilia has undesirable medical and social consequences

27 The management of the children and their families is discussed

28 The nature of the hyperkinetic syndrome is discussed in terms of the concept of attention It is suggested that a simple clinical analysis can be employed to measure the characteristics of the syndrome.

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PARENTAL AGE AND MUTATION

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IN certain instances, human malformations are believed to originate by fresh mutation of single genes Knowledge on this question has been summarised recently by Haldane (1949), Nachtsheim (1954), and Neel and Shull (1955)

Mutation is supposed to be constantly recurring, but only occasionally are conditions favourable for its detection Achondroplasia, which is apparently due to a single gene in heterozygous state, usually occurs sporadically, as shown in the extensive survey by Mørch (1941), and in such cases it is believed to have arisen by fresh mutation The incidence of this condition, however, has a marked association with parental age Weinberg (1912) expressed the view that the high incidence of achondroplasia in lastborn children strongly suggested that mutation was the cause It was natural to think that older germ cells, possessed by older parents, might be more likely to show deterioration, in the form of genetical changes On the other hand, in conditions such as epiloia, aniridia, neurofibromatosis, and retinoblastoma, which also are thought to arise from time to time by fresh mutation, no clear relationship has been found between incidence and either parental age or birth order

Conversely, a disease in which the association with parental age is conspicuous—namely mongolism—seems not to be caused by a single gene mutation (Penrose 1954) This view is disputed by Kemp (1944) who considers that mongolism arises in the same way as achondroplasia To decide which view is correct, more data need to be collected, but even on the basis of existing material the question can be subjected to critical examination

Causes of Spontaneous Mutation

Spontaneous mutation in a cell in the germ line might be due to various causes, of which the two most obvious are (1) failure to copy the gene correctly at cell division, and (2) irradiation from natural sources—i e, cosmic rays and terrestrial radioactive substances Another cause may be (3) chemical mutagenic agents

Failure to Copy Gene

Let us consider the likely effects of type-1 mutation in relation to parental age There are very few cell divisions in the female germ line but many in the male germ line since the spermatogonia are continually dividing Thus the incidence of mutation due to failure to copy a gene at cell division would be unlikely to have any strong relation to maternal age, a marked increase of defects with this origin, however, would be seen at late paternal ages The incidence of such a defect would increase with the father's age at first in a fairly linear manner, presumably starting to do so at puberty, but perhaps accelerating later

Irradiation from Natural Sources

The effects of type 2 mutation, on the other hand, would be proportional to total exposure of germ cells to radiation, and this would be proportional to the time irrespective of the number of cell divisions The incidence of diseases directly due to this cause would increase with parental age fairly steadily, this would apply equally to fathers and to mothers The relationship between incidence and age of parents would not, however, be very marked and consequently it would be difficult to detect The theoretical increase in mean age of parents of these fresh mutants, compared with the population average, is easy to calculate Suppose that m_0 is the mean maternal age in the unmutated population, measured in years, and v the variance Then m_1, the me age for mutants, is obtained thus* $m_1 =$ In England, for example, the mean age of m_0, in the general population is 28 6 years standard deviation is 6 0 years, thus, m_1 36 0/28 6 = 29 9 years The same calcul made for age of fathers, but with less confide of inadequate data The mean, p_0, is prob 30 9 years, and the standard deviation is The expected mean age, p_1, of fathers of fre of this type, would thus be 32 3 years.

Chemical Mutagens

Under type 3, there is a possibility, su Haldane (1955), that chemical mutagens produced as toxic by-products of normal met they accumulated in the germ cells such ag affect ova more than sperms and would diseases which appeared at late maternal incidence perhaps rising with the square o In the case of mongolism, however, the mea incidence with the age of the mother is greate it rises exponentially (Jenkins 1933) Th a different kind of causation For example, th of a virus, or other such agent, growing and in the cytoplasm of the germ cells could in nentially with time It might act, conceivab of gene mutation, but more probably it would zygote directly through transfer of cytoplasm.

TABLE I—MEAN AGES, IN YEARS, OF UNAFFECT FOR SOME CONGENITAL MALFORMATIO

Condition, number of cases, and source*	Father's age (yr) (p)	Mot age (m
Data from England		
Mongolism (215) *a*	37 7	[illegible]
Anencephaly (21) *b*	31 8	[illegible]
Hydrocephaly (43) *b*	33 6	[illegible]
Spina bifida with hydrocephaly (18) *b*	34 8	[illegible]
Epiloia (12) *c*	31 7	[illegible]
Congenital heart-disease (386) *d*	32 0	[illegible]
Spina bifida (59) *b*	34 6	[illegible]
Achondroplasia (16) *e*	[illegible]	[illegible]
Control population	30 9	[illegible]
Trait with incidence proportional to parental age	32 3	[illegible]
Data from Denmark		
Mongolism (369) *f*	38 6	[illegible]
Epiloia (21) *g*	[illegible]	[illegible]
Neurofibromatosis (49) *g*	34 2	[illegible]
Achondroplasia (97) *h*	[illegible]	[illegible]
Control population	33 3	[illegible]
Trait with incidence proportional to parental age	34 9	[illegible]

* *a*, Galton Laboratory data, *b*, Penrose (1946), *c*, Penrose (1935), *d* Polani and Campbell (1955 (1952), *f*, Øster (1953), *g*, Borberg (1951), *h*, M

case association with the father's age wou significant The frequency of cell division in the gonia and the paucity of cytoplasm in the would both tend to minimise paternal tr A very sharp rise of incidence with maternal course, also consistent with many other ex such as hormonal mechanisms affecting the of the developing embryo

Difference between Parents' Ages

The difference between mean ages of mothers ($p-m$) for a particular condition is and critical measurement For example, if are raised because the condition is due to type the difference between them would rem constant, increasing only very slightly In th observed means are listed in table I mongolism, in spite of the greatly raised m

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* The formula is correct for all types of dist maternal ages

E II—MATERNAL AGE IN MICROPHTHALMOS
(Sjögren and Larsson 1949)

Microphthalmos *	Expectation based upon control Swedish population	Relative incidence	
		Observed	Expected
4	1 7	0 85	0 56
19	2 0	0 70	0 73
30	30 4	0 8	0 90
33	31 0	1 03	1 06
38	23 7	1·00	1 3
11	11 0	0 97	1 40
2	1 4	1 43	1 56
137 31 5	137 0 30 1	1 00	1 00

standard deviation of the control population is 6 8 the difference mean of the observed total (31 5) less trols (30 1) is 1 4 years that is more than twice its or 0 6 years.

*On the basis of linear increase with age

ulations have repeatedly *failed* to demonstrate ndent effect of the father s age (Jenkins 1933 33 Øster 1953) The low value of the difference 1 index of the same phenomenon The very t attributable to mother s age alone puts in rather a special category A weaker › purely maternal is observed in dizygotic Dahlberg 1926) another trait which cannot be attributed to fresh mutation

ation regarding achondroplasia is strikingly Here the father's age is increased much more mother s, as shown by the large differences ıeans both in English and Danish data, 3 4 6 6 years respectively It seems not unlikely hat the association of the incidence with the o is the main factor and that the raised mean mother is only a reflection of it due to the very lation between father s and mother s ages in l population (0 8) If so the cause of mutation oplasia may have to do with copying failure ensitivity of germ-cells during division (type 1) ously demonstrated, phenomena attributable to caused by natural radiation (type 2) would be with only slight increases in parental ages eases are shown actually by epiloia and by natosis both of which are believed to arise utation in the sporadic cases. The findings are but from the statistical point of view insig e those given by Neel and Shull on retino

A large group of sporadic malformations lue to fresh mutations in most instances, is y the material on microphthalmos collected and Larsson (1949) Table II gives the age 1 of mothers. This was not considered by the rs to be remarkable but as is clear from e-incidence column there is a slight linear mother s age increases The mean for micro m_1 is 31 5 years which differs from m_0 4 years, a quantity which is just statistically The expected difference, on the hypothesis causation would be $(6\ 8)^2/30\ 1 = 1\ 5$ years, in satisfactory agreement with observation ely information is lacking concerning ages of his series

congenital defects which may sometimes arise lt of fresh mutation it is not unreasonable to evidence of relationship to parental age An acrocephaly considered by Ferriman (1941) to mutation in many instances A significant maternal age has been found for this condition 938) It is possible also that some of the ental age relationship observed for congenital ly spina bifida and anencephaly (Penrose be evidence of the part played by fresh mutation This suggestion would only be valid in so far as these malformations were due to dominant or sex linked genes. Anencephaly, which sometimes has the appearance of a recessive trait (Böök and Rayner 1950) shows no appreciable association with either father's or mother s age (Record and McKeown 1949) The sample of 21 anencephalics in table I has a slightly raised mother s age, and the 43 cases of hydrocephaly without spina bifida have a greater increase In spina bifida with or without hydrocephaly, and in congenital heart-disease in so far as there is an increase in mean parental age it applies perhaps more to fathers than to mothers.

Comments

These inconclusive data are cited to emphasise the need for accurate and comprehensive inquiry in this field Yerushalmy (1939) produced evidence that for constant maternal age-groups, the father's age was significantly associated with the general stillbirth rate and with neonatal mortality The influence of the father was less strong than that of the mother, but its independent existence seems to supply evidence for supposing that fresh mutations not uncommonly cause mortality in early life It leaves open the question of the type to which such mutations might belong

Another question which requires much further study is the effect of parental ages in sex linked diseases such as hæmophilia and the Duchenne type of muscular dystrophy Haldane (1946) has suggested that mutation of the hæmophilia gene may be much more likely to occur in males than in females—i e., usually in the germ cells of the maternal grandfather of the patient under observation If this were so the ascertainment of the grandfather's age at the mother s birth should be of special interest but so far no data have been published *on this point*

Summary

It is assumed that the gene mutations, which are responsible for certain human diseases and malformations can originate in several different ways.

An attempt is made to differentiate causes of mutation by examining their relationships to parental age

The influence of the father's age is shown to be of critical significance When the effect of the father's age on incidence is appreciable, as in achondroplasia, the hypothesis of fresh gene mutation as the cause is strengthened When it is absent as in mongolism other mechanisms must be postulated

Slight increase of both father s and mother s mean ages may be shown in conditions originating in mutations caused by *radiation*

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CONTROL OF PSEUDOMONAS PYOCYANEA INFECTION IN A UROLOGICAL WARD

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IN July and August, 1950, a severe outbreak of bladder infection with *Pseudomonas pyocyanea* occurred in a ward largely devoted to the treatment of patients undergoing prostatectomy We describe here the investigations undertaken during the outbreak and the measures taken to control it and to prevent a recurrence Although *Ps pyocyanea* was the predominant organism in this outbreak, other organisms may also lead to bladder infection before and after prostatectomy, and we believe that the system of bladder drainage evolved has greatly reduced the incidence of all types of bladder infections in this ward

Investigations

The ward in question, which contains seventeen beds, is in an old part of the hospital and has not been modernised Bed spacing is just adequate At the time of the outbreak the sterilisation equipment was far from ideal, there being only one small instrument steriliser in the bathroom where all dressing trolleys were prepared before being wheeled through a small corridor to the ward

Method of Bladder Drainage before August, 1950

If bladder drainage was considered necessary a self retaining catheter of the balloon type was used The majority of catheterisations performed on the ward were done by the male nursing staff Urine was drained from the catheter by a long rubber tube which dipped into the open end of a bottle on the floor or a urinal No attempt was made to ensure a closed system of drainage When the patient was out of bed, leakage of urine was prevented by plugging the open end of the rubber tube by means of a wooden spigot Bladder washouts were given every morning, and catheters were changed every third day Catheters and rubber tubes were sterilised by boiling , but as no large steriliser was at that time available in the ward, the collecting bottles were all immersed together for at least half an hour in a large metal bath containing 'Dettol' in 5% solution (Hayes 1949) The dettol was changed daily

Preoperatively, patients with an indwelling catheter received ammonium chloride to acidify the urine, whilst postoperatively all patients were given sulphonamides and penicillin for five days

Incidence of Infection before September, 1950

It had been our custom to examine bacteriologically specimens of urine from patients admitted for prostatectomy, at the time of admission, before operation, on each of the first five postoperative days, and immediately before discharge from hospital The records of 1949 and early 1950 revealed that there had been a constant incidence of infection due to *Ps pyocyanea* which had never reached serious proportions to August, 1950, however, this incidence alarming pace and by August *Ps pyocyanea* wa from the urine of every patient who had an catheter (fig 1) The incidence of *Ps pyocyan* during the above period does not, however, truly indicate the general incidence of infection in this ward With 1 exception all patients undergoing prostatectomy had urinary infection at some time during their stay in hospital, and only 5 were discharged with a sterile urine Second to *Ps pyocyanea, Escherichia coli* was the org- commonly isolated

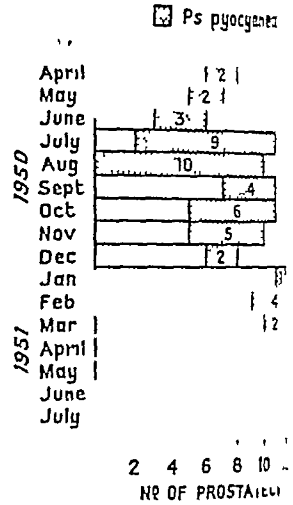

Fig 1—Monthly incidence of Ps in patients undergoing

We were unable to prevent urinary infectio bladder washouts with mercurochrome Phen ('Phenoxetol') (2 2%) washouts usually ch *pyocyanea* infection within a few days, and routine procedure whenever the organism wa Berry (1944) and Gough et al (1944) had on this antiseptic against *Ps pyocyanea* But m tion of the *Ps pyocyanea* from the bladder wi ethanol never resulted in a bacteriologically s Bladder washouts as a method of attacking problem of urinary infection in the pr indwelling catheter seemed unsatisfactory an approach was indicated

Bacteriological Investigations of the Wards

In August, 1950, when the *Ps pyocyane* was at its height, a series of bacteriological was undertaken to trace, if possible, the so infection One serum agar plate was exposed bed in the ward when bedmaking and dust progress In seven out of seventeen plates Ps was cultivated, the maximum number of any one plate being two In five of these sev the occupant of the overlying bed had a Ps infection, and in the other two the patient in t bed was infected It was concluded that th was present in the dust in the ward and th spread of the infection could occur

We next turned our attention to the patient bedding In 2 patients known to have a bladd of *Ps pyocyanea*, cultures taken from the anterior urethra, and the free end of the catheter all yielded a profuse growth of th It was also recovered with ease from the p the sheets of the same two men It appeared that the bedding of a patient with a bladd could be contaminated and that the atmosp be infected during bedmaking

The methods used in ward dressings were Before each dressing the nurse scrubbed up at a basin in the ward, using a nailbrush whic immersed in 5% dettol solution, the dettol be daily A "no-touch" technique was follo procedures except for passing a catheter

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* Aided by grants from the University of Leeds the Yorkshire Council of the British Empire Cancer Campaign, the board of governors, United Leeds Hospitals and the Leeds Regional Hospital Board.

,h a dressing round and without warning the iff previously, cultures were taken from the ıands the dressing trolley, the instruments, sh, the dettol solution in which the nailbrush sed and the sides of the washbasin A heavy *Ps pyocyanea* was recovered both from the ınd the sides of the washbasin Pathogenic were not isolated from the trolley and instru ıe dresser s hands yielded a few colonies of rganisms Cultures were also taken from a r immersion for thirty minutes in 5% dettol the dettol itself both yielded a profuse *Ps pyocyanea* The next day the organism ,d again from the nailbrush, a sterilised , the dettol solutions

hus clear that, should one patient in the ward l with *Ps pyocyanea* there was every oppor ıt to spread to other patients The dresser s d become contaminated in passing a catheter ng a urinal he would subsequently con the nailbrush and he would start every dressing with infected hands Finally an erson s urinal would contaminate all other ing the period of immersion in the dettol bath

ethods Used to Control the Infection

xperience the majority of men with prostatism erile urine on admission to hospital and ıt kely that subsequent infection of the urine e from the kidneys or the bladder wall The ıight reach the bladder as a result of

sterilisation of the catheter;
in the technique of handling the catheter
ion carried on the tip of the catheter from the thra;
ritis developing as a result of the irritation caused elling catheter; or
ıon travelling along the lumen of the catheter

as no reason to believe that the sterilisation ıeters was faulty It was thought necessary o improve the technique of catheterisation ale nurses were instructed to pass catheters no touch " technique the catheter being by means of forceps Student nurses found ılt. The wearing of rubber gloves whilst catheter had to be abandoned owing to the ıvolved and the fact that their sterilisation led work to an already over burdened nursing used instead mittens made of calico (fig 2) worn only when the catheter was being The care of these mittens caused little extra hey were sent to the laundry after use and then in bulk Nailbrushes were boiled each efore dressing rounds, then kept immersed in ution of *phenoxyæthanol*

ıring the patient for catheterisation the pubis d and the glans penis was cleaned but no as made to sterilise the anterior urethra before tion since we were anxious to keep the tech ımple as possible Some degree of urethritis (usually very slight) due to the indwelling catheter appears to be unavoidable but it can be minimised by changing the catheter every third day and whenever practicable by using small catheters—e.g 18 or 20 gauge. Each patient was given a bath, unless contra indicated before the first and each subsequent catheterisation

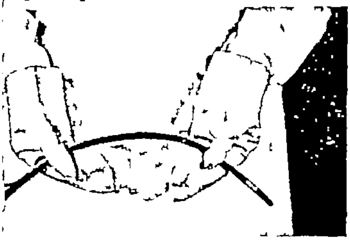

Fig 2—Calico mittens.

The most easily controlled route of infection appeared to be along the lumen of the catheter In view of the inadequate sterilising facilities in the ward it was essential to devise a complete drainage apparatus all the components of which could be autoclaved The apparatus chosen was modified from an intravenous administration set which had a metal screw cap for the bottle The long air vent on the metal screw-cap (fig 3) of the administration set was cut short and this became the inlet tube the old outlet tube becoming the air vent To the inlet tube was connected the rubber drainage tube which in turn was joined to the catheter by a Pyrex glass adaptor (The use of pyrex tubing reduces the breakage rate) Glass bottles of 1 litre capacity were used to collect the urine and before use these were autoclaved in wire baskets with individual compartments for ten bottles. The rubber drainage tubes each with a screw cap and a glass adaptor connected to each end were autoclaved in individual calico bags and stored for future use in the ward (Similar drainage apparatus has been described by Emmett [1940] and Lane [1949])

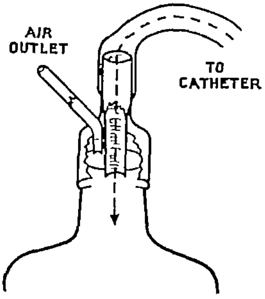

Fig 3—Metal screw-cap attached to the drainage bottle.

Immediately after catheterisation either in the operating theatre or in the ward and *before* the sterile towels were removed the sterilised drainage tube was attached to the catheter and the bottle screwed into place. This was to prevent the open end of the catheter or metal screw-cap from becoming infected by contact with the patient s skin clothing or sheets Specimens of urine for bacteriological examination were obtained by placing the screw cap of the drainage apparatus over the open neck of a specimen bottle (Temporary occlusion of the drainage tube before collecting the sample is helpful)

Individual wire baskets with handles, were made for the drainage bottles not only to reduce the breakage-rate but also to allow the patient to carry his own bottle when walking about the ward before and after operation This relatively unrestricted mobility we consider essential for patients with prostatism A small hook was added to the carrying handle so that the bottle could be hung from the side of the bed

The catheter and the drainage tubes were changed every third day but the drainage bottles were replaced by sterilised ones when they became full If the junction between the catheter and the drainage tubing has to be broken—e.g for bladder washouts—infection is inevitably introduced into the bladder (see below) For this reason it is advisable under these circumstances to recatheterise the patient and to connect a fresh sterilised drainage apparatus.

Technique for Irrigating the Bladder

Since the introduction of this method of bladder drainage we have abandoned routine bladder washouts confining such washouts to clearing of obstructing blood clot. Occasionally however bladder irrigations are required when using long-continued urethral catheterisa

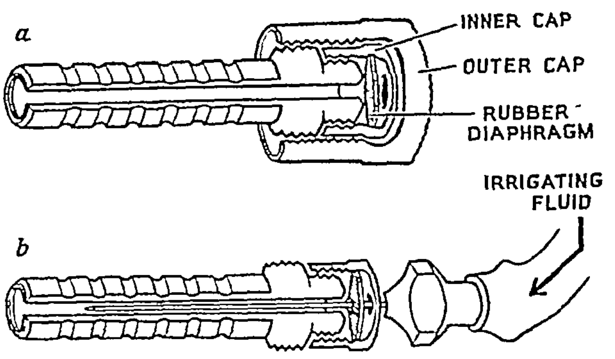

Fig 4—*a*, metal adaptor to fit the irrigating limb of a three-way Foley catheter *b*, metal adaptor with outer protecting cap removed and transfusion needle inserted through the rubber diaphragm

tion as a preoperative measure At first irrigations were given through the lumen of the catheter after disconnecting the drainage apparatus This method, however, resulted in the reintroduction of the *Ps pyocyanea* organism, although no other patient in the ward had such an infection The irrigation was next given through the irrigating limbs of a three way Foley catheter Again, *Ps pyocyanea* infection occurred It was thought that this was due to organisms gaining access to the lumen of the catheter or the irrigating limb of the Foley catheter, and attempts were made to seal this off A metal adaptor † (fig 4) with a rubber diaphragm was designed to fit the irrigating limb of the three way Foley catheter The adaptor was attached to the catheter before sterilisation The irrigating fluid was run from a litre bottle through a standard blood transfusion administration set, the needle of which was inserted through the rubber diaphragm of the adaptor after removal of the outer protecting cap The irrigation was performed during the night so that the patient could remain out of bed during the day

We have found domiphen bromide ('Bradosol') the most suitable irrigating fluid, and no more than 1 litre per day appears to be necessary The concentration of domiphen bromide in the bladder should never be more than 1 in 4000, and this concentration is attained by using a dilution of 1 in 2000 in the reservoir and adjusting the drip-rate to deliver a quantity approximately equal to the volume of urine entering the bladder from the ureters We have not observed any harmful effect from the use of domiphen bromide in such concentration If the strength is increased a small proportion of patients complain of pain and some have hæmaturia The 1 in 2000 solution of domiphen bromide was autoclaved before use

Results and Discussion

These methods may at first appear a little cumbersome, but in practice the routine is simple and it eases considerably the work of the nursing staff The results have been outstanding Infection of the bladder has been greatly reduced—indeed in patients who have had preliminary catheterisation before prostatectomy, the bladder has appeared normal on cystoscopy except for a small area in contact with the tip of the Foley catheter Ascending renal infection has now become extremely rare, and is virtually never seen in patients who have had no instrumentation *before* admission to our unit Administration of ammonium chloride was stopped when the drainage apparatus was introduced Indeed, no preoperative oral or parenteral medication to reduce the incidence of urinary-tract infection is necessary

The incidence of *Ps pyocyanea* infection fell sharply (fig 1) From March, 1951, onwards all patients received, in addition to sulphonamides and penicillin, streptomycin during the first five postoperative days, and t fell even lower Many patients who had had catheterisation or instrumentation before op discharged with a sterile urine or, at worst, only slightly infected (see accompanying tab

The over all morbidity and mortality afte tomy have also been reduced considerably introduction of these methods In the year 1952, 355 prostatectomies were performed and there were 7 deaths—a mortality of 1 97 the reduction in bladder sepsis resulting from of these methods increases the rate of epi of the prostatic bed and also reduces exce which could lead to stricture formation

The technique of nightly bladder irrigat described, has been used only in patient continued preoperative bladder drainage—i in patients admitted with severe uræmia prostatic obstruction (Parsons 1954) We used it in patients with retention who were operation within a few days, nor has it been the postoperative period Where, at the

INCIDENCE OF URINARY INFECTION AT TIME
IN PATIENTS WHO HAD HAD NO URETHRAL
OR INSTRUMENTATION BEFORE OPERATION

Date (1951)	Transurethral prostatectomy				Retr prostat	
	No	Sterile	Slight growth	Heavy growth	No	Sterile
March	9	5	2	2		
April	4		3	1	8	4
May	5	5			4	1
June	5	3	1	1	1	
July	7	3		4	2	2
August	4	3	1	-	1	
		19	7			1
Total	34	26		8	16	11

first catheterisation, there was no infection tract, the nightly irrigations of the bladde the urine bacteriologically sterile in the instances However, the method will establised infection This observation with in-vitro tests that have shown that properties of domiphen bromide are greatly the presence of organic material (J W McLe communication)

Improved techniques of ward dressing and tion, the use of streptomycin, in addition and sulphonamides, routinely in the postope and the improved drainage apparatus have contributed to the reduction of infection reduction was certainly manifest before the of streptomycin, and many of the strains of P met with have been insensitive to this antib Further, streptomycin had been used for a before the introduction of the bladder draina without any reduction in the incidence of in have no doubt that the use of the drainag has been the important factor in eradicating and particularly in preventing the spread from one patient to another

The isolation of *Ps pyocyanea*, not onl dettol treated scrubbing-brush and urinals b the dettol solution in which they were surprising, especially in view of the clai behalf of this antiseptic Hayes (1949) h in-vitro tests that when fresh solutions o used it is an effective antiseptic against th in the strengths in which we used it, wh are allowed to age, however, the antis decreases rapidly Since fresh solutions of th were made up in the ward daily, its failur d to ageing and its disappointing performance med by the results of our own in vitro tests.

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† Made by Messrs T H Spicer & Son, 8, Wordsworth Parade, Green Lanes London, N 8

Summary

reak of *Ps pyocyanea* infection in a urological oted largely to the treatment of prostatism ed.

break was probably due to errors in sterilisation

ghtening up of sterilisation technique and on of a closed system of bladder drainage in omy cases virtually eliminated the infection

nk Ciba Laboratories Ltd for a generous supply ol. We also thank Mr J Hainsworth and Miss pbell, of the department of medical photography a Hospital, Leeds, for the figures

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IA ASSOCIATED WITH ELBOW AND KNEE JOINTS

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hypotheses have been put forward concerning and causation of ganglia Of these hypotheses generation of connective tissue (Ledderhose ke 1908 Carp and Stout 1928) appears to be the rally accepted Little, however is known of s which precipitate this degeneration Brooks ggests that trauma and osteo arthritis of the joint may be predisposing factors. Seddon vours trauma to the capsule of the carpal a possible cause of cystic degeneration or herniation leading to ganglion formation otes that the trauma may be occupational In rauma was not thought to be an ætiological Clarke (1908) neither did he believe that nor abnormalities of the blood supply were

been stated that the lesions usually arise from iles (Carp and Stout 1928) and it is well known majority are situated close to the smaller carpal joints But the larger joints are not immune a have been described arising from the shoulder ber 1875) the elbow joint (Brooks 1952) the Cook 1952) and knee-joint (Brooks 1952) lia of the wrist arise from cystic degeneration tive tissue then it is reasonable to expect ions at other joints or indeed at any site of tissue So-called ganglia have been described om tendons (Thorn 1896) from periosteum 1887) and from the subcutaneous tissues no 1947) Cystic degeneration of nerves has ribed by Hartwell (1901) and Ellis (1936) cases described by Ellis the lesion was in the erve and gave rise to symptoms from pressure ve-fibres.

e here 14 cases of ganglia arising in the region bow and knee joints treated at University ospital between 1931 and 1955 These lesions rise to diagnostic difficulty since ganglia are only found in such regions In 2 cases the peared to have caused pressure on adjacent

Case records

GANGLIA AROUND THE ELBOW-JOINT

—A woman, aged 31 complained of pain in the right ree months duration One month before the onset of her symptoms she received a blow on the elbow from a door The pain was increased by gripping objects firmly in the hand. Tennis-elbow was diagnosed in the outpatient department but an injection of procaine into the tender area followed by manipulation failed to produce any improvement She was later admitted and examination revealed swelling and tenderness just below and anterior to the external epicondyle of the humerus. Pain was increased by movements of the forearm, but the elbow joint itself was apparently normal Radiographs of the joint showed no abnormality At operation an area of moist glistening tissue was found in the common origin of the extensor muscles This tissue was excised and the patient made an uneventful recovery

Case 2—A man aged 39 complained of a swelling on the outer aspect of the left elbow which had been present for a year On examination a painless smooth fluctuant mass $2 \times 1^1/_4$ in was felt on the lateral aspect of the joint The mass was fixed to the deeper tissues but not to the skin. Extension was limited in both elbow joints, and radiographic examination of these joints revealed osteo arthritic changes At operation a cystic tumour containing glairy fluid was dissected off the capsule of the elbow joint. The patient made an uneventful recovery

Case 3—A man, aged 33 also gave a history of a painless swelling on the outer side of the left elbow for five months On examination a cystic swelling was present over the posterior aspect of the lateral epicondyle of the humerus The cyst was attached to the extensor muscles of the forearm The elbow joint was clinically and radiographically normal Aspiration in the outpatient department had yielded a glairy fluid Operation revealed a cystic tumour in the origin of the brachio-radialis This was excised and the patient recovered uneventfully

GANGLIA AROUND THE KNEE JOINT

Case 4—A woman, aged 58 gave a history of pain and weakness of the right foot for three weeks She first attended her own doctor, who found a lump below the knee joint the patient had no symptoms from the lump nor any knowledge of the duration of its presence On examination there was an ill-defined fluctuant swelling measuring $3^1/_2 \times 2$ in in line with the fibula its midpoint being about 3 in below the head of this bone On active dorsiflexion of the foot the swelling became less mobile Sensation in the limb was normal, but there was a partial foot-drop with $^3/_4$ in of wasting of the muscles. The diagnosis on admission was sarcoma of the fibula but radiographs of the bones were normal The Wassermann reaction was negative At operation a tumour containing gelatinous fluid was exposed This cyst communicated above with the superior tibiofibular joint and below it ended in tendinous fibres which were fused to the peroneus longus muscle; no connection was found with the peroneal nerve The cyst was excised The patient recovered completely and the foot-drop and wasting of the leg muscles disappeared

Case 5—A man, aged 33 complained of a painless swelling over the outer part of the right knee which had been present for a year Six months before admission his doctor had aspirated from the swelling a little viscid fluid The patient was also suffering from pulmonary tuberculosis. There was a cystic swelling the size of a tangerine over the upper outer aspect of the right tibia, which appeared to be coming forwards from the head of the fibula No connection with the knee joint could be demonstrated clinically At operation, under local anæsthesia a multilocular mass containing a transparent jelly was excised. It appeared to arise from the tibialis anterior muscle and at its lower edge a narrow prolongation could be followed down in the muscle to a second small cyst

Case 6—A girl aged 15 had a year before admission developed an aching pain in the right leg and three weeks later a lump had appeared followed by cessation of the pain. The lump had not increased in size but a few weeks before admission the aching had recurred. She had not noticed any weakness in the leg On examination a cystic swelling 2×3 in was present in the upper third of the leg in front of the fibula. It was situated in the extensor muscles and was not well defined. The knee-joint was clinically and radiographically normal. There was a little blunting of sensation to pinprick in the distribution of the anterior tibial nerve in the foot and weakness of dorsiflexion of the big toe Intensity duration curves of the extensor muscles were normal. On Feb 23 19 3 operative exploration revealed a multilocular cystic tumour containing glairy fluid in the extensor digitorum longus muscle just superficial to the anterior tibial nerve The upper and lower limits of the cyst were tendinous, the upper one being attached to the tibia, and the lower one passing distally into the muscle belly After excision of this cyst the patient made an uneventful recovery, but the hypo æsthesia and weakness of dorsiflexion of the big toe have persisted

Case 7 —A man, aged 30, for three years had had a lump on the right leg just below the knee The lump varied in size, and was painful when enlarged, the pain radiating up and down the leg, exertion also increased the pain There was no history of trauma On examination an oval cystic swelling 2 × 1$^1/_2$ in. was present anterior to the head of the fibula The cyst was fixed deeply, but was not attached to the skin Clinical and radiographic examinations of the knee joint were normal At operation a tumour containing thick glairy fluid was found lying just anterior to the biceps femoris tendon No note was made concerning its origin except that it was not connected with the superior tibiofibular joint The patient made an uneventful recovery

Case 8 —A woman, aged 51, gave a three month history of pain down the outer side of the left calf She did not complain of any weakness in the leg, or of the presence of a lump Examination revealed a cystic swelling 2$^1/_2$ in long in the upper part of the peroneal muscles It was ill-defined, but slightly tender There was no weakness or hypo æsthesia in the leg, and radiographic examination of the leg bones was normal At exploratory operation no abnormality was found.

Case 9 —A man, aged 36, complained of recurrent attacks of pain in the left knee joint in the past eighteen months The joint also seemed to "lock" at times, but he did not state that it also unlocked suddenly On examination a relatively fixed soft fluctuant mass was felt on the medial side of the knee just above the joint line There was a little wasting of the vastus medialis A diagnosis of loose body was made, but radiographic examination of the knee joint was normal At operation a cystic swelling was excised from the site of the reflection of the synovial membrane deep to the capsule of the joint Recovery was uneventful

Case 10 —A man, aged 43, complained of a lump above the right knee which had appeared after a kick on the knee five years ago It had gradually increased in size and for six months before admission had been causing pain in the thigh which at times radiated down the leg Examination revealed a hard swelling just above the outer aspect of the right knee-joint measuring 2$^1/_2$ × $^1/_2$ in On tensing the fascia lata, the mass could not be definitely palpated Radiographic examination of the knee joint was normal Operation revealed a tumour, which oozed a jelly like substance, attached to the tendon of the biceps femoris muscle Recovery was complicated by an infected hæmatoma

Case 11 —A woman, aged 39, complained of a swelling on the inner side of the right knee which had been present for eighteen months, the swelling had gradually increased in size There was no history of trauma Examination revealed a lobulated cystic swelling 3 × 2 in just below the joint line on the medial aspect, it was not attached to the underlying bone or the skin, and the knee joint was clinically normal. At operation the cystic swelling was excised No note was made of its attachments

Case 12 —A woman, aged 50, had had a swelling on the outer aspect of the right knee for many years The swelling had slowly been increasing in size, but had not caused any symptoms On examination an irregularly oval elastic swelling, measuring 2$^1/_2$ × 1$^1/_2$ in was found overlying the head of the fibula The swelling was more freely mobile from side to side than vertically The knee joint appeared to be normal, and there was no weakness or sensory change in the leg At operation a multilocular swelling, attached to the capsule of the superior tibiofibular joint, was excised The patient made an uneventful recovery Four months later she was seen again in the outpatient department with a recurrence of the swelling This subsided spontaneously

Case 13 —A man, aged 39, complained of a painless swelling on the inner aspect of the right knee which had appeared two months previously after a blow on the knee from the starting handle of a car Examination revealed an oval cystic swelling, measuring 2$^1/_2$ × 1$^1/_2$ in, on the inner aspect of the lower third of the right thigh The swelling was beneath the deep fascia and did not appear to be connected with the knee joint Clinical and radiographic examinations of the knee joint were normal At operation
excised from the substance of the vastus
It was firmly attached to the capsule of the
but no communication was found with the
operatively the patient was found to have
distribution of the saphenous nerve, but oth
an uneventful recovery

Case 14 —A man, aged 39, complained of a
left leg which had been present for twenty years
increasing in size, and ached a little after walk
no history of injury or weakness of the leg
revealed a lobulated cystic swelling, 1$^1/_2$ in.
over the upper part of the fibula about 1 in.
tibiofibular joint The lump was mobile
relatively fixed in the vertical plane, and was
to the skin No abnormality was present in th
on clinical examination, and there was no
lesion of the lateral popliteal nerve At operation
swelling was dissected from the peroneal muscle
was traced upwards to the capsule of the
fibular joint, but there was no communicatio
interior of the joint

MICROSCOPIC EXAMINATION

Microscopic examinations, performed in 11
gave a common histological picture The
of a thick wall of fibrous tissue containin
clefts of various sizes, and lined by a layer of
like cells The clefts were most numerous
lining membrane, and disappeared in the
of the fibrous wall Despite the apparent
the sites of origin of the ganglia, the micros
indicates that such lesions arise from
pathological process

Discussion

Trauma preceded the appearance of the
3 of the 14 cases in this series, and it can
be regarded as an important ætiological facto
of the joint concerned was demonstrated in
and again cannot be implicated as a cause.
cases the ganglia definitely communicated
It is impossible, however, to say whether
primarily arose from the joint by herniation,
as a cystic degeneration of the capsule
joint communication The lesion excised
was found to lie close to the synovial reflectio
deep to the capsule of the joint The finding
an intra articular origin In 4 of the cases
appeared to be situated wholly in muscle
to the joints, and in 1 further case it was att
tendon of the biceps femoris muscle T
therefore have diverse origins, which suppor
thesis that they develop from degeneration
tissue

In 1 case (case 4) a partial foot drop
associated with a ganglion in the peron
Excision of the cyst led to full recovery fr
drop Case 6, presenting with a ganglion
part of the extensor digitorum longus, was
weakness of dorsiflexion of the big toe, and
sensation in the cutaneous area of distrib
anterior tibial nerve These remained un
excision of the ganglion Brooks (19
cases of nerve palsies associated with gan
excision of the cyst was followed by var
recovery, apparently depending on the
duration of the pressure on the nerve
similarly noted this complication, he des
of paralysis of the deep branch of the ulnar
from carpal ganglia Nerve palsies as a resul
from ganglia are not common, but the pos
always be considered and such lesions care
by clinical examination

In 6 cases of the present series a
diagnosis was confirmed at exploratory
preoperative diagnosis was incorrect in the

because in such a situation the possibility of
n being a ganglion was not considered Explora
ssential (a) in cases associated with nerve palsies
o establish the diagnosis when this is in doubt—
rly when the more deeply situated lesions
fibro sarcomata. Treatment by aspiration had
tempted unsuccessfully in 2 of the cases in
contents of the cyst reaccumulated After
excision only 1 of the ganglia has recurred.
uch lesions are multilocular careful dissection
l to ensure freedom from recurrence In case 8
preoperatively there were signs of a cyst
on no abnormality was found It is unlikely
exploration was inadequate, and possibly the
ruptured spontaneously before operation
taneous disappearance of ganglia is known to
ther situations

SUMMARY

of ganglia are described—3 situated around the
t and 11 in relation to the knee joint
the cases there were signs of pressure on closely
erves giving rise to muscle weakness and
ema.
is was difficult in cases where overlying
sked the physical signs.
s of origin were diverse but the ganglia
microscopically had a common histological

thank Prof R S Pilcher for his kind assistance
rmission to publish 12 of the cases. Mr A J
and Mr C W Flemming have also kindly given
for publication of cases under their care

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MBAR DISC PROTRUSION AS A SURGICAL EMERGENCY

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E protrusion of a lumbar disc causing acute
on of the cauda equina calls for urgent opera
the literature of protrusion of the intervertebral
attention seems to have been drawn to the
f permanent paralysis if pressure on the cauda
not quickly relieved

y the first published case of central protrusion of a
hat of Goldthwait (1911) who mentioned it as a
use of the condition found in his patient.
m and Teacher (1911) were the first to describe
ion in the British literature their patient died
ding renal infection Apart from Elsberg's (1916)
chondroma causing compression of the cauda
tle further was reported until Dandy (1929) pub-
cases of bilateral cauda-equina compression with
covery after operation It is worthy of note that
red protrusion of a disc as a cause of so-called
especially bilateral sciatica, several years before Mixter and Barr's (1934) classical report of nineteen cases, seven of which had bilateral cauda-equina compression

Further examples of massive protrusion of lumbar discs were reported by Dandy (1942) French and Payne (1944) Ver Brugghen (1945) Black (1948) and two cases in achondroplastic dwarfs by Schreiber and Rosenthal (1952)

On the radiological side Epstein (1949) described five cases and emphasised the value of myelography in demonstrating a block from massive protrusion

We report here three examples which show that complete recovery can be obtained by timely treatment

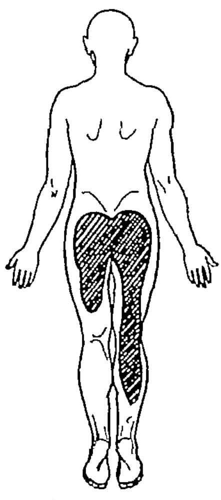
Case-reports

FIRST CASE

A housewife aged 33 was admitted to Oldchurch Hospital on Jan. 5 1953 and was referred to us by Mr R A King For 15 years she had been subject to attacks of pain in the sacral region just to the right of the midline following exertion or strain They occurred at intervals of about 6 months and lasted a few days. The pain was never severe enough to make her go to bed and it never radiated into the lower extremities 5 days before admission, however she began to get aching in the back of the right thigh becoming steadily more severe and spreading to the lower part of the back. The pain was made worse by coughing and sneezing 2 days before admission she had noticed numbness in the perineal region and had had difficulty with micturition with no sensation of voiding urine On the day of admission she had passed only small amounts of urine incontinently and the lower abdomen felt uncomfortable

Examination

She walked with a very cautious gait, any unguarded movement producing pain. Her bladder was distended to within an inch of the umbilicus and was tender to palpation. The spine showed a flattening of the lumbar curve with spasm of the erectores spinæ muscles and all movements of the spine were painful and limited. There was no wasting or loss of muscle tone in the lower limbs but slight loss in the power of dorsiflexion at both ankle-joints The knee jerks were present and equal but the right ankle-jerk was absent and the left ankle jerk difficult to elicit The plantar responses were both downgoing There was complete anæsthesia to all forms of sensation in the saddle area extending down the back of the left thigh as far as the knee and down the back of the right thigh and calf almost to the ankle (see figure) Straight leg-raising was limited to 60° on each side



Extent of anæsthesia (hatched area) in case I

Investigations

Plain radiography of the lumbosacral spine and pelvis revealed no abnormality Lumbar puncture between the 4th and 5th lumbar vertebræ showed normal pressure with free rise and fall on jugular compression. The cerebrospinal fluid (C.S.F.) contained protein 25 mg per 100 ml and no excess of cells. Lumbar myelography showed a complete block opposite the disc space between the 5th lumbar and 1st sacral vertebræ.

Treatment

Operation was undertaken on Jan. 5 1953 within a few hours of admission. The spine and lamina of the 5th lumbar vertebra were removed together with the lower border of the lamina of the 4th lumbar vertebra and part of the upper border of the sacrum The dura mater was opened in the midline and a smooth tense rounded elastic swelling was found arising from the disc space between the 5th lumbar and 1st sacral vertebræ This swelling measured 1 cm across Its centre lay a little to the right of the midline, and it almost occluded the sacral canal The roots of the cauda equina were compressed and lying mostly on each side of the swelling An incision was made over the apex of the swelling, and at once disc material began to be extruded under pressure This was picked up with pituitary rongeurs and was easily removed, the whole protrusion coming away in one piece The dura mater and the other layers were closed with interrupted stitches

Progress

After the operation there was immediate relief of pain 8-hourly catheterisation was required for 12 days Thereafter normal micturition was re-established The patient was discharged from hospital 7 weeks after operation and resumed normal household duties, including the care of her two children Her only complaint is of occasional backache and slight aching in the right leg on excessive exertion Micturition is normal There is full power in her lower limbs, and both ankle jerks have returned There remains a small patch of complete anæsthesia in the right buttock for a radius of three inches from the anus

SECOND CASE

An engineer, aged 63, was admitted to Oldchurch Hospital on Aug 17, 1953, and was referred to us by Mr King He gave a history of an attack of backache and left-sided sciatica which had occurred 10 years previously and had lasted for 3 weeks Afterwards he remained without symptoms until 3 weeks before admission, when he noticed gradual onset of pain in both legs The pain became steadily more severe, but he could get about until 3 days before admission, when he woke with very severe pain in his back and in both legs He had remained in bed since then, in such severe pain that he could not find any position of comfort Injections of morphine failed to relieve him During these 3 days he had difficulty in passing urine and was incontinent at times

Examination

He was a heavily built man, in such severe pain that it was barely possible to obtain a history, except in isolated sentences He was continually turning in his bed in an attempt to get relief His bladder was palpable three inches above the symphysis pubis Spinal movements were almost absent any attempt at flexion caused increase in pain The erectores spinæ muscles were in intense spasm He could not lift either leg from the bed, and passive straight-leg raising was limited to 20° on either side There was no wasting and muscle tone was normal Power was normal, within the limits of pain, at both hips and knees There was no voluntary dorsiflexion at either ankle, and plantar flexion was very weak, the right being more affected than the left Both knee jerks and both ankle jerks were absent, and the plantar responses were unobtainable Accurate sensory testing was rendered difficult because of his restlessness, but, apart from a slight blunting to pinprick and cotton wool over the front of the right thigh, there were no sensory abnormalities in the lower limbs or saddle area

Investigations

Plain radiography of the lumbar spine showed gross narrowing of the disc space between the 1st and 2nd lumbar vertebræ with "lipping" Lumbar puncture showed a complete manometric block, and a myelogram revealed a complete block opposite the disc space between the 2nd and 3rd lumbar vertebræ—i e, lower than the abnormality seen in the plain films

Treatment

Emergency operation was undertaken on the evening of Aug 18, 1953, 24 hours after admission With the help of the marker placed on the skin at the time of the myelogram to overlie the site of the block, the spines and laminæ of the 2nd and 3rd lumbar vertebræ were removed The dura mater was opened in the midline A large tense, central prolapsed disc was found at the space between the 2nd and 3rd lumbar vertebræ After incision of the protrusion, the disc began to extrude spontaneously and was removed in one piece

Progress

Postoperative recovery was uneventful Pain was relieved within a few days Difficulty with micturition persisted for about 10 days, but catheterisation was never required Some return of power at the ankles was noted within a few days of operation, but further recovery was slow, and at the time of his discharge from hospital, 9 weeks after operation, the patient still needed a stick to get about 5 operation he was symptom free and could walk unaided By March, 1954, 7 months after the op was back at his job doing a full day's work and he had made a complete recovery This state maintained

THIRD CASE

A lorry-driver, aged 39, was admitted to Oldchur on April 14, 1954, and was referred by Mr W D months before admission he began to have aching back of both thighs and calves There was no related injury, but his work involved lifting cwt 2 weeks before admission he had a sudden lumbar region Next day he walked with difficul of backache and weakness of both legs S pain spread into both buttocks and lower limbs, to have difficulty with micturition The pain worse by coughing, straining or moving

Examination

He was in considerable pain and could only flexing his hips and knees All movements of the limited and painful Straight leg raising was on either side There was no muscle wastin was much reduced at both knees and gross both ankles The knee jerks were present, but jerks and plantar responses were absent The not distended

Investigations

Plain radiography of the lumbar spine showed of the disc space between the 3rd and 4th Lumbar puncture at the level of the space betw and 3rd lumbar vertebræ, after failure at a lower le no manometric block Myelography with ethyl undecylate ('Myodil') as the opaque substance complete block opposite the space between the lumbar vertebræ

Operation

On April 15, 1954, the day after admission, a was carried out, the site of the block had been marked on the skin at the time of the myelograph dura mater was opened, the cauda equina was fo backwards opposite the disc space between the lumbar vertebræ The nerve roots were retra right to expose a large, firm, dome-shaped central measuring about 1 cm in diameter When this disc material was extruded spontaneously, it was a pituitary rongeur and gently removed as one trum" There was an immediate flow of myodil from above and the cauda equina fell back into position

Progress

Pain was relieved in a few days The patient to have difficulty with micturition for three days, tion was never needed Within 2 weeks he co little, and he was discharged from hospital operation 3 months after the operation he well and had returned to light work and after months he was symptom free and back to his full-ti ment without disability He showed just detectab of dorsiflexion of the right foot, and the left ank depressed Otherwise there were no abnormal

Discussion

These cases presented with bilateral the cauda equina Three stages can usually be (1) there is first a long history of intermittent (2) later the pain radiates into one lower and (3) finally there is sudden onset of pain and in both lower limbs with disturbance of Characteristic remissions or fluctuations in the occur

In most cases the history indicates the nat lesion The differential diagnosis is from tumo cauda equina—e g, meningioma and neurofibr from primary and secondary disease of the lum Tumours of the cauda equina tend to produce progressive compression without striking remis Bloom et al (1955) draw attention to long in some cases of benign tumours of the cauda

present cases the results of early surgery were
It is clear however, from a review of the
that in many cases especially when surgery
yed the results have been imperfect Middleton
cher (1911) and Ver Brugghen (1945) reported
which the patient died of urinary infection and
other patients have been left with permanent
nce of urine or footdrop
compression of the nervous system is much less
rated than insidious compression A slowly
tumour, such as a meningioma may grossly
he *spinal cord or its nerve-roots* but when
ur is removed full recovery usually takes place
mpressive lesions, on the other hand because
not give time for adaptive changes, are liable
permanent damage In the cases discussed
minor symptoms may have been present for
e, the duration of bilateral cauda equina com
has been short usually not more than a few
is therefore a matter of urgency to relieve the
ion if early and complete recovery is to be
It has been our practice to deal with these
urgical emergencies Myelography and operation
n carried out within a few hours of admission
ses were all operated on by the transdural
They were essentially central or paracentral
ns and the midline transdural approach gave
satisfactory access

Radiology

st lumbar disc lesions plain radiography shows
mality but it should always be undertaken to
other disease Both clinical examination and
liography may fail to indicate precisely the
of the disc protrusion In case 2 plain radio
was misleading for there was considerable
g of the disc space between the 1st and 2nd
vertebræ with well marked ' lipping but a
protrusion had taken place from the disc between
and 3rd lumbar vertebræ which appeared
ally normal
graphy is essential to establish the exact level
npression and should be an emergency procedure
ve protrusion of the disc with bilateral cauda
ymptoms Any delay may cause permanent
o the cauda equina A *metal marker strapped*
in over the site of the block at the time of
phy enables a *pinpointed operation* to be done
imal removal of bone and interference with the

Summary

cases are reported of massive protrusion of the
bral disc causing acute bilateral compression
uda equina
sults of early surgery were good and it is
nded that such cases should be dealt with as
emergencies.
mportance of preoperative myelography is
ed

h to thank Mr Leslie C Oliver M.B., F.R.C.S. for
the management of these cases and his help in the
on of this article

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CONCEALED TRAUMATIC SUPRAREN HÆMORRHAGE

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WITHIN nine months I found severe suprarenal hæ
rhage, without any other signs of intra-abdom
trauma at two necropsies performed at the reques
H.M Coroner A review of *the 100 Coroner's* c
examined at the Withington Hospital in the past
years showed two further cases

Case records

Case 1—Mrs. A aged 79 was admitted to the Manch
Victoria Memorial Jewish Hospital on June 7 1954
being knocked down by a car The ambulance driver
that she had been unconscious.

Clinical Findings and Course—She was conscious but
orientated and she vomited once She had a fractur
the humerus, and laceration of the scalp Pulse rate
blood pressure 160/90; temperature 98°F No abnor
neurological signs

After toilet and suture of the wounds, she was returne
the ward, and was given a blood transfusion with penic
six hourly But her condition deteriorated and she bec
unconscious. Burr holes were made by Mr W N Coor
and the brain was found to be bulging No clot was pres
but subarachnoid hæmorrhage under considerable tens
Late on the 10th she died, having lived almost four
after the accident

Necropsy fourteen hours later yielded no evidence of cra
fracture but there was extensive subarachnoid *hæmorrh*
The right suprarenal gland appeared as a shell full of bl
clot it weighed 10 g against 4 g for the left gland. Th
was no obvious thrombosis of vessels, and the underly
kidney was intact.

Histology—*The right suprarenal gland had been destro*
by hæmorrhage leaving only some cells of the zona glom
losa and capsule None of the vessels could be defined in
hæmorrhagic tissue There were scattered polymorphs ly
among the red cells. The other gland was slightly conges
The renal tissues under the damaged gland were int
The pituitary gland was normal

Case 2.—Miss B, aged 70 was admitted to Withing
Hospital on Nov 18 1954 immediately after being hit b
car

Clinical Findings and Course—She was dazed but co
answer questions. She had lacerations of the right sup
orbital ridge and the left shin No abdominal tenderness
guarding Neurological findings equivocal Pulse rate
temperature 97 8 F *blood pressure 135/95*

Some hours later she vomited 10 oz. of coffee ground
streaked with fresh blood. Next day she was restless and
developed bilateral orbital ecchymoses On the third day
pulse was noted as weak but her blood pressure was ma
tained at about *160/95* Eight days after the accident
was sitting up out of bed but after another four days
died

At *necropsy* fifteen hours later the main findings w
fractures of the right 10th 11th and 12th ribs in the poster
axillary line with some local extravasation of blood but
pneumothorax The right suprarenal gland was replaced by
hæmorrhage the left gland being intact There was
evidence of fracture of the skull or recent hæmorrhage of t
brain.

Histology—In the right suprarenal gland only a rim
normal cortex was visible Thrombosis of vessels was se
the ghost outlines of vessels containing clot being demonstra
in sections stained by elastic van Gieson technique T
opposite gland was a little congested and the pituitary a
thyroid glands appeared normal. The kidney lying imme
ately under the gland showed no traumatic injury, and ap
from some degree of congestion showed no distinctive featur

Case 3—Mr C a butcher aged 65 was admitted
Withington Hospital on July 6 1951 two days after bei
knocked down by a van He complained of frontal headac
and bleeding from the left ear He had not been unconscio
and immediately after the accident he had had a bruise

the left elbow treated and had gone off to work Next morning the headache had been very severe, and he had vomited once

Clinical Findings and Course —He was a little drowsy, but apart from neck rigidity and a positive Kernig's sign, there were no localising signs in the nervous system, and the skull showed no obvious damage A lumbar puncture yielded bloodstained fluid under pressure Next day, though he was talking rationally, neck rigidity had intensified As on admission, pulse rate was 80, temperature 99°F, and blood-pressure 160/100 Further lumbar and cisternal punctures again produced bloodstained fluid, not under excessive pressure' Six days after admission the patient was mentally confused and became restless neck rigidity persisted and his bladder was distended He developed a flaccid paralysis of the right arm and leg, and died fourteen days after the accident

At *necropsy* seventeen hours later the abnormal findings were œdema and congestion of the lungs, and a large hæmorrhage in the left suprarenal. The skull showed no fracture, but there was a little blood clot in the left anterior fossa, probably caused by rupture of a small cerebral vessel associated with contusion

Histology —The kidneys showed moderate hypertensive change The left suprarenal gland had been destroyed by hæmorrhage In the brain the internal capsule showed diapedesis of red cells, as in contusion

Case 4 —Mrs D, aged 65, was admitted to Withington Hospital on Oct 21, 1951, after being knocked down in the road

Clinical Findings —She was confused and had abrasions of the nose, with bony crepitus, with bruising of the head Pulse-rate 80, blood pressure 105/60 No abdominal tenderness or abnormal neurological findings She died three and a half hours after admission

At *necropsy* forty eight hours later the third rib on the left side was found to be fractured in the mid axillary line, without displacement of the fragments, but with extensive hæmorrhage under the pleura The pelvis had been fractured in two places (pubis and ischium), with much hæmorrhage round the rectum and bladder No fracture of the skull was found, and section of the brain, which was pale, did not show any hæmorrhage or thrombosis Surrounding the suprarenal glands in the retroperitoneal tissue was some hæmorrhage, and both glands showed extensive hæmorrhage in the medulla The kidneys were normal.

Histological examination of the tissues was not made

Discussion

Hæmorrhage into the adrenal glands varies from small interstitial hæmorrhages to gross destruction with rupture into the peritoneal cavity or the retroperitoneal tissues It has been reported in association with infections, severe burns without apparent infection, hæmorrhagic states, chronic nephritis and chronic pancreatitis, uræmia, and pregnancy and its complications, and after repeated convulsions It has also been the sole finding in some cases of sudden death

In the four cases I have described, infection was not apparent, and it is significant (1) that the other abdominal viscera were not injured and (2) that in all cases a closed head injury was suspected (The 160 records examined included 30 cases of closed head injury)

Discussing the pathology of the adrenal gland in relation to sudden death, Keith Simpson (1937) laid particular emphasis on the changes in blood chemistry His conclusions were that probably changes in sodium metabolism, loss of tissue fluid and plasma volume, and the development of hypoglycæmia, were all collectively responsible for death It is noteworthy therefore that among 76 cases of closed head injury Higgins et al (1954) found 18 with major alterations in the levels of blood electrolytes, urea, sugar, and plasma-proteins

Among these 18 patients two groups showed changes in the levels of chlorides in the blood and urine In one group of 9 patients, with hyperchloræmia and hyperchloruria, hæmorrhage and thrombosis was demonstrated in the pituitary glands of 6 Damage to the under surface of the frontal lobes was also thought to be associated with increased blood-chloride levels The other small group, showing hypochloræmia and hyperchloruria, was described as ver Addison's disease without pigmentation The p adrenal damage existing, was discounted as a re lack of response to sodium chloride, 'Eucortone,' d acetate, and cortisone

Munro (1938) and Rowbotham (1945), in th graphs on head injuries, do not mention adren Nor does Lewin (1953) in reviewing 1000 case head injury It is of interest to note that I Clarke's (1954) series of closed abdominal in significant cerebral damage and bilateral hæmorrhages

It seems possible that suprarenal hæm either concomitantly with the head injury or of an incipient thrombosis leading to infarct gland (Keele and Keele 1942) The degree of the organ goes far to determine the length of Bilateral hæmorrhage will produce rapid d unilateral or lesser degrees of damage may survival or even recovery There may be su for Margaret Crawford's suggestion (1951) tha disease is sometimes a sequel to suprarenal h during pregnancy or the puerperium

In cases of suspected head injury the pos suprarenal damage should be considered. B studies substitution therapy, and even further help to diminish the mortality of road

Summary

Four cases are presented in which the pat fatally injured, and suprarenal damage was necropsy It is suggested that such damage m the cause of death in cases of closed head

I am indebted to Dr L Stent for permission records of the department of pathology, Withingt and for her helpful criticism I should like to H. T Cox and Mr R A Bailey for permission records

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LOWER-SEGMENT CÆSAREAN SE FOR PLACENTA PRÆVIA

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IT is widely accepted that lower segment section represents a great advance in operative and in British obstetric practice the classic segment operation has largely been abandoned theless Marshall (1949), from figures subm nineteen of the largest maternity hospitals in th showed that 46% of cæsarean sections per placenta prævia were of the classical type figures referred to the years 1943–47, but reports from some of these hospitals show placenta prævia, classical section is still p Within the last year, in America, Eastman (reaffirmed his belief that classical section is to the lower-segment operation for placent In spite of the support of Macafee (1945), Mars Moir (1950), and others, it is obvious that enced obstetricians consider that the adv gment operation for placenta prævia are offset sk of maternal hæmorrhage and of damage to the rculation, if the placenta is found under the incision

Maternal Hæmorrhage

the placenta is situated anteriorly there is the y of free bleeding from maternal sinuses at the cæsarean section It has been claimed that r segment incision is less likely to involve the l site but so far as I am aware, no one has curately the frequency with which the placenta ntered when classical section is used for placenta Kerr and Moir (1950a) state that in classical not necessarily for placenta prævia there is a nce that the operator will encounter the placenta (limited) experience of the classical operation in prævia suggests that it is not uncommon for the ncision to involve the placental site

Princess Mary Maternity Hospital Newcastle ne, during the ten years 1945–54 the obstetricians d 172 lower segment sections for placenta with 2 maternal deaths—one due to pulmonary n, the other to Friedlander's pneumonia on the lay of the puerperium No mother died from age

all and Cox (1949) from the collected figures of hospitals reported 300 lower segment sections enta prævia with 1 maternal death due to e colitis. From the mother's point of view age is not a contra indication to lower segment for placenta prævia provided that blood is tely available at the time of operation

Blood loss from Fœtal Circulation

the placenta is encountered by the operator in ine incision the risk of blood loss from fœtal annot be ignored but with care can be avoided and Russell (1954) studied the problem in the Mary Maternity Hospital for two years and veral suggestions They emphasised the import ircumventing rather than incising the placenta, need for rapid clamping of the umbilical cord ere had been any risk of damage to the fœtal on They advised careful inspection of vessels œtal surface of the placenta as soon as the had been delivered The indications for serial ons of hæmoglobin and for blood transfusion of s were given

ork led to a better understanding of the problem st 1952 the routine described above had become tablished in the hospital practice and since that obstetricians have performed 38 lower segment for placenta prævia The placenta was encoun der the incision in 10 of the cases, and in 8 of pædiatrician after careful examination of the considered that serial estimations should be the babies hæmoglobin On the basis of the aid down by Neligan and Russell (1954) none abies required transfusion and all survived

ecent cases illustrate the importance of rapid of the umbilical cord after the placenta has been red by the operator both patients were delivered segment cæsarean section for type III placenta

—The operator encountered placenta under the cision but was able to circumvent it for delivery y's head The umbilical cord was clamped twenty fter the placenta had been encountered. When the was examined it was noted that two small fœtal d been torn clean across; serial estimations of the moglobin were therefore made At birth the Hb (10 2 g per 100 ml.) but during the first four re was a sharp fall to 110% (16 3 g per 100 ml.) ns were made at intervals over the next fifty hours but there was no further fall. The baby made excellent progress.

Case 2.—The operator encountered placenta all along the uterine incision but managed to push it to one side for delivery of the baby's face The umbilical cord was clamped twenty five seconds after the placenta had been encountered. Inspection of the placenta showed that two moderate-sized fœtal vessels had been lacerated Serial estimations of the baby's hæmoglobin were made for five hours and the lowest level found was 118% (17 5 g per 100 ml) The baby's progress was quite satisfactory

When fœtal vessels have been damaged, as in these two cases, the longer the interval after the placenta has been encountered until the umbilical cord is clamped the greater is the chance of serious fœtal blood loss When the interval has been less than thirty seconds we have had no example of fœtal blood loss of sufficient degree to warrant transfusion

Discussion

Many patients with placenta prævia spend several weeks in hospital in the antenatal ward, and much care and thought are given to their management Fully half these patients come to delivery by cæsarean section and it is important that any hazard to mother or baby inherent in the operation should receive careful consideration

On the one hand classical section carries a greater risk for the mother Postoperative distension and vomiting are more troublesome (Marshall 1949) Bowel obstruction is a recognised late complication of the operation and many believe that there is a greater risk of rupture of the upper segment scar in a subsequent pregnancy (Kerr and Moir 1950b) This accident carries a greater threat to the lives of mother and baby than does rupture of a lower-segment scar, for upper segment rupture is often complete and baby and placenta may be thrust into the peritoneal cavity Chesterman (1953) from the collected figures of several maternity hospitals, reported 23 instances of upper segment rupture with 2 maternal and 17 infant deaths. There were 15 cases of rupture of a lower segment scar no mother died and only 1 infant It is difficult to see how these risks, associated with upper-segment cæsarean section can be avoided

On the other hand lower segment section, when the placenta is situated anteriorly may damage the fœtal circulation and jeopardise the baby's life Our experience in the Princess Mary Maternity Hospital during the past two and a half years shows that this danger can be overcome and need not deter the operator from using the lower segment approach In large measure the elimination of this risk to the baby has been brought about by attention to operative technique particularly circumvention of the placenta and rapid clamping of the umbilical cord Radiology however has added a further precision to the management of these cases. In the past two years the obstetricians have been forewarned by the radiologist on several occasions, of the presence of an anterior placenta prævia. The clinical application of placentography in this type of case has already been described (Russell and Warrick 1955) If in spite of all precautions, the fœtal circulation is damaged and a significant amount of blood is lost the injury can be recognised quickly and treatment instituted by the pædiatric staff

Summary

It is accepted that lower-segment cæsarean section carries less risk to the health and life of the mother than does the classical upper segment operation

In placenta prævia provided attention is paid to certain points of technique, the mother can have all the advantages of lower-segment cæsarean section without added danger to herself or her baby

I am grateful to Prof. Harvey Evers and Mr Frank Stabler for their advice and encouragement and for permission to

publish details of cases admitted to the Princess Mary Maternity Hospital under their care In the two cases described, the timing and hæmoglobin estimations were carried out by members of the department of child health in the University of Durham All hæmoglobin estimations were made on the Medical Research Council grey wedge photometer

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RUPTURE OF THE LOWER-SEGMENT CÆSAREAN-SECTION SCAR

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RUPTURE of a lower segment cæsarean section scar is uncommon but probably not so rare as the paucity of published reports suggests Dewhurst and Rowley (1951) could find only 66 cases on record, and in most of these a vertical incision had been used which was not confined to the lower uterine segment In the discussion which followed their paper four speakers described no fewer than 6 additional cases in their own experience

As Schmitz and Gajewski (1951) have pointed out, the strength of a well healed uterine scar may be even greater than that of the muscle Among the factors responsible for defective scars the most important are

(1) An incision placed at too high a level in the uterus
(2) Faulty apposition of the wound edges, and other errors in technique
(3) Postoperative infection (especially if a hæmatoma should develop beneath the bladder, become infected, and drain through the uterine suture-line)
(4) Subsequent implantation of the placenta over the incision

I report here a further unusual ætiological feature in the rupture of a lower segment cæsarean section scar

Case-report

A woman aged 31 had been married for five years Her first four pregnancies had all ended in abortion at about the 10th week However, she had not been admitted to hospital and had never had a curettage

At the 36th week of her fifth pregnancy she was referred to the hospital antenatal clinic because of breech presentation External version was unsuccessful Her pelvic measurements were small, the true conjugate diameter measuring only 3 7 inches Consequently an elective cæsarean section was done at the 40th week of pregnancy, on Jan. 17, 1953, under general anæsthesia There appears to have been no technical difficulty during the operation, and the transverse incision in the lower uterine segment was repaired in the usual two layers with continuous catgut sutures The patient's temperature rose to 101°F on the second day after operation, and to 100 2°F next day, but thereafter her convalescence was satisfactory The wound healed by first intention Mother and baby (which weighed 5 lb 15 oz at birth) were discharged on the fourteenth day of the puerperium

The patient again became pregnant in 1954, her last menstrual period beginning on July 10 She attended the hospital antenatal clinic throughout her pregnancy, which progressed normally The fœtal membranes ruptured spontaneously at 9 A M on April 1, 1955, when she was nearly 38 weeks pregnant, and she came into hospital At 1 P M clear liquor amnii was draining, but no uterine contractions were noted The baby appeared to be small, and the presenting vertex was beginning to fix in the pelvic brim The cervix barely admitted one finger and was not completely taken up The fœtal head was mainly above the pelvic inlet, and a slight d
proportion existed The abdominal scar was n
but there was no tenderness on suprapubic pres

In view of the pelvic contraction and the febrile
associated with the previous confinement, it was
repeat cæsarean section, even though the baby
so small The operation was started three hou
4 P M Weak contractions had begun an hour
were recurring at 10 minute intervals, but the
remained high On painting the skin, it was note
uterus was irregular in shape, and a rupture
On opening the abdomen this suspicion was verifi
being found lying free in the peritoneal cavit
quickly extracted and was followed immedi
placenta, which had already separated A small
contracted uterus now came into view, measur
than 6 inches long The original lower segment s
$^3/_4$ inch above the bladder, had given way in its
In addition there was a vertical laceration
anterior wall of the uterus, beginning at the mi
old scar and continuing up to the fundus
had almost inverted itself through this tear
still admitted one finger only There was very lit
the peritoneal cavity, and the patient's gener
remained excellent

A subtotal hysterectomy was performed jus
level of the transverse rupture Convalescence
and the patient left hospital on April 14 The b
5 lb 9 oz, its condition was good at delivery,
no resuscitation

The patient stated afterwards that she had
a sudden severe pain just as the anæsthetic was be
tered, probably the uterus suddenly disrup
juncture

Dr D A Leslie reported on the specimen
"Sections taken around the ruptured area of the
the presence of anisotropic crystals like talc with
granulomatous changes, some crystals lie within
and some free in the tissues It seems possible th
have predisposed to rupture The myometrium
shows œdema, and there is trophoblastic invas
however, within normal limits"

Discussion

A remarkable feature of this case was the
nature of the uterine rupture, occurring so
at the onset of labour, and it is difficult to
accident could have been foreseen and avoided
if the lower segment scar gives way it does so q
gradually, without cessation of uterine co
and the first untoward sign may be the
cystic swelling in the lower abdomen

It is now widely recognised that siliceous
introduced into the tissues during operation
set up a granulomatous reaction Numerous
this subject have appeared in recent years
workers have mentioned the close resemblance
tubercles and these talc lesions, which may sh
necrosis and caseation (McCormick and Ra
Roberts 1947) It seems obvious that talc
the uterine scar could contribute little to it
and very likely their presence was the factor
for its disruption so early in labour

Lawrence (1953) gives the incidence of r
lower segment cæsarean section scars subje
minimum of three hours' active labour as 0·6
workers have put the risk rather higher (Mi
Eames 1953), and it is possible that minor dis
scar may go unrecognised, unless the prac
of exploring the uterine cavity immediately afte
of the placenta

In addition to the present case there has bee
instance of rupture of a lower segment scar in t
in the past fifteen years This was a dehi
long discovered when cæsarean section was
because acute fœtal distress developed after
lasted six hours

As each year 40–50 previously sectioned p
allowed a trial of labour, of whom about

vaginally, the obstetric staff feel that the risk of s low enough to justify persisting in their present tive attitude towards repeat cæsarean section

ndebted to Mr F J Burke on whose service this as admitted for permission to publish and to Dr llo for his report

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EIOMYOMA OF THE RECTUM

FAYEK GHABRIAL
M.B M Ch. Cairo

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CAIRO UNIVERSITY EGYPT

roportion of rectal tumours which prove to be mas is very small—perhaps 1 in 2000–3000 n et al 1950)

myoma of the rectum seems to have been first n 1881 by Vander Espt In 1921 Hunt describing 4 ses seen in the Mayo Clinic said that only 20 cases or fibromyoma of rectum had so far been recorded. (1928) reported a case of pedunculated rectal a in a man of 30 The tumour measured 3 × 1½ nd had a broad pedicle attached to the rectal wall o the anal canal Norbury (1934) had a case in mooth rounded swelling the size of a tangerine and y fixed to the sacrum was removed after excision ccyx and part of the sacrum

on et al. (1950) described the 10 cases of rectal a seen at the Mayo Clinic from 1911 to 1946 All small (diameter 0·5–5 cm average about 1 cm.) ed 2–4 cm proximal to the dentate line Only 1 d gross bleeding and none complained of pain or ge of bowel habit or loss of weight, weakness or Indeed there were no significant symptoms and all urs had been detected during routine physical ion. They were treated by local excision and no of recurrence was found after periods ranging from irty nine years.

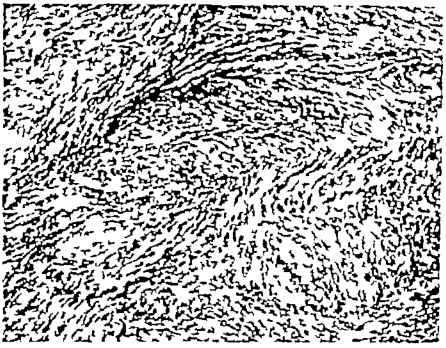
y respects the following case differs from those t the Mayo Clinic

aged 37 an Egyptian, working as a clerk in an oil complained of constipation for eighteen months, smus and rectal bleeding more recently The ccurred only on defæcation and the blood (usually *but occasionally dark clots*) was partly mixed with He had lost some weight, and had lately noticed and dyspnœa on exertion which he ascribed to blood

re a diagnosis of malignant rectal tumour was the patient was advised to have a radical combined ith a permanent colostomy This he refused.

xamination revealed external piles second-degree les, and a sphincter with normal spasm With the he rectum a hard non tender spherical mass with lefined edges could be felt on the anterior and right l of the ampulla of the rectum Its uppermost limit e reached with the *tip of the finger* Over its most tre an ulcer could be felt about 1 cm. in diameter dges sloping gradually from the surface of the The mucous membrane was mobile over the mass a small area all round the ulcer where it was fixed. tself could be moved to some extent.

pecimens taken at sigmoidoscopy showed bundles muscle fibres alternating with bundles of fibrous former predominating In some fields the tumour cellular the stroma contained thin walled, newly ed vessels and the nuclei were hyperchromatic ey did not show any mitotic figures. But the



Section of the tumour (× 120)

tumour did not appear to be malignant and it was diagnosed as a cellular vascular fibroleiomyoma (see figure)

Removal per vias naturales was decided upon. Under spinal anæsthesia the anal sphincters were dilated so that it was possible to pull upon and expose the tumour The mucous membrane was incised at its lower pole where it was mobile a plane of cleavage was found and the tumour was enucleated intact together with the adherent mucosa around the ulcerated area Inspection of the tumour revealed no remaining fragments or shreds Hæmostasis was secured by combination of diathermy coagulation, ligation and Gel foam pack kept in place by a wide bore rectal tube surrounded by paraffin gauze which was left in the rectum for twenty four hours The postoperative care was the same as for hæmorrhoids and recovery was uneventful

The specimen removed was a hard spherical mass 4 in. in diameter with a relatively smooth outer surface On section the surface was whitish and there was no sign of hæmorrhagic cystic or colloid degeneration Histological examination of serial sections yielded no evidence of malignancy

The patient had no further symptoms, and gained in weight and strength Two years later rectal examination revealed *no abnormality except for a puckered cicatrix.*

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Preliminary Communication

METABOLIC RESPONSE TO ADRENALECTOMY

AFTER surgical operation or other injury retention of water and sodium together with a loss of potassium and nitrogen is usually demonstrable Several groups of investigators have shown in man an increase in the urinary excretion of adrenocorticosteroids during th postoperative period and an increase in the [illegible] tion in the blood has also been demonstrated [illegible] observations have been taken to support [illegible] that *trauma produces an increase in the* [illegible] of the adrenal cortex which, in turn, [illegible] the alterations in excretion of [illegible] nitrogen On the other hand, [illegible] of Ingle et [illegible] on adrenalectomised animals [illegible] dose of cortin are [illegible] with [illegible] hypothesis.

An opportunity [illegible] the hypoth[illegible] subject was afforded [illegible] an oper[illegible]

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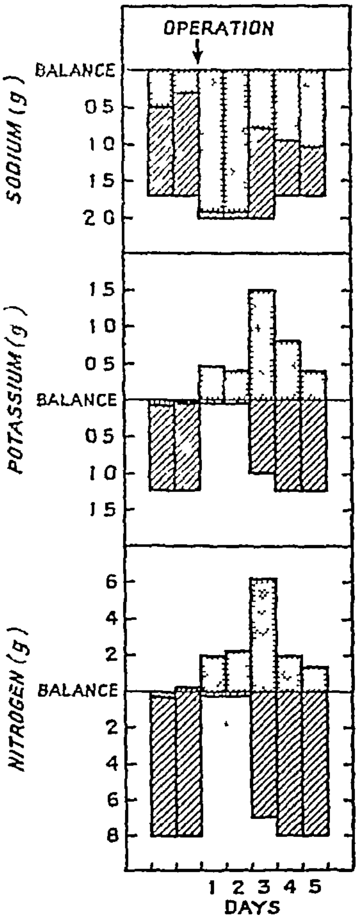
1 Ingle, D J., Ward, E. O., Ku[illegible] 194[illegible] 149 51[illegible]

of the second adrenal gland of a patient suffering from malignant hypertension Large amounts of cortisone acetate were given, a dose of 200 mg per day being given for three days before the operation and continued for several days after the removal of the gland

The findings in 24 hr collections of urine are shown in the accompanying figure, no stools were passed during the first five days after operation Although the intake of sodium chloride was kept virtually constant, there was a postoperative decrease in the amount excreted in the urine with the result that there was considerable retention of sodium and chloride for several days

As in operations not involving the adrenal gland, there was also a period of negative nitrogen balance This was not due to starvation, for it reached its maximum three or four days after operation, when normal feeding had been resumed Similarly, the urinary excretion of potassium was maintained after operation, leading to a marked negative balance when the intake was reduced to nil on the first two postoperative days, and actually increasing when the intake reached preoperative levels from the third to the fifth postoperative day The urinary excretion of acid-stable formaldehydogenic steroids, which usually increases after operation, was constant throughout the period of observations



Sodium, potassium, and nitrogen balances after operation: stippled areas represent retention (sodium) or loss (potassium and nitrogen), the areas below the balance lines represent intake. In retention, urinary excretion is thus indicated by the hatched areas and in loss, by the sum of the hatched and stippled areas

In fine, the postoperative metabolic changes involving sodium, potassium, and nitrogen were similar to those following *operations on* patients with intact functioning suprarenal glands It is quite obvious that in this case the postoperative metabolic response was not due to increased secretion by the adrenal cortex This conclusion is in agreement with the statement lately made by Dr Stuart Mason in a discussion at the Royal Society of Medicine [2]

Our thanks are due to Sir James Learmonth, who gave us the opportunity to study this case

J S Robson
M.D Edin., M.R C P E
D B Horn
A.H.-W C, A R I C
H A Dudley
M B Edin., F R C S E
C P Stewart
D Sc Durh, Ph D Edin

Departments of Clinical
Chemistry and Surgery
University of Edinburgh

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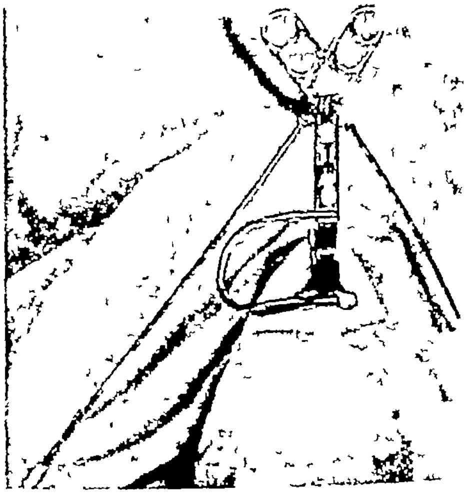
[2] Mason, S See *Lancet*, 1955, i, 1056

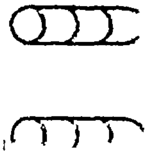
New Inventions

AN IMPROVED BIPOD FOR BOYLE-DAVIS

The original "bipod" for a Boyle-Davis ga
of a single ring at the end of a rod, and it was
as a means of supporting the gag without the
on the chest that is involved in the use of a
breast-plate

The bipod shown in the accompanying f
several rings so fitted that the height can be





and they are placed in such a way that th
directed along a central axis

My thanks are due to Mr V J Millard, 12
Avenue, London, N 2 for making the
Miss Ann Greaves for the photographs.

West End Hospital for
Neurology and Neurosurgery,
London W 1

CLIFFORD

" One often hears of small untruths, that
way of living with one's fellow man, as white lies
the black lie that is aimed to injure the person
is told It might not be out of place to say that
may be classified as white or black As white l
within the realm of normal, honest people's behav
black truths perhaps should be banned from
Most physicians would agree that the easiest wa
selves is to tell the truth and the whole truth
physician need no longer dissimulate before his
worry every time he sees *him to remember* what
told before In practically all cases the patient
truth *But think of a woman who had a* brea
already showed axillary metastasis. There
stances, there are *people*, there are times that
rules of conduct moral, ethical or even religi
debatable quality *When such a moment* comes
concepts should guide a man to break *them* for
good—*to save the patient* first and paste toge
ments of one's shattered conscience at a later
There are *few* who will continue to live bravel
when they know that their end is near *If th*
strength *is found in a* patient, the physician will
truth. Yet, for the very few that possess th
may not create despair and hopelessness *in the*
constituted "—Dr Samuel Standard, *in* Sh
Know the Truth? New York, Springer P
1955

Reviews of Books

ry Diseases

ROSCOE L PULLEN M D, F.A C P professor of
ine and dean University of Missouri School of
ine Columbia Missouri London: Henry Kimpton
Pp 669 £5 10s

o textbook should be pleasurable as well as
ve The student trying to comprehend a
medicine needs to be carried smoothly through
ers hardly aware of the style of the writing
e which intrudes will also distract The practi
o, searching rapidly for facts should be able
on clarity and a good index: having found
without difficulty he will think better of the
e as easily finds the facts on the page Clear
n pleasing type and thoughtful paragraphing
helpful than strings of references
ok by Dr Pullen and his collaborators attracts,
nd instructs, though like all coöperative text-
is a little uneven The exclusion of the archaic
en in the section on the physical signs of lung
these are described as used nowadays in practice
as they have been handed down through the
ooks. Clearly it is not desirable that every
ould agree with everything, and there are of
some controversial points For instance
on pneumonia is limited to the condition
y inhaling vomitus, though in this country it
ch wider meaning In general the classification
neumonias is ætiological; and this is a great
ent on the old anatomical classification still
some textbooks Pulmonary adenomatosis
t of place among benign tumours; for as the
mself says, the disease is always fatal. More
confusing to find what appears to be the same
iscussed in a different chapter as alveolar
noma. More space might well have been given
trial pulmonary diseases, particularly coal
oneumoconiosis The chest radiographs are
produced, but the references though helpful
vell balanced: benign tumours get more than
eas pulmonary tuberculosis—a subject evolving
dly—gets only 20 This is a pity for the chapter
particularly clear This is a useful addition
latively few good textbooks of diseases of the

Pathology in General Practice

ally commissioned articles from the *British Medical*
al London: British Medical Association 1955
21 21s

two years ago the Editor of the *British Medical*
commissioned contributions on set subjects
o laboratory medicine and this book contains
rticles thus obtained—revised and brought up
They form seven sections after an intro
eight articles on practical techniques are
by sections (each containing six or eight articles)
ntary and excretory function, on metabolism,
ions, and on hæmatology and the volume ends
eo isolated articles on skin diseases, tropical
and industrial poisoning

thors seem to have been invited as much for their
exposition as for their expert knowledge and the
a book of reasonable size which provides answers
questions that are apt to arise in general practice
renal function and pituitary function which do not
boratory aid and methods of investigating out
infection are clearly described; so are some of the
roblems of skin disease gout, and anæmia while
n on practical techniques is uniformly excellent—
ne might be hesitant in attempting puncture of an
jugular vein for the first time if nobody more
d were by
f the articles are chiefly concerned with the per
of a specific test or the investigation of a specific
and it is therefore refreshing to note Dr W W
emphasis on the formulation of the problem for the
— Lumbar puncture is contraindicated: (1) if
tioner has no positive problem which may be solved
as a result of the findings.' It is made clear that the laboratory can be of maximum use to the practitioner only if there is adequate consultation between practitioner and pathologist and Dr Parker in his essay on the Public Health Laboratory Service suggests how consultation be achieved even in that rather impersonal field.

This book will be of real help to the family doctor especially the man working in country districts It would be of equal value to the newly qualified houseman and the senior student and it should also be on the bookshelf of the clinical pathologist, since it provides him with straightforward answers to all sorts of questions outside his favourite field

La maladie de Bouillaud

Editors: ROBERT DEBRE PIERRE SOULIÉ Paris: Expansion Scientifique Française 1953 Pp 148 Fr 1200

FROM the inquiry undertaken jointly by the Medical Research Council and the American Heart Association[1] it was concluded that in rheumatic fever corticotrophin or cortisone controls the acute manifestations more quickly than aspirin, but with the hormonal therapy there is a greater tendency for these manifestations to reappear for a limited period at the end of treatment. In the 497 cases studied there was at the end of a year no significant difference between the three methods of treatment in respect of the cardiac state By contrast Dr Debré and Dr Soulié are convinced that corticotrophin and cortisone offer the best treatment for acute articular rheumatism (*la maladie de Bouillaud*), and for the prevention of rheumatic carditis. Early diagnosis of rheumatic fever is therefore very important, especially since, in their experience, the condition can usually be diagnosed before the heart is clinically involved

They discuss in detail symptoms and signs of principal and secondary importance in the diagnosis of rheumatic fever and of rheumatic carditis and analyse critically the value in diagnosis of the family history the patient's past history the erythrocyte-sedimentation rate the culture of streptococci from the throat, an elevated anti-streptolysin titre hyperfibrinæmia anæmia and leucocytosis They appreciate the difficulty of establishing absolute criteria for diagnosis especially in early cases, but emphasise that treatment must be begun on presumptive evidence

They studied 267 patients from three medical units for $3^1/_2$ years. The patients were divided into three groups—severe cases (23) simple cardiac rheumatism (131) and acute articular rheumatism without cardiac involvement (113) 6 patients in the first group died, but dramatic improvement in desperately severe cases was observed with corticotrophin in others in whom salicylates had failed. The efficacy of hormonal treatment was difficult to prove in the second group and rests more on a multiplicity of observations than on proof in the individual case They describe fully the effect on fever joint pains, skin manifestations auscultatory findings, pericardial effusion and electrocardiographic changes Even more difficult to prove was the rôle of hormonal therapy in preventing cardiac complications, but these experienced observers are in no doubt of its value though 6 patients died.

They use corticotrophin only for urgent cases Otherwise they give cortisone 100–200 mg daily according to age for an average period of 15 days They also discuss the place of rest salicylates antibiotics, and anticoagulants and finally the management of convalescence and the use of antibiotics for prophylaxis against further attacks

Natural History of Tsetse Flies

PATRICK A. BUXTON C M G., F R.S professor of medical entomology in the university of London at the London School of Hygiene and Tropical Medicine London: H K Lewis. 1955 Pp 816 £4 4s

WHAT is loosely called the tsetse problem is really a complex of problems involving twenty-one kinds of tsetse flies, occurring in diverse environments throughout tropical Africa and responsible for two diseases in man and a series of diseases in his domestic stock. The whole complex has been and still is one of the chief stumbling blocks to the advance of civilisation in Africa In a subject which is so many-sided local conditions are of paramount importance It is not easy to see the problem as a whole with all its facets—medical, veterinary, agricultural, sociological—in just proportion Professor Buxton's book will therefore be of special value, for it is both comprehensive and well balanced

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[1] *Brit med J* 1955 1 855.

Naturally, he places the main emphasis on entomology—on the fly itself, its anatomy, physiology ecology, and control—and he gives a fully documented account of the tsetse flies in all parts of Africa illustrated by an admirable series of photographs and of clear maps (the work of H S Leeson) But the medical side is skilfully integrated with the entomological In several chapters he deals with the trypanosomes carried by the tsetse flies, and with the organisation of the curative treatment campaigns which in some parts of Africa have successfully controlled sleeping-sickness though the tsetse-fly population remains undiminished

Fluid Therapy

JAMES D HARDY, M S, M D, F A C S, associate professor of surgery, Medical College of the University of Tennessee Memphis London Henry Kimpton 1955 Pp 255 42s

IN small compass this monograph covers comprehensively and lucidly, the problems of electrolyte and water metabolism as met in surgical practice Physiological principles are discussed adequately by reference to standard papers, and one can find no fault in the description of the syndromes of water and salt depletion Occasional physiological errors, such as the suggestion that considerable amounts of intracellular potassium are osmotically inactive and the statement that hyperventilation tetany is associated with an *elevated* plasma-bicarbonate, are of little importance in an essentially practical handbook There is guidance to the diagnosis, the understanding, and the therapy of the major disorders occasioned by loss of alimentary secretions, and especially valuable is the discussion of burns and the particular problems posed by the infant and by the neurosurgical patient The situation is seen through surgical eyes and the book is for the surgeon The physician is less likely to find help with his own problems of "fluid therapy", there is no mention of steatorrhœa nor of commonplace medical emergencies such as salicylate poisoning

The price of the next edition might be reduced by the resection of a dozen uninformative photographs of apparatus This book is one that could do nothing but good in the hands of the house surgeon, but its cost may put it beyond his reach His senior colleague can afford the book and should have it, for whether he is resecting adrenal glands or implanting ureters into the colon it has much to offer him

Polypeptides which Stimulate Plain Muscle

Editor J H GADDUM, SC D, M R C S, F R S, professor of pharmacology and materia medica, University of Edinburgh Edinburgh E & S Livingstone 1955 Pp 140 15s

THIS book is based on a symposium held at Montreal in 1953, but it is in fact a more up-to-date review of knowledge of substances which are obtained from tissues and which (among other actions) stimulate smooth muscle, and it contains information which could otherwise only be found by an exhaustive and exhausting search of the journals The crescent nature of the field is shown by the fact that since the symposium was arranged doubt has been thrown on whether some of the substances are polypeptides

In an important first chapter Professor Gaddum describes how to decide whether a substance obtained from a tissue by a drastic extraction method is genuine or an artefact, for a mistake here may lead to an enormous waste of labour Other subjects discussed a e oxytocin, vasopressin, bradykinin, hypertensin, angiotonin, cholecystokinin, and ferritin (V D M) The book will be of value to anyone working with "local hormones", but others, even clinicians, may care to dip into it, despite the forbidding title, and see how it is possible to advance "the proper study of mankind" by examining a substance found accidentally in the plasma of a dead cat (sustained pressor principle of the kidney)

Gynécologie

NICOLAS C LOUROS, professeur titulair obstétricale et gynécologique, Universit Translated by Dr TÉLÉMAQUE NICOLOP (France) Expansion Scientifique Franç Pp 404 Fr 5500

THIS French translation of a textbook writt by Professor Louros of Athens, is intended f students as well as for qualified practition interest to a British reviewer lies in the choice matter for such a book, intended for sale in F is not long, and is divided into three almost e anatomy and physiology, gynæcological di operative gynæcology Features which str unusual include a section on sexual intercour might with benefit be included in British books on the physical types of womankind (pyknotic intersexual, &c) and, in the operative sectio devoted to plastic reconstruction of the breast operation described on that organ) The main left by the book, however is that much of th is identical with modern British and America This teaching is imparted clearly and corre the book is well produced, except that the the illustrations is somewhat uneven

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Essentials of Orthopædics (2nd ed Lond Churchill 1955 Pp 538 55s)—This mas by Mr Philip Wiles has stood the test of time, and tions have had to be made to the original text is a little larger but it is still a monograph, and particular interests are fully described Today, whe is hardly at a premium, it is pleasant to find a b is so much an author's own. It is really surpr little change has been needed, but where advance made—notably in the chapters on osteo arthritis and on "low back pain," where so much that w is now clear—Mr Wiles has ruthlessly changed The chapter on disc prolapse is lucid and co These rather general chapters are among the best The high standard of production has been maintai book is both presentable and readable It has the of not being too specialised for the reader with pædic pretensions or particular ambitions.

Control of Communicable Diseases in Ma 1955 Obtainable from H M Stationery Office 5s 6*d*)—Five years have passed since the last ed excellent handbook was published by the Amer Health Association, and its compilers have done w the increase in size to 60 pages Despite this growth of a handy size and at its present price it must be best investments in medical literature It contains of the latest information about the identificati agent, sources of infection, modes of transmis tion period period of communicability, suscept resistance, range of occurrence, and method of cont 118 communicable diseases All this authoritative is presented in an accessible form, and the Achilles previous edition—the index—has now been Intended for a wide public, including public-heal doctors nurses, social workers, and health educat military physicians and others concerned with the Armed Forces at home and abroad, it has bee into nine other languages There is probably recommend it to doctors in the public health se will almost certainly avail themselves of it, but doctor will likewise find it a standby

Origins of Resistance to Toxic Agents—A on this subject was held in Washington, DC, 1954, under the auspices of the Office of Nav and the University of Pennsylvania The proce now been published under the editorship of Dr M Dr Roger D Reid and Dr Orr E Reynolds. (Academic Press London Academic Books 195 $12)

Problems of Consciousness—The Josiah M Foundation, New York, have published the tra their fifth conference on this subject, which was he 1954 The editor is Dr Harold A Abramson (195 $3 50)

THE LANCET

DON SATURDAY AUGUST 13, 1955

atural History of Mitral Stenosis

D with the need to review the results of surgery l stenosis, we have become more keenly aware ack of a large control series The best study nosis hitherto has been that by GRANT,[1] who l up for ten years 238 men with mitral stenosis d served in the 1914–18 war At the end of rs 42% had died 34% showed progression, % were unchanged Of those whose exercise e was "good" or 'fair" at the beginning of iod 82% survived after ten years The out- s much worse in the presence of poor exercise e, auricular fibrillation and of course, con failure

EN[2] has now reported from Denmark an it study based on a follow up three to twenty ter of 351 patients with mitral stenosis of 271 had this valvular lesion alone The age f the patients at first examination was 14–73 vas a history of rheumatic infection in 58% of es, and in these the first cardiac symptoms ed, on average, fourteen years after the attack. years after the first attack of rheumatism the ty was 50% and this figure was not increased o three recurrent attacks of rheumatism The diac symptoms were usually noted in the early t the age ranged from 5 to 66 the f the first cardiac symptoms t l ranged from one to fifty two of eighteen years Survival tended the older the patient at the onset of symptoms set of auricular fibrillation which increased in frequency as the years went on was followed % survival at six years and a 10% survival at years In patients with auricular fibrillation anied by venous congestion the outlook was than in patients with right-heart failure and ythm, in the latter group there was a 60% ty in one year (The more serious prognosis group was also recognised by PARKINSON and KENNEDY[3]) Attacks of acute pulmonary shortened the 50% survival rate to seven but some were still surviving up to eighteen fter the first attack An isolated hæmoptysis f serious import (60% survival eighteen years but recurrent hæmoptyses are more grave women with mitral stenosis who had one or regnancies, 28 dated deterioration from the ncy, but in the remainder who were mostly m free no aggravation followed the preg

Most interesting of all are the figures on life ncy, based on data at the first examination American Heart Association's classification II, dyspnœa on mild exertion, grade III a on ordinary activity, grade IV, dyspnœa at 0% of patients in class II with sinus rhythm survived for twenty years, at the end of this time 40% were still in the same state as at the beginning, but the others were deteriorating Of patients in class III with sinus rhythm, or in class II with auricular fibrillation, 46% survived after ten years and 11% after seventeen years When congestive failure and grade IV dyspnœa appeared symptoms had lasted on average, for fifteen years, more than half then died in one year and 95% were dead after seven years These figures in general correspond closely to those of GRANT, but differ from those of WOOD[4] who found an average of seven years, in contrast with OLESEN's fifteen years, from the onset of symptoms to total incapacity

Mitral stenosis is a grave disease—in OLESEN's series the average age at death was 47—but the course varies widely, and some patients survive for half a century In nearly half the cases there is no history of any overt attack of rheumatism which makes it clear that cardiac rheumatism may develop quite silently Equally it may progress silently The unknown factor accounting for variation in course may be continuing active rheumatism MAGAREY[5] believes that, while the narrowing and roughening of the valves may be initiated by rheumatism, the slow build up of organising adhesions results from simple deposition of fibrin on the thickened or irregular valves over the years, but the idea of inevitable progressive constriction is difficult to sustain when we think of the exceptional cases where stenosis is first recognised fifty years after the initial rheumatic attack, and the patients in whom there is no evidence of any progression over decades COOMBS[6] and ROTHSCHILD et al[7] have shown that rheumatic activity in the heart may continue for decades The frequency with which microscopically active rheumatic lesions are und in the atrial appendage at valvotomy indicates that continuing clinically silent, active rheumatism is common, and MCKEOWN[8] has underlined the serious significance of these lesions The stenosing process in the valve begins at the outer edges with gradual narrowing, and the characteristic centimetre buttonhole size may be reached only after many years Whatever the mechanism, a way of arresting this stenosing process in the valve could pave the way to reduction of the need for cardiac surgery

It is apparent from OLESEN's study that long and patient observation will be needed to assess the effect of mitral valvotomy on survival Every operated series so far contains at least half as many disappointments as good results It is widely agreed that gross heart failure is seldom reversed by the operation Moreover, clinical assessment does not always agree with postoperative hæmodynamic findings[9,10] Measurements by WADE et al[10] indicate that the best early hæmodynamic results of valvotomy are obtained in grade II patients with sinus rhythm But OLESEN shows that many such patients have a relatively good immediate prognosis without operation. While a good deal can be said for operating before the onset of

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R. T *Heart* 1933 16, 275

Stenosis a follow up of 351 patients. By Knud tning Olesen Copenhagen: Munksgaard. 1955 Pp Dan. kr 16

son, J Clark Kennedy A E. *Quart J Med* 1938 13

[4] Wood P *Brit med J* 1954 i, 1051

[5] Magarey F R. *Ibid* 1951 i 850

[6] Coombs, C F Rheumatic Heart Disease Bristol 1924

[7] Rothschild M. A. Kugel, M A Gross, L. *Amer Heart J* 1931 9 586

[8] McKeown F *Brit Heart J* 1953 15 433.

[9] Pantridge J F Smiley T B Henry E W *Ulster med. J* 1953 22 126

[10] Wade, O L., Bishop J M. Donald K. W *Clin. Sci* 1954 13 511

gross secondary changes in the pulmonary circulation, it should be kept in mind that progression is often very slow and that the operation itself may be much improved technically in the years to come "We do not yet know whether the operations will be of permant value or only set the clock back for these patients by a few years" [11] We cannot yet tell how commonly re-stenosis will take place in patients who have undergone valvotomy Hitherto this has been only rarely recorded, but WOOD [4] mentions that it followed 3 of the first 20 valvotomies Only persistent and accurate follow-up will establish the extent of this risk

Isoniazid and Clinical Trials

ISONIAZID is a highly effective drug, and its side effects are few and unimportant The attention still accorded its isopropyl derivative—iproniazid—is therefore a little surprising, for there are many reports that, in man, iproniazid is much the more toxic of the two Thus CHEIFETZ et al [12] said that its administration had to be discontinued in 25 out of 52 cases treated LICHENSTEIN and MIZENBERG [13] found that toxic symptoms were "common and troublesome," and COATES et al [14] thought it too toxic for general use MITCHELL [15] attributed to it a death from toxic encephalitis Its use in preference to isoniazid would be justified if its therapeutic effect were so much greater that its higher toxicity was outweighed but there is no convincing evidence of this OGILVIE [16] has now reported on the course of the disease in 24 patients treated with isoniazid and 30 treated with iproniazid, both groups also receiving 1 g streptomycin three times a week After two months' treatment it was found that more than three-quarters of those who received iproniazid had had some toxic symptoms, compared with a third of those who received isoniazid (and this seems an unusually high proportion) The mean gain in weight was twice as great in the iproniazid as in the isoniazid group, but this was the only convincing difference OGILVIE says that ' prognosis, as judged by temperature response, the closure of large cavities and the incidence of bacterial resistance, was more favourable in the iproniazid group", and it is true that only 3 out of 6 patients treated with isoniazid became afebrile within two weeks, compared with all the 5 treated with iproniazid Furthermore, large cavities closed in 2 out of 11 treated with isoniazid, compared with 6 out of 12 treated with iproniazid, and sensitive bacilli were isolated in 4 out of 8, compared with 8 out of 8 But these differences are really quite small, and in the much more important factors of radiographic clearing and sputum ' conversion" the differences were even smaller They give no substantial support to the use of the more toxic product

Some of the problems concerning isoniazid still resist solution despite large trials FOX and SUTHERLAND [17] working for the Medical Research Council, have sought to determine the clinical significance of isoniazid resistance by an investigation of 93 from which they conclude that "the study of clinical disadvantages due directly to the dev of isoniazid resistance is inconclusive Nev because isoniazid resistance tends to occur i which is pursuing a relatively unfavourabl its development is an adverse prognostic ; much value there will be in this sign is p matter of opinion, since the unfavourable co generally have been apparent at the bed before the arrival of the laboratory report it is very important to find out whether i as has been suggested,[18] safely be used al retrospective analysis of a group of patient, large, treated for only two or three months not specially designed for the purpose is m give the definite answer one could wi. SCADDING said in the Lettsomian lectures problems "can only be solved by carefully and controlled investigations," and "until results are available from such investigations physician will continue to treat his patient supposition that isoniazid resistance is unfa and to plan antibacterial treatment in such a minimise the risk of the emergence of resistant

There are other pressing problems For seems probable that only a controlled cli will satisfactorily answer the question necessary to remove tuberculous nodules after protracted antibacterial treatment cannot, unfortunately, hope that this a come out of the survey now being made joint British Tuberculosis Association and the S Thoracic Surgeons even though here as m cases are available for analysis [20] This type of tion shows broadly what is happening, throu country, to patients treated surgically, and it is valuable But unless the fate of similar not surgically treated is known, the chest can make no reasoned judgment Perhaps the questions concerning thoracic surgery in ary tuberculosis could be answered by relati clinical trials These would require no than do national unselective surveys, but th require much more coöperation Such co was obtained when the Medical Research conducted their clinical trials—now unfo discontinued—and the results amply ju unselfishness of the clinicians

Reserpine and the Mind

IN a recent issue we published three artic clinical applications of reserpine Profess and Dr MCQUEEN in New Zealand [21] and Dr in Australia [22] have used reserpine in the tre hypertension, both alone and in combina pentolinium The results were good, exc disturbing mental symptoms appeared in so patients who received reserpine SMIRK and M found further that the alkaloid rescinnam obtained from *Rauwolfia serpentina* and c related to reserpine, is also liable to produc symptoms in hypertensives In the same d Dr SHEPHERD,[23] of the Maudsley Hospital, a carefully planned trial of reserpine in nent of anxious and depressed ambulant Reserpine was clearly of value in the of many of these patients These three been conducted so carefully that errors of tion can be excluded How, then, can the paradox be explained ?

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[11] Graham, G K, Taylor, J A, Ellis, L B Grunberg D J, Robbins, S L *Arch intern Med* 1951 88 532
[12] Cheifetz I Paulin C, Tuatay, H, Rubin E H *Dis Chest* 1954, 25 390
[13] Lichenstein M R, Mizenberg E *Ibid* p 573
[14] Coates, E O Brickman, G L, Meade, G M *Arch intern Med* 1954 93, 541
[15] Mitchell, R S *Ann intern Med* 1954 42, 417
[16] Ogilvie, C M *Quart J Med* 1955, 24 175
[17] Fox, W, Sutherland, I *Thorax*, 1955, 10 85

[18] See *Lancet*, 1954, ii, 691
[19] Scadding J G *Ibid*, July 9, 1955 p 49, *Ibid* Ju p 99 *Ibid*, July 23, 1955 p 154
[20] See *Ibid*, July 9, 1955, p 83
[21] Smirk, F H McQueen, E G *Ibid*, July 16 195
[22] Wallace, D C *Ibid*, p 116

eserpine is used in the treatment of hyper loses of the order of 1–2 mg each day produce in the first few days drowsiness ınd depression of activity These symptoms ıss off but after a longer period of therapy o level—usually about two to four months— us mental changes may appear [21 23] perhaps ıy as 10% of patients [21] These symptoms ıke the form of more or less severe mental ı accompanied by lethargy, unhappiness and ıl from the environment, anxiety is not ıifest [24] The *content* of the illness of course omewhat on the patient's previous person the general pattern described in different ıs similar Mental symptoms are commoner s whose previous personality was unstable [26] nptoms may clear promptly on withdrawal ıg,[21] or may persist for some time [22] Occa severe mental symptoms have been noted start of treatment,[22] but in one patient on a e of reserpine a year elapsed before mental ı was evident [24] In the majority of recorded ression has appeared after two to five months t with a daily dose of more than 1 mg The of patients observed after longer periods of ıs treatment is small The points which ıre clarification are

can the practitioner recognise the type of
whom mental symptoms are likely to appear
erpine therapy ?
the reaction of the patient to the early stages
ent afford any indication of whether he will
ıtly have severe symptoms ?
r what total dosage of the drug do severe mental
s develop ?
t is the duration of treatment before mental
s result ?
t factors affect the prognosis of the illness ?
s the existence of hypertension itself in any way
e to the precipitation by reserpine of mental
s ?

liberate use of reserpine in the treatment of ıisease may seem irrational but only because norance of the neurophysiological mechanisms DAVIES and SHEPHERD [23] have proved ıat reserpine benefited many of their patients method of inquiry did not enable them to hat kind of patient was especially likely to how such patients benefited and why the s effective Reserpine sedates chronically l psychotic patients rendering them more and more manageable clinical impressions fect [27–29] have been confirmed statistically [30] ght be due merely to a non specific sedative action, and a comparison of reserpine with a barbiturate in this type of case is needed But reserpine has unique pharmacological properties,[31 32] and the wide range of conditions in which it has proved beneficial together with the sequence of behaviour changes it has been found to induce,[29] suggests that its action may be more fundamental

Just as the psychiatric indications for reserpine have not been defined so there is no agreement about the optimum dose KLINE [30] gave 1 mg daily and others have given up to 20 mg daily [33] These large doses produce a new and important range of toxic effects occasionally fatal [29] sometimes the blood pressure falls sharply,[28] and collapse has been reported [33] In some patients an organic type of mental confusion has developed while others have shown epileptiform convulsions [29], and some have suffered from a syndrome characterised by tremor and pill rolling,' rigidity of cog wheel type, mask like face excessive salivation slowness of movements, and shuffling gait [29 33 34] This parkinsonian syndrome is said to be reversed rapidly when the drug is withdrawn [29 33 34] The same toxic effects are produced by large doses of chlorpromazine in psychiatric patients [35–41]

It seems that reserpine acts at various levels of the central nervous system It is not clear whether it selectively depresses certain neurones or whether it disturbs interneuronal conduction The total effect of reserpine in a given patient may depend on its affinity for the various portions of the central nervous system and the susceptibility of the various areas to functional impairment by the drug as well as on the patient's personality These factors will determine whether it induces depression relieves neurotic and psychotic symptoms damages the extrapyramidal pathways or increases susceptibility to epileptogenic stimuli Future studies of the use of reserpine in mentally ill patients will doubtless be directed to furnishing more detailed information on the psychodynamic changes induced by the drug and the help of psychologists might be enlisted It is also important that physicians should follow the lead of Dr P S TWEEDY [42] and record cases of depression in hypertensives during treatment with reserpine, as is done by Dr GORDON MACARTHUR and Dr BERNARD ISAACS in our correspondence columns this week Physicians would do well to withhold the drug from patients with a history of mental instability,[43] to withdraw it immediately and permanently from patients in whom depression develops in the course of therapy and not normally to exceed a daily dose of 2 mg Those who would use reserpine in the treatment of mental disorder will find encouragement in the report by DAVIES and SHEPHERD but should avoid the very large doses used by some workers and remain on the alert for convulsive or parkinsonian symptoms

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[39] Fabisch W *Ibid* p 1277
[40] Kinross Wright V *Amer J Psychiat* 1955, 111 907
[41] Bird E. G Goss J D Denber H C B *Ibid* p 930
[42] Tweedy, P S *Lancet*, July 30 1955 p 219
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Annotations

HÆMOPTYSIS

Hæmoptysis is alarming, but Anderson et al [1] observe that it has not always a sinister significance They remark that bleeding is readily produced by mild trauma of the bronchial mucosa at bronchoscopy, and add that it would be surprising if hæmoptysis did not sometimes result merely from the apposition of inflamed mucosal surfaces during a violent bout of coughing Staining of the sputum is common in winter respiratory infections and during exacerbations of chronic bronchitis indeed in certain seasons a considerable proportion of the hæmoptyses investigated at chest clinics are of this innocent character Anderson et al have detected by bronchoscopy areas of mucosal inflammation and erosion which were sources of hæmorrhage, and they point out that such foci must often be beyond the range of the bronchoscope Simple bronchial infection is no doubt responsible also for some of the exasperating cases of recurrent hæmoptysis for which no obvious cause can be found, for if "dry" bronchiectasis can give rise to bleeding there is no reason why an area of chronically infected mucosa in a bronchus of normal calibre should not do likewise Possibly, too, some cases of recurrent hæmoptysis are due, not to infection or trauma of the bronchial mucosa, but to some structural or functional defect In idiopathic pulmonary hæmosiderosis, for example, blood escapes from the alveolar capillaries, and deposits of hæmosiderin in the lung produce a miliary appearance on radiography Hamer [2] has reported an example of this condition with unusual features which have rarely been described [3-6] The patient was a young adult who had recurrent frank hæmoptysis , anæmia was present only intermittently, and a chest radiograph was clear when symptoms first appeared Some believe that the lesion responsible for this disorder is a defect of the elastic tissue of pulmonary arterioles, but others consider that the fundamental cause is increased permeability of the pulmonary capillaries which leads to hæmorrhage, and that destruction of elastic tissue is secondary [2 5] Kerley [3] suggests that there is a mild form of the disease which may persist for years in adults, and if this is so it may account for some cases of unexplained recurrent hæmoptysis

Menstruation is sometimes cited as a cause of hæmoptysis [1] The fact that hæmoptysis not infrequently occurs during or just before menstruation in women with pulmonary tuberculosis is evidence of an increased blood-supply to the bronchial mucosa at this time , but menstruation per se is no sufficient explanation of hæmoptysis

Recognition that a fair proportion of hæmoptyses are without serious significance does not, of course, diminish the need to investigate all cases Cardiovascular and systemic disease should be sought, and radiographic examination of the chest and examination of the sputum for tubercle bacilli are essential If radiography shows
e of disease, bronchoscopy and broncho-
ld be undertaken, especially if the hæmop-
extensive or unassociated with an episode
ry infection MacHale [7] reported that of 71
hæmoptysis in which radiography showed no
ity, bronchoscopy revealed a neoplasm in a
bronchus in 4 instances , and endobronchial
ulosis and bronchiectasis may likewise give rise to hæmoptysis without producing changes in
graphs Jackson and Diamond [8] estimated roughly a quarter of the cases of hæmopty
average series no satisfactory explanation
found after the fullest investigation Ander
believe that, in the great majority of the
disease is unlikely to emerge, and they expre
that many physicians are so reluctant to
diagnosis of tuberculosis in the face of mod
evidence But tuberculosis crops up often
follow-up studies to justify wariness

REABLING THE ARM

> "The words dexterous, maladroit, sinister,
> their place in the language from the use of our
> commonly talks of someone as having a good
> subject One urges oneself to take a good grip of
> So have thought and the movement of the
> welded together in common parlance. Only by
> them together in treatment can a successful
> attained"

Mrs Jones,[9] occupational therapist at F
the recuperative home of the Slough In
writing on occupational therapy for the upper
here in mind that until a patient can picture
—form a kinæsthetic image of it—he cannot
voluntarily , and her own imaginative me
with such patients are based on this fact The
occupational therapist, she says, must
injury If the master hand is disabled, it
whenever possible, to resume its leadership,
this is impossible the other hand—the "slave
must be taught to lead, and "the abdicating
must learn to assume the more modest role
and to do this with grace and efficiency"
hand is disabled the master hand must be
from becoming too protective and too greedy
the slave hand must be offered new and
opportunities, and not allowed to back out
of responsibility If both hands are disabled,
of power must be distributed according to
not always easy, or even always desirable,
patient off in work akin to his normal trade.
hand is disabled, and he is given work which
accustomed to do with his master hand
slave hand steadying the tool or the job, he
mayed to find how much his skill depended
hand, and how his injury has delayed his
may develop some undesirable trick mo
things up Again his hands will be soft, and
not at first be equal to the demands of his
say engineering He may have to begin on
and progress to woodwork before he can get
own job Provided its owner has the right
limb often improves with remarkable speed.

Thus a skilled engineer with a badly burned
had had a series of skin grafts, arrived at F
able to extend his elbow to 140° only, and with
movement in any direction at the wrist After
of treatment he could extend his elbow to
his wrist and fingers fairly freely He was dis
employed by his firm for a time on inspection,
months he was back on his own job, and anxious
skin graft to improve the span between his th
index finger

Mrs Jones also mentions incentives which op
wrong direction decentives, perhaps.

Repetition work, such as is done in a factory,
useful exercise for some injured limbs , but when
work of this kind from various firms in Slough
persuade the patients that they were not,
exploited

The work was carelessly done, much of her own
in inspection and correction of faults, and

Anderson, A E jun Buechner, H A., Ziskind, M M Ann intern Med 1955, 42, 1246
2 Hamer, N A J Brit med J 1955, i, 1008
3 Kerley, P In Textbook of X-ray Diagnosis Edited by S C Shanks and P Kerley London, 1951 vol 2, p 178
4 Walton, M , Williams, A. A Brit med J 1951 ii, 300
5 Tait, G B , Corridan, M Thorax 1952 7 302
6 Cliff, J M Brit J Radiol 1953, 26, 302
7 MacHale, S J Thorax, 1953, 8, 164

8 Jackson C L , Diamond, S Amer Rev Tuber
9 Jones, M S Brit J phys Med June, 1955 p

pattern of thought was set up in the occupa apist, as well as in the patient ' This type of given up instead she engages the interest of each other, and sets them to making tools and ipment for their fellows to use

ter crude splints or self aids which patients have make themselves, or seen in the workshops are ntly worn, used and appreciated than those finely icles which come from an unknown outside source '

make straps slings and sandbags for the n and—at their own suggestion—ashtrays ision stands which they can buy for their esides repairing chairs and gramophones and games equipment Among all these activities possible to find one allied to a patient s normal livery time is no object a job may have to be or months to wait for a patient who will benefit leting it Many of the old fashioned handicrafts in the treatment of hand injuries basketry and in be taught with either hand leading and leather work and carpentry call for the use of s Large handles can be put on tools, and table cutlery, to encourage grip

it who had lost all his left-hand fingers but had ost of his thumb had a temporary prosthesis made the workshops with a Perspex peg capped with oppose the thumb He arrived at Farnham Park after 18 months in hospital, and handed over his looked at as if it did not belong to him any more attitude to his hand changed as he learned to use it

ixed to tools or machines can be designed to special movements—for instance flexion of phalanges or interphalangeal joints ' Terry gs used for grip exercises can be fixed to many nd of handles, thus leading patients to practise almost unconsciously

y-driver with a severely injured hand produced an wheel, and with this fixed to a machine drove rough his reablement and was back on the road in s. In hemiplegics extension of the fingers is encour eans of a block of wood with the hand print deeply to fit the fingers : the patient uses this as a sanding with his good hand over his spastic one pu hes the thmically over the surface to be smoothed. The dually relax and the patient recovers his kinæsthetic xtension.

cupational therapist dealing with limb injuries idently be observant ingenious and endlessly improvise she must also as appears from this a sound and practical psychologist It is the it in a reablement unit no less than appropriate which gets an injured person quickly back to

IC DAMAGE FROM THERAPEUTIC AND DIAGNOSTIC USES OF X RAYS

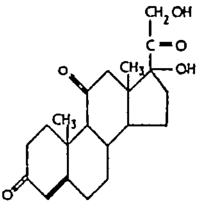
TION is at present focused on the possible genetic radiation associated with nuclear explosions ear power[1] but possible genetic dangers from peutic and diagnostic use of X rays are also t

U S.A it has apparently been the practice to ne women with amenorrhœa and some with y radiation of the ovaries The dosage is con and Müller[2] has suggested that relief in this woman s distress at her infertility is probably it the price of induced mutations which will e to the death of some of her descendants many generations hence The fact that a few of the children of women so treated showed no lities[3] is of little significance since, as with the of the Hiroshima and Nagasaki survivors[4] the effects will not become apparent in the first few generations if (as experimental work suggests) most of the mutations are largely recessive

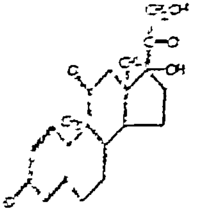
Of perhaps greater importance are the effects of the diagnostic use of X rays. Stanford and Vance[5] have reported a useful investigation of the dose to the gonads from various diagnostic X ray procedures For women they measured the dose to the skin over the ovaries and then converted this to the dose to the ovaries themselves by a factor worked out by preliminary experiments on cadavers They found that the dose to the ovaries varied from 0 020mr for radiographic examination of the fore arm to 800mr for a lateral radiograph of the lumbosacral joint The dose to the testes varied from 0 13mr to 1100mr per film In addition, by working out the relative frequency of the different procedures in patients under 30 they established the average gonad dose per film; this is of the order of 35mr for males and 60mr for females Stanford and Vance did not attempt to calculate the genetic effects of this, but it is possible to put forward a very cautious estimate of the extent of these effects. Assuming that the background radiation over a generation is about 3r[6] then an average of, say, 1 diagnostic X ray examination per person per generation would increase the mutation rate due to radiation (and hence the tendency to genetically determined deaths from this cause in later generations) by about a hundredth in men and a fiftieth in women This calculation assumes that, as in Stanford and Vance's study care is always taken [illegible] reduce the field area to a minimum possible when taking radiographs

NEW STEROIDS

RECENT accounts[7–9] provide further [illegible] about two new synthetic steroids—meta[illegible] (prednisone Meticorten) and metacortand[illegible] [illegible] nisolone Meticortelone ')[10] Metacorta[illegible] [illegible] from cortisone only in the addition of a [illegible] [illegible] in ring A



CORTISONE



[illegible] ACIN

The outstanding [illegible] is their very weak action on [illegible] the need for restricting the [illegible] and an [illegible] inflammatory [illegible] as great as that [illegible] it cortisone. [illegible] 20 patients [illegible] a rheumatoid [illegible] either [illegible] nal or hydrocort[illegible] metacort[illegible] was started. [illegible] workers the [illegible] in the produced [illegible] of symptoms [illegible] the null cortisone [illegible]. The older [illegible] has shown been [illegible] ificance are accepted [illegible] for [illegible] and did [illegible] daily. I [illegible] whether [illegible] suppresses [illegible] [illegible] dose of [illegible] [illegible] earlier [illegible] [illegible] treatment [illegible] daily

ECTOMY

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[1] ockroft J Nature Lond 10 5 175 873.

[2] üller H J Amer J Obst Gynec 1054 67 467

[3] aplan I I Ibid p 481

[4] eel J V et al Science 1053 118 537

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

signs of improvement a rise in hæmoglobin in patients with anæmia was particularly striking In the main the untoward effects of these new steroids are similar to those of cortisone, except for their negligible effect on sodium balance Euphoria and insomnia seem to be rather prominent but acne is apparently rather less troublesome than in cases treated with cortisone One serious undesirable effect has already emerged , in a quarter of the patients treated by Margolis et al [7] dyspepsia developed Furthermore only a few months after the first account of the use of these new agents in rheumatoid arthritis [11] a report from the same source [8] has described the development of duodenal ulcer in 3 out of a total of 18 successive cases treated The ulcers were symptomless, and were discovered in the course of periodic radiographic examination Radiographs of the stomach and duodenum had been taken immediately before steroid treatment in 2 of the patients, and had not been abnormal Without interruption of steroid administration signs of healing were apparent in 2 cases after three weeks of treatment by diet and aluminium hydroxide The incidence of peptic ulceration in this group exceeded what might be expected with cortisone or corticotrophin Bollet et al [8] emphasise that patients treated with these new drugs must be carefully observed in order to avoid unheralded perforation or hæmorrhage, and they suggest that aluminium hydroxide should be administered prophylactically In 1 case in this series, in addition to a peptic ulcer, psychosis and impaired glucose tolerance developed

In summary, metacortandracin and metacortandrolone are potent anti inflammatory agents, similar to cortisone in their therapeutic indications, but possibly more effective definitely less liable than cortisone to produce fluid retention (though they may induce a rise in blood pressure), and unpleasantly liable to cause peptic ulceration—which may be symptomless

SPECTRAL PHONOCARDIOGRAPHY

PHONOCARDIOGRAPHY is the graphic registration of heart sounds and murmurs The signals from a microphone placed on the precordium are amplified by thermionic valves and led into a mirror galvanometer, the movements of which are reflected on to moving photographic film or paper The lines on the finished record are close together if the sound or murmur is of high pitch or frequency, and more widely separated if the pitch is low , the amplitude of the lines represents the intensity of the heart vibrations The human hearing mechanism and the stethoscope greatly attenuate the lower frequencies, and filters mimicking this effect are incorporated in the phonocardiograph if it is to produce records resembling the findings of clinical auscultation

By this means much has been learnt about the timing of heart sounds or murmurs and their relation to each other and to other events in the cardiac cycle [12–14] Furthermore this graphic registration of the findings by clinical auscultation is of value in teaching Faint murmurs, such as those due to very slight aortic incompetence, have been difficult to record better than they can be heard, o the sensitivity of the human ear to frequencies undred to a thousand cycles per second, at urmurs occur By lessening the attenuation requencies by means of filters, it should be o record the low-frequency heart sounds and s far better than they can be heard, since the relatively insensitive to frequencies below 100 s per second Yet here again the ear has proved more ent than was expected, perhaps because of the man quality of selective concentration, and the use of a bell stethoscope which is more effective than the diaphragm for low frequencies Furtherm low frequency heart vibrations have so fa information than those of higher frequenc better suited to the characteristics of hum - Analysis of the frequency components of t and murmurs [15 16] has so far yielded little diagnostic value In standard phonocardi frequency of murmurs is not always easy to it is difficult to measure the frequency co short sounds McKusick et al [17] have used t of the sound spectrograph developed by the Bel laboratories, in a technique termed "spectra diography" The heart sounds and murmur form pass from the microphone on the ches battery of filters each of which is tuned to frequency band For instance, the bottom have a band width of 20–80 cycles per se the next a band width 80–140 c p.s., and so filter will let through energy only in its par quency band The output from each filter separate small light, and each light will glow dully according to the intensity of the sound in its particular band or frequency The l arranged vertically in a row with those highest frequencies at the top and those lowest frequencies at the bottom Photog vertical row of lights with film or paper zontally gives a recording which McKu spectral phonocardiogram This is a good looks like the silhouette of a conventional p gram, and the frequency of each part of sound can be seen at a glance Each vertical line of t represents a vibration in the sound or mur in conventional phonocardiography , but tall it represents a high frequency rather vibration Intensity (loudness) is indica brightness (or blackness), since the bright bulb depends on the amount of energy in t frequency from which it is served Thus phonocardiography frequency is seen more intensity The apparatus required for spec cardiography is complex, but McKusick ha simpler method involving an intermediate ta

Whether this technique is valuable it is to say, but some examples of its use have al described [18–20] So far those who have used th nique have mainly confirmed the findings of co phonocardiography particularly the relation to each other and to murmurs On the whole nique does not show these points quite a we phonocardiograph using galvanometers wi frequency response This is partly because hi and high intensity happen to be linked togeth heart sounds and murmurs, so that the phonocardiogram with its clear depiction does not miss much of what has so far bee this new frequency analyser But spectral p graphy is not much more than a year old and mical improvements can be made It would be helpful if the recordings were made at a speed so that the sounds and murmurs were separated , and, while a simultaneous gram and record of respiration are already take be an advantage to have another simulta recording, and a record of the carotid pulse The range of density, indicating intensity improved , but, as with radiographs, there be some loss in reproduction

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Special Articles

OF " IN CLINICAL RESEARCH *

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OF OBSTETRICS AND GYNÆCOLOGY IN THE
OF SHEFFIELD ; CONSULTANT OBSTETRICIAN AND
ST UNITED SHEFFIELD HOSPITALS AND SHEFFIELD
REGIONAL HOSPITAL BOARD

ick woman consults a medical man she comes ons that she hopes may be answered Some nswers can be quick and certain and such oken of as within the province of medical is true that there are some who do not at once at the easily resolved uncertainty is part of edicine but that is because at times we all what we now take for granted had at one time ved Semmelweis just over a hundred years g observed the similarity between a friend s and fatal puerperal fever postulated the that puerperal fever might be the result of nts brought from the dissecting room but it til he tested the validity of this hypothesis students to clean their hands that he in large measure its truth

rber (1954) speaks of the biologist s road to describes six stages in the journey along this first stage is the choosing of a question the collecting of the data the third their inter the fourth the testing of the validity in any and the fifth the writing up of the work done tage is the contemplation of the work in its ext

THE DATA

five stages may conveniently be discussed by xample from a paper written many years ago

I—TOTAL VERSUS SUBTOTAL HYSTERECTOMY

sterectomy	Post operative infection	No infection	Total
ion			643
ration			252
	92	803	895

on was whether total or subtotal hysterectomy preferred and the criterion by which this was judged was the incidence of post nfection (Nowadays such a question would ot be asked or if it were, different criteria hosen)

of 805 cases of hysterectomy was studied of ations 643 were total operations and 252 perations of all cases, 92 were infected The first point is that these figures must be orrect for if they are not there is no point ing with any further examination of them or carelessly compiled data are scarcely worth ght and certainly not worth careful analysis analysis is a precision tool that is misused ged if applied to data of such inferior quality ad better be scrapped

second point to be remembered One often d in discussing a problem that a large series y to settle an uncertainty only to a point Though random errors may be presumed to as the numbers increase, systematic errors eliminated by increasing the numbers. For example, in the hysterectomy study I am using one can imagine the odds heavily weighted against say the subtotal operation if all or a proportion of the total operations had been followed by chemotherapy or if only one surgeon was responsible for the subtotal opera tions and the conditions in which he worked were less favourable as regards postoperative sepsis than those in which the other surgeons worked Clearly, if such a bias exists in an example careful analysis can scarcely be justified Likewise, careful analysis would scarcely be justified if the subtotal operation has been chosen for those diseases especially liable to lead to postoperative infection.

For argument s sake we will assume that there is no bias, and we may therefore proceed to the analysis This study is an experiment, for it is concerned with the testing of some hypothesis In this example it is a hypothesis of no relationship, or null hypothesis which we may formulate somewhat in the following terms the incidence of postoperative infection is not influenced by the type of hysterectomy done Now if this hypo thesis be true it follows that the numbers within this table should be such that the proportion of cases found to be infected after operation is the same whether the total or the subtotal operation had been done it is quite simple to calculate what the expected numbers would be (table II) Since 92 cases in 895 were infected we should by our hypothesis expect that among the total operations there would be $\frac{92}{895} \times 643 = 66\ 1$ infected cases thus $a = 66\ 1$ Subtraction will give the marginal totals of b c and d Now we know what to expect if the hypothesis of no relationship be true—and what is very important we have something very exact against which the actual observations may be compared (table III) and these may now be added to the table

TABLE II—TOTAL VERSUS SUBTOTAL HYSTERECTOMY

Hysterectomy	Post operative infection	No infection	Total
Total operation	a	b	643
Subtotal operation	c	d	252
Total	92	803	895

INTERPRETATION

Interpretation is now possible If the observed numbers and the expected numbers are the same there is no reason to doubt the truth of the null hypothesis If they differ a little we must not at once condemn one surgical procedure rather than another chance variation and other known and unknown factors will all have played a part and so a few cases either way will not lead us to the conclusion that the null hypothesis is not true It is only if there is a substantial difference between observa tion and expectation that we will say that there is a real difference present

The further our observed distribution lies from the expected distribution the more likely it is that the null hypothesis is not true and that the grouping has shown up a real difference Statistical tests of significance are

TABLE III—TOTAL VERSUS SUBTOTAL HYSTERECTOMY

Hysterectomy	Post operative infection	No infection	Total
Total operation	61 (*66 1*)	579 (*576 9*)	643
Subtotal operation	31 (*25 9*)	221 (*226 1*)	252
Total	92	803	895

The observed numbers are on the left the expected numbers are in parentheses.

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part of a lecture on the Interpretation of Clinical given to St Mary s Hospital Medical School on 1954 no more than measures of this difference between observation and expectation To obtain a measure of this difference we *might* start by subtracting the observed numbers from the expected numbers in all four cells and adding the differences , but this will not get us far, because the sum of these differences is zero If, however, the differences are first squared, the negative signs will be eliminated Clearly, too, the meaning of these differences must depend on the number of cases studied, and so the contribution from each cell may reasonably be modified by division by the corresponding expected number We now have as our measure of the difference between observation and expectation the sum of the observed number less the expected number squared, divided by the expected number this is known as chi square (χ^2) In our example,

$$\chi^2 = \frac{(64-66\ 1)^2}{66\ 1} + \frac{(579-576\ 9)^2}{576\ 9} + \frac{(28-25\ 9)^2}{25\ 9} + \frac{(224-226\ 1)^2}{226\ 1} = 0\ 26$$

The smaller the value of chi square the closer is the agreement between observation and expectation under the null hypothesis , the larger the value of chi square the more strongly does the evidence point towards the existence of a real difference between the underlying liabilities to infection following the two types of operation Yet, even when there is no real underlying difference, we shall rarely be lucky enough to get a chi square of zero (i e , perfect agreement between observed and expected numbers) , all we can say is that if there is no real difference, the chi square will tend to be smaller than if there is such a difference

The statistical tables tell us that 95% of the values of chi-square (computed from this kind of table) which are likely to happen by chance lie between zero and 3 84 If our calculated value is greater than 3 84, it follows that either a 1 in 20 (5%) chance has come off, or a real underlying difference exists

The discipline of statistical inference directs us to draw the latter conclusion, on the principle that long chances do not come off very often, and we shall therefore rarely be wrong in drawing this conclusion "Rarely" here means 1 in 20 , and, if we consider this too big a risk to accept, the remedy is in our own hands , we may increase our critical value of chi square to 6 64, which (as the tables tell us) reduces our risk to 1 in 100 It may not, however, be wise to insist that this risk should be too small, for there is another risk to be considered—i e , that we may attribute to chance a result which is due to a real difference—and by decreasing the one risk we increase the other Statisticians usually try to steer a course between these two risks and the 5% level of significance (i e , corresponding to a 1 in 20 chance) is what they usually recommend for general use If the value of χ^2 calculated is significant at the 5% level it is sometimes said to have a probability (P) of less than 0 05

There is no certainty, there never can be any certainty, in arguing from the particular to the general Therefore we may take any level we like as significant , but if we adopt easy standards at least let us say what they are and not be surprised if later we find out, or it is pointed out to us, that we have drawn the wrong conclusions

data It is foolish to be too dogmatic about

where the probability is higher than 0 05—

fall below the value corresponding to the 5%

significance

me sound another note of caution Just because a

ence is significant does not explain the difference,

does it mean that the particular arrangement or

uping chosen is responsible for the difference

Tests of significance take different forms according to the different problems, but they all conform more or less to the same pattern Consider another example Many years ago I wished to establish the relationship between the height of the puerperal uterus and the state of the bladder whether filled or empty Therefore I measured the uterine height in inches of 14 puerperal women just before and just after they had passed pared the figures obtained (see table IV)

TABLE IV—UTERINE HEIGHT IN PUERPERI
AFTER MICTURITION

Case no	Measurements (in)	
	First	Second
1	7 50	6 25
2	4 25	3 75
3	7 00	4·50
4	6 00	4 50
5	8 00	4 25
6	3 75	2 25
7	5 00	4 00
8	6 25	5 25
9	5 00	2 00
10	6 75	3·00
11	7 50	5 25
12	4 25	2 50
13	6 50	4 25
14	5 50	4 00

Because each pair of readings belonged to only 1 patient, it was appropriate that tion should be on the difference between the ment and the second (Note that, by making her own control, the precision of this simp was made very high) Now the hypothesis ship might be expressed thus the state of does not influence uterine height, and the change should be expected between the second measurements Starting from the two slightly different approaches are poss

(1) If the hypothesis be true, the difference have as many figures with a negative sign positive sign, for there would be no reason one column should exceed those in the other , a positive sign Approached in this way it between tests of significance and chance fairly well illustrated It is like calling red cards in a pack, and negative values the as the chance of drawing 14 consecutive red so the possibility in this experiment of getting positive by chance is so slight that we may null hypothesis is not true But this is an because no allowance has been made for the values in the difference column We can if we analysis even more precise by following up the no relationship by a second approach.

(2) If this hypothesis be true, the average of the difference column should be zero The test is then a comparison between the observed

There are countless other aspects of test which may concern the clinician in his readers are referred to standard works on However complicated a test may appear, the logic of the test will be similar to that simple examples given here When the ated, much is gained because the significance may often be recognised without the all the actual calculations

EXPOSITION

The questions have been asked and the and analysed All that remains is to write done Some find this step wearisome, to be unimportant I look on it as interesting, and worth while, for it is comes to put one's thoughts down on paper substance of the work becomes apparent Its viction that the subtle shades of emphasis research have no existence without the

I wish to thank those of my colleagues me with this short paper, particularly Prof D and Dr G H Jowett, of the department of the University of Sheffield, for their most helpf

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Press

ADULT IMBECILES

ABILITIES AND TRAINABILITY *

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ant survey by Lewis in 1020 suggested that
ien about 60 000 imbeciles in England and
seems likely that imbeciles have shared in
decline in infant mortality and that the
w drugs and therapies has prolonged their
hence their numbers † The importance of
of imbecility cannot however be measured
numbers alone for to those families into
are born such cases represent a formidable
onal, and economic problem particularly
r life they are seldom able to contribute
o their own support

s than two thirds of the imbecile population
ommunity where at the best they are kept
ccupation centres and at the worst may be
where they often cause immense difficulties
tunate parents and normal siblings The
umber rather more than one third are in
but there are long waiting lists of those
ospital admission is sought and in any
priority on such lists tends to be lower than
y, destructive idiots or high grade delin
in at the best the imbecile in an institution
ied, although often only nominally at the
y do virtually nothing year in and year out

CAL OPINION OF IMBECILE ABILITIES

ch research has been done on medical and
ects of imbecility the psychology of the
scarcely been studied at all. Indeed text
such a gloomy picture of their adult abilities
blem must have seemed hardly worth investi
is Tredgold (1952) states that

> dt of training a considerable proportion can be
> such simple duties as sweeping and scrubbing
> ing brasses, weeding garden paths collecting
> ping in the laundry and so on. But they can
> o things under supervision. They are quite
> adapting themselves to anything out of the
> ich they have been accustomed and it is doubtful
> work they do from an economic standpoint is
> ervision it entails None of them can contribute
> ably towards the cost of their keep

s (1029) writes

> are incapable not only of earning an independent
> it even of contributing materially to their own
> o best that can be expected of imbeciles will be
> of routine tasks under supervision The brightest
> go in a somewhat irregular fashion such menial
> ping dusting scrubbing floors, washing earthen
> reakable articles, and even rough laundry work;
> however they would need almost continuous
> supervision. In wood work the best of the imbecile youths can manage rough polishing sand papering and hammering large nails and in needle-work the best of the girls can manage coarse stitching and tacking few will be able to thread their own needles [and] tying shoe laces often remains entirely beyond their powers '

This, then is the clinical opinion of authorities on mental deficiency and no one would deny that the imbecile, taken at ' face value gives the impression of such impairment that little can be done for him But the question arises whether face value is necessarily a true picture particularly in economic circumstances different from those prevailing at the time the quoted statements were originally written Through the interest of members of the Medical Research Council's Unit for Research in Occupational Adaptation this problem is being examined afresh

RECENT INVESTIGATIONS

Some of the studies by members of the M R C unit will now be briefly described Most of their work on imbeciles has been done at The Manor Hospital Epsom

Gordon (1953) and Gordon O Connor and Tizard (1954 1955) observed 40 male imbeciles aged from 17 to 35 and with a Stanford Binet range of intelligence quotient (I.Q) from 25 to 48 points (mean 35) in studying Some effects of incentives on the behaviour of imbeciles. They found that on a some what unpleasant persistence task imbeciles clearly respond to incentives in an orderly and predictable way and in a direction not unlike that found amongst normals. It was also clear that the subjects were capable of intense and sustained effort at least over short periods of time.

A second experiment used a simple manual dexterity task—namely the insertion of small nails in the perforations of zinc sheeting this called for precision, speed and accuracy Gordon states that examination of the learning curves for the first thirty trials did not suggest any striking difference from the shape of learning curves reported in several studies employing a simple motor task with normal subjects. The final trials did not indicate that a limit of improvement had been reached by any but a few subjects. After a six week interval of non practice [the] subjects achieved within three trials the equivalent level of performance which originally required at least thirty trials to reach." It was concluded that many traditionally accepted generalisations about imbecile ability were not supported by the data indeed the results often supported quite opposite views.

Tizard and Loos (1954) investigated the learning of a fairly complex spatial relations test by six imbeciles. All showed rapid improvement and considerable transfer of training to a similar task. When the subjects were retested a month after the final practice period their scores remained much higher than initially It was concluded that a subject s initial score is likely to give a poor idea of his ability to do the test after practice

In a further investigation by Loos and Tizard (1955) the questions asked were: 'can adolescent and young adult imbeciles of medium grade be taught to do a simple industrial job with sufficient care and skill to make possible their employment on it, [and] what conditions will enable them to work steadily and happily throughout a normal working day without compulsion or punishment ?

6 subjects were placed in the hospital s rehabilitation unit, where training of the feeble-minded is carried out Here industrial work is undertaken which at this time consisted in folding and gluing cardboard boxes for a London firm. These 6 imbeciles had all been regarded for many years as being capable of only limited work under constant super vision and none had been deemed exceptional in any way indeed they formed a fairly representative sample of their grade and age They were trained to fold the boxes, a task involving nine different bimanual movements to be made neatly and in a specific order Within two weeks they were able to make deft and precise movements more efficiently than some feeble minded boys whose average I Q was 40 points higher but who did not use such a good technique They were very responsive to changes in their working condi tions and the most suitable appeared to be those in which they worked as members of small groups whose production was related to the supply of material to higher-grade patients

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paper read by the senior author at the annual
ce of the British Psychological Society April,

a (1952) quoted by Kirk and Spalding (1953)
ted out that in New York in 1920 85 newborn
of every 1000 births and of these deaths 35·3
from congenital debility and malformations.
the infant-mortality rate had dropped to 25 per
which 16 8 resulted from congenital debility and
ations. Thus, writes Benda 10 newborn
00 live births who as late as 1920 would die of
al factors, survived in 1940 It is likely that
these would be imbeciles.

THE PRESENT STUDY

These and other experiments have led us to raise several questions, such as the following

Can imbeciles do a full day's work on industrial tasks ?
Can they acquire comparatively difficult skills ?
To what extent does initial ability (which we have termed "face value") relate to final achievement ?
What, indeed, are the limits to imbecile trainability, and what practical and theoretical implications emerge ?

Before describing our attempt to answer these questions, we must make clear the definitions of imbecility to which our work relates Here there are two possible approaches, the legal administrative and the scientific, which are highly correlated at this level Our subjects are all legally defined as imbeciles and certified as such that is, they show " arrested or incomplete development of mind " which is " so pronounced that they are incapable of managing themselves or their affairs, or, in the case of children, of being taught to do so" (Mental Deficiency Acts, 1913–27) *It is true that some mental* defectives function at a low level only temporarily, and retardation of mental growth by adverse childhood experiences may later be made good cases have been authenticated of individuals who originally functioned at the imbecile level but later improved (see Clarke and Clarke 1953) But our subjects are not " retardates" of this kind They conform to four criteria (1) on the legal administrative definition, they are certified as imbecile , (2) their I Q lies within the range 20–49 , (3) an organic ætiology can be either demonstrated or presumed (see Penrose 1949, Crome 1954) , and (4) their disability is deemed permanent

The subjects are, in fact, the same six male imbeciles as were studied by Dr Tizard and Dr Loos in the earlier work Their age range is 20–30, with a mean of 24 , their range of Stanford Binet I Q s is from 24 to 41, with a mean of 33 , and their period of stay in this hospital ranges from six to fourteen years with in most cases long periods in other institutions

The group includes one mongol and one congenital syphilitic , the condition of another may have resulted from spinal meningitis at the age of 3 , another is of syphilitic stock , another had scarlet fever at an early age which may have been a relevant factor , and in the final case the ætiology is obscure

Two of the six look fairly normal, while the remaining four look typically imbecile , two can hardly talk at all, although the remainder are quite garrulous Three cannot name colours correctly, but all can match them , two are hoarders of rubbish and two are unstable, one of the latter showing apparently psychotic traits Four of the six do not know their ages a 24-year old saying that he is aged 10, while another of the same age merely maintains that he is ' over 18 " Only one can count above ten, and two cannot really count at all.

Thus in all respects these are typical imbeciles , and their response to psychological tests of any sort is exceedingly poor

For the last two and a half years these 6 imbeciles have been employed as cardboard box folders in a small experimental workshop, where their work and behaviour have been carefully observed On the average, their output of cardboard boxes has been 30,000–40,000 per thirty five hour week, but on occasion—e g , when a special order had to be fulfilled rapidly—they have reached 60,000–70,000 During the whole of this period sickness has been very rare , most have had feverish colds or influenza, but there has been nothing more serious Supervision is minimal, since they work reliably and consistently , in fact, the supervisor normally is at the other end of the building and merely visits this workshop every hour or so—a fact of importance in view of traditional attitudes about the necessity of continuous supervision Indeed one weekend, in the absence of the supervisor, all
6 imbeciles became bored, gained access t
workshop, and worked all morning witho
vision at all For the last two years it has b
they can do a full day's work reliably and
money thereby , and, further, they have t
ince of enjoying their more active life

After a pilot experiment with 1 imbecile
gations were designed to elucidate the que
mentioned earlier

Experiment 1 investigated the abilities of
to use a simple guillotine and to cut w
exact lengths—in this case 10 in Though
task requires both dexterity and coordinatio
movements have to be made by each h
correctly, or the wire will slip resulting in err
are commonly regarded as lacking in thes
it would therefore be predicted that their l
a task would be difficult or indeed impos
larly with an allowable error tolerance of
(plus or minus)

Each had the sequence explained and tw
He then cut 5 wires only as practice, with he
as necessary, and from then on his perform
both for speed and accuracy There were two
hour each, separated by a week of non practice
was poor, ranging from 15 to 40 wires cut in fi
an average of 27 At the end of the second hou
range was from 32 to 57 wires per five
average of 49 Initial and final scores for each
follows 35–46 , 23–33 , 40–52 , 30 56 , 16-
the end of the second session there was no
the subjects had reached their limit of impro
level attained by 5 of them was little diff
performance of those of average I.Q 40 points h
been well practised in this task

The conclusions reached, which sub
seemed to confirm, were (1) that the initi
pared with the normal is exceedingly low,
initial level seems to predict final level e
or very poorly , and (3) that the main distin
the performance of imbeciles and people
higher I Q is not so much the final level of
on simple tasks as the time taken to achi
This experiment made it clear that 5 out of
could cut wire accurately at rates which w
average income of £2–3 per week.

Experiment 2 was a relatively complex
—the soldering of 4 different coloured
correct terminals of an 8 pin television
requ
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The
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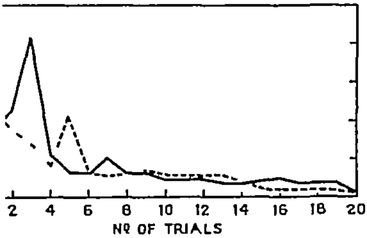
Fig. 1—Twenty four-year-old mongol, I Q 34, soldering television components. Earning capacity 10s per day



e-pump assembly Learning curves of two imbeciles

e too much or too little solder on the iron the terminal through which the solder runs may kward position and so on to each of these the to learn to adapt and in view of traditional imbecile ability and trainability it is surprising ald even attempt such a task

res with help ranged from four to nineteen plug with an average of rather less than eight When the experiment was terminated after a 34 trials, the time per plug without any assistance uced to a range of from 1 min. 42 sec to 3 min. rage 2 min 27 sec) and errors had become

terest that in every experiment in this series, ility of performance is very considerably reduced of practice that is to say from very different es on the particular task they reach very similar

imbecile the learning of this skill is very leed but all improved their performance l at the conclusion there was no certainty ad reached their peak speed At this stage l rather slower than high grade patients, but ely that they could each earn about £3 per s job This task cannot really be considered able for them for it seems to be somewhere ceiling of trainability Simpler soldering owever are well within their powers

ment 3 an attempt was made to teach a simple sk involving a sequence of different opera ycle-pump assembly was chosen because 0 erations have to be performed in the correct ding the use of screws and washers which in d seem to be a very difficult process for them. t was given one demonstration of the assembly ded to follow the experimenter in each opera then on he was timed *Initial scores ranged* 20 sec to 10 min 45 sec. with assistance from enter By the thirtieth trial the time per nged from 51 sec to 1 min 50 sec. without ce Accuracy had become perfect ; and indeed to be an ideal assembly task for imbeciles s not so much the end level that distinguished mance from that of normals, as the length of ed to achieve it—i e, one and a half hours a few minutes. Fig 2 shows typical learning his assembly

terest that in *experiment 4* the subjects were learn a more abstract series of operations, first three designs of the Wechsler Block This involves copying a geometrical design ture by using multicoloured blocks ; the ere able with difficulty to learn to copy each idually but quite unable to learn three designs ce

MARY DISCUSSION, AND CONCLUSIONS

search has thrown doubt on some traditional ons about the ability and trainability of In the present study it was found that 6 ho seem to be a fairly representative sample dult institutionalised imbeciles) could reach in quite unexpected levels of achievement when suitably trained It seems that the limits to the trainability of imbeciles are very much higher than have been accepted traditionally either in theory or in practice

The subjects have been employed in a sheltered workshop for the last two and a half years, doing simple industrial work reliably and consistently with little supervision Light industrial assembly measurement and wire cutting and soldering all of a simple nature are well within their powers The present study has also shown that (1) the initial ability of imbeciles on industrial as on other tasks tends to be exceedingly low (2) their initial ability has little relationship with the level achieved with training and (3) the main distinction between the performance of imbeciles and others on simple tasks is not so much the end level as the time taken to achieve it

Practical and theoretical implications can now be considered It seems that to take the imbecile at face value is to ignore his potentialities. These would enable many, after training, to perform certain useful tasks and to contribute in many cases substantially to their own support Merely to keep the imbecile happily occupied—laudable though that certainly is—is not necessarily in his best interests nor in those of society It is far from our intention to underestimate the value of the work done by occupation centres, which keep the imbecile occupied aid his social adjustment and give some relief to parents and relatives. But a more positive approach is needed here quite as much as in other spheres of mental health where custodial care has given way to remedial treatment Just as in many countries, rehabilitation centres and sheltered workshops have been established for people with severe physical handicaps whose condition was formerly considered hopeless so it should be possible to aid many of the mentally handicapped who can never be socially independent but with similar help could contribute substantially to their own support

Turning to more theoretical implications it is apparent that to describe a person by one or more quotients or clinical ratings is not in itself enough for this may ignore differences in abilities *within* individuals Thus, while the measured general capacity of a person of severe mental handicap may be low and the impression given at face value poor it is often possible to find among the deficits some asset which can be developed and improved Thus a low I Q must never be used as an excuse for inaction but rather as a starting point for planned training and treatment Similarly our findings support the view that qualities such as manual dexterity and motor coördination are not static but capable of improvement within limits which are often ill understood and ill defined.

We wish to express our gratitude to Dr J F MacMahon physician superintendent, and to Dr A M. Clarke for many suggestions and helpful advice ; to Dr J Tizard and Dr N O'Connor of the Medical Research Council's Unit for Research in Occupational Adaptation whose interest in the problem stimulated us to undertake the present research ; and to Mr A T Pethick for his supervision and interest in the sheltered workshop

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Conferences and Congresses

OBSTETRICS AND GYNÆCOLOGY

THE 14th British Congress of Obstetrics and Gynæcology assembled in Oxford on July 27–30 under the presidency of Prof J CHASSAR MOIR

Management of Normal Labour

At a session on July 29, the congress discussed the rôle of the midwife, the family practitioner and the specialist in normal labour Mr F W ROQUES, president of the section of obstetrics and gynæcology of the Royal Society of Medicine, took the chair

Prof J L MCKELVEY (Minneapolis) considered maternal mortality with particular reference to the State of Minnesota, which has 3 million inhabitants Almost all births there (50,000 per annum) took place in hospital, with a doctor in attendance Every maternal death was carefully investigated and assessed by a maternal welfare committee of the State Medical Society A big effort was required to trace every death related to pregnancy and childbirth The death-rate from obstetric causes in 1952 was 0 42 per 1000 live births Of these, about a third were considered to be preventible and the minimum attainable figure at present, Professor McKelvey suggested, was 0 3 per 1000 (The corresponding figure for England and Wales in 1952 was 0 59)

These results represented a tremendous advance in America over the last 30 years and the man responsible for the fine figures was the family practitioner, now trained to a high degree of skill In America home deliveries had almost disappeared, and the practitioner worked in the hospitals There he met consultants, and had every laboratory facility His results were now a challenge to any other system

Professor McKelvey pointed out that this did not encroach on the the field of a specialist, for anybody could be trained to perform the technicalities of a specialty A consultant should be a man whose grasp of his subject was a constant stimulus to those around him, and who is always trying to extend the scope of knowledge in his field, rather than a man who spends all his time at the grindstone There was a vital need for research into the late effects of obstetric conditions (for example, essential hypertension in pregnancy and obstetric trauma at delivery), and a fresh study of fœtal abnormalities was called for

Mr ARNOLD WALKER (London) presented figures from Birmingham and London in an attempt to assess the amount of practical obstetrics undertaken by the family doctor It appeared that less than 10% of practitioners who did midwifery cared for as many as 20 cases a year in the cities—and notably less than that number in London Over a half undertook antenatal care only while of those who were on call for the delivery of the patient, only 1 in 5 attended the confinement But what was true for the cities did not necessarily apply in rural areas Nevertheless, skill was built on experience, and what was required, Mr Walker suggested, was a smaller body of practitioners doing midwivery as "G P ecialists" who would undertake enough work to in their interest as well as their skill Recruitment is work might help to solve the registrar problem e did not propose to "battle" on behalf of the idwives He considered it was essential to give them responsibility, if they were to maintain the high standard they had already reached They already conducted—without the direct support of a medical practitioner—four fifths of the deliveries in the country, both in domiciliary and hospital practice, and he believed that they already were and would remain the practitioners of normal labour in Britain He was rather disappointed at the number of midwives who drifted away from midwifery after completing their training, and he
suggested that, in order to check th
obstetric practice ought to be recognised
secure

Dr G F ABERCROMBIE (London) spoke of
as a family practitioner during which he h
personally 768 confinements He described
to a confinement, his emphasis on natur
and the importance of giving the patient
standing of the physiology of pregnancy
before expecting her coöperation at the time
He was inclined to favour hospital deli
primigravida in view of the high rate of
but in his parous patients only 5% had
operative procedure He made a strong
general practitioner should be allowed
pital beds, once the hazard of confineme
come, many such patients could return
the care of their family doctor

Prof A M CLAYE (Leeds) said domicili
should be as dead as the dodo, as elsewhe
was All abnormal cases were already
hospital and he believed that all normal
be admitted too, since it was impossible
normal delivery

Prof J C HIRST (Philadelphia) gave
the work done at the Preston Matern
at which over 6000 women had been deli
wives, with no maternal deaths He
importance to the training of midwive
rural areas

Prof B S TEN BERGE (Groningen)
domiciliary service for the poor in Rott
results in that service were very good
believed that well organised antenatal care
results in the patients' homes equal to the

Dr J E JAMESON (Moreton in Marsh)
experience as a practitioner in charge of
in a small hospital serving a rural area T
charge of these patients had achieved a
it 300 confinements He believed that
might be best arranged by the area de
obstetrics

Prof W C W NIXON (London) remind
that the obstetrician must not be barred fro
of normal labour otherwise the progress o
a most important field would be seriously

The Widdicombe File

XXVII FROM SNAILS TO B.C

DEAR DR LONGLEA,

Thank you for your letter about the Ro
I am suitably abashed I never thought
might have tuberculosis, he seemed suc
forward case of chronic bronchitis until
went down with miliary tuberculosis—wh
been prevented This nasty business has
up and take notice

As you know, there has always been—
lot of tuberculosis round here Fifty years
me, there were always two or three in the
away with consumption, and the young p
dread of it One old man remembers that
breathing exercises twice a day by an ope
ate a live snail each morning as a safegua
sumptives were treated by the village
extracts of plants gathered from the hed
the tuberculous are treated at sanatoria and
returning to us fatter and rosier than
friends, but the disease is still with us

I know you feel that the time has com
tuberculosis from the community, and I'd
if you'd tell me just how you think I can

no that the *general practitioner's first responsi* to detect cases early and refer them for proper . Old Mr Robinson is an object lesson But fighting with one hand tied behind my back here's no X ray department within reach to can send patients direct I know your chest most helpful in seeing people for me but I have chest X rays on the faintest suspicions feel inclined to take up your time with numbers l young people and bronchitic old ones So would like first would be an open access X ray at, please! It's also high time that the mass X ray waggon came round our way again If e me fair warning I'll do some propaganda.

y, tuberculin testing I now have a Heaf gun ing itself is easy But I'm not really sure what result signifies I gather that in children probably indicates active tuberculosis; from calls for an E S R and chest X ray; and most over 25 are normally positive

ve notified a case the public health people o test the contacts and offer B C G vaccination gative reactors But I don't seem to see very he public health staff though this is doubtless ny fault as theirs (The health visitor I do meet to time around the village in fact she drops nes with the latest news.) It would help if the lth department sent me a report of each ion; otherwise I can see myself getting excited ative tuberculin test in one of their vaccinated

he patient returns from the sanatorium it's to take over the day to-day supervision As this includes keeping him supplied with the drugs, cheering him up when he is browned estraining him from digging the back garden s meant to be up for toilet only

my mind the trickiest problem is preventing nder treatment at home from infecting others, y children The sputum positive ones come grounded in hygienic measures But on and off m negative case may unknown to anyone, positive and he is the real menace His own ill doubtless have been protected by B C G av in our village the patient who thinks he is is allowed up for a few hours a day will be get together with the next-doors and their ound the T V or even baby sitting to make a gs on the side Once they are at home and your fatherly eye some patients carry on in a would make your hair turn grey These con nore likely to come to my notice than to the tor's, since everyone is on their best behaviour ppears. Am I to refer all such contacts to you keep the patient strictly indoors or warn young children that Mr So-and So is a menace ung? Neither way would be popular to say

the country where tuberculosis is still common one has time to pass the day with everyone else ms where nobody has any time for anything), a case can be in contact with almost the whole *Vaccinating the family contacts* is only at the surface of the problem Why can't we ll babies soon after birth? I know the vaccine sed fresh the immunity may not be long vaccination may have to be repeated and local complications but all this is true of against smallpox B C G vaccination of s been practised in Scandinavia for years. ure? The other day I put this to a professor ogy who knows about these things. He spoke of the evidence being unconvincing of the conditions perhaps being different in Scandinavia and of the need for us to establish by careful trials the case for B C G in the young When he had finished I asked whether he had had his three kids vaccinated Yes he said, he had This isn't exactly dog in the manger but it seems a bit odd What do you say?

Yours sincerely
W B St C BREWER

Points of View

THE DOCTOR IN CONTEMPORARY LITERATURE*

RONALD BODLEY SCOTT
M.A. D.M Oxfd F R C P
ASSISTANT PHYSICIAN TO ST BARTHOLOMEW'S HOSPITAL, LONDON

IT is commonly said that the esteem in which the public holds the medical profession has fallen If this be true the situation is one which should cause us all concern although we may reflect on the irony of this decline going hand in hand with an increase in our ability to control disease of which our fathers would not have dared to dream The barometer of public opinion is not easily read and any information on this subject however trivial its source is of value It was with these thoughts in mind that I embarked upon the investigation which I shall here describe.

* * *

Fiction holds up a mirror to life and it should be possible to see therein a reflection of the doctor as he appears to the contemporary novelist To obtain a concentration of experience it was convenient to study a form of fiction in which doctors appeared frequently, while it was advisable to avoid works in which a medical man was one of the major characters, because he would then be invested with attributes not necessarily regarded by the author as typical of his calling The class of novel which most nearly fulfils these requirements is that of detective fiction and it was to such works that I turned my attention

The detective novel in its purest form may have passed the zenith of its fashion but there is still an outpouring of works in which the central themes are murder violence and sudden death, and, as episodes of this kind are inevitably followed by the appearance of a doctor they suit our purpose equally well. I do not propose to deal with the classics of this form of fiction but the importance of our profession to the detective was established by the creation of Dr Watson more than fifty years ago This practitioner recently described in the *Times Literary Supplement* as a clot in the arteries of the Royal Colleges of Physicians and Surgeons, first met Sherlock Holmes within the walls of St Bartholomew's Hospital Two years ago a plaque was unveiled there to commemorate this event Filial piety therefore has added its stimulus to my researches

* * *

It is suitable to begin with the general practitioner [illegible] because he has characteristics which separate him [illegible] from the class of doctor always known [illegible] 'specialists.' He is usually portrayed as [illegible] cheerful. A few quotations provide a [illegible] a big cheerful middle-aged man," [illegible] eminently practical young man," [illegible] manner a quiet square [illegible] hair growing low down over his forehead [illegible] pleasant looking square [illegible] face." In [illegible] tions you will have been struck by the [illegible] general practitioner, possibly this is symbolic, denoting the solid virtues of dependability and unimaginative competence which the novelist either sees, or wishes to see, in his medical attendant

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* Based on an address given to the [illegible] British Medical Association on [illegible]

It is, however, not every general practitioner who possesses these desirable qualities Dr Smith in *More Work for the Undertaker* is tall and stooping with a back like a camel, and although kind and professional is stigmatised as "not as bright as some" Indeed intellectual capacity does not appear to be a feature of the family doctor Another Dr Smith is described with the ring of truth as "a thin man with a tired face" Dr Shaw, in *Death at the Bar*, is a more attractive personality, "dominating the scene with bright vivid blue eyes, gazing through his spectacles" and combining with "a look of serio comic solemnity,' ' a certain air of distinction," while young Dr Fettes, in *Death of a Ghost*, possesses the enviable gift of "looking blank without appearing foolish"

Examples could be multiplied, but these are sufficient to show the impact the general practitioner makes On the whole he may be said to emerge with credit he has an appearance of competence, he is stolid sometimes he is even distinguished He remains unruffled by the curious situations which the novelists devise for him

The accounts of his purely professional abilities and the manner in which he conducts consultations are interesting and revealing Mr Todhunter, in *Trial and Error* is told brusquely that he has an aortic aneurysm "Well," says his doctor, "what can you expect? Your blood pressure's been too high for years" He is, in the timeworn phrase, given six months to live, but the blow is softened by the observation that "life on the physical plane is a darned nuisance and the sooner we're out of it the better" The methods of young Dr Tom Croxley in *She Died a Lady* were more devious, he would tell the patient "all the imposing medical terms for what was wrong with him,' an approach commended by his father, who was his senior partner, as impressing, pleasing, and inspiring confidence from the start

We must all at some time have been a little envious of the knowledge of medical jurisprudence and toxicology possessed by these fictional general practitioners The precise time of death is announced with assurance after a cursory glance at the body A moment s inspection is enough to make the most obscure of country doctors suspect the most obscure of poisons ' He looks to me," says big cheerful middle aged Dr Burwick, "like a typical case of oxalic acid poisoning" Not content with mere impressions, he withdraws to his dispensary with the suspect bottle of sherry, carries out the tests necessary to confirm his opinion, and, on adding a reagent, "is unable to repress an exclamation as it throws down a white precipitate" We can only reflect wistfully upon our own copies of *Aids to Forensic Medicine and Toxicology*, lying in the attic beneath the dust of twenty years

* * *

I must turn now to the "specialist," who stands in marked contrast with the selfless family doctor Many, like Dr Mawsley in *Death in Harley Street*, are interested only in the amassing of wealth Dr Eugene Arnold, of *Red Window Murders*, is an example "as fond of
as Marlborough and as mean about it," he had a
ned superior air as though he always had his
book in his hand" He even "took on Ralph
er—the most brilliant student of his year at the
al—as a dispensary clerk to handle minor cases
out fee"

In matters of appearance the specialist does lead, and
manners are usually irreproachable Dr William
elham, although "a bit of a pompous ass," was plump,
nd, and kindly, with silver hair and "the manners of
a Prime Minister"—an ambiguous description, it is true
—"he could squeeze the last drop of politeness out of a

conversation" His "only touch of
a pair of black-ribboned eye glasses"
hallmark of the successful consultant
Davidson, of whom it was said that "
taken to medicine instead of primroses
been just such another," also wore glasses
ribbon A second distinguishing feature
white hair," although its charm in the case
Woodthorpe, the eminent Society physician
been offset by his custom of "licking his lip
a nervous habit that had persisted since

Perhaps it is natural that psychiatrists
many prominent parts in detective fiction
in the words of *The Lancet's* peripatetic
goes to the Folies Bergeres to watch the
powerful dramatic appeal, his activities
mysterious and usually sinister, he is cast
for the rôle of villain Dr Eugene Arnold
specialty with "assured success and power
a hard handsome face which could become
the turning on of an electric light" Dr
very clever Canadian, was another, "
glasses pale blue eyes glittered reflective
manner suggested great reserves of power
astonish those who number psychiatrists
acquaintances to learn that "he said very
will increase their surprise to hear that he
somehow to make every word sound signific

Surgeons enjoy less popularity with the
detective fiction, they lack the machiavelli
of the psychiatrist and the polish of the Soc
A striking exception, however, is Sir John
Nursing Home Murders His background
Cambridge, and St Thomas's Hospital
short of being irreproachable, and he
"curious quality people call personality"
' next to actors, medical men profit most
forgiven losing his temper when he learns
Home Secretary had been away for the week
theatre sister whom he hoped to marry,
sympathise with him when the Minister, who
abscess he was called upon to drain, died
after the operation A very different char
Thoms, his assistant, "fat, scarlet faced and
facetious, his undistinguished but blame
punctuated by mild scandals about women
education at St Bardolph's, Essex, and
had not fitted him for competition with
Sir John

The narrower forms of specialism receive
tion, but one instance is Dr Mawsley, in
Street, a specialist in "glands" Although
rapacity, he is in part redeemed by his
research. His investigations were prose
experimental laboratory which led out of his
room where he made use of rats provided by
bone Borough ratcatcher at a cost of 5s a pair
enough it was his interest in the effects of
glands of these animals which led to his un
at the hands of his illegitimate son by a
hospital where he had been a house physician

All specialists lead lives of elegance amongst
ings of opulent good taste Dr Pelham "
between his lips and a glass of sherry at his
an example of this leisured luxury Sir Daniell
consulting room in St Luke's Chambers,
provides another illustration It had "apple
an Adam fireplace and silver starred curtains
and expensive room, crying in devious
gratitude of wealthy patients"

It is possible in these glimpses to discern
hostility to the specialist His appearance
guished, his manners are too perfect and he
groomed With his beribboned eyeglasses, his

rwhelming urbanity, he recalls an Ambassador
) Pinero This glittering figure fills his patients
s of their own inferiority and with apprehen
ning his fees This fear is often well founded
façade there is callous avarice Nevertheless
ists are ' brilliant ' and many have distin
emselves in other fields than medicine Dr
nold was able to win over a sporting peer by
confession that he happened to be a cricket
no distinction " In general it may be said that
specialist is remote and olympian his only
s to human weakness are his rapacity and his
regular liaisons with members of the nursing

trast between general practitioner and speci
led in these composite pictures is interesting
otions lag behind reality and some of these
consultant life have vanished the beribboned
ve disappeared and few specialists now live
ant princes To most novelists moreover the
ife of the hospital remains a mystery A scene
t and the Drop provides convincing evidence
ce : the night sister at St Bartholomew's was
screen with a recently admitted casualty and
g detective heard the sound of a kiss followed
per of " now rest and get well for me soon—

* * *

another rôle in which the medical practitioner
detective fiction it is that of the murderer
rised to find him playing this part in little less
the novels I chanced to read It may be asked
novelist should so frequently select the doctor
irderer It is widely believed that the medical
rly acquires a profound knowledge of toxicology
ie has at his command poisons which leave no
he victim s body and which baffle the most
emists In spite of this however the medical
is commonly recorded as choosing some mun
such as hyoscine or chloral or a traditional
arsenic In *Death Leaves a Diary* for instance,
s poisons his mother in law with arsenic and
rsing Home Murders Dr Roberts makes use of
which he administers with a syringe ingeniously
his anæsthetic apparatus At other times there
o simple violence Dr Eugene Arnold belies
d appearance by using a hammer Sir Daniel
having rendered his victim unconscious by a
his cigarette case suffocates him by holding
d placing his hand over his mouth Only rarely
ingenious methods employed Dr Kingston
se of the Late Pig balances a stone urn on a
supporting it with a block of ice which melts
he urn to fall with devastating precision on the
man sleeping below in a deck chair
t be supposed that opportunity was responsible
doctors committing murder but it is rarely
ents whom they kill Dr Roberts was an
to this rule but he was obsessed and regarded
s dedicated to purification of the race by
g those who were eugenically unsound In the
is betrayed by his custom of cutting a notch in
of his wooden stethoscope to celebrate each
In the main their motives are commonplace
l is afraid that his blackmailing activities will
ed ; Dr Furness is after his mother in law s
and young Dr Tom Croxley s frantic passion
ife of an alcoholic professor of mathematics
to murder when she surrenders to the charms
r car salesman
y instances the fact that the murderer is a
irrelevant to the novel s plot and we must seek
occult reason for the author s choice It is
that we should see in it another indication of the
hostility with which the public regards our profession This feeling has deep roots The medical profession is in a sense a priestcraft with its own language its incomprehensible code of etiquette and its objective view of matters which engender great emotional heat in the laity The public feels resentment at its exclusion from this secret society The doctor again is in a position of enviable superiority the patient has no choice but to display to him the sordid workings of his psyche as well as the pitiful shortcomings of his body Finally the malignant blows of fate are seldom acceptable as inevitable or as the fault of the sufferer and the medical attendant may find himself the scapegoat

The most gracious and grateful of patients, amongst whom I am sure we may rank these novelists have feelings towards our profession which are at best ambivalent It is these emotions which make them unable to resist the temptation to tear away the veil of professional respectability and to reveal the ravening beast it conceals. At the denouement the face of the previously suave Dr Furness was shining with sweat his skin was mottled and his chin thrust out to show his teeth in a humourless grin ' Dr Edmund Galley became a frothing screaming homicidal maniac and in the eyes of Dr Kingston shone the blood light In these phrases the novelists stand more starkly revealed than their characters they are hitting back at those who have unwittingly slighted them in the past and avenging critical comments on their steadily increasing weight and on their habits of eating drinking and smoking to excess

* * *

I have attempted to present a picture of the medical profession as reflected in a small and specialised sample of contemporary literature The portrait is of course outmoded because the National Health Service has changed the face of medical practice in this country and these changes have not yet influenced the detective novel possibly the authors of such works earn incomes which enable them to remain private patients Nevertheless I submit that there are points in this analysis which are instructive The novelist makes a sharp distinction between the general practitioner and the specialist a division which has been unhappily accentuated by the rigid framework of the National Health Service replacing the profession s previously elastic structure In his view the specialist adopts a cold scientific attitude to his patients while the general practitioner although rated as intellectually inferior is a warm hearted friendly character I have already pointed out the twofold nature of the patients feelings towards the profession of medicine admiring gratitude for the friend in need going hand in hand with rebellious dislike for the carping authoritarian who sees him in his unguarded moments and denies him his pleasures By an unjust dichotomy the novelist diverts the first emotion to the general practitioner and the second to the specialist The popular identification of the specialist with science contributes to this schism the Englishman is properly suspicious of science and dreads the thought of being made the subject of experiment The old fashioned family practitioner he believes is as ignorant of the first as he would be innocent of the second In these emotions we may discern an atavistic longing for the medicine of the witch doctor—a desire to evade responsibility for one s own ill health to have done with the tedium of rational explanations and to surrender to the narcotic charms of incantations spells and sacrifices

From this we are driven to the conclusion that the public s choice of doctor is dictated by the same considerations that inspired a cartoon in *Punch* in 1854 when a now classic phrase was first used

> What sort of doctor is he ?
> Oh well I don t know much about his ability got a very good bedside manner "

In England Now

A Running Commentary by Peripatetic Correspondents

I READ somewhere lately that a high-up professor in social medicine has calculated that over 40 social workers are entitled to call at our homes He thought this all wrong, and I suppose the logical conclusion is the all-purpose "social-worker-health-visitor" sort of person that lots of people seem to be discussing, including a Government committee or two

It set me thinking about house-callers in general, and it is clear that something must be done to regulate the position, get rid of vested interests (and so on) The paper boy starts the day, followed by the postman Then we have deliveries of bread and milk (separate blokes), occasionally the fish shop will send something along and so will the butcher now Another postman will have called before lunch and perhaps a parcel postman as well I suppose the daily woman when she comes and the occasional visit of a gardener do not really count as callers but as staff The window-cleaner is classified as a regular caller Groceries come once a fortnight, and beer when the weather is hot and the van is coming our way The evening-paper boy is a man The dustmen (2) call weekly I suppose I ought not to include the Breton selling onions or the dark-skinned chap selling stockings In times of full employment we do not seem to have seen the brushman, but gypsies with clothes-pegs still come along We seem to be getting along towards 10 —and some of mine are no more fantastic than some in the list of the social professor chap's In emergencies of course there are a lot more, and I expect the original 40 applied mostly to emergencies The plumber, the electrician, the wireless chap, the carpenter (broken windows or locks), and the doctor can all be counted (The descending order refers to the fees charged)

What I would like to see is an all-purpose "tradesman-deliverer" to cope with all the routine stuff, and a sort of *fundi* as I think they call him in Africa, to deal with the mechanical emergencies I don t think I can really advocate their combination for practical reasons All this specialisation is wrong I must try and remember this next time I argue with health visitors or almoners

* * *

A few years ago, before we had got used to calling our surgeons "Mr," an old diabetic came to my medical outpatients one morning I had missed him for a few weeks

"Hello, Brown, you haven't been to see us lately, have you?"

"No, Sir, as a matter of fact I've been in the 'orspital, I broke me leg"

"Oh, I'm sorry to hear that And who looked after the broken leg for you, Brown?"

"Dr Jones it was, Sir 'E was the 'ouse surgeon in our ward"

"Yes, of course, but who was the visiting doctor, the honorary surgeon?"

"There weren't no other doctor, only Dr Jones"

"But, Brown, there always is a senior doctor who comes in and tells the house surgeon what to do Who was he?"

"No, there weren't none in our ward, Sir All I 'ad was a little man in a white coat, 'oo used to come and talk with Dr Jones about the leg 'E seemed to know about first-aid I think he was the ambulance man—they all called 'im *Mr* Thompson Smith"

* * *

rs Blank and her daughter Madeline are both ics When they were out shopping on Monday ine plucked her mother's sleeve and said "You come in here and have a sandwich, quick" By ime Mrs Blank was fully aware of her surroundings had eaten the sandwich and paid for it, though she d no memory of doing so She is lucky that her ughter has grown up into such a responsible person adeline is nearly six years old

* * *

My peripatetic colleague's remarks (July 30) on the preparation of our Olympic team for next year reminds me of an experience which I had in Iceland during the war We had been garrisoning the island thr months of arctic weather in very isolated p one day an American G I presented himsel reception station He was the first of the which became the torrent which relieved u me a phial, he asked that I should give h yellow-fever inoculation I agreed with s for I had almost forgotten of the existe disease, and certainly did not expect to me

Some months later, when I was rel American opposite number, I seized the op quiz him on the practice of inoculating tr yellow fever during service in Iceland Hi gem of 20th-century medicine—"Waal, Do fully process our troops"

* * *

Marianne came to school with tears st her face A kind schoolmistress asked wha In quavering tones Marianne replied "Ou little kittens yesterday and Mummy's drowne "Oh," said the mistress soothingly, "but y possibly keep so many kittens at home." "It replied Marianne "Mummy promised I co

* * *

Self-pity, although generally deprecated as unworthy, is, after all, an agreeable and form of indulgence And so I have been *Dombey and Son* to seek some satisfaction commiseration with old Sol Gills

He, it will be recalled, reminded his nephe that during the preceding ten days he could more than one person coming into his shop.

"Two, uncle," corrected Walter "There was came to ask for change for a sovereign."

"That's the one," replied Sol

"Why, Uncle, don't you call the woman came to ask the way to Mile End Turnpike?"

Two persons then, conceded Sol, who cont didn't buy anything nor want anything, for if they have gone to another shop

"But," insisted the irrepressibly sanguine Wa were two of 'em"

"Well Wally," said his Uncle by way of con being like the savages who came on Robinson Cr we can't live on a man who asks for change f and a woman who inquires the way to Mile En

Of late my practice has been limited to letters requesting details of consultations and to giving over the telephone names an of other consultants and specialists I am ask mend In one instance the inquiry was about on which I am reasonably entitled to regard authority I can't decide whether that was a to injury or adding injury to insult Anyw Gills and I are very much en rapport philosophy

* * *

Daddy "Go into the bathroom and clean yo

Mummy (after a pause) "Why don't you Daddy asked?"

Daughter (aged 3) "I didn't hear what he sa

Mummy "He asked you to go and clean yo

Daughter "I didn't hear *that* either."

Yet I have searched my neurology textbook description of Transitory Cortical Deafness

* * *

DEBILITY II

Such trivial complaints! In such a flo
She bores me let her go and spit up li
Get rid of her Prescribe the usual ton
Thoracic surgeons much prefer them

Anxiety neurosis? Phenobarb
Will do the trick, or bismuth and bicarb
They seldom cut their throats, and if they
Good riddance, if you take my loftier v

Don't ask me to assuage a common pain
I hate both vulgar ills and vulgar gain
Wiser than Luke, than Galen more refine
I only practise to improve my mind

Letters to the Editor

SEQUELS TO ANÆSTHESIA

t week in your editorial Anæsthesia in the attributed to me the *opinion* ' that nitrous may have very serious effects on the nervous This is not my view My view is that the ts result directly or indirectly from oxygen This was the view of Courville and of Yandell who in a foreword to Courville s book [1] there will doubtless be those who will explain these sequelæ as due to a specific of nitrous oxide In my judgment however e which Doctor Courville here presents is o the effect that at least the major part of and probably all of it is due simply to In nitrous oxide/oxygen anæsthesia for dental n the chair oxygen restriction be it noted it and dominant featur

s Hospital
1 S E 1

J G BOURNE

your leader last week you draw unwarranted about the toxicity of nitrous oxide as an agent You make unsubstantiated statements harmful effect of this gas on the central tem while the paper by Dr Bedford and a per by Dr Bourne [2] are incorrectly represented of these papers was it suggested that nitrous a deleterious effect on the nervous tissu Bourne [2,3] has taken great pains to show that xia with which this agent is often associated o trouble

years now it has been the standard practice eagues including Dr Bourne and myself mas s Hospital to use nitrous oxide with en for anæsthesia during many inpatient but to supplement it by the intravenous such agents as thiopentone and muscle In this manner unconsciousness can be without asphyxia from the nitrous oxide for eriods. It is in fact the very innocuousness that makes it an ideal anæsthetic agent in es where it can be used with supplements when nitrous oxide is used as the sole agent, adequate supplementation either for the r maintenance of anæsthesia and whether nts or outpatients oxygen restriction is all tly liable to occur

st, as your editorial does that it is the nitrous that causes damage is against pharmaco lence and a reversion to ideas which were before the late war

's Hospital
n, S E 1

W D WYLIE

must accept these reproofs. In the paper we in 1952 Dr Bourne made clear his opinion istration of nitrous oxide is harmful only in t deprives the patient of oxygen He distin tween the quick whiff of gas ' in which is almost entirely anoxic in character ould probably be accomplished nearly as well gon or any other inert gas as with nitrous nd the long gas which more nearly true nitrous-oxide anæsthesia Skill in gas, he said lies mainly in limiting at all lement of oxygen deprivation to the minimum surgical anæsthesia But the field of æsthesia offered by this method is narrow

SIR—Dr Bourne s letter in your last issue entitled Dental Gas and Cerebral Palsy has reminded me of the following unpublished case of which I have kept notes

A girl aged 22 attended University College Hospital casualty in August 1931 with an abscess under a recently healed cut sustained at work. This was opened in the evening under nitrous oxide and pus was evacuated The total duration of the anæsthetic was three minutes, and it was followed by deep stertorous breathing with the patient unconscious and slightly cyanotic The pulse rate was over 120 and feeble the pupils were dilated, and the plantar responses were extensor

After thirty minutes the coma became light and the patient began to grind her teeth and struggle Every quarter of a minute she emitted a hoarse cry and tried to sit up It took three people to keep her on the table She was incontinent of urine and fæces and vomited her pulse became uncountable and almost imperceptible After fifteen minutes of repeated struggles she was exhausted A few whiffs of chloroform stopped the movements and her condition improved slightly

She was admitted still unconscious, but after two hours the struggles and shouts started again. She was again controlled by chloroform, which had to be repeated several times in the night. Eighteen hours after the onset her temperature was 106°F her pulse rate was uncountable and her respiration rate 84 Consciousness returned at thirty six hours, when her temperature had fallen to 100°F with pulse 148 and respiration 48

Her temperature and pulse-rate did not return to normal until the tenth day She was discharged after four weeks having made a complete recovery There were no signs of damage to her nervous system. During convalescence two of her four vaccination scars became gangrenous and separated leaving a clean ulcer which slowly healed

Sittingbourne
Kent.

F M MALLINSON

PHÆOCHROMOCYTOMAS

SIR,—The several articles on phæochromocytoma in your issue of Aug 6 give up to date information on the medical aspects of this interesting condition and valuable advice on the use of adrenolytic agents especially as adjuvants during surgical intervention The actual surgical approach to the adrenals however in each case where it is described is given as via the loin Dr Helps and his colleagues state that phæochromocytomas are bilateral in 10–20% of cases, and mention that Colston and later Kvale et al have recommended approach through the anterior abdominal wall Such an approach might have demonstrated the second tumour in the left adrenal in their case 3 where the tumour in the right adrenal was removed through the loin In Mr Richardson s case where an ectopic tumour was removed per abdomen after unsuccessful bilateral exploration of the loins the final excellent result might have been attained earlier through an initial abdominal incision

The feasibility of the abdominal approach to the [illegible] was first brought home to me during a series of [illegible] tomies for carcinoma ventriculi while [illegible] for removal with the stomach The left adrenal [illegible] almost offers itself for excision during [illegible] pedicle to the right The right adrenal is more [illegible] of access, but its lower pole at least can [illegible] fairly easily after mobilising the duodenum [illegible] and it can then be delivered down from [illegible] the inferior vena cava.

I have been emboldened to [illegible] in two cases of my own of [illegible] (where both ovaries were [illegible] incision) and have [illegible] All were successful from [illegible]

The advantages [illegible] alteration in the [illegible] that they leave [illegible] rendering the [illegible] secondly [illegible] be carried [illegible] stases at the one operation, and, last but not least, the patient is spared considerable extra discomfort

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[1] O B Untoward Effects of Nitrous Oxide Anesthesia. n View California 1939
[2] G *Lancet* 1952 ii, 705
[3] G *Proc. R Soc Med* 1954 47 416

My own experience is insufficient for me to speak with any authority, but it does seem that the abdominal approach is worth a more general trial The only strong contra indication that suggests itself, in the case of adrenalectomy for advanced carcinoma, is that enlargement of the right lobe of the liver by metastases would make the approach to the right adrenal more difficult The left adrenal and ovaries could, however, still be removed together through the abdomen

South Devon and East Cornwall
Hospital Devonport
MICHAEL REILLY

PREMATURE INDUCTION OF LABOUR IN HÆMOLYTIC DISEASE OF THE NEWBORN

SIR,—I have read with great interest the article by Dr Kelsall and Mr Vos (July 23) At the National Maternity Hospital Dublin it has been and it still is, the practice to carry out selective premature induction of labour in the management of this disorder

I have described the results in 50 prematurely induced infants treated by exchange transfusion [1]

> Premature induction was carried out at between 33 weeks and 35 weeks In the series there was no case of stillbirth, there were 8 neonatal deaths Exchange transfusion was carried out in every case, and repeat exchange in 5 cases The 50 cases of hæmolytic disease occurred in 46 women whose previous obstetrical history showed living, 112, stillbirths due to hæmolytic disease, 36, neonatal deaths due to hæmolytic disease, 42 Of these 50 infants 42 survived, giving a mortality of 16% The birth weights of 25 of the infants were between 3 lb 2 oz and 5 lb 8 oz Of these 25 infants 4 died

Dr Kelsall and Mr Vos do not mention the birth weights of the infants treated, nor the initial or subsequent level of the serum bilirubin or hæmoglobin They refer to the danger of transfusing these small infants with citrated blood It is our practice to give 1 ml of calcium gluconate solution to every 100 ml of blood exchanged and occasionally it is advisable to give rather more calcium than this The idea of using fresh blood heparinised is certainly a good one, but I cannot agree that the danger with citrated blood is as great as the authors make out

Up to 1954 repeat exchange was not often practised, but at the present time some 50% of these premature infants with hæmolytic disease have had two or more exchange transfusions It is found that the degree of shock is minimised with this practice, and that when one is over the first hazard, of cardiac failure, which is treated by leaving a deficit (say, 400 ml removed and 300 ml given), the second problem prevention of kernicterus, is merely one of repeating exchange to keep the serum-bilirubin level under 20 mg per 100 ml In the present year some 20 prematurely induced infants (32 exchanges), birth weight under 5½ lb, have been treated with this method, with 3 deaths (To be published)

In another article [2] reference is made to the hæmoglobin level, serum bilirubin level, and survival rate, biochemical analyses before and after exchange were carried out because it was thought that a high level of serum-potassium in the baby before exchange, or after exchange stored blood, might be a factor in causing cardiac Although the series was small, it was thought probably had no such effect The serum potassium varied between 16 and 33 mg per 100 ml before ange, and examination of the infant's blood after hange appeared to show a rise in the blood-potassium it had been low and a fall if it had been high So while appeared to bear a relation to the degree of hæmolysis, e fact that the serum level was high did not mean that the prognosis was more grave Ner imbalance certainly has some adverse eff study here is required

At the National Maternity Hospital, four and a half thousand deliveries each number of cases of hæmolytic disease more and more impressed by the indivi case Induction should be selective, and to depend most strongly on the previo history [3] Kernicterus is not a problem atelectasis and intracranial hæmorrhage the same proportion as in unaffected prem As Dr Kelsall and Mr Vos's paper sugges with the prematurely induced infant our hospital it has always been the teachi premature induction in selective cases (it sh that "selective" here refers to the maj cases—70% approximately) This prac adhered to during the past five years, similar teaching centres induction has been It is good to see that the view we have upl also the considered view of others

Dublin
SHEAM

LONGEVITY IN A TAPEWORM

SIR,—Like Thursday's child, Dr Black (July 30) has far to go Indeed Boger *saginata*) is probably over 35 years,[4] while been claimed for *Diphyllobothrium latum*[5] coccus cysts" have persisted for as long as living state [6] I have encountered these fi part of a study of animal longevity I do the helminthologists accept them—if they I would very much like to hear them

The recipe for such longevity in so humbl a familiar one—warmth, idleness, others' expense, and constant but not reproduction Longevity, unfortunately for common in human groups which live conditions

Department of Zoology,
University College,
London, W C 1
ALEX

HOMOSEXUALITY

SIR,—I am surprised to see that you p week an anonymous article on "Male Hom when the Home Secretary's committee the subject might decently have been sub judice

I trust that you will have the fairness to to answer the few points raised by this author's juggling with the Kinsey figures suspect, is indeed naïve other youthful treated in the same way, could be made to large percentages of the population are theref and potential murderers A more un-scient it would be hard to imagine The paper se strange compound of the author's dream with its expensive sixteen years with the p who conveniently put the blame for the on his parents and early environment ne tell us anything new about homosexuality ex-parte statement for homosexuality No suggested that other people's interests might for instance, if homosexuality between cons in private were legalised—and that is what by every devious trick are trying to get— able problems of morals and morale would who have the teaching and the care of th youth in their charge, including those who

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[1] Dundon S Irish J med Sci April, 1954, p 177

[2] Dundon, S *J Irish med Ass*, 1954, 35, 269

[3] Dundon S, O'Driscoll, K, Geoghegan, F

[4] Penfold, W J, Penfold, H B, Phillips M 15, 41

[5] Riley, W A *J Parasit* 1919, 5, 193

[6] Lawson, T C *J Amer med Ass* 1939, 112, 1331

Servicemen All that matters apparently nal sexual gratification of a few in safety footnote which gives some details of four in which 56 men or youths were charged xual offences in various parts of the country, iost vital question in this matter Is the iis article—is the Editor of *The Lancet*—such groups of men banded together for purposes should go on unchecked? A is imperative for that would be the result adult male homosexuality in private footnote seeks to give the impression that he Criminal Law Amendment Act (1885) was underhand way and without the full know approval of both Houses of Parliament rue According to T P O'Connor there was disquiet at that time on the subject oout certain houses in London which were e male brothels and in some degree beyond he fact that the clause was passed without it voice meant wholehearted approval. who introduced the amendment many ards after Oscar Wilde s conviction wrote in *Truth*

d Taylor were tried on a clause in the Criminal ient Act which I had inserted (in 1885) in order ossible for the law to take cognisance of proceed s. I took the clause *mutatis mutandis* from the r As I had drafted it the maximum sentence ars The then Home Secretary and Attorney most experienced men suggested to me that in nvictions are always difficult and that it would e the maximum to be two years. Hence the of the severest sentence that the law allows

was of opinion that Wilde s sentence of two labour was inadequate Considering that ase he was openly and boastfully dominated it seems that he should have been under some inuous restraint

C G LEAROYD

e

NTAL EFFECTS OF RESERPINE

ing the past 12 months we have treated ale patients suffering from hypertension ie. The duration of treatment ranged from 9 months with a mean of 17 weeks The anged from 1 to 3 mg., but one patient ig daily for one week Four patients have ital symptoms in the course of treatment hese it was necessary to withdraw reserpine iired psychiatric treatment.

woman aged 58 of cheerful disposition with evere hypertension received 3 mg of reserpine onths after the start of treatment profound somnia, and unwillingness to mix with people eloped. Anxiety was not a feature of this illness is no suicidal tendency Reserpine was with e patient received psychiatric treatment The wly receded over a period of 3 months.

woman aged 58 of nervous temperament was pertension with 2 mg of reserpine daily 3 weeks ng treatment she became excessively nervous and agitated though not depressed A coarse ped The tremor disappeared and her personality ts previous state 4 weeks after reserpine was

A woman aged 61 with severe hypertensive received 1 mg of reserpine daily It was later at this patient had been in hospital some years eatment of mental depression. 10 weeks after rpine the patient complained of headache unny feelings all though her body and fits depression Reserpine was withdrawn and she to a mental observation ward. She continued to be depressed and hypochondriacal, but it was found possible to discharge her after a further 4 weeks in hospital.

CASE 4 —A 65 year-old woman received 1 mg of reserpine daily for treatment of hypertension. On the 2nd day of therapy she became excited irritable depressed and at times confused. These symptoms disappeared after 4 days Reserpine was not withdrawn and has now been given continuously for 4 months without recurrence of these symptoms.

The remaining sixteen patients have shown no mental disturbance during treatment, apart from lethargy in some patients in the early stage of treatment or when high doses have been used Our experience suggests that reserpine should not be given to hypertensive patients with a history of mental instability and that mental depression may also occur in patients of previously apparently normal personality after prolonged treatment with reserpine

University Medical Unit
Stobhill General Hospital
Glasgow N

J GORDON MACARTHUR
BERNARD ISAACS

---

y Hyde H Trials of Oscar Wilde. London 1948;

INCOMPLETE PITUITARY INSUFFICIENCY

SIR,—Last year we described in your columns some cases which appeared to show partial pituitary failure[1] In subsequent correspondence[2–4] it was debated whether destructive lesions of the anterior lobe of the pituitary could lead to depression of thyroid and adrenal function without causing loss of sex function and we should like to present further information about two of our patients (cases 6 and 7) in whom this problem arose

In both these patients features of hypothyroidism were relieved by testosterone alone and impairment of water diuresis was improved by cortisone but not by thyroid extract[3] In a subsequent test in case 6 the patient having taken thyroid extract gr 2 daily for 9 months, diuresis during the 3 hours after a water load was increased from 24 2 to 81 8% by 100 mg oral cortisone

Tests of urinary radio iodine (I^{131}) excretion were performed before and after 5 days stimulation with thyrotrophic hormone (T.S.H.) ('Ambinon B' 4 ml daily for 3 days and 'Thyropar' 10 units, daily for 2 days) Circulating eosinophils and urinary 17 keto steroid (17 K.S.) excretion were estimated before and during a course of long acting corticotrophin 120 units intramuscularly daily for 5 days. Each patient continued to take her usual thyroid extract gr 2 daily in case 6 gr 3 daily in case 7

CASE 6 —I^{131} excretion (85 3% of the dose in 48 hours; T index * = 1 3) was of typical complete thyroid failure and was not altered by T.S.H. (81 9% excretion in 48 hours T index = 2 3) Before corticotrophin was administered circulating eosinophils were 120 and 112 per c.mm. and 17 K.S. 0·9 and 0·5 mg per day 4 hours after the first injection eosinophils fell to 9 per c.mm and they remained at 0–12 per c.mm. 17 K.S. rose steadily reaching 15 mg on the 5th day

Here the I^{131} tests point clearly to primary hypothyroidism The adrenocortical insufficiency on the other hand was not improved by thyroid extract and was fully corrected by corticotrophin so it was probably due to a relatively minor pituitary insufficiency consequent on obstetric shock. Such a pituitary lesion might have aggravated pre existing thyroid deficiency[4]

CASE 7 —I^{131} tests showed no uptake (77 3% excretion in 48 hours; T index = 0 7) before and a definite uptake (28 1% excretion; T index = 8·46) after administration of T.S.H.

Before corticotrophin was administered eosinophils averaged 166 per c.mm. and 17 K.S. were 0 94 and 1 30 mg per day There was no response to corticotrophin until the 4th and 5th days when eosinophils fell to 21 and 27 per c mm. and 17 K.S. rose to 3 3 and 3 3 mg.

Both the thyroid and the adrenal cortex were reactivated by pituitary hormones It would therefore

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1 Wilson L A Auld W H R, Bowman, W *Lancet* 1954 ii 715
2 Fraser R. Garrod, O *Ibid*, p 919
3 Wilson L A Auld W H R. Bowman W *Ibid* p 1041
4 Fraser R. Garrod O *Ibid* p 1232

appear that this is indeed an example of hypopituitarism without loss of sexual function or genital atrophy—a diagnosis in keeping with the patient's remarkable pallor and severe loss of body hair The history might suggest that an incomplete pituitary necrosis had complicated the first delivery and that the pituitary had suffered further minor insults during later confinements

We thank Dr Russell Fraser for much helpful personal correspondence and for his kindness in arranging for radio iodine tests at the Postgraduate Medical School of London

Aberdeen General Hospitals
Department of Clinical Chemistry
Aberdeen University

L. A. WILSON
W. H. R. AULD
W. BOWMAN

* Dr Russell Fraser informs us that normal range of T index is 2·8-13 and that values below 2·8 indicate defective [illegible]

SURVIVAL OF SALMONELLA TYPHI IN SEWAGE-CONTAMINATED SOIL

[illegible] by Dr Harvey and Dr Phillips [illegible] their modification of Moore's sewer [illegible] and the finding of viable *Salmonella* [illegible] in sewers long after the source had been [illegible] to record a somewhat similar [illegible] the investigation of a recent case of [illegible][1]

[illegible] only noteworthy fact in the investigation itself was [illegible] was not until the patient, a boy of 13, had been questioned closely for the third time about events at his presumed date of infection that he admitted having built a dam in a local stream with a friend, subsequently a wet shoe and the friend's sister developing chickenpox pinpointed this episode to 14 days before his onset The only known carrier in the district, who was found to be still heavily excreting the organism, lived 4½ miles further up-stream and the effluent from his cesspool discharged into a soakaway and ultimately drained into the stream The cesspool and the subsoil water in the vicinity of the soakaway (which was about 15 feet from the stream) yielded profuse growths of *Salmonella typhi*, and it was calculated that it would be possible for organisms, entering the stream at this point to reach the site of the dam in 12 hours, and therefore although both Vi phage strains were reported to be untypable, it seemed reasonable to assume that the stream was the vehicle of infection In order to prove this, Moore's swabs were repeatedly laid in different places and left down for varying times, but the organism was not recovered

At this point it was learnt that a main trunk sewer was to be laid through the soakaway, and, as trenching operations were soon to begin, this created a delicate administrative problem On the one hand, the labourers engaged on the work had to be protected effectively but without alarming them, and on the other hand, the carrier's livelihood lay in the district and depended on his secret being maintained Printed instructions on hand hygiene, boot washing, &c, were distributed through the contractor to the men individually, and arrangements were made for washing facilities to be available on the site The subsoil was clay and as the water table was within a few inches of the surface the contractor was asked to dig an intercepting trench and to provide a pump in order to keep the main trench, when it was commenced, as dry as possible The carrier agreed to use the W C in his business premises, and, therefore, as it was known that he was not a urinary excretor and that none of the other occupants of the house were carriers, the passage of *S typhi* into the cesspool ceased on Dec 11 It was then felt that if the cesspool contents could be sterilised [illegible] minimise the risk to the crew of the cesspool emptier) [illegible] he cesspool then emptied, the drain between the cesspool [illegible] e soakaway opened up, and both it and the surrounding [illegible] d liberally sprinkled with chloride of lime, time and the [illegible] ral purifying action of the soil would render the ground [illegible] e before trenching operations began

The cesspool was therefore dosed on 3 alternate days with [illegible] nough freshly prepared chloride of lime to give a calculated concentration of 70 p p m of chlorine, after which a sample yielded no growth of *S typhi* on direct plating, but sub
cultures from one of 4 tubes of selenite F
few colonies Double the amount of ch
therefore added daily for 3 days, after which
was obtained, the cesspool was then emp
removed Subsequently a sample of subsoil w
line of the main trench yielded *S typh*
the cesspool contents were positive on April
on April 20 and May 7, positive again on
and finally negative on June 3, a sample take
between the cesspool and the soakaway
April 1, and one from the intercepting tre
the day before trenching operations start
S typhi After the positive sample of April
was again heavily dosed with chloride of lime
advisable to offer T A B to the labourers
engaged on the work, all but one accept
sequently had typhoid, and the carrier's sec

Thus *S typhi* was recovered from
160 days after the last infected sewage
and from the subsoil water 158 days aft
get additional information about the surv
organism a sample of cesspool contents, tak
was stored outside the laboratory und
conditions and examined from time to time. I
died out fairly rapidly, but it was still re
10 ml sample out of three on Feb 2
After this date, however, it was no longe
It is realised, of course, that the soil sur
completely dependent on the carrier's sta
he maintained throughout, that he ha
faeces into the cesspool since Dec 11 As h
concerned about the whole business a
cooperative, his statement was accepted.

My thanks are due to Dr Norman Weed,
Public Health Laboratory, Reading for his
and to Dr E C H Huddy, County Medical O
for permission to publish this brief account.

T T B
Late Deputy County
Berks

Cardiff

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[1] Report of the Ministry of Health, 1953 part 2 H M Stationery Office, 1954, p 54

COALMINERS' CALORIES

SIR,—As I sat reading *The Lancet* of A
of the number of hours during the we
similarly disposed myself, it was with rebel
that, of all people, " miners spent two
total time and more than one third of the
lying or sitting " Then, as a cup of coffee
me the shocking question posed itself How
wife's day ordered on such a basis! Will P
and his colleagues next turn their studies
No doubt many doctors' wives will be pleas
as subjects

Ro

London, S E 1

THE UTER AND THE UTER

SIR,—Reading Mr Burnett's letter of
derivation of the word uterus encourage
holiday, to think that a few examples fro
language about the derivation of the cha
represent the same organ may be of so
your readers

One of the Chinese characters for "
from a picture of the fœtus in the wo
prefix, or radical, for flesh, this character
meaning of womb in common usage An
which has the meanings of eminence (an
and of the self expression of a person is
breath or spirit emanating from the mo
same radical for flesh, this becomes the
pregnant uterus—an eminence of flesh
expression of a new personality) The
uterus in Chinese is now a pair of cha
represent the infant and the palace, thu
organ with a nobility that is lacking in
sack, used by the Romans

esting to note also that of two of the
pregnancy one is the picture of a pregnant
he left side and now has the usage of the
whole life and the other which pictures
right side means shame to conceal hide
a realm of medical history to be enjoyed in
Chinese characters

J R Rose

NT OF TETANUS WITH CHLORPRO ND NITROUS OXIDE ANÆSTHESIA

s interested in the article by Dr Bodman
gues (July 30) as I recently had the oppor
rve the effects of chlorpromazine for twenty
n a 7 year old mare with tetanus

nus appeared fourteen days after an untreated
ose to the right hock. Three minutes after an
ection of 450 mg chlorpromazine in 5% solution
, 1 mg per kg body weight) the generalised
muscles of the head and neck was abolished
otrusion of the membrana nictitans became less,
ident and nostril flaring disappeared There
n of the abdominal and tail muscles and
which were previously laboured became much
e reduced to 10 per minute Six minutes after
e animal sank to her knees, but she regained the
ion two minutes later Hyperæsthesia was
educed and she was now able to masticate and
ns of tetanus reappeared after five hours and
ontrolled by further injections of the drug
s not continued because the owner requested
the animal for economic reasons

Hospital
Liverpool

I N Owen

MCISION AND PENILE CANCER

as interested in correspondence in your
the relation of carcinoma of the penis to
[1] During six years practice among the
of South West Africa I found that epi
the penis was the commonest malignant
male Hottentots The Hottentots do not
mcision, and a rather tight and elongated
ears to be a racial characteristic

Town
rica

J Helman

BARBITURATE ANTAGONIST

year an obese woman was admitted to this
ing been found sleeping deeply the evening
he stomach washings were found considerable
barbiturates

gorous treatment the patient contracted pneu
ied $4^3/_4$ days after having been found asleep
a few hours before death contained 58 mg of
er 100 ml ; and the urine last voided contained
biturate per 100 ml (In the last 24 hours of life
st over 1000 ml of urine)

h day of intoxication she retained therefore
ts of barbiturates and she would have excre
mall portion of this by the 6th day, when a
gmide would have been advisable as in the
ed by Dr McElligott [2]
ures confirm the estimate of Dr Wright [3] as
Professor Shaw s view [4] that on the 6th day
arbiturate is left in the body

ted to Dr Hirsch and his staff of the Government
ratories Jerusalem, for the barbiturate estima

ek Hospital
m

J Leuner

WARTS

Sir,—Your annotation last week brings home to us how common are these undesirable excrescences and the medical officers of health who have collected the information are to be congratulated The arduous and unrewarding duty of treatment falls to the skin department whose staff are naturally discouraged by finding a never ending line of patients queuing up for treatment Nor can the weary registrars and house physicians derive any comfort from your quotation of the opinion that measures designed to combat plantar warts are illogical and are unlikely to succeed unless their scope be extended to include warts of other types.'

The prophylactic approach to plantar warts is not so hopeless as this opinion suggests Warts on the feet are spread by persons with warty feet leaving the infection on floors Upon the infected floors tread yet unsullied feet If they are shod they will escape infection but if they are bare and unprotected who can wonder if they eventually blossom with warts ?

I have some figures relative to the effect of wearing shoes upon the incidence of plantar warts at school which date from 1949 and refer to Cambridge schools. It happened that some schools in Cambridge did their gym and dancing in bare feet and some in shoes. The school medical officers very kindly gave me details of the school habits and the numbers of pupils in the schools. 1769 children wore shoes for gym and dancing and 1845 did not Among the 1769 shod children I had 1 with plantar warts and among the 1845 unshod children I had 10 Further analysis of these figures by sex provides a clue as to why girls are more prone than boys to plantar warts for the 1845 barefoot children were composed of 466 boys and 1379 girls. The boys provided 2 of the cases of plantar warts and the girls the other 8 The figures may be tabulated thus

	Incidence of warts	
	Shod	*Unshod*
Girls	0/105	8/1379
Boys	1/1664	2/466

The greater exposure in girls is no doubt one of the reasons why plantar warts are commoner in girls. Another reason is that the female skin is more vulnerable I noticed this during the late war when vaccinating the A.T.S after having practised exclusively on the male skin The stroke which was ideal in men drew blood from the weaker skin of the other sex What goes for the arm does not necessarily go for the sole but I should be surprised if it did not

The remedy is easy—in theory The children must wear shoes for dancing and gym But headmistresses and gym teachers disagree Shoes, they say cramp the style of the dancer or gymnast who must be free to express herself It seems that in this age of untrammelled expression we are expected to accept plantar warts as part of the price of freedom

I cannot accept the view that plantar warts stem from warts of other parts to any significant extent Plantar warts are a race apart They are recognisable not only by their histology—to which you refer—but also by their clinical features, which can be summarised as deep soft plump and painful Ordinary warts do certainly occur on the soles and by comparison they are hard shallow wizened and painless. They are known as mosaic warts and they cling to life with a fanatical zeal unknown to the true plantar wart Plantar warts in their turn occur on the hands where they maintain their clinical character They have a particular liking for the paronychial and subungual tissues and the finger pulp of mothers whose daughters have plantar warts. No doubt the darning needle lets in the virus present on the stockings That these ectopic plantar warts present an unfamiliar face is plain because they get treated as whitlows and many are the poultices knives and syringes of penicillin that are arrayed against them

Swimming baths, shower baths, and bathroom floors are not blameless and I would not attempt to exonerate

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953 ii 33 101 449 130 507 565 623 734 1263
tt M *Ibid* 1955 i 820
J T *Ibid* p 1073
H *Ibid* i 969

them They are unrewarding environments in which to attempt prophylaxis Something might be done to sensitise the public conscience against those people with plantar warts who attempt to share them with the rest of the community by going barefoot in public places As a long term ideal this is excellent, but as a practical measure for immediate action I would suggest that school children should wear gym shoes Perhaps some of your other readers have ideas on this painful subject

Aberdeen ALAN LYELL

Sir,—The East Anglian report on the high prevalence of plantar warts in school children, particularly in girls, lends colour to my suspicion that the practice of barefoot dancing and gymnastics is responsible

Barefoot gymnastics and dancing appear to be somewhat of a passion at present and might account for the spread of infection by contamination of gymnastic apparatus and floors Girls do more dancing and I suspect more barefoot gymnastics than boys Also, judging by the dirt accumulated on the soles after a lesson even in a well-kept gymnasium, this might lead to an increase in cloakroom infections if the girls wash their feet as they need to do before putting on shoes again

Perhaps the East Anglian medical officers of health may be able to correlate the prevalence of plantar warts with the practice of barefoot physical culture and if it is proved to be connected a return to the old-fashioned gym shoe might have its rewards

After all, the knowledge that plantar warts spread by barefoot walking, especially in institutions, is not new

Manchester H A FRIEDLANDER

THE DEATH PENALTY

SIR,—I am interested in Dr Hamilton's assurance in your issue of Aug 6, with its exposition of his private notion of ethics

Yet, whatever he may say, ethics is part of philosophy, a subject not included in the medical curriculum and one not to be understood without some study It is indeed a complex problem that he solves to his own satisfaction in half a column of *The Lancet* one that has occupied the minds of men of genius for over two thousand years

However, I must repeat, though I burden your patience, that if there be a valid case against capital punishment, your correspondent does not state it, nor appear to understand in what it must consist

For example, he writes "Ethic (*sic*) is not given us from some hypothetical source, nor does it grow on trees, nor in philosophic systems It is slowly built up in society by the ethical activities of society"

He does not define an "ethical activity," nor tell us how we may recognise it as such It remains something undefined and of hypothetical source, and without definitions of his operative terms, his sentences are devoid of rational content, and mean precisely nothing

If ethics, like Topsy, "just growed," when do the activities of Society become ethical, and how do we know that they are so? What qualities—at the critical time—make ethical what was not so before? Which came first, the hen or the egg, the activities or the ethics? Dr Hamilton has no answers to these questions It has not occurred to him that any are called for

n reason, ethics must consist in *principles* that are
ble to human behaviour in all circumstances,
the science of ethics itself is not responsible for
ig them in practice They are not principles
ed from conduct, but principles that should *in*
n it

Dr Hamilton confuses what he believes to be the owth of "ethical activities" in society with the rinciples that must precede and determine this growth

If there be a case against capital pu
pity that none of your correspondents
it the compliment of a lucid and
making it clear whether, and how far, h
on ethics, upon grounds of simple ex
his sensibilities are affronted by the
section of press and public when
pending, or upon all these grounds each
degree

Yet, it has to be conceded that the
language of ethics, in which any such
couched, are no part of the training or ex
doctor This may be why, like Everyman
something he dislikes he finds it eas
steam persuading himself that he has
tion to the problem, whereas he has don
relieve his feelings, and detonated a numb
adjectives Whether this be an 'eth
I leave to Dr Hamilton to pronounce

London F M E

SIR,—I have read with great interest the
that followed your editorial on capital
chiefly that having recourse to Aristotle

Aristotle's *Ethics* are undemocratic bas
and anchored to the idea that a few men ar
who can dictate what virtue should be Ari
this is wrong and unethical Those sages an
whose duty it is to make the young acquire
that eventually they practise virtue without
power of the law If the pupils acquire bad h
to the same legislators they must be punished
be satisfied

However *sensible Aristotle's* teachings ma
the modern mind, to say the least, they are de
sense There is no benevolence in them
mankind are things to be discussed intellectu
man must take a passionate interest in anoth
ness Aristotle never learnt from human ex
absolutely barren of emotional considerat
deepest aspects of moral life never cross
Ethics are absolutely repugnant to modern
democracy, and his reactions to human be
related to those of the hardened post mortem
have nothing in common with the kind
approach of the true doctor, whose main
preservation of life

No one has better summed up the *Eth*
than that great contemporary philos
Russell "What he has to say is what wi
comfortable men of weak passions, but
to say to those who are possessed by a
or whom outward misfortune drives to de

Thames Ditton, Surrey L. P

SIR,—It is difficult to discuss the
unemotionally, but there would seem to b
points against its continuance which do
emotional considerations

The result of a fair legal procedure, like
scientific work, can be expressed only as
It would be as well, therefore, to inflict only
as are reversible Secondly, it has been
evidence as to the deterrent effect of capit
is equivocal In other words, it is doubtful
ordinary citizen need feel that his already
of being murdered would be increased
penalty abolished The police are enti
differently about this matter, but perhaps
of very severe penalties against the unauthor
of lethal weapons would provide them
safeguard

Ilkley, Yorkshire

Public Health

)utbreak at the Royal Free

al Free Hospital in London during the past
of the nursing staff 5 of the medical staff
illary medical staff 8 of the students and
estic staff at Gray s Inn Road and Liverpool
d what was initially referred to as glandu
ut as the outbreak has progressed so many
ures have been observed that it is now
ustain that, or any other diagnosis. A
tatement has been issued for the guidance
rs who may encounter similar cases.

break there is involvement of lymph nodes
on with in most cases, signs and symptoms of
itis or polyneuritis. The disease has happily
ourse in the large majority of cases. Where the
ure is concisely known the incubation period
etween five and seven days Although most
young nurses a proportion have been sisters
are over the age of 40

ymptom has been vague malaise followed withi
seven days by mild sore throat tender enlarge
lymph glands (often confined to the posterior
n but in some cases generalised) pain under
argins and pain in the neck, back and limbs of
ity Headache without meningism has been
the symptom which seems to be peculiar to this
ecially in the early stages is vertigo This has
nsient but in a few cases it has been persistent
and has been accompanied by slight nerve

and signs of encephalomyelitis have sometimes
in forty-eight hours of the onset but in other
ave been *delayed* for as long as three weeks
pareses, particularly ocular have been common
of either pyramidal or lower motor neurone type
erved sometimes with painful muscle spasms
numbness, neuralgic pains, or anæsthesia have
her alone or in association with motor mani
oma was not observed but a state of drowsiness
tively common

of the lymph nodes has been accompanied in
extreme tenderness in the region of the liver and
n. Liver enlargement has been quite definite but
s made it difficult to determine the size of the
n when the infection has been severe pyrexia
ht or absent In certain cases there has been a
ate tachycardia sometimes persisting into

o-cell counts have varied from 3000 to 12 000
sometimes with a neutropenia and occasionally
lute lymphocytosis. Although typical glandular
ve not been observed morphological changes have
some lymphocytes and the specificity of these is
d The Paul Bunnell test has not been positive
The cerebrospinal fluid has been examined in a
d in none was there a pleocytosis or an increase
n content

help of a number of virus workers outside the
ensive studies are being made to identify the
gent

al grounds it seems doubtful whether this is
of infectious mononucleosis for although the
l complications have been described in that
other epidemics they are exceptional whereas
nt one they are almost the rule Furthermore
tests have failed to support a diagnosis of
mononucleosis. On the other hand it is
t in the epidemic variant of infectious
sis, hæmatological and serological changes
e classical disease are less constant The very
ivity the prominence of visceral manifesta
requency of sensory neurological signs com
the predominantly benign course, make a
polioencephalitis most unlikely The studies
progress may establish that the infection is
own virus or its variants but it is possible that
is involved

Poliomyelitis

Uncorrected notifications for the week ending July 30 were (previous week s figures in parentheses) paralytic 121 (93), non paralytic 120 (84) total 241 (177) Uncorrected notifications up to and including the 30th week of 1955 totalled 1213 In 1954 the total at this stage was 986 and in 1953 it was 1059 So far this year the *picture is very similar to that of 1952,* which did not prove to be an epidemic year In addition in 1952 the issue was not partially obscured by the large proportion of non paralytic cases that have occurred this year The increase in notifications has been general throughout the country, and the only major foci of the disease so far have been in Barnsley (61 cases) and Stepney (83) On Aug 8 it was reported[1] that there were 58 cases (confirmed or suspected) in the borough of Willesden and the number of patients with poliomyelitis in the isolation hospital at Neasden Middlesex, was 77

In Canada the Minister of Health has said that sufficient time has now elapsed since the last inoculations to say that the poliomyelitis vaccine used in Canada was completely free of untoward effects or the possibility of direct *infection*[2] The vaccination programme, he added would be continued at the beginning of next year So far just under one million children had received two injections, and a few had already received a third.[3] No inoculations had been given during the summer months. As well as third injections a further two million children would be given their first two injections next year This would mean that by next summer more than half the child population of Canada would have had at least two injections Nearly all the vaccine used in Canada has been manufactured at the Connaught Laboratories in Toronto A small quantity only of commercially produced vaccine was imported from the United States in April The Institute of Microbiology at the University of Montreal will in future also produce vaccine under *the same conditions as the Connaught Laboratories.*

Infectious Diseases in England and Wales

Disease	Week ended July				
	2	9	16	23	30
Diphtheria	6	10		8	7
Dysentery	807	590	619	518	471
Encephalitis					
Infective	3	1	5	1	[illegible]
Post-infectious	3	5	6	3	1
Food poisoning	[illegible]	241	384	490	461
Measles excluding rubella	17 717	18 389	16 425	14 830	[illegible]
Meningococcal infection	[illegible]	[illegible]	[illegible]	34	24
Ophthalmia neonatorum	41	43	16	35	43
Paratyphoid fever	17	10	16	20	29
Pneumonia primary or influenzal	295	236	233	[illegible]	233
Poliomyelitis					
Paralytic	47	[illegible]	78	93	121
Non paralytic	26	37	[illegible]	84	120
Puerperal pyrexia	230	223	[illegible]	234	210
Scarlet fever	683	656	40	352	342
Smallpox	—	—	—	—	—
Tuberculosis					
Respiratory	743	660	695	715	[illegible]
Meninges and C N S	20	20	18	16	9
Other	113	105	100	[illegible]	91
Typhoid fever	5	12	7	9	6
Whooping-cough	1833	1865	1765	1788	1705

Not including late returns

Chiropody for the Elderly

In his annual report for 1954 Dr A C T Perkins, medical officer of health for Middlesex, suggests that the provision of an efficient chiropody service for elderly people might result in ultimate economy

> The lack of such a service must inevitably result in numbers of old people being forced into institutions merely through the effects of loss of mobility which *might well have* been prevented by the timely attentions of a chiropodist Unfortunately the County Council has hitherto been unable to obtain the necessary sanction to provide a complete chiro

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[1] *Times* Aug 9 1955.
[2] *Ibid* July 30 1955
[3] *Scotsman* Aug 6 1955

pody service under the powers conferred by Section 28 of the National Health Service Act, as it would wish It is to be hoped that a reversal of national policy in this matter will not be much longer delayed "

Medicine and the Law

Man Fined for Attending Wife in Childbirth

SINCE 1926 it has been an offence for any person who is not a certified midwife to attend a woman in childbirth "otherwise than under the direction and personal supervision of a qualified medical practitioner" Cases of sudden or urgent necessity are excepted An offence in this connection is punishable on summary conviction by a fine not exceeding £10 These provisions are contained in the Midwives Act 1951, which replaces earlier legislation on the subject

At Gloucester magistrates court recently a man was fined £3 on a charge of attending his wife in childbirth, not being under the supervision of a doctor[1] The man, who pleaded guilty, stated in evidence that he was a diet reformer and a student of natural healing; this was the second child he had delivered, and he did not know that he was committing an offence

Death during Continuous Narcosis

At a recent inquest[2] Prof J M Webster, Home Office pathologist, spoke of the dangers of continuous narcosis "I think it is a very dangerous treatment" he said "You pour barbiturates into a body You don't know what happens to them, and you are living very dangerously when you employ massive doses of barbiturates"

The patient, a woman of 39, was given continuous narcosis for depression Treatment began on July 18, and on July 22 the patient died The coroner asked whether the dosage of gr $7^1/_2$ of barbiturate, mentioned by the doctor concerned, was a recognised one The doctor said it was a recognised dose for this sort of treatment It was appreciated that this treatment could be dangerous Professor Webster said that death was due to paralysis of the respiratory and cardiac centres by continuous narcosis A verdict of misadventure was returned

Lighting of Hospital Ward

The lighting in a hospital ward was criticised by the St Pancras coroner at the inquest into the death of a patient[3] The patient had been operated on for a perforated gastric ulcer, and after his return from the theatre a student nurse sat with him After about five minutes she noticed his ear turning blue, and a doctor was called The doctor said in evidence that he was at the bedside within ten seconds, but the patient was "quite dead" "The lighting was exceedingly dim," the doctor added. "It was only gross changes in the man's colour that could be distinguished The lighting in that particular ward is quite inadequate" Evidence was also given by a senior anæsthetist who suggested that a recovery room would be ideal for patients who had undergone operations

The coroner said that the patient had suffered some obstruction in the throat and had been asphyxiated "I am in no sense blaming the nurse I have no doubt that this could always happen with the lighting described"

A Case of Gas Gangrene

In a civil action at Hampshire Assizes,[4] Mr Justice Pilcher awarded £2000 damages to a married woman of 39 whose right arm was amputated after broken in a fall and gas gangrene had dev husband was also awarded £2000 damages incurred because of his wife's disability

Husband and wife sued the South West Regional Hospital Board, the West D Hospital Management Committee, and a doc negligence in treatment The defendants gence Giving judgment, Mr Justice Pilch the wife broke both bones in the right forear was a small punctured wound caused by th the hospital, an unpadded plaster was applied His Lordship said that he found it impossib the doctor from some responsibility for gave a course of penicillin Good practice a fracture of that kind should not be enclos an unpadded cast The doctor had failed plaster completely when symptoms appear evidence he found it quite impossible to find that the doctor, in the course of his treat patient, was guilty of negligence The do to be blamed, however, for failing to suspec place, that the arm had become infecte gangrene, nor for failing to diagnose the co he cut the plaster completely

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Obituary

REGINALD ST GEORGE SMALLRID
K C B, M B Edin, F R C.P, F R CS

Surgeon Vice-Admiral Sir Reginald Bond, we announced last week, will be remem affection not only by the officers who served the Royal Navy, but also by the colleagues with him on the councils of the many charities to which in his retirement he ga of his time

He was born at Ogbourne St George, Wi the younger son of the Rev Alfred Bond Worcester He was educated privately and at the University of Edinburgh where he gained the Mackenzie bursary in anatomy in 1890

After he graduated M B in 1894, perhaps influenced by his elder brother Hubert Bond, he spent some years in appointments in mental hospitals But in 1898 he joined the Royal Navy and for the next five years he served afloat in ships at home and abroad Later he was appointed to the depot ship at Barrow-in-Furness where, before the outbreak of war in 1914, he had gained practical experience on such varied specialties as the building of naval airships, tropical diseases, and landing parties of R At the beginning of the war he served in H M *wealth*, but in 1916 he was posted to one hygiene appointments in the Royal Navy health officer on the staff of the Comman Plymouth Later he was appointed to a in the medical department at the Admiralty

In 1921 he became director of medical professor of hygiene at the R N Medical Greenwich To these years belongs much on the special health problems of the received "their Lordships' appreciation" in designing and perfecting an air-purifie for submarines In 1922, at a special adj was also awarded the Gilbert Blane me spicuous zeal and professional ability But

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1 *Times*, July 29 1955 *Daily Mirror* July 29, 1955
2 *Sheffield Telegraph*, July 30, 1955
3 *Islington Gazette* July 29 1955
4 *Times*, July 30 1955

limited to one profession and in the same year
called to the bar at the Society of Gray s Inn
920 to 1926 he was a co-editor of the *Journal of*
l Naval Medical Service

20 he was appointed C B and on promotion to
k of surgeon rear-admiral he left Greenwich to
arge of the R N Hospital at Plymouth The
g year he was elected F R C P In 1931 he suc-
Sir Arthur Gaskell as medical director-general of
vy In the same year he was appointed an
, physician to the King and in 1933 he was
d K C B He retired in 1934

n active and generous retirement he became a
and hon secretary of Queen Mary s Hospital
pton a treasurer of Epsom College and a chair
the committee of the Royal Naval Benevolent
and, till two years ago he served on the executive
ee of the Professional Classes Aid Council.

) writes ' I served several times under Reginald
my chief and always found him a most courteous
ly approachable senior officer He was especially
commonsense administration and as medical
general he did much to prepare the R N Medical
for the ordeal of the second world war He also
ear and lucid writer of the King s English For
e him a lot, for editing many of my own scientific
nd articles. I think it is not too effusive to say
ng to his considerate, kindly and selfless nature
Naval doctors who ever served with him loved
l will feel that his passing has deprived them
ersonal friend He was a real officer and
an.

ginald died in Worthing on July 27 a few days
death of his wife formerly Miss Blanche Irvine
o married in 1900

LIVE NEVILLE ROLFE O B E the former secre-
eral of the British Social Hygiene Council and
49 general secretary of the British Rheumatic
ion died on Aug 3

C FLUGEL, D.SC lecturer in psychology at
ty College London since 1914 died in London
6 at the age of 71 As a former hon secretary
ident of the British Psychological Association he
known to many of his medical colleagues. His
rom *The Psychology of Clothes* (1930) to the
on, Psychology and Peace (1947) had won him
nders among laymen and doctors alike

Appointments

IARGARIT M.B St And school M O York C B
N, W P M D, Belf D P M medical superintendent
shire Hospital Downpatrick
HTLAS E M. M R C S D I H D C H M O H Pembroke
enby
STEPHER M B, Lond D I H A A M O Welsh Regional
tal Board
W R M B Glasg D P H asst. M O H and school M.O
m
CHAIL, M R C S D P H asst M O H and school M.O
n upon Trent
DR Breun M B N U I D O M S M O in charge of a
tion clinic Westminster and Central Eye Hospital
m
, J H C M B Camb F.R.C.S part time consultant
n Kettering and Northampton area
W J W M B Sheff F R C S part time consultant
rthopædic surgeon the Royal Infirmary and the Children s
tal Sheffield
I I M B Camb medical registrar Ipswich and East
< Hospital
C W M B Manc F R C S part time consultant asst
medic surgeon Royal Hospital and Edgar Allen Physical
nent Centre Sheffield

Factory Doctors:
, C M., B.M Oxfd Ascot Berkshire
A K M B, Camb F R C S, Yarmouth Isle of Wight
J R M B, Camb Southwell Nottingham

Notes and News

ROCKEFELLER GRANTS

THE Rockefeller Foundation during the second quarter of 1955 has made grants of over $5½ million They include a five year grant of $314 000 to help the University College of the West Indies in Jamaica to expand its programme of medical teaching and research and to extend its medical services to other islands of the West Indies. A grant of £52 000 has also been made to the University of Oxford towards building and equipping a laboratory for the research of the new regius professor of medicine Dr G W Pickering The University of Edinburgh is to receive a five year grant of £30 000 to set up a nursing teaching unit Another grant of 225 000 rupees (about $49 500) is to go to the Indian Council of Medical Research to help in the construction of a head quarters building

Smaller grants include $30 000 to the Galton Laboratory University College London for research in genetics under Prof L. S Penrose F.R.S and $21 000 to the Queen s University Belfast for equipment for virus research under Prof G W A Dick.

THE NEW LOOK ON PARASITES

IN years gone by the parasitologist studied chiefly structure But outlooks change and the physiology of parasitic organisms, and beyond that the whole vast intricate complex of the relation of the physiology of the parasite to the physiology of the host are now being investigated New techniques have shown that parasites like organisms living in other ways, depend for their life on enzymes, catalysts and so forth and sometimes on the interaction of these with corresponding entities produced by their hosts Hence their lives inside their hosts, and their specificity to certain hosts may be determined precisely by biochemical and biophysical factors about which we still know comparatively little.

A conference held earlier this year at Rutgers University was devoted to the Physiological Consequences of Parasitism[1] At this conference Prof W H. Taliaferro whose researches on the immunology of parasitic organisms have long been well known discussed a study of the formation of anti-sheep hæmolysins in the rabbit The rise and fall of antibody in the rabbit he said, follows a discontinuous curve each segment of which is described by the compound interest integral The spleen forms most of the antibody at first but then its production of antibody rapidly drops Non splenic sources produce less antibody at first but continue to produce it at a low level for much longer periods. The mechanism of antibody synthesis is being examined by X ray inhibition of antibody formation and by injecting minced spleen from an immunised donor into a non immune recipient in conjunction with radio isotopic labelling The results indicate that almost none of the amino acids which appear later in the antibody are taken from the amino acid pool during the induction period and they suggest that during the induction period antibody synthesising enzymes are produced

William Trager spoke on the growth, nuclear division, schizogony and further development of the malarial parasite of birds *Plasmodium lophuræ* which can be maintained in vitro outside the erythrocytes of the host for several days This extracellular development requires besides substances whose chemical nature is known unidentified substances present in an erythrocyte extract that has been suitably prepared

Leslie A Stauber reported on the study by a different method of another intracellular protozoon parasite *Leishmania donovani* maintained in the hamster Investigation of the effects of alterations in the environment of the infected hamsters showed that the leishmanias rapidly build up the infection to a high level, and that death of the hamster is due to their cumulative effects. It is known that the leishmanias cause a fall in serum albumin and a rise in serum globulin The intracellular site of this parasite and the type of host-cell no doubt have an important influence in preventing the host from developing an effective resistance similar to the resistance developed by man to cutaneous leishmaniasis

Most of the remaining papers dealt with metazoan parasites Ernest Bueding dealt with the glycolytic enzymes of *Schistosoma mansoni* The survival and reproduction of these trema todes, which live in the hepatic sinuses and in the portal and mesenteric veins, where the oxygen tension is relatively high depend almost entirely on their anaerobic utilisation of carbohydrate Their rate of consumption of carbohydrate is so high that in five hours they metabolise an amount of glucose equal to their dry weight Unlike many helminths, *S mansoni* converts glucose quantitatively into lactic acid, and in this respect it resembles its vertebrate host, the phosphorylating glycolysis effected in vertebrate tissues can be demonstrated in this trematode, in which the enzymes involved are also found Studies of the enzymes by immunological and biochemical methods have indicated opportunities for interfering with the function of the parasite's enzyme without affecting the equivalent enzyme in the host

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[1] Some Physiological Aspects and Consequences of Parasitism Edited by William H Cole New Brunswick N.J Rutgers University Press 1955 Pp 90 $2

In his paper on intestinal physiology and the host-parasite relationship Clark P Read reported on the paradox revealed by in vitro and in vivo study of the tapeworm *Hymenolepis diminuta* of the rat and mouse—that this species readily uses glucose for the synthesis of starch but cannot use starch, yet tapeworms taken from rats to which starch had been fed contained more polysaccharide than those taken from rats given glucose Read also discussed the effects of bile salts on the emergence of tapeworm larvæ from the cysts (bladderworms and cysticercoids) The bile salts it seems, can affect the host parasite relationship in at least two ways They can kill the bladderworm outright, as sodium taurocholate kills the bladderworm of *Tænia pisiformis*, so that hosts which possess this bile salt may be immune from infection with this species, whereas the dog which has no taurocholate, is not Secondly, they can help the emergence of the tapeworm larva, so that the host is thereby rendered more susceptible to the infection They can help the emergence of the larva (*a*) by stimulating it to the activity necessary for its escape from its cyst, (*b*) by denaturing the proteins of the cyst-wall, so that the lytic action of pepsin or trypsin on the cyst is enhanced Comparison of the mouse and rat showed that, in the mouse whose stomach empties the more quickly trypsin and pepsin and hydrochloric acid act on the cysticercoid for a shorter time, so that fewer tapeworm larvæ emerge, and thus may be one reason why this tapeworm is commoner in the rat than in the mouse

JOURNAL OF TROPICAL PEDIATRICS

SINCE far more children live in the subtropics and the tropics than in the more temperate zones it is surprising that only in recent times has a specialised study of child health been initiated in the hotter parts of the world This thought is expressed in an editorial which introduces a new publication—the *Journal of Tropical Pediatrics*[1] (Although printed in England and with editorial offices in Calcutta, the journal has adopted the American spelling for "pediatrics," which is perhaps both unfortunate and surprising) There seems to be no doubt that there is room for such a publication Dr Cicely Williams, who has done so much to stimulate interest in this field, contributes the opening article, on the Organization of Child Health Services in Developing Countries, in which she makes the important point that whereas much in surgery, pathology, and so forth can be exported from Western medicine, this "emphatically" does not apply to the child-health services The need for adaptation is great, and it is a lack of appreciation of this which is so greatly delaying the institution of maternal and child-health services in newly developing countries Nutritional problems are everywhere urgent, and it is significant that each of the succeeding six contributions to the first issue is devoted directly or indirectly to some aspect of nutrition. Dr D B Jelliffe is the editor and he has an imposing list of pædiatricians on his advisory board or as contributing editors

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University of Oxford

On July 30 the following degrees were conferred

D M—B B Waddy, W H J Summerskill

B M—H P Tollinton N M Bleehen, K P Ferris, J W L Parry, T D R Hockaday, J M H Pearson, B E Sayers, M E M Cook J J Allison, Theodora M. Draper

University of Cambridge

Dr D'A Kok has been appointed a university lecturer in the department of medicine, Dr D H Clark an associate lecturer in psychiatry, and Mr J F R Withycombe an associate lecturer in surgery

New Australian University

On Aug 4, Sir Earle Page F R C.S., the of health, was installed as first chancellor of th of New England, which has been opened at South Wales

British Association for the Advancement of

The annual meeting of this association wi Bristol from Aug 31 to Sept 7 under the Sir Robert Robinson, O M, F.R S

Institute of Medical Laboratory Technology

The triennial conference of this institute is to University of Nottingham from Aug 27 to Sept presidency of Prof Robert Cruickshank Furth may be had from Mr George Whiting The Prior Notts

Symposium Neuroradiologicum

This meeting is to be held at the Universit Malet Street, W C 1, from Sept 13 to 17 Furth may be had from Dr R D Hoare, National H Square, W C 1

Manchester Royal Infirmary Old Residents

The twelfth reunion of this club will be held Hotel, Manchester, on Saturday, Oct 1 Furt may be had from the hon secretary of the Manchester Royal Infirmary

B M A Research Scholarships

The council of the British Medical Association applications for the following research scho Ernest Hart scholarship (£250) a Walter Dix (£250), and four ordinary research scholarships Further particulars may be had from the secr House, Tavistock Square, W C 1

Disease and Its Transmission

The Institute of Biology is holding a symp London School of Hygiene and Tropical Medic Street, W C 1, from Sept 29 to Oct 1, at veterinary, and plant biologists will consider methods by which disease is transmitted Furth may be had from the secretary of the institu House South, Tavistock Square, W C 1

Wellcome Foundation

Brigadier J S K Boyd F R S, has been trustee of the Foundation as from Jan 1, in Prof T R Elliott, F.R S, who is retiring from th in October Brigadier Boyd is giving up the of the Wellcome Laboratories of Tropical Med end of this year, and will be succeeded by Hennessey, who, until his recent retirement, wa medical services in Uganda

Working Party on Social Workers

This Working Party, which was set up by the Health and the Secretary of State for Scotland chairmanship of Miss Eileen Younghusband is a receive written evidence on the recruitment of social workers at all levels in the local-authority welfare services Persons or organisations evidence to the joint secretaries, Mr G I C Miss E L Hope Murray, at the Ministry of He Row, London, W 1

New Glasgow Health Centre

On Aug 8 Glasgow's first post war health opened at Pollok It has cost £50,000 to provide maternity and child welfare services health services for three neighbouring housing joint population has already reached 37,000, school children There is to be a permanent doctors and three nurses at the centre, and call when necessary The local staff of Glasgow health and welfare departments will also use the

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The Royal Sanitary Institute is in future to be Royal Society for the Promotion of Health

Dr W S C Copeman, chairman of the Empire Council, is to visit Australia to lecture at the University Postgraduate Federation and New Zea at the invitation of the ministry of health and the Rheumatism Council He will be away about four

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[1] Orders for the new journal and business matters are dealt with at Effingham House, Arundel Street Strand, London W C 2 Annual subscription £1 1s single numbers 5s plus postage

WASHIORKOR AND PROTEIN MALNUTRITION

DIETARY THERAPEUTIC TRIAL *

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port here some preliminary results of a test of therapeutic diets in kwashiorkor
iorkor is defined by the F.A O /W H O Expert e on Nutrition (1953) as due to protein mal —i.e, to relative deficiency of protein foodstuffs et. A protein foodstuff known to initiate cure any other treatment is skimmed milk The of the trials described below was to define if the precise factors in skimmed milk which are le for initiating the cure of this syndrome
ed milk contains *at least two important pro* ein and lactalbumin In addition it contains rate traces of fat vitamins minerals, and trace lements. Almost certainly there must also be food factors only partially identified—e.g (Schwarz 1952) and the *Lactobacillus bifidus* yörgy 1953)

Plan of Trial

erative project was set up in South Africa in itres—Cape Town Pretoria and Durban—to herapeutic efficiency of certain formulæ repre ynthetic and partly synthetic substitutes for nmed milk. A concurrent series of cases treated l skimmed milk was used as a control group In itute formulæ there was successive *elimination* dious nutrients known to be present in skimmed e elimination started with lactalbumin and fat l to the known vitamins, and will end with the on of synthetic amino acids for the casein The this latter substitution would be to eliminate unknown accessory food factors associated with casein A salt mixture patterned on that of dried skimmed milk was kept constant throughout the synthetic and partly synthetic formulæ

The following agreed standard procedures for preparing the feeding formulæ, for supplementary treatment and for biochemical methods were adopted in each centre

Feeding

For the first twelve to twenty four hours all the patients were given by mouth, or if necessary parenterally an electrolyte solution (Darrow's or Hartman's) with glucose This period served for observation and for correction of dehydration and electrolyte imbalance if present The test formula was then offered in a strength of 5–10 calories per fluid oz. (30 ml.) and if refused was given by gavage The fluid intake prescribed was $2^1/_2$ oz per lb body weight per twenty four hours. With improvement in appetite the strength of the formula was increased to 15 calories per fluid oz. and the total fluid intake adjusted to the infant's demand By the end of the test period an intake of 40–60 oz. (1200–1800 ml) or 600–900 calories per twenty four hours was achieved by most children in the test The constituents of the individual formulæ and the code numbers by which they were known are set out in table I Apart from the formulæ prescribed no other food supplements of any sort were given during the test.

Chemotherapy

Procaine penicillin 300 000 units daily by intramuscular injection and oral sulphadiazine gr $1^1/_2$ per lb body weight daily were administered for at least a week in each case from the start

Weights

All the patients were weighed daily to measure their loss of œdema and their progress.

Blood Specimens

Blood was taken by venepuncture two or three times a week for estimation of serum proteins and electrolytes and for blood-counts &c Serum proteins were estimated by the biuret method (Weichselbaum 1946) In Pretoria 27 2% sodium sulphate was used for the precipitation of the globulins whereas in Durban and Cape Town 23% sodium sulphate was used The results for Pretoria are therefore shown separately in fig 1

Definition and Selection of Cases

One of us (Brock 1955) has described in some detail the symptoms and signs which when they are encountered

TABLE I—COMPOSITION AND CODE NUMBERS OF TEST FORMULÆ

S A D M., South African dried skimmed milk (roller dried) with no vitamin supplement
S.A.D.M +V.S., South African dried skimmed milk with separate daily vitamin supplement of

Thiamine	4–6 mg	Vitamin B$_{12}$	6 µg
Nicotinic acid	30–35 mg	Vitamin A	6000 units
Riboflavine	3 4–4 4 mg	Vitamin D	1600 units
Pyridoxine	4 µg		
Calcium pantothenate	0 25–1 mg	Ascorbic acid	80–105 mg
		Folic acid	5 mg

In Pretoria $1^1/_2$ minims of 85% lactic acid per fluid oz. was added to the skimmed milk mixtures.

C_1 labco vitamin free casein 38 0 g., salt mixture 9 6 g., vitamins† 0 2 g and glucose 52 2 g per 100 g of dry formula

NaCl	1 535 g	†Thiamine	1 0 mg
K_2HPO_4	3 00 g	Riboflavine	2 0 mg
$CaHPO_4$ $2H_2O$	2 g	Pyridoxine	1·0 mg
$CaCl_2$	0 31 g	Calcium pantothenate	10 mg
CaO	0 735 g	Nicotinamide	10 mg
$MgSO_4$ $7H_2O$	1 11 g	Inositol	5·0 mg
$CuSO_4$ $5H_2O$	0 0057 g	Choline	100 mg
Ferric citrate	0 11 g	Para-aminobenzoic acid	30·0 mg
KI	0 0032 g	Biotin	0 2 mg
$MnSO_4$ $4H_2O$	0 02 g	Folic acid	0 2 mg
$ZnCl_2$	0 001 g	Vitamin E	14 2 mg
		Menadione	14 2 g
		Vitamin B$_{12}$	0 01 g
Total	9 6062 g	Total	207·06 mg per 100 g of formula

With this formula a daily extra supplement of vitamin A 1000–6000 units and vitamin D 1000–2000 units was given

C_2 labco vitamin free casein 38·0 g, salt mixture 9 6 g and glucose 52 4 g per 100 g of dry formula.
No vitamin supplement of any kind was given with this formula.

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coöperative project the organisation and the pre ary testing of all formulæ were undertaken by Prof Brock and Dr J D L Hansen respectively of the tments of medicine and pædiatrics of the University pe Town and Groote Schuur Hospital. Dr E. E , of Merck & Co., Inc. Rahway New Jersey U.S.A., n close consultation at all times and supervised the ration of the formulæ which were supplied by c & Co, Inc After preliminary testing including lete metabolism balance tests had been carried out pe Town the formulæ were submitted for further on the large numbers of cases available at Pretoria Durban. At Pretoria the work was done by Dr Pretorius in consultation with Prof J Davel of partment of pædiatrics, University of Pretoria and ria Hospital At Durban the work was done by G Hendrickse in consultation with Dr F Walt pædiatric department of McCord Zulu Hospital n.

against a background of probable protein malnutrition, should lead the clinician to suspect that he is dealing with kwashiorkor Some laboratory criteria are given which can be used for confirmation but the view is expressed that in the last resort diagnosis may depend on the successful result of appropriate feeding The criteria described by Brock (1955) were used in selecting cases for the present trials

All the cases selected as kwashiorkor showed (1) a dietary history suggesting protein malnutrition, (2) œdema associated with hypo albuminæmia and not explained by renal, cardiac, or other disease (3) retarded growth, (4) peevish mental apathy, and (5) a variable dermatosis In the great majority of cases in Pretoria and Durban the characteristic dyspigmentation and alteration in the texture of the hair were observed In Cape Town, where the cases are mostly among Cape Coloured (mulatto) people, dyspigmentation of the hair is much less easy to detect, but alteration in its texture is common Under the conditions of this project it was not feasible to establish the presence, in every case, of fatty liver or reduced duodenal enzymes. A coming to necropsy had fatty liver

Owing to periodic shortage of test mat random sampling of cases was impossible. In any case to any particular therapeutic conscious bias was not exerted, and when te were in good supply the cases were selected. No cases were rejected unless the child wa subsequently found to have progressive The age distribution is shown in table II

Criteria of Response to Therapeutic T

As stated above, skimmed milk initiates substantial proportion of cases of kwashiork This "initiation of cure" can be descr following way After the institution of dietr with skimmed milk the general condition alm ately improves Within the first three to sev apathetic, irritable, and anorexic child chang that is beginning to take an interest in his sur is no longer irritable, and clamours for feeds may remain station few days or increase œdema After this diuresis which produce loss of weight and dis of œdema by the fourteenth day this time he may what wasted owing œdema, his general is vastly improved tone and play a returned, the skin texture, and scaling tive lesions heal mentary changes still present because much longer to disapp estimations of the serum level show a rapid recovery, and by the day are often twice admission In the the weight becomes there may already gain in weight due to tion of new tissue cure has been init and the therapeutic At this point the of mixed feeding is satisfy appetite, to growth and develop to consolidate cure required for initiati is usually between twenty one days In severe infections and delay the above events, and such cas found in groups the results—i e, requ tional antibiotics, blood In the pr no patients were tre test formulæ for twenty four days

At the end of peutic trial the chi put gradually on feeding and disch appropriate instruct parents

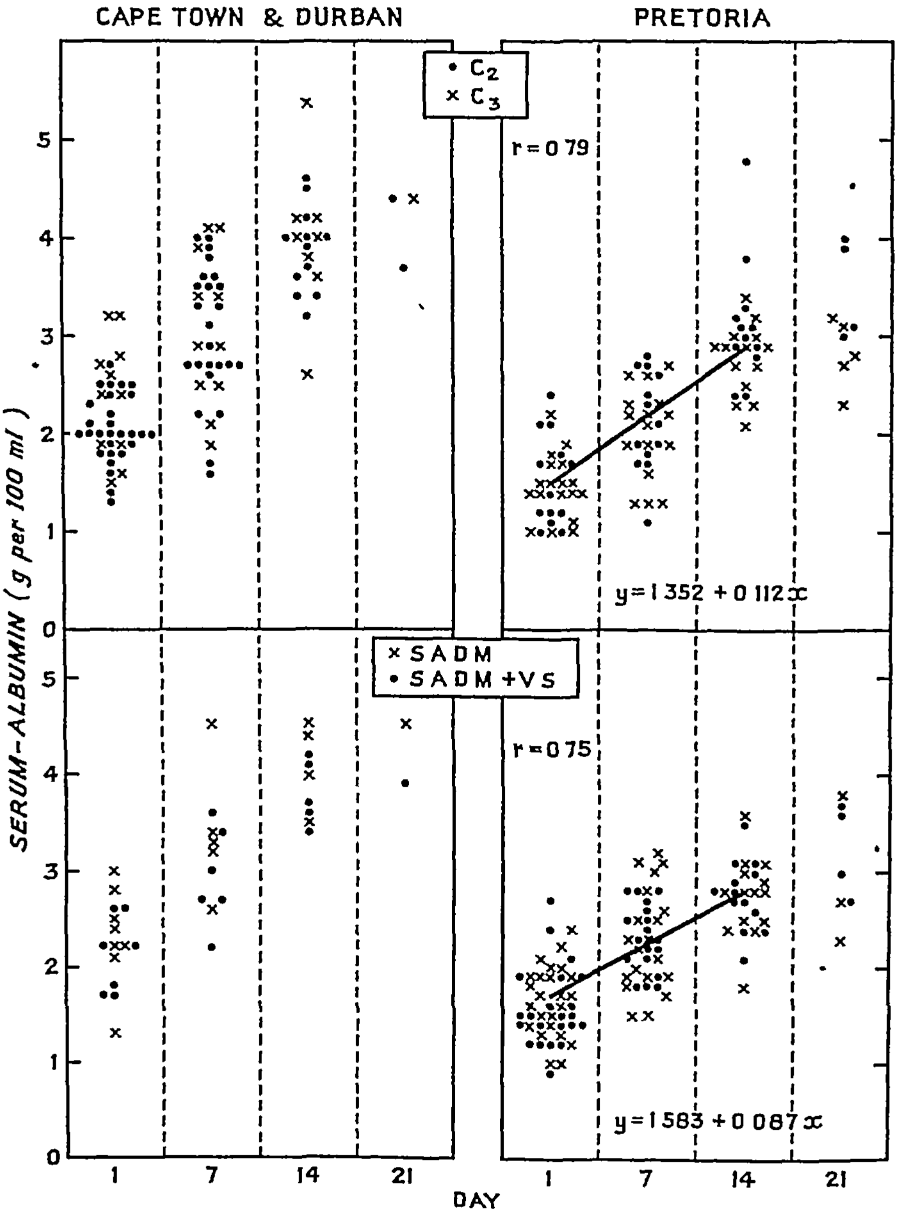

Fig 1—Rise of serum albumin during treatment with test formulæ: S.A.D M, skimmed milk S A D M + V.S, skimmed milk with vitamin supplement, C_2, casein formula with vitamins; C_3, casein formula without vitamins

ABLE II—AGE DISTRIBUTION OF 135 CASES

	Age (yr)				Youngest	Oldest
	0–1	1–2	2–3	Over 3		
	4 (5%)	48 (6 %)	19 (25%)	6 (8%)	8 mos	65 mos
	8 (20%)	26 (65%)	6 (15)	0	6 mos	30 mos
	2 (11%)	14 (78%)	2 (11%)	0	11 mos	24 mos
	14 (10%)	88 (65%)	27 (0)	6 (5%)		

s Encountered and Modifications of Standard Régime

orkor, even with the best of nursing, medical drugs is associated with an over all mortality 0–15% (Dean and Schwartz 1954) Criteria of are ill defined and complicating infections are sent though difficult to detect Diarrhœa is even in the recovery phase and leads to electro rbance (Hansen and Brook 1954) Sometimes severe anæmia (Adams 1954) In the initial itability and anorexia require expert and patient As sudden deterioration within a few hour is continuous observation by trained personnel is

of these difficulties modification of the standard as sometimes required in the interest of the These modifications took two main forms

tional antibiotic therapy was given where compli ections were severe and uncontrolled by penicillin adiazine Chloramphenicol chlortetracycline and ycline were the drugs used

portive treatment in situations of collapse dehydra vere anæmia took the form of parenteral electrolyte nd transfusions of blood or of plasma.

lition if a substitute test formula was not by the patient skimmed milk was given instead

Results

ping the results as follows the above mentioned have been taken into account

are cases in which no treatment was given other laid down as standard for all and in which cure was ated within twenty-one days.

II are cases in which the same end result was nly with the aid of additional antibiotic therapy as above

III are cases in which supportive transfusion of of blood was necessary to initiate cure This group des the cases in which it was thought advisable in the patient's interest to change the formula—e g because of evidence of intolerance—and those in which the supervention of severe infection diarrhœa or anæmia so retarded the recovery that full initiation of cure was impossible in the time given to the test

Group IV are the deaths (divided into those occurring within forty-eight hours of admission and those occurring later)

The results are set out, according to this grouping in table III † With each of the test formulæ initiation of cure by the diet with only penicillin or sulphadiazine as supportive treatment (group I) was achieved in 40–60% of cases In a proportion of cases equally good results could be obtained only with more vigorous antibiotic treatment (group II) and supportive transfusions (group III) The mortality rate was lowest with the C_2 formula (10%) and highest with the S A D M formula (30%) but if forty-eight hour deaths are excluded these figures become 10% and 18% respectively suggesting that the differences may well be due to chance selection of more severe cases in the S A D M group To overcome the variables of supportive treatment and to facilitate statistical analysis a simplified grouping has been adopted in table IV Here group I has remained as before but groups II, III and IV have been classed together as failures In this way it is possible to examine the ability of a formula to initiate cure in the absence of any supportive treatment other than penicillin and sulphadiazine

TABLE IV—STATISTICAL COMPARISON OF EFFICACY OF TEST FORMULÆ (CAPE TOWN PRETORIA AND DURBAN COMBINED)

—	Group I (cure)	Groups II III and IV (failure)	Total
S A D.M + V.S (skimmed milk with vitamin supplement)	17 (60·7%)	11 (39·3%)	28
S.A.D.M (skimmed milk without vitamin supplement)	14 (42·4%)	19 (5 ·6)	33
C_1 (casein with vitamins)	26 (59%)	18 (41%)	44
C_2 (casein without vitamins)	15 (50%)	15 (50%)	30
Total	72 (53%)	63 (47%)	135

Analysis by χ^2

S.A.D.M. +V.S./S.A D.M $0·2 > P > 0·1$

C_1/C_2 $0·5 > P > 0·3$

S.A D.M and S.A D.M +V S /C_1 and C_2 $0·7 > P > 0·5$

S.A D.M. +V.S and C_1/S.A.D.M. and C_2 $0·2 > P > 0·1$

TABLE III—DETAILED ANALYSIS OF RESULTS

Formula	Centre	No of cases	Group I	Group II	Group III	Group IV	
						Total	48 hr deaths excluded
s (skimmed milk with supplement)	Pretoria Durban Cape Town	21 7 0	14 3 0	1 2 0	3 1 0	3 1 0	2 1 0
	Total	28	17 (60)	3 (10·7%)	4 (14·3%)	4 (14·3%)	3 (10·7)
skimmed milk without supplement)	Pretoria Durban Cape Town	24 8 1	13 0 1	0 2 0	5 2 0	6 4 0	4 2 0
	Total	33	14 (42%)	2 (6%)	7 (%)	10 (30%)	6 (18)
formula with vitamins)	Pretoria Durban Cape Town	14 20 10	12 9 5	1 0 1	0 5 1	1 6 3	1 5 2
	Total	44	26 (59)	2 (4·5%)	6 (13·5)	10 (3)	8 (18%)
ormula without vitamins)	Pretoria Durban Cape Town	18 5 7	11 1 3	1 0 0	5 4 2	1 0 2	1 0 2
	Total	30	15 (50%)	1 (3%)	11 (37%)	3 (10)	3 (10%)

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† Illustrative case-histories (multigraphed) may be had on application to the office of THE LANCET 7 Adam Street Adelphi, London W C 2

TABLE V—STATISTICAL ANALYSIS OF RESULTS FROM PRETORIA

—	Group I (cure)	Groups II, III, and IV (failure)	Total
S A D M + V S (skimmed milk with vitamin supplement)	14 (66%)	7 (34%)	21
S.A D M (skimmed milk without vitamin supplement)	13 (54%)	11 (46%)	24
C_2 (casein with vitamins)	12 (85%)	2 (15%)	14
C_3 (casein without vitamins)	11 (61%)	7 (39%)	18
Total	50 (65%)	27 (35%)	77

Analysis by χ^2

S A D M + V S – S A D M	0 5 > P > 0 3
S A D M + V S + S A D.M /C_2 – C_3	0 3 > P > 0 2
S A D M – V.S C_3	0 8 > P > 0 7

On this basis the differences in cure rate achieved by the various formulæ have been tested by χ^2 and found to be not significant (see table IV for probability values) Likewise, if all the cases treated with skimmed milk as a basic formula are compared with all the cases treated with casein as a basic formula, there is no significant difference in cure rate The same may be said for all the formulæ containing added vitamins compared with those containing no added vitamins

To minimise the effect on the results of differences in case material and ward handling between the three centres the biggest series of cases (that from Pretoria) has been separately analysed in table V Here again no significant differences are found in the cure rates with the various test formulæ

The rise of serum-albumin level achieved with each formula series may be seen in fig 1 It bears a strictly linear relationship to the duration of treatment throughout the first fourteen days The regression coefficients did not differ between Cape Town, Durban, and Pretoria The recovery of serum albumin level, measured by the regression slope was in no way different for the casein formulæ and for the dried milk formulæ

The addition of a vitamin supplement to dried milk (S A D M + V S) did not accelerate the return of the serum-albumin level to "normal," judged by the fact that there was no significant alteration in the steepness of the slope obtained from the use of dried milk without a vitamin supplement (S A D M)

The lack of effects of vitamins on restoration of the serum-albumin level is further shown in fig 2, where the regression slope of cases with the "vitamin free" casein formula C_3 proved to be as steep as that obtained when known vitamins were added to the casein formula (C_2)

Discussion

As stated above, the primary purpose of the studies here reported and those still in progress is to determine which of the nutritive factors in skimmed the cure of kwashiorkor This knowledge elucidate the pathogenesis of this serious ill- lead to more efficient treatment and preventi also greatly aid in the selection of suitable p to take the place of animal proteins in areas are scarce

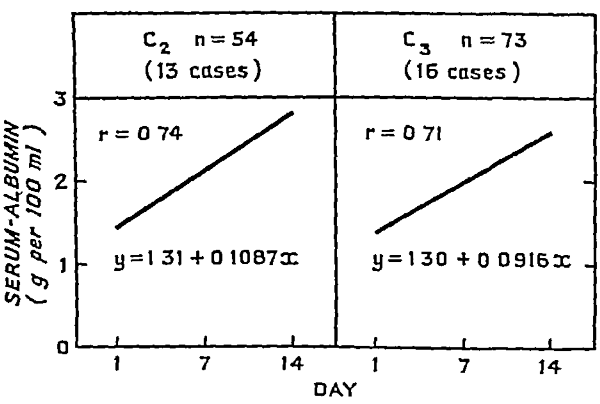

Fig 2—Regression lines of rise of serum-albumin (y) against time (x) during treatment with casein formula C_2 (with vitamins) and casein formula C_3 (vitamin-free) in results obtained in Pretoria (In fig 1 only those estimations are plotted which happened to fall on the 1st, 7th, 14th, and 21st days.)

Our results concern only "initiation of cu has been carefully defined, and no conclu drawn about "consolidation of cure" It se able, however, to assume that nutrients re downward course of kwashiorkor and initiat also be among those necessary for consolida They are also probably the main limiting nut diets that give rise to kwashiorkor

The data to hand indicate that all the k tested can initiate cure, and that all for contain the nutrients required for initiation of finding that a partly synthetic formula (C_3 of 'Labco vitamin free casein,' dextrose mixture has proved no less effective tha milk is important On this minimal formu skin and mucous membrane lesions, usually associated vitamin deficiencies, have healed Biochemical criteria of successful response to t e g , a rise in serum albumin, and, in a few cas amylase—have also been fulfilled with this fo

With a larger series of cases the difference cure and of failure may prove significant Th being pursued to bring a greater number into so that the relative efficiency of the individ can be better assessed

It should be noted that the standard successful initiation of cure (group I) has been For the purpose of statistical analysis, cases groups II and III—i e , those requiring sub biotic or supportive therapy—have been failures Many of these cases, however, had whole or in part to the dietary therapy, and added to group I, the proportion of cases each formula becomes very substantial

The differences in results between the three the variability in rates of cure and of death and after forty eight hours) emphasise certa ties involved in a nutritional trial concerning When a case of kwashiorkor is brought to disease is already in an advanced stage and req treatment The serum chemistry (Hansen 1954, Dean and Schwartz 1953, Trowell et reveals a gross disturbance of protein, carb lyte, and water metabolism that must affect and tissue Clinical assessment of severity and are usually extremely difficult No single sign physical signs can be said to aid in this re patients who appear to be in extremis, with and other lesions, respond rapidly to treatme others judged to be only moderately unexpectedly

Regional characteristics superimposed on syndrome are also important The differen mainly concerned with resolve themselves following

(1) *Basic diet before admission* consists ch (corn) porridge in Pretoria and Durban, whereas vegetables, such as squash (*Cucurbita Pepo L* and potatoes are added to small amounts of calorie intake in the Cape Town cases is probabl the Pretoria and Durban cases Hence the Cape merge more towards the undernourished or mar the kwashiorkor spectrum than do the cases the centres, some of which are towards the fatter or " end At all three centres protein intake is inadeq

(2) *Race* —Most cases in Durban and Pretoria of Bantu stock, whereas those in Cape Town are of mixed origin known as the Cape Coloured. I

—PRELIMINARY RESULTS OBTAINED WITH BORDEN'S SKIMMED LACTIC ACID MILK

re	No of cases	Group I	Group II	Group III	Deaths
	4	4	0	0	0
	4	3	1	0	0
ι	3	2	1	0	0
ıl	11	9 (8[illegible]%)	2 (18%)	0	0

ıbits of the latter are patterned rather on the poor . than on the Bantu (Brock 1949)

emia —Many cases in Durban were complicated by ole anæmia, often megaloblastic which was not seen ıor two centres This anæmia was severe enough to additional therapy in the form of blood transfusion acid, and accounts for the lower proportion of cases ntre falling into group I

er respects the cases were clinically very similar ɜ is no doubt that they were the same syndrome ı was common in all three centres, in contrast to ın Uganda (R F A Dean personal communica his complication necessarily increases the severity yndrome and contributes significantly to the y and mortality rates The total mortality of this 27 out of 135 cases (20%) For the three centres mortality figures are :

Town	5 cases (27 8%)
ria	11 cases (14 3%)
ın	11 cases (37 5%)

res are high compared with some recent reports her centres. Thus in Coonoor (Nutrition ι Laboratories 1954) the mortality in 34 cases with skimmed milk alone was 6% and for 35 ated with vegetable protein 3% In another ication from the same centre Venkatachalam et) report a mortality of 9 3% (including forty ır deaths) in 207 cases treated with skimmed

and Schwartz (1954) point out that mortality ınot be accurately compared because criteria of ɜ and severity differ from place to place At one hildren may be brought only when moribund at another the progressive signs may be well d and the children seen and treated, before the s far advanced At our three centres cases are seen at busy and overcrowded outpatient ents of general hospitals For every child l many have to be sent home and among those into hospital a high proportion are severely ill ortant factor in treatment and mortality is age bility to infection and disorders of water and te balance is greater in the youngest As can be n table II the vast majority of children in this o under the age of 2

viate the possibility that regional differences may ıe interpretation of results a separate analysis le of the largest series—that from Pretoria It wn a trend indistinguishable from that of the oup (table IV)

st be allowed that the inclusion of sulphonamide ıth) and penicillin (by injection) in the basic ıt introduces some uncertainty in that these ions may have altered the bacterial flora of the s. This treatment however, was necessary in est of the infants The dosage was uniform in all ps and as there is no evidence that kwashiorkor ured by any form of antibiotic or drug therapy appropriate diet we feel that the interpretation of lts has not been vitiated by this treatment

ɔ intestinal intolerance of experimental diets is ortant problem A formula that aggravates a will retard recovery even if it contains all the essential nutrients The method of processing of the dried milk formula may also be a factor The skimmed milk used in our studies was a South African product processed by roller drying An imported proprietary brand of dried skimmed lactic acid treated milk prepared by the spray process is being tested for comparison with the results achieved with S A D M The preliminary results in 11 cases are extremely favourable (table VI) If true differences are confirmed by further study they can reasonably be attributed to the method of processing including the lactic-acid treatment

Although this form of testing has limitations certain implications arise out of the data. The lesions of skin and mucous membrane have long been put down to a concurrent vitamin deficiency though no one vitamin or group of vitamins has been definitely incriminated In our series the vitamin supplemented group showed a somewhat higher cure rate, but the difference was not statistically significant and this is in keeping with the experience of Altmann (1948) and Gomez et al (1954) that vitamin supplements to a basic milk formula are of no particular advantage in the treatment of kwashiorkor An adequate explanation would be that milk has an appreciable vitamin content (Clements 1949) Our findings that a vitamin free casein mixture (C_2) initiated cure in 50% of cases (in Pretoria 61%) are thus of great interest and importance They suggest that the known vitamins are not of themselves the major limiting nutrient factors in the pathogenesis of kwashiorkor although it is obvious that specific vitamin deficiencies may coexist It must be re emphasised that the present tests were limited to the initiation of cure and did not last longer than three weeks No doubt, if the vitamin free formula had been continued beyond this period, adverse effects would have become manifest Obviously, to consolidate cure all essential nutrients will be required

No statistical difference could be found in the speed or degree of restoration of the serum albumin level with the four different formulæ This objective measurement lends strong support to the clinical findings

Neither of the two casein formulæ used (C_2 and C_3) contained lactalbumin globulin, or fat, and it is apparent from the statistical comparisons in table IV that these two fractions of skimmed milk do not contribute significantly to the initiation of cure. The same may be said of milk carbohydrate, which as a source of calories has no demonstrable advantage

We are thus drawn to the tentative conclusion that the curative factors in skimmed milk lie within the casein, mineral, and trace-element fractions Casein contains the essential and some non-essential amino acids (Clements 1949) partially identified factors such as Schwarz's factor 3 (Schwarz 1952), and perhaps others not yet identified It is proposed to continue the studies along the same lines with a casein formula from which Schwarz's factor 3 has been removed and with formulæ in which synthetic amino acids take the place of casein The amino acid formulæ will contain the same salt mixture and will be tested first with and later without, vitamins From these trials it should be possible to assess better the individual rôles played by essential amino-acids and accessory factors in initiating the cure of kwashiorkor

Summary

Therapeutic trials in cases of kwashiorkor at three centres in South Africa are described the object being to determine which nutrients in skimmed milk are responsible for curing this disease

The trials were limited to the initiation of cure no conclusions being drawn about its consolidation

In kwashiorkor cure can be initiated by giving skimmed milk without further dietary supplements.

A partly synthetic formula, C_2, consisting of Labco vitamin free casein water glucose and a salt mix

ture, proved to be no less effective than skimmed milk both in initiation of cure and in restoring the serum-albumin level Evidently, therefore, this formula contains the curative factors of skimmed milk

The tests are being continued with Labco casein from which Schwarz' factor 3 has been removed, and with mixtures of pure amino acids patterned on casein

Addendum

Since this paper was completed 9 cases have been treated by identical methods with an amino acid formula (A 2) of the following composition

L—Arginine HCl	19 5 g	DL—Valine	53 0 g
L—Histidine HCl H_2O	13 0 g	DL—Aspartic acid	61 0 g
DL—Isoleucine	57 0 g	L—Glutamic acid	82 0 g
L—Leucine	42 0 g	Glycine	8 8 g
L—Lysine HCl	41 5 g	DL—Alanine	30 0 g
DL—Methionine	12 0 g	DL—Serine	33 0 g
DL—Phenylalanine	30 0 g	L—Tyrosine	23 0 g
DL—Threonine	36 0 g	L—Cystine	3 8 g
DL—Tryptophane	11 4 g	L—Proline	38 0 g

To this mixture of 595 g of amino acids are added glucose 307 g , salt mixture 96 06 g , and vitamins 2 00 g

The results are

Centre	No of cases	Group I	Group II	Group III	Group IV
Pretoria	4	2	0	2	0
Cape Town	5	3	1	0	1
Total	9	5 (*56%*)	1 (*11%*)	2 (*22%*)	1 (*11%*)

The recovery-rate in this small series is therefore comparable to that obtained with the milk and casein formulæ

It can be concluded at this stage that, in at least some cases of kwashiorkor, cure can be initiated with mixtures of synthetic amino acids supplemented by known vitamins In these cases at least, no unidentified dietary factors, such as Schwarz's factor 3 and György's *Lacto bacillus bifidus* factor, are required for the initiation of cure as defined

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COMPLETE RELIEF OF GOU

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CONTINUOUS administration of sodium trols the serum uric acid level in gouty people leads to cessation of the symptoms of chron arrest and partial repair of destructive ch 1953) which may be demonstrable radiolog 1952) Continuous administration of prob likewise been used in the treatment of (Gutman 1950, Gutman and Yü 1951, 19 1953, Marson 1954) and is indicated in p cannot easily tolerate sodium salicylate dosage Unfortunately probenecid lower uric acid levels and increases the urinary uric acid much less than does sodium salic 1954) In some patients probenecid precip gouty attacks during the first few weeks' initial toxic symptoms are common, and se reactions may develop (Marson 1954) Pr also much more expensive than sodium salic

Though it is generally accepted that chr arthritis results from deposition of uric acid in little is known about the rôle of uric acid in of recurring acute attacks In most patients of the serum uric acid level at normal or values does not immediately protect the p further attacks (Marson 1953) , and this fact the suggestion that uric acid per se is not for the acute paroxysms (Mason 1954) has been reported that the acute episodes *frequency and severity during* long-continued tion of salicylate (Marson 1953)

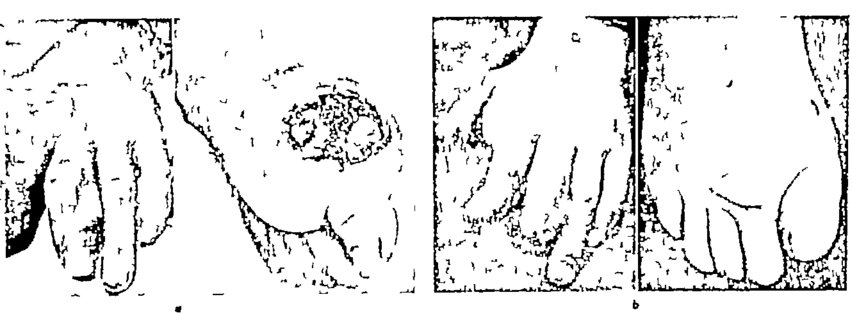
After five years' experience with the drug treatment of gout I am convinced that ceases to occur when the serum uric acid trolled , but this control is not usually treatment has been continued for several m

The purpose of this communication is to how effective the control of gout can now be

Clinical Material

The seven cases described here are take much larger series under both treatment and o The only criteria for selection are that all th presented with chronic gouty arthritis, the level was normal in each case, and the patient studied for more than 18 months

Investigations made before treatment estimation of the blood-urea level and repeat tions of the serum uric acid level by the Brown (1945) The patients have been seen at a gout clinic, where their progress has been the serum uric-acid level estimated, and drugs prescribed No dietary or alcoholic have been imposed and, apart from a large fluids, and the administration of colchicine for episodes (0 5 mg 2 hourly until pain disap toxic symptoms appear), treatment has been to the continuous administration of either so cylate or probenecid Sodium salicylate has scribed in an initial dosage of gr 30 three usually dispensed in a fluid mixture containing agent and sodium sulphite as a preservative bicarbonate has sometimes been included in dosage to the salicylate Probenecid has been in a dosage of 0 5 g four times daily With the patients have been instructed about the toxic effects and have been advised that, if the severe, they should reduce the dosage accordin



se 1: a right foot and left hand in December 1949 before treatment; b same foot and hand in October 1950 after seven months treatment with sodium salicylate. The ulcers were completely healed after three months treatment.

Case reports

FIRST CASE

r butcher aged 39 was first seen on Nov 29 symptoms began in 1936 when he had sudden n in his left foot which rapidly became swollen d shone like a lantern The pain lasted 2 weeks he had at least one similar attack of joint pain in e next 8 years the main joints involved being the e left instep the knees, and the right hand These ually lasted about 2 weeks, but in 1942 and 1944 ere attacks of polyarthritis lasting 7 and 9 weeks. e first noticed on his hands tophi which have ely enlarged In 1946 he noticed a swelling on the his right foot near the base of the big toe In year he developed recurrent ulceration of the d he has since had one or other finger bandaged ly Between 1944 and 1948 he had about acks of acute joint pains each lasting about a

l. 1948 he had a very severe attack of generalised s lasting 14 weeks. During this illness he lost 2 st and it was several months before he felt reasonably Since this attack he has been unable to walk further rter of a mile or to stand for longer than half an time because either of these exertions caused him s right foot persisting for several hours. At this was forced to abandon his hobby of horse-riding e pain and ulceration in his fingers prevented him ing the reins.

uly 1948 onwards he had attacks of joint pains 3-month intervals In early October 1949 the hich had first appeared on his right foot in 1946 and ally enlarged became very painful and after 3 rst and discharged white material. Pain was thus ut the large ulcer remaining had shown no signs of der dry dressings at the time of admission eight r on Dec 8 1949

tient s mother and maternal grandfather had had

on and Investigations

s a cheerful and rather obese man with severe is gout involving mainly the hands and right foot There was a large ulcer on the inner aspect of the overlying a tophaceous mass the size of an orange torted several fingers, and ulcers were present on and index fingers of both hands. A large tophus d the metacarpo phalangeal joint of the left index d a tophus was present on the dorsum of the right here was nodular enlargement of both olecranon Apart from gout no physical abnormalities were

five determinations of the serum uric-acid level on therapy periods ranged from 6·5 to 17·4 mg l. (mean 10·6 mg) The urine was free from albumin. l urea level was 18 mg per 100 ml. Radiography nds and right foot showed severe gouty arthritis, h destruction of bone at the right first metatarso l joint

Treatment and Progress

Therapy with sodium salicylate gr 30 t.d.s. was begun on March 10 1950 and continued until July 17 1952. The patient never acquired a tolerance towards salicylates and throughout treatment he had repeated attacks of tinnitus and deafness with occasional episodes of minor mental confusion. At these times he had to reduce the dosage of salicylate to a point at which the serum uric acid level was not well controlled. On July 17 1952 further salicylate was stopped and he has since received probenecid 2 g daily with no untoward effects.

The serum uric acid level was maintained at a mean of 6·2 mg per 100 ml during salicylate therapy and 7·3 mg during probenecid therapy The tophi have not enlarged All the ulcers healed within 3 months, and the only recurrence involved the tophaceous mass on the right foot this mass broke down on Dec 9 1952 discharged much tophaceous material and healed completely in 2 months.

The persistent joint pains gradually diminished and since July 1951 the patient has been able to carry out the full duties of a butcher—which for the previous 5 years was impossible—and to ride a horse again In December 1951, he reported that he now rarely had discomfort in any joints and could walk long distances Up to that time he had had three attacks of acute gout since starting treatment but since then his only joint pain came on in December 1952, in association with the sudden swelling and bursting of the tophus on the right foot Since December 1952 he has remained free from any joint discomfort In May 1953, he bought normal fitting shoes for the first time in 10 years and he has been able to continue wearing them.

SECOND CASE

A plasterer aged 53 was first seen on Aug 4 1950 His symptoms began in 1938 when pain suddenly developed in both feet which rapidly became swollen red and shiny the attack lasting 2 weeks. Since then he had had similar attacks especially in the feet at the rate of about five a year They had lasted 3–16 weeks and he was usually confined to bed. The attacks tended to last longer and to involve multiple joints recently the knees and hands being also affected During this period of 12 years he had more or less continuous discomfort and weakness of the feet and ankles preventing him from walking further than half a mile in a day He had worn surgical boots for a year and had required two walking-sticks for the past 4 months He had been unable to attend work for a total period of about 3 years in the past 12

His father had gout

Examination and Investigations

The right wrist was swollen and painful; the proximal interphalangeal joint of the left index finger and both first metatarso phalangeal joints were swollen There was limited painful movement of both knees.

Twenty two determinations of serum uric-acid level ranged from 4·3 to 5·7 mg per 100 ml. (mean 5·0 mg) The blood urea level was 30 mg per 100 ml.

Treatment and Progress

Therapy with sodium salicylate gr 30 t d s was begun on Aug 28, 1950, and this dosage was later raised to gr 35 t d.s The patient has never experienced any symptoms of salicylism

The serum uric acid level was maintained at a mean of 3 5 mg per 100 ml Within 3 months of the start of salicylate therapy all the chronic symptoms had entirely disappeared, and the patient has been able to walk painlessly and as far as he likes He has not lost a single day's work He continued to have repeated but slight attacks of acute gout until April, 1952, by which time he had had nine attacks since treatment was started He has remained free from all symptoms of gout during the past 3 years

THIRD CASE

A butcher, aged 62, was first seen on Jan 10, 1951 His first relevant symptoms occurred 8 years previously, when, after gardening, he developed sudden pain, swelling, and redness of his left foot His right foot was similarly affected a few days later, and pain persisted for 8 weeks Since that time he had had repeated severe attacks of joint pain every month or two, each attack lasting about 10 days The main joints involved had been the metacarpo phalangeal joints of the index and middle fingers of both hands, the big toes, and the insteps For 3 years he had continuous pain and swelling in both hands and pain in the feet after standing a few hours His work had been seriously affected by his symptoms

There was no definite family history of gout

Examination and Investigations

The metacarpo phalangeal joints of the index and middle fingers of both hands were much swollen The grip was poor in both hands. The lumbar and dorsal spine was fixed, and radiography showed gross ankylosing spondylitis (The patient had never had any backache and was unaware of his spinal condition)

Seventeen determinations of serum uric acid level ranged from 5 3 to 12 0 mg per 100 ml (mean 7 9 mg) The blood-urea level was 22 mg per 100 ml

Treatment and Progress

Therapy with sodium salicylate gr 30 t d s was started on March 1, 1951 For 3 months the patient had attacks of tinnitus and deafness but could always avoid these by reducing the dosage to about gr 80 daily After this time he was able to return to the original dosage and remained free from further symptoms of salicylism

The serum uric acid level was maintained at a mean of 3 5 mg per 100 ml Within two months of the start of salicylate therapy discomfort and stiffness of the hands had disappeared and the patient could carry out the full duties of a butcher for the first time in 3 years, all the swelling of the hands had disappeared after 6 months' treatment, and so had the discomfort in the feet Acute attacks of gout occurred 4 days and 6 weeks after the start of treatment The patient remained symptom free from September, 1951, until he was last seen in March, 1953, when further treatment was discontinued In April, 1955, he wrote saying that he had remained free from symptoms of gout and had had no further treatment

FOURTH CASE

A solicitor, aged 49, was first seen in April, 1951 His symptoms had begun 14 years previously (at the age of 35), when he was awakened by severe pain in the right big toe, which was swollen, red, and shiny The attack resolved within a week, but a few months later a more severe attack affected the same joint Since that time he had had at least six attacks of acute arthritis each year, at first restricted to the big toes but later involving the ankles and hands For 8 years he had had continual slight pain and stiffness in the feet and ankles, making walking difficult and long walks impossible, a distance of two miles always causing severe pain lasting several days During these 8 years he had noticed progressive development and enlargement of tophi of the hands, which later caused difficulty in writing A tophus had been excised from the right index finger in 1948 and another from the right middle finger in March, 1951

The patient's father had had gout

Examination and Investigations

He was a plethoric man with fifteen tophi of the fingers, varying in size up to that of a cherry, and a tophus in the helix of the left ear Flexion of the fingers
dorsiflexion of the wrist was limited by pain. The swelling of the first metatarso phalangeal joints

Fourteen determinations of the serum ur ranged from 6 7 to 11 9 mg per 100 ml. (mean blood urea level was 18 mg per 100 ml. of the feet and the right hand showed replacement

Treatment and Progress

Therapy with sodium salicylate gr 30 t.d.s. May 5, 1951 During the first three weeks nausea, tinnitus, and deafness, but since then free from toxic symptoms, except of very occ tinnitus and deafness

Sodium salicylate was replaced by probenecid Oct 2, 1953, to Jan, 23, 1954, and from Ma to Oct 2, 1954 On the third day of probenecid patient developed nausea, vomiting, and gen The probenecid was discontinued for 3 weeks, was given again with no further untoward effects

The serum uric acid level was maintained 3 3 mg per 100 ml. during salicylate therapy per 100 ml during probenecid therapy Within 2 start of treatment all the persistent joint d pletely disappeared for the first time in 8 years walk in comfort as far as he liked. Within 6 start all the tophi had totally disappeared, and graphy 2 months later showed recalcification areas of bone replacement Acute gouty attack fourteen times in the first 14 months of although this incidence was higher than pre severity of the attacks was much diminished. has not had a single attack during the past although previously he had had six attacks 14 years

In August, 1954, after 5 months' probenecid was a gradual return of persistent discomfort in the ankles, and by October, 1954, these symptoms severe as at any time previously During the probenecid treatment five determinations of acid level ranged from 4 2 to 5 5 mg per 10 4 7 mg) Further probenecid therapy was stopped salicylate was substituted in the former dosage symptoms disappeared gradually and complete following 6 weeks

FIFTH CASE

A coalminer, aged 31, was first seen in June 9 years he had been subject to attacks of involving the feet and ankles, the attacks four times a year and lasting for about 6 week start of his symptoms he had lost 6–7 months' year The attacks were becoming more frequent For the same period of 9 years he had had comfort in the ankles, which were swollen every return from work He had limped throughout had to spend each evening lying on the settee work, the only time when he left home was Saturday football match, and he remarked that crippled afterwards

There was no family history of gout

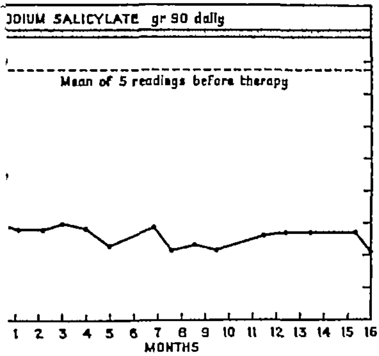
Examination and Investigations

He had swelling and limitation of movement of Eight determinations of serum uric acid level 9 8 to 13 8 mg per 100 ml (mean 11 5 mg) urea level was 44 mg per 100 ml.

Treatment and Progress

Therapy with probenecid was started on in a total daily dosage of 2 g and has been were no untoward effects

The serum uric acid level was maintained at 5 9 mg per 100 ml After 2 months' therapy experienced complete relief from discomfort of his affected joints for the first time in 9 years first year of treatment he had four attacks of each less severe than previously and promptly colchicine He has remained free from all joint during the past 20 months and has not lost a day the treatment began



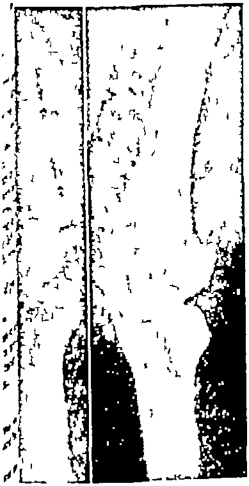
serum uric-acid levels during 16 months treatment m salicylate gr 90 daily Since the start of treatment no tacks of acute gout occurred and symptoms of chronic peared within four months.

SIXTH CASE

ntant, aged 42 was first seen on Oct 3 1953 the age of 22) he developed in both big toes sudden welling which lasted a fortnight and after this he attacks in one or other big toe at about yearly In 1940 he had a severe attack in the right hand 3 while in the Army he was in hospital for 3 h polyarthritis involving the feet hands elbows nee Since that time the attacks of acute arthritis e more frequent and he had had six attacks in past 2 years.

reviously been a keen hiker but for 10 years he fficulty in walking and for 4 years walking further le had produced severe discomfort in the feet, ral hours. For 8 months he had been unable to than a few yards and this discomfort had been unaffected by colchicine therapy

His father and paternal grandfather had had gout


b

ı a right second metacarpo- joint on Oct. 3 1953 showing areas lacement; b same joint on Aug 7 9½ months treatment with sodium showing recalcification.

Examination and Investigations

He had an effusion in one knee, bilateral olecranon bursitis, and painful limited movement of both ankles A typical attack of acute gouty arthritis of the left hand was witnessed on Oct 10 1953 together with a dramatic response to colchicine therapy

Five determinations of serum uric acid level ranged from 7·0 to 8·4 mg per 100 ml (mean 7·8 mg) The blood urea level was 21 mg per 100 ml. Radiography of the hands and feet showed areas of erosion compatible with gout

Treatment and Progress

Therapy with sodium salicylate gr 80 t.d.s. was started on Oct 21 1953 and has been continued at this dosage For the first 2 days the patient had tinnitus deafness, and muzziness for 2 months he was subject to occasional slight deafness; but since that time he has been completely free from symptoms of salicylism.

Fig 2 illustrates the serum uric-acid levels, which were maintained at 2·0–3·0 mg per 100 ml. (mean 2·5 mg) No further attacks of acute gout have occurred Within 2 months of commencing therapy the patient had given up his car because of the pleasure of walking Within 4 months his joints had become completely symptomless and he had a hiking holiday with no ill effects The olecranon bursæ had disappeared by this time Radiography on Aug 7 1954 showed recalcification of the eroded areas (fig 3)

He has now received salicylate for 16 months, and has been free from symptoms during the past year

SEVENTH CASE

A sales engineer aged 51 was first seen on Oct. 21 1953 For 20 years he had been subject to numerous attacks of acute gouty arthritis affecting the ankles wrists, and fingers and from the onset the longest remission had been for 3 months. Colchicine always relieved the exacerbations of intense pain in these attacks, but for nearly 20 years he had had in his ankles persistent pain and swelling which were steadily increasing and for 7 years he had had pain and swelling of various fingers, together with progressive development of tophi. For several years before his attendance he had been severely incapacitated with these chronic symptoms, and he had needed two sticks for 5 years

His paternal uncle and grandfather had both had gout.

Examination and Investigations

Swelling and limited movement were present in many finger joints the wrists ankles, big toes, and left knee. There were many tophi on the fingers up to the size of a walnut.

Two determinations of serum uric acid level were 9·6 and 10·6 mg per 100 ml. The blood urea level was 44 mg per 100 ml.

Treatment and Progress

From Oct 25 1953 the patient was treated with calcium aspirin gr 100 daily till Nov 28 1953 when sodium salicylate gr 90 daily was substituted. From the start he was subject to attacks of tinnitus and deafness, which did not diminish and consequently on Feb 20 1954 further salicylate was stopped, and he was given probenecid 2 g daily which has been continued.

The serum uric acid level was maintained at a mean of 3·3 mg per 100 ml. during salicylate therapy and at 5·1 mg during probenecid therapy Within 2 months of the start of treatment the patient reported improvement and by this time he was wearing ordinary shoes for the first time in 3 years. By February 1954 all the tophi had almost disappeared and by June 1954 some 8 months from the start of treatment all the persistent pain and swelling had disappeared, together with all trace of tophi He had already discarded his sticks, which had been constant companions for 5 years By September 1954 he became able to walk long distances He had four minor attacks of acute gout 3 4 5 and 9 months after treatment but has now been free from all joint symptoms for 6 months.

Comments on Case-reports

All the patients experienced complete relief of chronic gouty symptoms and had no further acute attacks The duration of treatment necessary to eradicate chronic symptoms varied from 2 to 21 months (see table) but was less than 6 months in five of the seven cases Acute paroxysms ceased up to 33 months after the start of treatment but in only three of the seven patients did they cease within the first year of treatment In one patient (case 6) no further acute attacks were observed after the onset of treatment and this was one of only

RESULTS OF TREATMENT

Case no	Age at first attendance (yr)	Length of history of symptoms (yr)		Average interval between attacks in 2 years before therapy (mos)	Duration of therapy before arrest of symptoms (mos*)		Duration of present remission of acute attacks (mos)
		Acute	Chronic		Acute	Chronic	
1	39	13	1½	4	33	21	26
2	53	12	12	2½	20	3	16
3	62	8	3	1½	1½	6	13
4	40	14	8	2	14	2*	12
5	31	9	9	3	12	2	20
6	42	20	10	2	6	4	18
7	51	20	20	1	9	8	6

* A relapse of chronic symptoms followed substitution of probenecid for salicylate, a return to salicylate induced a complete remission within 6 weeks

two patients in whom recurrent attacks stopped before the relief of chronic symptoms

In one patient (case 4) a relapse of chronic symptoms followed the substitution of probenecid for salicylate, but there were no further acute episodes Probenecid maintained the serum uric acid level in this patient at a mean of 4 7 mg per 100 ml, compared with a mean of 3 3 mg during salicylate treatment A return to salicylate led to a further remission in symptoms This case illustrates the individual variation in serum uric acid level at which chronic symptoms are relieved Symptoms recurred in this patient with a mean serum uric-acid level of 4 7 mg per 100 ml (range 4 2–5 5 mg), but case 5 experienced complete relief of symptoms with a serum uric acid level maintained at 6–7 mg

Case 1 is a good example of severe tophaceous gout with ulceration His unusual sensitivity to salicylate prevented the maximum lowering of the serum uric acid level This fact may explain the length of treatment required to eradicate his symptoms completely, and the fact that many of his tophi have remained clinically unaltered Despite the persisting objective evidence of gross tophaceous gout, the patient is free from joint pain

In one patient (case 3) treatment was stopped 2 years ago after a remission of symptoms which had lasted for 18 months He has continued to remain free from all joint symptoms, whereas previously he had for 8 years had acute gout at least every 2 months

Discussion

It may be objected that the remissions from attacks of acute gout are spontaneous That this may apply to one or two cases cannot be denied, because such remissions are known to occur, but it is extremely unlikely that this should apply to the whole series The patients were selected only in that they all presented with chronic gouty arthritis, their blood-urea level was normal, and they had been studied more than 18 months As their histories relate, acute attacks of gout occurred frequently in all of them and were usually becoming progressively more frequent and severe when treatment was begun In my experience long spontaneous remissions are mainly restricted to patients in whom symptoms have been limited to occasional acute episodes

Gutman and Yü (1955), after noting the reduction in frequency and severity of acute episodes in chronic gouty patients treated with probenecid, dietary regulation, and regular colchicine prophylaxis, regarded colchicine as the main factor in minimising the recurrence of acute arthritis This suggestion cannot apply to the present patients, in whom colchicine was reserved for the treatment of acute episodes and was never given prophylactically Gutman and Yü probably failed to eliminate acute attacks completely because of the short duration of treatment, which was as little as 8 months in some cases, and because they mainly us which is a much less effective uricosur sodium salicylate Despite the additi dietary regulation, the fall in the serum u in their patients was much less than is us with salicylate treatment (Marson 1954). T are well illustrated by Gutman and Yü's which in spite of initial probenecid therap uric acid level was 6 5–8 0 mg per 100 symptoms were not alleviated After 4 mont was superseded by salicylate, which produ uricosuric effect and maintained the se level at 3 3–5 5 mg per 100 ml The patient began to improve for the first time, and b become noticeably smaller within 4 m start of treatment

Reabsorption of urate deposits may conti months, which is shown by the gradual d tophi and progressive radiological improvem this time it is likely that the uric acid level fluid in proximity to the dissolving tophi r higher than the level in the serum, and this why acute paroxysms of gout can occur levels in the serum If this hypothesis is corr acute gouty paroxysms stop when urate de been completely absorbed, or when th deposits are insoluble It might be expecte under these conditions would the uric-a the tissue fluid be reduced to about the in the serum and thereby protect the patient bouts of acute gout

It is not disputed that long continued uricosuric drugs is essential in the treatme with chronic gout The use of this form o patients in whom symptoms are limited acute episodes will depend on the frequency of these attacks and on the extent of relief the prompt administration of colchicine

Summary

Effective control of the serum uric-a continuous administration of sodium salic relieves the symptoms of chronic gouty ar first mild attacks of acute gout continue variable period all painful manifestations completely relieved

Seven cases are described in which e salicylate or probenecid was administered f 18–60 months, and their progress during t been recorded

A suggestion has been made to expla delay in cessation of acute attacks

In one case a recurrence of chronic gout followed the substitution of probenecid fo However, this drug is sometimes effective gout and is indicated in those patients tolerate salicylate

Most of the work was done in the departm peutics of the University of Birmingham at Hospital, Birmingham I am most grateful t Thomson for encouragement throughout the stu Gaddie and his colleagues for numerous biochemi tions, to various members of the consultant United Birmingham Hospitals for referring pati Dr D Taverner for his useful criticism

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RVOUS DEGENERATION IN MALIGNANT DISEASE

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t years a variety of neurological disturbances
described in cases of carcinoma (usually of the
ut obvious metastases in the nervous system
e published cases are few they suggest that
rative process responsible for these disturb
a predilection for certain well defined parts
vous system producing such conditions as
uropathy and myopathy (Denny Brown 1948)
tor and sensory neuropathy (Lennox and
050) subacute cortical cerebellar degenera
1 et al 1951) and proximal motor neuro
rt 1954) These conditions may be in pure
ften occur in various combinations (Henson et
eathfield and Williams 1954) Little is known
r ætiology
gnition of these disorders is important from
oint of surgery for they may appear before
owth has given rise to any other symptoms
ny of the cases which have come to necropsy
oeen only localised metastasis
e of bronchial carcinoma reported here was
for its unusual neurological manifestations
esence of porphobilinogenuria

Case report

ian aged 61 complained of cramps in his right
Christmas, 1953 in two weeks the cramps
o his left calf He continued to work twelve
but towards the end of January he could not
ended to fall forwards After a period of rest
as admitted to hospital in Sheffield in February
re the only abnormal physical sign found was
of the knee jerks investigations, including
ncture were negative. He was thought to have
l disorder but did not respond to pyschotherapy
nt home to Ireland.
ie was admitted to Daisy Hill Hospital Newry
pasms were noted but they did not at that time
ne clinical picture all the tendon reflexes were
the right plantar reflex was extensor a diagnosis
itis was made The spasms of the legs increased
despite large doses of barbiturates and the
transferred to Claremont Street Hospital Belfast,
1954 He then complained of frequent severe
sms of the legs, loss of power and increasing
the legs and weakness of the hand grips; at no
complain of abdominal colic, except for one day
lmission to the hospital in Sheffield. In his previous
only item of note was appendicectomy in 1930
no history of fits exposure to toxic substances,
orders He was liable to have bronchitis in the

n

powerfully built well nourished pleasant alert
and correctly orientated His general health was
othing abnormal was found in the cardiovascular
ary systems numerous rhonchi and basal crepita
eard in the chest Blood pressure 120/70 mm. Hg
a café au lait patch of pigmentation two inches
in the lumbar region
al nerves were normal There was slight weakness
s, particularly of the hand grips, but the tone
The small muscles of both hands were moderately
e legs were rigid in extension with the feet fixed
ovarus deformity There were limited active and
ements at the hip and knee joints within a range
nd symmetrical wasting of both legs below the
knees. Very slight passive movements were possible below the knees but caused pain All the tendon reflexes were absent It was impossible to test the ankle jerks and plantar reflexes satisfactorily because of the contractures. The abdominal reflexes were absent Light touch and pain sensation were unimpaired but vibration sensation was absent in all limbs and in the trunk up to the clavicles. Muscle joint sensation was slightly impaired in the fingers

The spasms consisted in an extensor spasm of the legs and trunk and slight adduction of the thighs they were often protracted and accompanied by severe pain causing the patient to cry out and break out in a sweat; they were spontaneous but at times could be precipitated by pulling back the bedclothes and by painful stimuli. Respiratory movements were restricted during the severe spasms, but the abdomen was not rigid and during the spasms he had difficulty in micturition. At times the spasms were prolonged for many minutes but at others they recurred for hours at intervals of seconds, exhausting the patient. The pain which accompanied them was described as shooting up the legs from the feet but it never spread to the trunk The arms were not involved in the spasms, and there was no risus sardonicus When lumbar puncture was done under general anæsthesia increased passive movements were possible in the spine hip and knee joints.

Course

On admission the patient had bronchopneumonia which was treated successfully with penicillin and later streptomycin and chloramphenicol On radiography on July 2 1954 the chest was clear When porphobilinogenuria was discovered all barbiturates were stopped and the painful spasms were treated with paraldehyde pethidine methadone hydrochloride (Physeptone) and finally morphine Quinine mephenesin neostigmine and atropine were tried in large doses but had no effect on the spasms. Large doses of vitamin B were given orally and intramuscularly

In view of the low serum-cholinesterase values a transfusion of a pint of fresh blood, taken from a donor at the bedside was given on July 17 without a reaction and without any effect on the spasms.

Intravenous gallamine triethiodide (' Flaxedil) 100 mg was given by Dr J K. Dorman on July 19 in 15 minutes this produced muscular relaxation and the range of passive movements at the knee and hip joints was increased within the limits of the contractures The spasms almost completely disappeared when slight respiratory paralysis was present

During the last fortnight of his life there was increasing œdema of the legs and dependent parts for which no cardiac or renal cause could be found the serum proteins were normal In the last week he deteriorated rapidly his temperature and *pulse-rate rose the spasms became very violent and he died* in hyperpyrexia on July 21 1954

Special Investigations

Urine —Normal appearance; no albumin or sugar sp gr 1 010-1 030 On July 6 porphobilinogen was found by the Watson and Schwartz method On July 9 and 17 porphobilinogen uroporphyrin, and urobilinogen were found On June 18 a urinary chromatogram for amino acids was normal

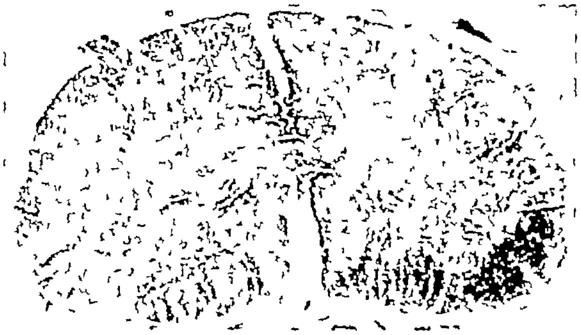
Lumbar puncture on June 14 produced cerebrospinal fluid under normal pressure and containing 55 red cells 2 white cells, and protein 25 mg per 100 ml and no globulin Wassermann reaction negative Lange 2211100000

Blood on June 17 contained Hb 13 7 g per 100 ml 14 600 white cells per c mm (neutrophils 73% lymphocytes 21%, monocytes 6%) Wassermann reaction negative On June 21 and July 1 the serum-electrolytes, including calcium and phosphorus, were within normal limits On June 23 the cholinesterase number was 38 by modified Michel method (Aldridge and Davies 1952) in which the cholinesterase activity of the whole blood is expressed as 100 times the change in pH produced when 0·1 ml of blood is incubated for 60 minutes at 25 C with acetylcholine as substrate On July 15 the cholinesterase number was 58 On June 22 the blood urea level was 30 mg per 100 ml On July 7 the blood cholesterol was 235 mg per 100 ml On July 20 the serum protein level was 6 2 g per 100 ml (albumin 3 9 g and globulin 2 3 g)

Electrocardiography on July 8 was normal

Necropsy

Lying peripherally in the lower lobe of the right lung was a tumour 2 cm. in diameter A few small secondary deposits



Lumbar cord showing demyelination of posterior columns, posterior root, and posterolateral columns (Weil's myelin)

were present in the hilar glands, but no tumour was found elsewhere in the body The lungs showed terminal bronchopneumonia, and there was a healed tuberculous focus at the right apex The other internal organs showed no significant variation from normal Section of the brain and spinal cord revealed only a little greyish discoloration of the posterior columns of the cord

Histology

The primary tumour and the deposits in the hilar glands consisted of an anaplastic carcinoma of oat cell type Sections of the other organs revealed no tumour or other significant findings beyond confirming the presence of mild bronchopneumonia In the spinal cord demyelination was present in the posterior columns, the posterolateral columns and the posterior nerve roots (see figure) In the posterior columns this change was conspicuous and present at all levels of the cord , but in the posterolateral columns, where it largely involved the pyramidal tracts, and in the posterior nerve roots, it was patchy and less extensive Abundant foam cells and large numbers of fat globules were noted in the degenerating columns Some gliosis was present No myelin degeneration was demonstrated elsewhere in the cord, in the anterior nerve roots, or at representative levels in the brain There was slight patchy lymphocytic infiltration of the pia of the cord, and numerous small perforating vessels showed lymphocytic cuffing in all areas of the cord , occasional small vessels in the brain stem and basal ganglia showed this change In the anterior horn cells of the cord there was a large amount of lipofuscin pigment, which sometimes displaced the nucleus peripherally Some of these cells showed slight chromatolysis, and a few were distended by large vacuoles A slight excess of microglial cells was present in the anterior horns, but no neuronophagia was observed Elsewhere in the cord and in the brain, including the cerebellum, there was no evidence of damage to nerve cells In three posterior root ganglia examined many of the nerve-cells had been replaced by round partly calcified concretions but there was no capsular cell proliferation or evidence of active degeneration Sections of peripheral nerve were taken from the radial, ulnar, sciatic, and posterior tibial nerves, and slight patchy wallerian degeneration was noted in the latter two Sections of muscle from gastrocnemius, deltoid, and diaphragm were normal

Discussion

The systematised nature and the character of the lesions in the nervous system of this case suggest that they are of similar nature to other nervous degenerations described in association with carcinoma Several unusual features, however, were present The involuntary movements which were so striking in this case have not been previously reported in this condition, and it is probable that they were related to the demyelination of the pyramidal tract, which demyelination has been observed in combination with other lesions in single cases by Brain et al (1951) and Henson et al (1954) The latter workers found pyramidal signs in 10 of 19 cases of carcinomatous neuropathy and myopathy, but the signs were only remarkable in 1 case (patient 1), which is the only published case so far in which pyramidal signs have been conspicuous

In cases of sensory neuropathy associated with bronchial carcinoma, degeneration and loss of neurones in the posterior-root ganglia is constantly
with degeneration of the posterior colu
pheral nerves and has been held respon
peripheral and central change (Denny B
Heathfield and Williams 1954, Smith and
1955) In the three posterior root gangl
from the present case, many of the nerve-ce
replaced by round partly calcified concretions
cell proliferation which has been a promine
the cases referred to above was, however,
difficult to relate these inactive and rel
standing changes with the active degenera
in the posterior columns and peripheral ner

Meningeal and perivascular lymphocytic
similar to that described by Brain et al
Henson et al (1954) was found in the pre
areas of the cord in which no degeneration
This finding is in accordance with the belief
et al (1954) that this change is not
degeneration

Porphobilinogen was detected in the
present case, but the late age of onset, the
previous episodes, and the clinical features
those of acute porphyria The patholog
in the nervous system in acute porphyria
what variable, but systematised changes
have not been described Central demyelina
rarely been reported and has then been slight
(Courcoux et al 1929, Baker and Watson 19
Brown and Sciarra 1945) Watson (195
11 cases out of many thousands tested in wh
bilinogenuria was present but which could
classified as porphyria, though latent porp
not be excluded

Since acute porphyria sometimes app
inherited as a mendelian dominant (Calvy
the available relatives of this patient were
submit specimens of urine for examination
were received from two sisters, a brothe
children of the patient, but in none of the
phobilinogen found Although latent porph
be excluded on these grounds, the upset of
metabolism may possibly be of a secondary

We cannot explain the two low serum-ch
values , Henson et al (1954) found a
cholinesterase level in their case 10 and
Low serum cholinesterase levels are found in
and malnutrition (Aldridge and Davies 19
organic phosphorus poisoning (Bidstrup et a

Summary

A case is reported in which there was an
of neurological disorder in association wi
chial carcinoma which had not metasta
nervous system Porphobilinogenuria
blood cholinesterase level were also present

Our thanks are due to Prof J H Biggart for
the pathological aspects of this case , to Mr D
for the biochemical investigations and to
Stevenson for the follow up of the patient's rela

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METABOLIC EFFECTS OF
OROHYDROCORTISONE AND OF
ONE IN ADRENAL INSUFFICIENCY

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vity of certain adrenal steroids can be much by incorporating a halogen atom into the (Fried and Sabo 1954) Reports suggest hese new compounds the sodium retaining more increased than the glucocorticoid activity l. 1954, Goldfien et al 1955), that the fluoro are more potent than their chloro analogues al 1954 Swingle et al 1955) and that the aining activity of 9α fluorohydrocortisone proaches that of aldosterone (Liddle et al fien et al 1955)

w compounds are active when given by mouth ht be more satisfactory than deoxycortone in ment of adrenal insufficiency As a prelimin we have compared the metabolic effects of cortisone acetate in two patients, one with disease the other after total adrenalectomy confirm previous reports in man (Liddle et oldfien et al 1955) of the great potency of ther studies are being made to determine the ctive dose of this new compound for optimal balance whether it needs to be supplemented dose of cortisone acetate and to assess more s glucocorticoid activity

Clinical Material and Methods

single woman aged 53 had had a left radical y for cancer of the months before the dies, a total adrenal ceded by irradiation ries had been per ause of metastases in She had remained well o, and the skin lesions ged only slightly housewife aged 51 ddison s disease since had remained well on ne acetate supple er by cortisone The cortone implant had 10 months before nt studies Both d been receiving corti a day and about 6 g lt for several months start of the present

ssion to hospital the re started on a con ith added sodium and chloride * Water intake was measured but not restricted 3–5 days were allowed for equilibration before the first metabolic balance period Cortisone and F H C were given by mouth half the daily dose at 9 A M and half at 9 P M The order of trial is shown in fig 1

Throughout the study the patients were encouraged to be up and about the ward At fixed times each day the blood pressure was taken and the weight recorded on scales sensitive to 2 g at the weights concerned Urine was collected over 24 hour periods ending at 9 A M and fæces in periods of 3–7 days. Blood was taken fasting at 8 45 A M on the last day of each balance period At the same time the urea space was estimated as an index of total body water (method of McCance and Widdowson 1951 with precautions described by Pawan 1954)

The following biochemical analyses were made urinary sodium potassium, chloride creatinine and nitrogen fæcal sodium potassium chloride and nitro gen plasma sodium, potassium chloride bicarbonate, urea proteins (plasma specific gravity) and hæmatocrit The composition of the diet was determined by analysis of aliquots of three complete diets taken at different times during the studies

The following special tests were made :

Mineralcorticoid function.—Salivary sodium and potassium levels were determined at different rates of salivary flow by the following technique : paraffin wax was chewed at varying speeds from 3 to 3 40 P.M (i.e., 6 hours after a dose of steroid) and separate collections were made of all the saliva secreted during consecutive 5-minute periods. Saliva from the first period was discarded This procedure was repeated at inter vals and the salivary Na/K ratios for the different periods were plotted against the corresponding rates of salivary flow

Glucocorticoid functions

	Hours after last dose of steroid
Fasting blood-sugar levels at 8.45 A M	11¾
Blood-eosinophil counts (venous) at 3 15 P.M	6¼
Electrocardiograms at 2 P.M	5
Water-diuresis tests (fasting) at 6 A.M	9

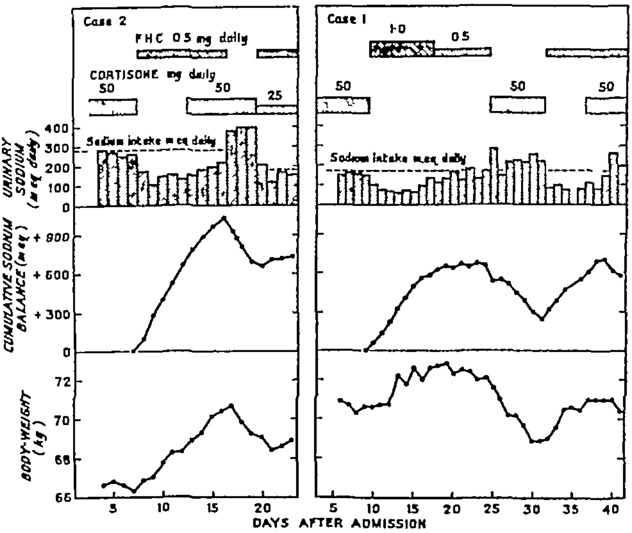

Fig 1—Effects of cortisone and F.H C. on sodium balance ; interrupted line indicates sodium intake

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* e sodium and potassium roughout were 165 and respectively ; in case 2 o 280 and 95 m.eq ly except in the last hen the sodium intake n.eq daily

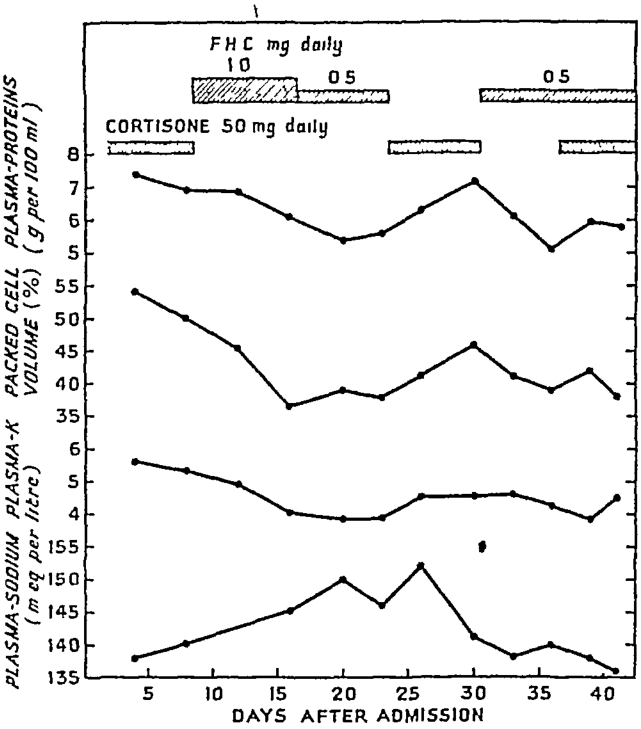


Fig 2—Effects of cortisone and F H C on plasma levels in case I

The water diuresis test consisted in giving 1000 ml of water between 6 and 6 30 A M and measuring the hourly outputs of urine and electrolyte until 9 A M It was not done on any day when blood was collected

Urinary steroid outputs—Urinary 17 ketogenic steroid and 17 ketosteroid excretions were estimated daily by a modification of the method of Norymberski et al (1953) Urinary 17-hydroxycorticoids were estimated by Smith et al 's (1954) modification of the method of Reddy et al (1952)

Results

Only the salient findings are reported in detail

Water and Electrolyte Balance (figs 1 and 2)

Both patients were in sodium balance during the initial period in which cortisone 50 mg per day was given Despite this, biochemical studies showed that replacement therapy was not completely satisfactory Case 1 (sodium intake 165 m eq daily) had a plasma-potassium level of 5 3–5 6 m eq per litre and a blood-urea level of 40 mg per 100 ml Case 2 (sodium intake 280 m eq daily) had a plasma potassium level of 6 1 m eq per litre

On changing to F H C 0 5 or 1 0 mg daily there was prompt retention of sodium Case 1, who was given 1 0 mg daily for 8 days, showed signs of coming back into sodium balance, with an increasing sodium output, on the 7th and 8th days There was a parallel, though proportionately smaller, gain in weight from retention of water (fig 1) In both cases there was a rise in plasma sodium level, a fall in plasma-potassium level, and hæmodilution, which was shown by a fall in hæmatocrit and plasma protein level (fig 2) These changes in the blood were greater in case 1

On returning to cortisone 50 mg daily, there was a prompt sodium diuresis, with loss of weight and reversal of the plasma changes These trends continued until again reversed by substitution or addition of F H C In case 2 addition of cortisone 50 mg did not interrupt the sodium retention caused by F H C 0 5 mg, when on a high sodium intake (280 m eq) A state of sodium equilibrium was obtained in both patients by combining cortisone 25 or 50 mg with F H C 0 5 mg while on a normal sodium intake (165–180 m eq)

Throughout these periods the chloride balances ran roughly parallel, and F H C c slight and transient increase in potass Changes in total body water (urea space) to those in body-weight There were n changes in blood-pressure, despite exc retention

In summary, the electrolyte effects of F were clearly greater than those of cortisone

Salivary Electrolytes (fig 3)

The salivary Na/K ratios at any given were lower on F H C than on cortisone Th be lower still when the two steroids were c case 1 there was no real difference between 0 5 and 1 0 mg of F H C

Glucocorticoid and Allied Effects (figs 4 and 5

Subjectively case 2 was equally well on e Case 1 felt less energetic, looked paler, and diarrhœa during both periods on F.H C. al

In both cases there was objective evid glucocorticoid effects of F H C 0 5 mg were of cortisone 50 mg, when measured at th after a dose of steroid These difference greater in case 1

The most consistent changes were in the grams (fig 4) The tracings, though normal showed marked flattening of the T waves when on F H C These changes were not due loss or hypokalæmia Similar changes Addison's disease (whether untreated or deoxycortone acetate) and are normally cortisone (Somerville et al 1951)

The mean eosinophil-counts were higher on cortisone (fig 5), the difference being cle in case 1

The mean fasting blood sugar levels lower than on cortisone, but the differ significant (fig 5)

Ability to excrete a water load in case 1 slightly subnormal on F H C the response better on cortisone (fig 5) The slight incre-

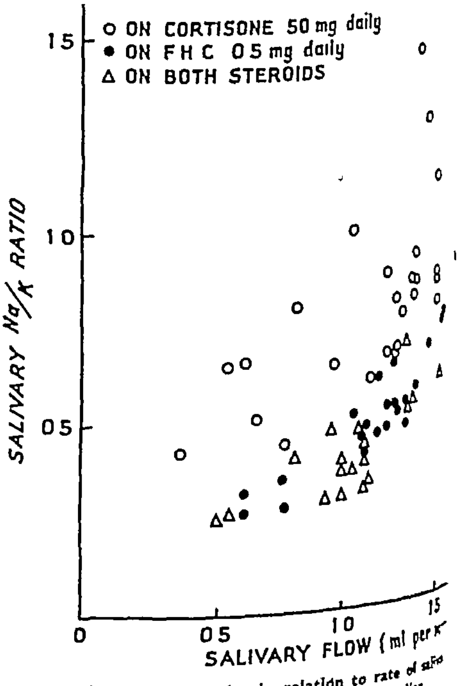
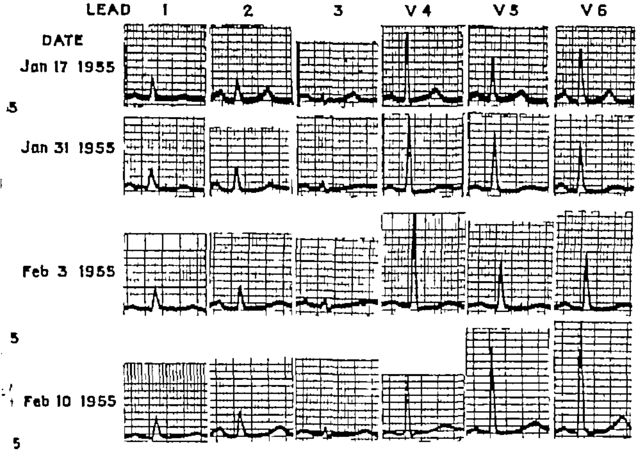


Fig 3—Salivary Na/K ratios in relation to rate of saliv Findings in case 2 were similar



of F H C. on electrocardiograms in case 1 with voltage standardised at 10 mm. and all tracings ne photographic (Elmquist) machine Dose of cortisone was 50 mg and of F H C. 0 5 mg daily case 2 were similar

-ing water diuresis on cortisone was not account for the greater urinary volume
n nitrogen balance were *not consistent but the* cretion was slightly less on F H C in case 1 the mean daily creatinine output was 19% ortisone than on F H C suggesting that the filtration rate may have been higher on the

steroid excretion —The results are shown in anying table

Discussion

published reports on 9α fluorohydrocortisone e emphasised its extreme sodium retaining In the adrenalectomised dog its electrolyte 80 times that of hydrocortisone (Swingle et al 7 times that of deoxycortone acetate (Liddle et al 1954) In man the electrolyte effects of F H C 0 5 mg were equal to those of deoxycortone acetate 2 mg and greater than those of hydrocortisone 25 mg (Goldfien et al 1955) The effective dosage for normal electrolyte balance therefore approaches that of aldosterone (Mach et al 1954 Kekwick and Pawan 1954 Prunty et al 1954 Goldfien et al 1955)

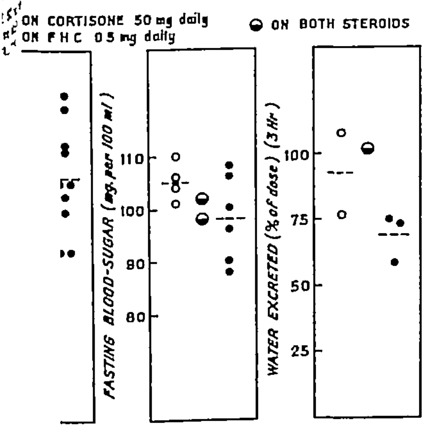
Our findings confirm these earlier reports and leave no doubt that in adrenal insufficiency F H C acetate 0 5 mg has a much greater sodium retaining action than cortisone acetate 50 mg and that the mineralcorticoid activity of F H C is therefore more than 100 times that of cortisone This difference was also reflected in the salivary Na/K ratios, when allowance was made for the rate of salivary flow (Thaysen et al 1954 Prader et al 1955)

Published reports indicate that halogen substitution also increases the glucocorticoid or cortisone-like actions of certain steroid hormones. Though these properties are more difficult to measure precisely than electrolyte activity it has been shown that the effect of F H C on the blood eosinophils is nearly 50 times that of hydrocortisone in man (Goldfien et al 1955) and 10–20 times that of hydrocortisone in the adrenalectomised dog (Liddle et al 1954) Again in rheumatoid arthritis the anti inflammatory effects of F H C have been assessed as about 10 times those of hydrocortisone but excessive sodium retention precludes the routine use of effective doses (Boland and Headley 1954 Ward et al 1954)

Our findings though not allowing any close comparison between the glucocorticoid potencies of these steroids show that F H C 0 5 mg is less active in this respect than cortisone 50 mg F H C 0 5 mg certainly appears to have some glucocorticoid activity shown for example by

URINARY STEROID EXCRETIONS

Treatment (mg daily)	Output (mg per 24 hr)					
	Case 1			Case 2		
	17 Hydroxy corticoids	17 Ketogenic steroids	17 Keto steroids	17 Hydroxy corticoids	17 Ketogenic steroids	17 keto-steroids
Cortisone 50	1[illegible] 0	15 0	4 8	12 2	14 4	3 4
F H C. 0 5 or 1 0	0 7	0 8	0 4	2 8	1 2	1 3
Cortisone 50 + F H C. 0 5	14 0	1 4	4 1	11 7	15 8	4 4
Cortisone 25 + F H C 0 5				5 4	7·0	2 1
Range in healthy females	4–12	4–14	3–15			



of certain glucocorticoid effects of cortisone and F H C. in Horizontal broken lines indicate mean values.

the water tests This dose, however, is probably insufficient for full maintenance of adrenalectomised or addisonian patients Case 1 was definitely less well when receiving F H C 0 5 mg , and in both patients there were significant electrocardiographic changes

In our experience cortisone, unless given in unphysiological doses or supplemented by extra sodium chloride is often inadequate for the maintenance of satisfactory electrolyte balance in adrenal insufficiency The patients studied were on cortisone 50 mg a day and some extra sodium chloride during the initial control period Their urinary glucocorticoid excretion was above the normal range, but, despite this, electrolyte balance was disturbed, with a tendency to hyperkalæmia and nitrogen retention To correct this, a steroid with greater mineralcorticoid action is required At present the best way of achieving this is by monthly injections of deoxycortone trimethyl acetate (Thorn and Jenkins 1952, Spence 1953, Sorkin and Soffer 1953) The combination of small doses of F H C with physiological amounts of cortisone (20–25 mg a day) may enable all treatment to be given by mouth Extra sodium chloride should seldom be required with this regimen Further studies are being made to determine more precisely the optimal dosage of both steroids on a normal sodium intake

Summary

The metabolic effects of 9α-fluorohydrocortisone acetate (F H C) and cortisone acetate were compared in two patients with adrenal insufficiency

The mineralcorticoid activity of F H C 0 5 mg a day was much greater than that of cortisone acetate 50 mg a day, whereas the glucocorticoid effects were less Adequate replacement was obtained by combining both steroids with a normal sodium intake

We are indebted to Prof Alan Kekwick for his encouragement and advice and for allowing us to study case 1 under his care We wish to thank the clinical research committee of the Middlesex Hospital for facilities to work in the Institute of Clinical Research and for a personal grant to one of us (J D N N), the Courtauld Institute for some of the plasma estimations, and Sisters E Fow and A Stoneman and Miss E Wilkinson Hughes, the principal dietitian, and their staffs for their willing coöperation This work was done during the tenure by one of us (O G) of a research fellowship from the Medical Research Council, who also provided the fluorohydrocortisone, which was part of a gift from Messrs Merck & Co

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DEAFNESS IN CEREBRAL-PA SCHOOL-CHILDREN

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FOR some time it has been suspected that of deafness in cerebral palsied children high As the number of these children is increasing, it is important to know what them are deaf, and what difficulties are inv their hearing An investigation has been probe these problems

Prevalence of Deafness

Pupils of three schools were examined, whether deafness was suspected or not special school for cerebral palsied children of age The second was a school for vocat of cerebral-palsied children who had left third was a school for physically handicap including 15 cerebral palsied pupils 89 these schools were tested, and as a contr representative sample of physically normal two secondary schools were carried out.

Testing was by pure tone threshold and when necessary this was supplemented

In 18 (20%) of the 89 children there which could cause serious disability (categ these were athetoids, 6 spastics In 12 (14 significant hearing loss in at least two quencies, which—in unfavourable con cause difficulty in hearing speech (category were athetoids, 9 spastics (The total num was 55, athetoids 20, and ataxic 3)

Only in 4 children had deafness been sus in the rest it was discovered as a result gation

The distribution of the two categories within each school was very uneven In 39 pupils, 4 were in category I and 4 were In school B, with 35 pupils, 11 were in 5 were in category II In school C, out were in category I and 3 in category II

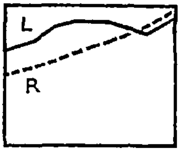
Of the 80 children in the control schools siderable bilateral conductive deafness, bilateral perceptive deafness 2 had a mode conductive deafness

Types of Deafness

Of the 18 children with deafness in ca hearing loss was of the perceptive type in ductive in 2 Of the 12 children in category loss was perceptive in 9 and conductive in these had disease of the middle ear

In 4 out of the 18 cases of deafness in in 2 of the 12 in category II, the hearing lateral In 1 of these, deafness was caused lation of cerumen It had been noticed of the class that this girl was "inattentive "concentrate" She was sitting with her wall After removal of the wax the hearing to normal

A physically normal person with unilateral able to adjust himself to his disability by in a favourable position as regards the sound, and changing position quickly turning the head in quick succession child with unilateral deafness, however, may because he may not be able to adjust himself and in some circumstances the effect of one loss may be the same as that of bilateral the two conductive types of deafness in



of bilateral deafness
ype of hearing loss
e audiogram
ination of the ears
eal anything abnor
was a spastic child
thought that a hear
ow notes in a spastic
d be caused by an
spasm of the tensor
isole This is a theoretical possibility which
stigated in greater detail The pathology of
erebral palsy generally is not discussed here

Detection of Deafness

tion of deafness in the cerebral palsied child
In physically normal children a common
eafness being suspected is a speech defect or
elopment of speech In a cerebral palsied deaf
articulation and voice are already affected
muscular defect it is hard to point out the
es caused by the additional defect of hearing
ically normal child does not respond in an
manner to various sounds (turning coming
carrying out requests) the suspicion is easily
he may not have heard In the cerebral
a response in the form of physical actions
xpected because he may not be able to
out.

in the cerebral palsied is rarely a total or
of hearing They usually have moderate,
ly severe, degrees of hearing loss, mainly
h frequency sounds In tête à tête con
ey may be able to follow familiar words or
hey may hear a variety of sounds even from
nce and so they appear to the superficial
to have any deafness.

examples show that one cannot rely in the
ed children on the common signs which
n of deafness

esting

tests are not suitable, because test pro
be modified individually

difficulties is to find out what type of signal
hild can give so as to indicate that he hears
d. The audiometrician should be able to
t is the most suitable procedure for each
children are able to give a signal by word
tion to sound stimuli may however be
ltered Smaller children may have to be
to the sound stimulus to perform some
al operation which must be sufficiently
ave no doubt that it is deliberate, and yet
for the handicapped child to perform In
ses the only suitable signal which left no
o child heard the sound was by pressing the
er person in attendance.

cians engaged in this type of work should
e experience in testing deaf children but
e familiar with handling cerebral palsied
should realise that these children who are
hool are mentally normal and that super
nces which are by the lay *public ascribed*
iciency are grossly misleading In fact the
liminary explanation of the nature of the
test task and there is no difficulty at all in
children understand what is wanted

nds on the patience and judgment of the
n who should be able to detect any signs
of response Some involuntary move-
e mistaken for a signal If there is any
the reliability of response the test must be
er day With some children the test should
ed unduly because they may get too tired

Testing can be carried out in any reasonably quiet room. The child should sit in a comfortable chair which does not produce any noise during the constant involuntary movements The noise produced thereby can be considerable and must be reduced to the minimum For this reason the earphone sockets should be of the type which have a very high degree of noise attenuation

Earphones usually supplied with clinical audiometers are made for adults. They are heavy and difficult to secure firmly to the ears of children by means of the headband supplied. Involuntary movements of the head may cause these earphones to slip or fall. Constant watch must be kept during testing that the phones fit well

Earphones are required which are comfortable attenuate the ambient noise, and are easy to handle and fit to the ears in such a way that movements of the head do not change the position of the earphone cushion The attenuation of noise conflicts to a certain extent with requirements of comfort and bulk, and a compromise must be reached Further experiments will be necessary to construct suitable earphones

Undetected Deafness

In our sample of cerebral palsied school-children 20% were deaf and probably this underestimates rather than overestimates the general prevalence of deafness in these children The comparatively low prevalence in school A is significant when it is related to the fact that pupils are selected for this school only if they are regarded as physically and educationally capable of getting full benefit from it, being of at least average mental ability As detailed hearing tests are not an established part of the otherwise very thorough examination of these children before admission it is quite possible that some children considered to be of too low a standard were in fact deaf and only seemingly backward In the other two schools the prevalence of deafness was very much higher

Compared with physically normal school children the *prevalence of deafness in cerebral palsied school-children* is evidently several times higher In our own control group we found only 5% of deafness We used this group mainly as a control of our apparatus and testing methods. For comparison the results of routine audiometric tests as carried out by the various educational authorities in junior schools are more suitable I am informed that in the two large counties of London and Middlesex not more than 1% of school-children have some hearing loss.

Summary

A survey of deafness in three different types of schools for cerebral palsied children was made 89 children were tested and in 20% a hearing loss was discovered which could cause considerable handicap

Screening tests are not suitable for cerebral palsied children because the testing procedures have to be individually modified according to the abilities of the child A full audiometric test is necessary Audiometricians should be specially trained for this type of testing

The present type of commercial earphones used for the audiometer are not satisfactory and a new type will have to be designed.

It should be a rule that all cerebral palsied school children have a detailed hearing test

I wish to thank Miss J Quinn and Miss M Graham audiology technicians, who did most of the testing of these children, for their help in the investigation. I am indebted to those in charge of the schools for cerebral palsied children and to the speech therapists to these schools, for the invaluable help and coöperation. Also my thanks are due to Miss E Whetnall, director of the audiology unit, for encouragement to continue with this work

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INTAKE OF VITAMIN D IN INFANCY

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WITH the recognition of the apparently new syndrome of 'idiopathic hypercalcæmia in infants with failure to thrive' (Lightwood 1952) and its possible relationship to vitamin D (Lightwood 1953, Russell and Young 1954 Lowe et al 1954, Creery and Neill 1954) a new interest has been aroused in the prophylactic use of this vitamin in infancy Last February *The Lancet* said that 'until we have more facts about vitamin-D intake it would be wise to assume that most babies in this country are getting more than they need " The present survey was made to obtain evidence on this point

Material and Method

This series includes 90 1% of the babies residing in the City of Belfast and aged about 3 months in either April or May, 1955 This age was selected because it was thought that feeding habits would be well established and in most cases, uncomplicated by the addition of solid foods The inquiry was carried out by the health visitors of the maternity and child-health division of the Health Department in the course of their routine visits to the babies For each child the following information was sought

(1) The exact type of feeding which was being given and the brand of dried milk or cereal where applicable

(2) The daily quantity of dried milk being consumed (in "measures" or "scoops") or liquid milk (in ounces) and the amount and type of cereal food if used

(3) Whether or not a vitamin D preparation was being given regularly at the time of the inquiry if so, its brand and the amount given in twenty-four hours The duration of therapy was not considered

In a very few instances information along these lines was not forthcoming—because the child was in hospital or elsewhere, or because the family had A few children were excluded owing to la information from their mothers The tota children included for the analysis was 10 73 (6 7%) were held to have been prem (birth-weight 5 lb 8 oz or less) No clinica was attempted

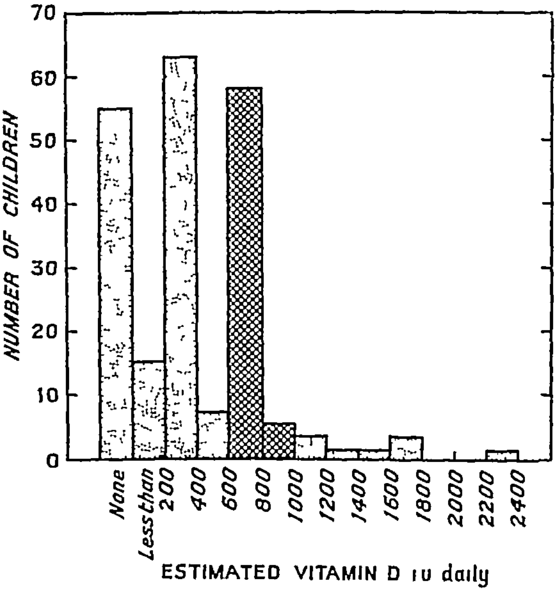


Fig 1—Of 212 wholly or partly breast fed babies 157 (74%) had vitamin D supplements : 141 had cod liver-oil compound (Ministry of Food) , 8 had adexolin ; 3 had halibut-liver oil , 3 had some vitamin D-or cereal ; and 2 had other preparations

Assessment of Vitamin D Intak

Cod-liver oil Compound (Ministry of Fo supplement most commonly used Where was said to be given, this was regarded as supplying 700 international units (I U). The directions on the label state that a small teaspoonful contains about 700-800 I U , many children will presumably be given more if larger teaspoons are used , so we feel that our figures will often tend to understate the vitamin-D intake from this source Where "drops" of t referred to we regarded 2 drops as equiva The results of experiments by two ho pita indicates that this again probably repr underestimate of the vitamin D content

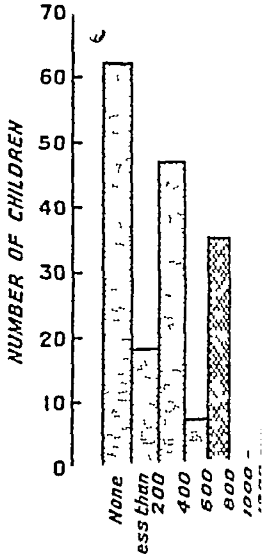


Fig 2—Of 176 babies fed on liqu (64 2%) had vitamin D suppleme liver-oil compound , 22 had a halibut liver oil 2 had and 5 had other preparations

Other Preparations Containing Vitam vitamin-D content of these was taken a declared by the manufacturers or by in her review of vitamin dosage

Dried Milks and Cereals Fortified with Here the vitamin D content was taken fro figure given by the manufacturer 250 I U of powdered milk for National dried milk per ounce for proprietary brands For all th a "measure" or "scoop" was considere to 1 drachm The lack of standard procedu ing out dried milks has been discussed by MacQueen (1954) We believe, however th is near the quantity most commonly g "measure" or "scoop" is used acco instructions Cereal preparations were Where they were used, "teaspoonfuls" w referred to, and these were taken to be domestic size and filled level By weighing of the appropriate cereal the vitamin D estimated by reference to the manufacture

Liquid Milk—No account was taken amount (about 0 3 I U per ounce) of vitam present in liquid milk

Results

Of the 1087 infants 212 (19 5%) were or partly breast fed at the time of the

re being fed on liquid cow's milk 351 (32·3%)
l dried milk, and 348 (32%) on proprietary
lried milk.

lts for each category of feeding are shown in
The daily vitamin D intakes were considered
nts of 200 I.U. and the histograms show the
f infants in each group. The hatched area
gure represents those children whom it is
are probably receiving an adequate daily
e vitamin (600–1000 I.U.)

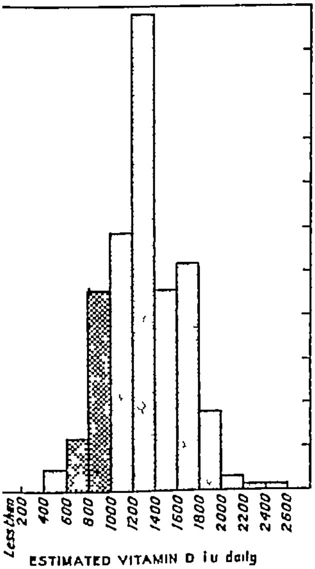
e seen that 10·8% of the infants had no added
and 15·0% had less than 600 I.U. daily.
es were almost all breast-fed (wholly or partly)
iquid milk.

ceived 600–1000 I.U. daily and 51·0% 1000–
daily. The great majority of the latter were
on dried milks (National dried milk and
brands).

ceived more than 2000 I.U. daily, largely
l on proprietary dried milks and receiving
supplements in addition.

Discussion

lent that this type of investigation can give
imate of the vitamin D intake of the children
depending as it does on the subjective method
. Despite this obvious difficulty the results
isplay an unbalanced state of prophylactic
th vitamin D for this group. For example
bing to find that 10·8% of the infants were
supplement of vitamin D at a time of rapid
l development. It is also noteworthy that
an intake well below the figure of 700 I.U.
mmended as adequate for full term infants
mmittee of the British Pædiatric Association



babies fed on National dried milk 249 (70·9%) had
pplements: 206 had cod-liver-oil compound; 30 had
d halibut-liver oil; and 7 had other preparations.

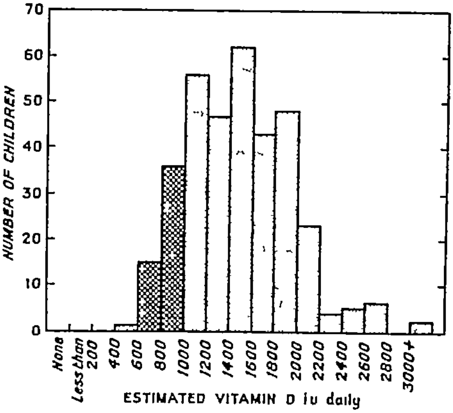


Fig 4—Of 348 babies fed on proprietary brands of dried milk 263 (75·6%) had vitamin-D supplements: 172 had cod-liver-oil compound; 65 had adexolin; 16 had halibut liver oil; and 10 had other preparations.

In the other direction it will be seen that more than half of these infants (55·2%) were apparently having amounts in excess of normal requirements. There is at present no clear proof that dosage of this order is generally dangerous, although Jeans (1950) stated that amounts of 1800 I.U. and more daily may give rise to anorexia, diminished intake of food, and retardation of linear growth. He regarded these as mild toxic manifestations of overdosage with vitamin D during a therapy usually considered reasonable and harmless. It seems wise to avoid this higher dosage unless it can be conclusively shown to be of corresponding benefit. Many authorities hold that prematurely born infants require more vitamin D than do those born at full term, but this seems doubtful in view of the work of Glaser et al. (1949) who have shown clearly that the premature infant has no increased need for vitamin D, the increased tendency to rickets depending on rapid growth and a shortage of calcium and phosphorus. 68·5% of the premature infants in this series were apparently receiving more than 1000 I.U. daily, 5·5% were having less than 600 I.U., and 4·1% were having no supplement of vitamin D.

How then can a more rational vitamin D prophylaxis be achieved? In the first place it seems clear that more attention should be paid to ensuring an adequate vitamin D intake for breast-fed infants and for those fed on liquid milk. The problem of the "more than adequate" vitamin D intake is by no means so simple. If vitamin D fortification of dried milks and infant cereals is to continue at its present level much could be done by advising that additional supplements of the vitamin are unnecessary. On the other hand it is probably desirable that the policy of giving some supplement of vitamin D should be maintained, if only to accustom the infant to it against the time when liquid milk is substituted for dried milk. It can also be argued that it would be unwise to cease altogether the practice of adding the vitamin to dried milk and relying entirely on supplements, for the results of this survey suggest that about 25–30% of infants fed in this way would receive no vitamin D.

The solution to this problem may lie in a compromise between a reduction in the amount of the vitamin added to dried milk and cereals and the giving of a smaller daily supplement than is at present usual. The amount of the supplement could be varied as required to bring the daily total to the desired level

It may well be that this suggestion would be hard to put into practice, and it is only put forward as a possible method of attaining a more controlled intake of vitamin D than is now feasible with the present level of fortification of dried milks and cereals

Summary

An attempt has been made to estimate the vitamin-D intake of 1087 Belfast infants aged about 3 months

The results appear to show that many breast fed infants and those fed on liquid milk are receiving no added vitamin D or insufficient amounts by accepted standards

Many infants fed on vitamin-D-fortified dried milks appear to be having more of the vitamin than they require

Possible methods of producing a more balanced policy of vitamin-D intake are discussed

We are deeply grateful to Dr H A Warnock (senior medical officer), the health visitors, and the clerks of the maternity and child health department of Belfast Corporation for their wholehearted interest and coöperation in this investigation We are also indebted to Prof F M B Allen, to Miss I Stevenson dietitian, Royal Belfast Hospital for Sick Children, to Mr J H Rostrick and Mr G E McIlhagger, pharmacists, Royal Victoria Hospital, for their helpful advice, and to Miss N Hunter for secretarial assistance

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EFFECT OF TRIIODOTHYROACETIC ACID IN A CASE OF MYXŒDEMA

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D.M Oxfd, M.R C P

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Triiodothyroacetic acid (triac) differs from triiodothyronine in that the tyrosine side-chain has been replaced by acetic acid Pitt Rivers (1953) has shown that this substance prevents thiouracil-induced goitre in the rat and raises the oxygen consumption of intact animals Thibault and Pitt-Rivers (1955) found that it also had an immediate effect on the oxygen consumption of isolated kidney slices, the observed rise being at a maximum in 15 minutes They also found that single injections increased the oxygen consumption of thyroidectomised rats within 2 hours On giving triac to two myxœdematous patients by daily intravenous injection, Lerman and Pitt Rivers (1955) observed clinical improvement, with a fall in blood-cholesterol and in body-weight, but with no change in basal metabolic rate (B M R) It is possible that a transient rise in B M R occurred but was not detected, because the injections were given in the afternoons, and the B M R measurements were made in the mornings

In the case to be described, an attempt was first made to determine whether the B.M.R rose within a few hours ous injection of triac Subsequently triac was given orally When it had been found t by that route, an attempt was made to d time of the maximum effect of single oral B M R

Methods

B M R measurements were all based on sumption estimated with Benedict Roth ap the figures (except in the repeated tests venous injection) represent the average of estimates, the values agreed well in all ca are expressed as percentages of average Aub-Dubois standards, using the patient's to estimate surface area If the patient used, the results should be multiplied by 1·0 to Robertson and Reid (1952) standards the be multiplied by 1 13

For intravenous injection triac was di alkaline physiological saline solution to solution, and autoclaved The autoclaved chromatographed by Dr R Pitt Rivers to be unchanged Oral doses were given eith alkaline solution (1 mg in 15 ml) or as 1 mg up with a carbohydrate base

Case-report

A builder's labourer, aged 58, had continu a week before his admission The immedi which brought him to hospital were breathless and pallor, these had been present for a few the previous 2 years he had also noticed general pains, loss of hair, dry skin, and increased cold On admission there was pallor of his was puffy and his skin dry, rough, and thick axillary hair, and his pubic hair was scanty was not palpable

At the time of admission the hæmoglobin anæmia was normocytic and the marrow transfusion of 2½ pints of blood was given, globin increased to 60%, at which level it rema throughout the subsequent investigations evidence of bleeding from the gastro-intestinal where

The initial B M R was –35%, and the uptake was only 4% in 24 hours Radiography of the a much increased heart shadow Electrocard low-voltage curves The urinary excretion of was 6 9 mg in 24 hours

Single Intravenous Injections of Triac

Two single injections (each of 5 mg) were interval of 3 days) before the patient had treatment The results are shown in table I first test were not ideal, because interested present from time to time At the second test the room except the observer, and perhaps the results were more regular During both

TABLE I—EFFECT OF SINGLE INTRAVENOUS TRIAC (5 MG)

1st test		2nd t
Minutes before or after triac	B M R (%)	Minutes before or after tri
–60	–20	–30
–45	–31	–10
–30		0
(I V saline solution 5 ml)		(I V triac 5 mg
–20	–6	+30
–5	–21	+60
0		+75
(I V triac 5 mg)		+90
+10	–28	+105
+25	–15	+120
+40	–3	+150
+55	–31	+180
+90	–26	+195
+120	–29	
+180	–22	

rfectly calm throughout and his
lid not vary Nevertheless the
injection of saline solution
though transient effect on the
ving that he was susceptible to
il influences. In the first test
e in B.M.R followed the injection
l at 90 minutes after the injection
very much greater rise In the
there was a smaller rise at 180
er the injection Both these rises
ent and it is doubtful whether
o attributed to drug action. In
the result of these preliminary
ly be described as inconclusive

al Administration of Triac

oral administration of 1 mg of
lution) every 4 hours there was
in weight and plasma-cholesterol
an equally rapid rise in B.M.R
At the same time the patient's
ndition improved rapidly; he
er and warmer and his pains
the puffiness disappeared from
nd his skin became normal in
he size of the cardiac shadow in
diograph decreased considerably
cardiography showed increased
ue T waves.

days treatment triac was with
hours The B.M.R. fell to −18%
was well above the basal level of −30% it seemed
caloriogenic effect still persisted For the next
received 1 mg 4 hourly except that none was
4 hours preceding estimation of the B.M.R. The
ained at −15% indicating that the calorigenic
iously observed had not been entirely due to the
action of the drug

l Oral Doses of Triac

he dosage was maintained at 2 mg daily given as
dose in the form of tablets. The time of adminis
varied but the time of the B.M.R. estimations was
nt (9 A.M.) During the 24 days that he received
e patient's skin and facial appearance remained
his weight was steady The size of the heart
reased further though the T waves in the electro
became a little flatter Nevertheless the plasma-
level rose towards it former level, and the B.M.R.

EFFECT OF VARYING INTERVAL BETWEEN DOSE OF TRIAC AND ESTIMATION OF B.M.R

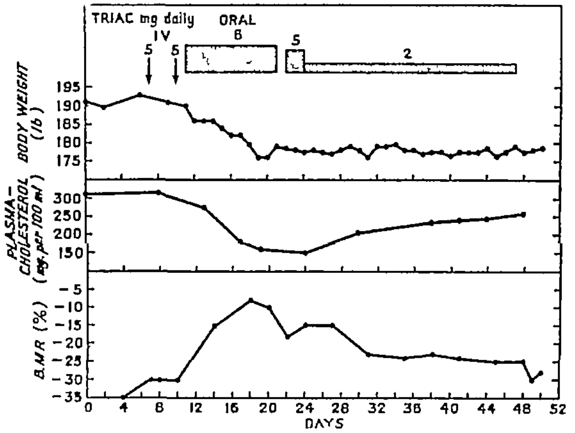
tween triac .R. (hr)	B.M.R (%)	Interval between last dose of triac and B.M.R estimation (hr)	B.M.R. (%)
	−25	15	−25
	−24	23	−23
	−23	39	−30
	−24	63	−28

it was receiving * mg of triac daily by mouth This was
gle dose at different times of day or night, to vary the
veen the last dose of triac and the time of the B.M.R
lways done at 9 A.M.) The last 2 figures in the table were
r triac had been discontinued for 2 days

nt −24% This figure did not vary appreciably
e interval between the daily dose of triac and the
estimation (table II) but when triac was withheld
the B.M.R. fell slightly to about its original level
%)

Discussion

e of myxœdema the initial effect of triac was
that of thyroxine or triiodothyronine in that
l signs of the disease were abolished and the
plasma cholesterol level reverted to normal
was achieved by oral administration though
used was very large compared with the usual
yroxine or of triiodothyronine The effect of
very rapid but not more rapid than would
d after large doses of triiodothyronine



The effect of triac on body-weight, plasma-cholesterol level and B.M.R.: 2 isolated intravenous doses of 5 mg each were first given; after this triac was given orally

After a remission had been obtained with 6 mg daily the dose was reduced to 2 mg daily During 24 days at this dosage the patient remained clinically euthyroid but the B.M.R and plasma cholesterol level reverted towards their original values The absence of clinical signs of myxœdema during this period may merely mean that insufficient time had elapsed for the reaccumulation of water and mucoproteins However, Lerman and Pitt Rivers (1955) also observed an apparent dissociation between the effect of triac on the clinical signs and on the B.M.R In their two cases the signs of myxœdema disappeared before there was any evident effect on the B.M.R. but the B.M.R. might have risen if treatment had been continued longer An alternative suggestion would be that triac has a greater effect on the retention of water and mucoproteins than it has on other aspects of metabolism This suggestion seems worth exploring although the evidence in its favour is at present slight

Summary

In a case of myxœdema triiodothyroacetic acid (triac) in oral doses of 6 mg daily rapidly reversed the clinical signs of the condition The B.M.R and the plasma cholesterol level returned to normal

When the patient was given single daily oral doses of 2 mg the B.M.R. and the plasma cholesterol level reverted almost to their original values but clinical signs of myxœdema did not reappear

Varying the interval between the daily dose of triac and the time of the B.M.R estimation did not affect the result

Attempts to determine the effect of single intravenous doses of triac on the B.M.R were inconclusive

I am indebted to Dr R Pitt Rivers F.R.S., of the National Institute of Medical Research for the supply of triac and for chromatography of the autoclaved solution to Prof M Maizels and Dr T Telfer for the plasma-cholesterol estimations and to the Sir Halley Stewart Trust for a personal grant

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CALCIUM VERSENATE IN MOTOR-NEURONE DISEASE

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Kinnier Wilson (1940) drew attention to certain symptoms and signs of lead poisoning which were very like those of motor neurone disease Lead probably affects the whole motor unit, damaging both the motor neurones and the muscles These cases of lead poisoning resembling motor-neurone disease must be rare

The following case raises several unsolved problems both of diagnosis and of treatment

The Patient and Her Illness

Mrs A B , aged 49, principal of a girls' school, was first seen on July 29, 1954, complaining of increasing weakness of the muscles of her right hand, especially of the extensors of the wrist and fingers She had wrist drop and dangling of the ring and middle fingers She also had slight weakness of the same muscles on the left side and particularly weakness and wasting of the right interossei At this examination there was no fasciculation and no sensory loss The reflexes were normal and the plantar reflexes were flexor

The picture suggested the possibility of lead poisoning and this was thoroughly investigated

Previous History

As a young girl she suffered from migraine and urticaria During a pregnancy in 1940 she had leucopenia and was given injections of liver In 1942 she had a curious illness of unknown ætiology which appeared to have caused a spasm of the diaphragm This recovered spontaneously

As a young woman, about 20 years ago, she worked as an industrial chemist and handled lead acetate in considerable quantities At present she lives in an old house receiving its water from a private supply in the Mendip Hills through old pipes, some of which are made of lead She never drinks milk in any form, and may well have a low calcium intake

It appeared, therefore, that this patient could have absorbed lead into her system in the past in several ways

Investigations for Lead

The amount of lead in her blood was 0 05 mg per 100 ml (a normal figure), and her urinary excretion of lead was 0 0495 mg in 24 hours (also a normal figure)

Course of Illness

At that time it was impossible to make a definite diagnosis and the patient was kept under observation When she was seen again on Oct 20 her muscular weakness had become much worse She had increasing difficulty in writing, particularly on the blackboard , after walking she became extremely fatigued, and she had also noticed difficulty in driving her car for any length of time Legs and arms were alike weak On examination the muscles previously found to be weak were now weaker There was also definite weakness in eversion and dorsiflexion of the left foot, with particular weakness of the right peronei and weakness and wasting of both the right and left interossei There was also diminution of the right ankle jerk, and to a lesser degree of the left ankle jerk, as compared with the previous examination

On Oct 28 she was seen by Sir Charles Symonds, who considered that she was an unusual case of motor neurone disease He pointed out that the weakness was more extensive than the wasting and thought that the deterioration favoured motor neurone disease

On Nov 4 the patient noticed fasciculation in her trunk, leg, and arm muscles When an electromyogram was done on Nov 7 at the Radcliffe Infirmary, Oxford, by Dr B Scott, definite fibrillation potentials were found, many being present in the muscles of the forearm on both sides and fewer in the right peronei

At the same time a biopsy was done from the extensor muscles of the middle finger, and Dr R M Norman, the neuropathologist in Bristol, reported that the lesion was [illegible] and not muscular

Further Investigations

Radiographs of chest and cervical spine Hæmoglobin was 95% and white blood-cells 2, 540, showing considerable neutropenia) Cer was normal in pressure and content Wasserm reactions in C S F and blood were negative

There was no basophilic stippling on the blo lead content of blood and urine was normal calcium was 9 1 mg per 100 ml , and a course of and 50 mg of parathyroid extract ('Parathorm produce any evidence of increased lead excretio

The patient was again discharged from hosp gluconate injections, with no definite dia a motor neurone disease which was obviou worse

To summarise the condition, a disease of neurones was present which everyone agr progressive It had resembled lead pois proof of this could be found The only was a fairly severe neutropenia, which had in this patient before

Treatment

Because the clinical picture was so like poisoning, and was getting worse, it was de calcium versenate injections, rather emp chelating agents had been adapted to t because of their marked affinity for heavy several cases of true lead poisoning had be treated—e g , by Bessman et al (1952) in States and by Giles et al (1955) in this cou

Chelating agents contain nitrogen or other s of giving up electrons to metals which require plete their atomic structure, and they are use metal complex thus formed is stable, and un excreted in the urine They are administered a salt because of the danger of tetany from cal also because lead will displace the calcium Lead like arsenic, bound to the sulphydryl group tissues These agents have been used in ulcers, and for arsenic or mercurial poisoning is not dangerous, since it does not emp copper and cobalt in human tissues.

Treatment with calcium versenate (calcium ethylenediamine tetra acetic acid , E.D.T.A. in this case without much hope of succe apparent response to treatment was striki

Daily injections (each of 2 grammes given in dextrose solution) were given on the 4 days De The patient noticed spontaneous decrease in and 1–2 weeks later a marked improvement in arms, particularly in the extensor group of mus 3 weeks she could walk further, write much m also drive a car more easily When she was there had been further improvement, though had been more static following the first month a Another course of five similar injections was g and again there was considerable improvement in the extensors of the right wrist She could m without difficulty and extend the fingers in e Again she noticed that the fasciculations we indeed they were hardly noticeable

She was seen at Oxford on May 23 by Dr C who also found considerable clinical impr electromyogram at Oxford on May 24 confirm

Since May the improvement has steadily and a further course is contemplated Th improvement has taken place, on each occ the first month after therapy

Discussion

The response in this case was unexpecte excretion of lead after calcium versenate not studied In cases of lead poisoning trea agent excretion of lead reaches a maximum injections cease We have no in the present case lead was actor and it is possible that m versenate affected some ic element and caused its

of course be argued that the improvement had nothing to ie treatment given Although hard to believe I must admit taneous improvement is not ual in motor neurone disease his was a somewhat atypical any rate the method seems to ther trial especially as motor isease is not a single entity arise from quite different ie of which may be hidden ding

chelating agents we have a ool which may well provide n on some of the chronic l diseases (*Lancet* 1955) The sway back Derbyshire sheep l Shearer 1940) in which opper is lowered in ewes and lambs and a high ead is found both in the soil and in the tissues ambs may indicate that these chelating agents use in an experimental approach to demyelina n animal and man

ating this preliminary report on an apparently ase I should add that I have so far tried the six other cases of motor neurone disease these no improvement was evident but the patients noted a considerable decrease in on following the injections and one of them have more power in the damaged muscles of giving calcium versenate by mouth is being

alness of this therapy remains to be proved investigation seems justifiable

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FICATION WITHIN THE LIVER

W C Smallwood
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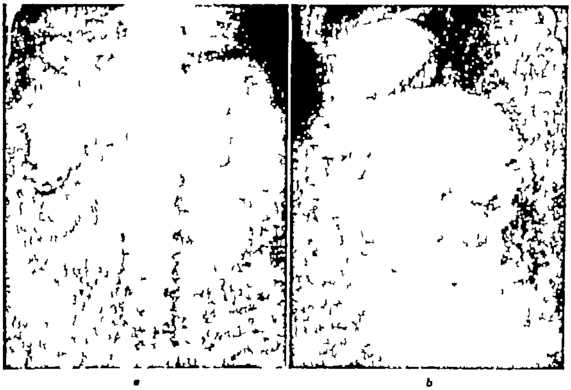
ng of widespread calcification within the liver iciently unusual to warrant a short description d a discussion of its probable aetiology

Case report

ife aged 47 was referred to hospital in June so of severe high epigastric pain This had it in April 1952 and after lasting a month il April 1953 after which it recurred and per pain though largely epigastric occasionally the interscapular region of the back It lasted each day and was not precipitated or relieved by any activity Appetite was stated to be unim he patient had lost 1–1½ stone in weight



Calcification in Liver: *a* postero-anterior view; *b* lateral view

Examination —She was a woman of average physical development nutrition and intelligence Her mucosae were well coloured Her liver was enlarged extending 2 inches below the right costal margin at the level of the ninth costal cartilage it was extremely hard and slightly tender and had a grossly irregular surface Her spleen was not enlarged. Clinical examination was otherwise negative

Past Medical History —At about the age of 13 she had been admitted to a hospital in Belfast with a tumour of the liver She had been treated with weekly injections which (she indicated) were made in the antecubital fossa and were presumably given intravenously After receiving six injections she defaulted Attempts to trace these hospital records have been unsuccessful She had not resided outside the British Isles or had any dysentery

Family History —She has never known her father Her mother died aged 84 cause unknown a brother died aged 32 with tuberculous arthritis another brother aged 50 and a sister aged 30 are believed to be alive and well They live abroad and have not been traced in connection with the present investigation The patient has six children, of whom five are apparently healthy and the sixth is a mongol She denies any miscarriages.

Investigation —Straight radiography of the upper abdomen revealed widespread calcification within and limited to the liver This consisted of a large central irregularly spheroidal mass surrounded by small irregularly calcified areas scattered throughout both lobes (see figure) Cholecystography showed a somewhat enlarged gall-bladder which filled well Barium meal follow through X ray examination of the alimentary tract was negative The erythrocyte-sedimentation rate was 2 mm in one hour (Westergren) Liver function tests and prothrombin level were normal Casoni test for hydatid disease negative Hydatid complement fixation test negative Mantoux test (1 10 000) positive Blood Wassermann reaction faintly positive ± – Kahn reaction positive on two examinations

Progress —In view of the past medical history and the results of serological tests a provisional diagnosis of calcification of a gumma or gummata of the liver was made and treatment with penicillin was started In twelve months the patient received three courses of penicillin each of 5 mega units in ten or twelve doses and two and a half courses of bismuth each of 1·8 g in eight doses During that time she had very little pain and afterwards the liver appeared somewhat smaller on palpation though still very hard and a little tender Liver function tests remained normal The blood Wassermann reaction was very faintly positive ± –

Discussion

It is recognised that calcification may develop in parasitic neoplastic infective granulomatous and vascular lesions of the liver, and that the condition is rare Konzelmann (1946) reports an incidence of 1 in 8000 necropsies The differential diagnosis of these various forms of calcification is discussed by Bassler and Peters (1947) and Astley and Harrison (1949)

Heilbrun and Klein (1946) conclude that, in cases such as these, hydatid disease is probably the commonest underlying lesion, and they report the case of a Czech serviceman, aged 32, whose complaint of vague abdominal pain led to the discovery of an irregular massive calcification in the liver They postulate the presence of alveolar echinococcosis, in which disease the daughter cysts evaginate from the germinal epithelium and migrate throughout the liver substance They point out that death and calcification of that lesion would explain the radiological findings in their patient However, they mention that the serological test for syphilis was persistently positive, although there was no other evidence of that disease

Except for the difference of age and sex our patient is strikingly similar to that of Heilbrun and Klein (1946) , indeed the radiological appearances are almost identical Both patients gave serological tests suggestive of syphilis, but except for liver disease they appeared quite healthy. In our patient the past history of " tumour of the liver " diagnosed at the age of 13 and treated by injections probably intravenous, suggests that syphilis was diagnosed at that time, and that any such infection was probably congenital However, there are at present no other manifestations of congenital syphilis, the family history does not support the diagnosis, and the liver calcification now present does not show the trabecular configuration described by Gray (1944) as characteristic of calcification in gummata Alveolar echinococcosis which was at one time believed to be restricted to certain areas of the European mainland, has recently been reported in Britain (Walshe 1954) Further, the occurrence of infestation before the age of 13 is no bar to the diagnosis, since the " hydatid cyst is nearly as old as its host " (Dévé 1933 quoted by Latham 1953) The occurrence of false positive serological reactions for syphilis in chronic liver disease is generally recognised and ascribed to abnormal globulin In our patient there was no biochemical or hæmatological evidence of liver dysfunction Also we have been unable to trace reports of false positive reactions in hydatid disease

We cannot exclude calcification in hepatic tuberculoma in our case Gray (1944) suggests that such lesions appear radiologically as dense spheres surrounded by clear moats, and that usually there is evidence of tuberculosis elsewhere, particularly in the spleen

Although we favour the view that in our patient the underlying lesion is gummatous, this must at present remain speculation Biopsy of the liver at this stage is considered unlikely to provide histological proof of the nature of the calcified lesion The case is reported because of its rarity and in the hope that its similarity to other cases of liver calcification may lead to a recognition of its underlying pathology

We are indebted to Mr J G Williamson for the reproduction of radiographs

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Preliminary Communication

PHAGE-TYPES OF STAPHYLOCOCCUS PY ISOLATED FROM IMPETIGO AN SYCOSIS BARBÆ

DURING twelve months June, 1954, to swabs from lesions of patients attending with impetigo and sycosis barbæ were exa particular reference to the isolation of St *pyogenes* Strains isolated were phage-ty method of Williams and Rippon[1] and their penicillin was determined by the serial-d method using the medium described by May Oxford staphylococcus was used as the referen

51 strains of which 34 (67%) were impetigo lesions and 17 (33%) from sycosis were examined in this way

45 strains (88%) were lysed by one or m basic phages, used at their routine test dil

Of the 34 impetigo strains 31 (91%) were (81%) being lysed by phage 71 alone, while the pattern 55/71 Of the 14 (82%) typable 17 sycosis barbæ lesions only 2 (14%) w phage 71 alone, 1 other strain giving 79/42D/71

Group distribution in this series was

Group I	9%
Group II	61%
Group III	[illegible]
Mixed	4%

This distribution of the majority of *Staph. py* skin lesions into groups II and III confirms of Tulloch,[3] whose results showed the distribution, but his series did not include isolated from impetigo lesions, and con percentage of group II strains was smaller 61%) and of group III strains greater (46% than in the present series

Only 17 (38%) of the 45 typable strains to penicillin 8 (26%) of the 31 impetigo st were sensitive, compared with 9 (64%) derived from sycosis barbæ

Work is now in progress to determine strains of staphylococci lysed by phage characteristics which would explain their in impetigo

I wish to thank the Medical staff of the Department of Dermatology for their kindness during this investigation

K E SMIT
M.B.

Department of Bacteriology,
Royal Infirmary, Sheffield

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1 Williams, R F O Rippon J E *J Hyg , Camb*
2 May J R , Voureka, A F , Fleming A *Brit*
627
3 Tulloch L G *Ibid*, 1954, II, 912

" The shortage of staff in the office cannot be proved, to be even worse than it It is certainly even more novel There is saying, shortage everywhere, in clerical and alike That is the symptom of *inflation*, or over-employment—call it what we will. It that clerical wages have risen considerably wages since before the war and *that* the office worker is underpaid and should be premise is right , the deduction less certain change seems to be at work. In the days when of the 'Three R's' still belonged to a minority routine clerical work was worth a premium. of general education has made that The rarer and more sought *after* qualities physical quickness and strength, coördination muscle, and willingness to work under hard *The Times*, Aug 12, 1955, p 9

Reviews of Books

ıtroduction to the Physiology of Skeletal Tissue
LIN C MCLEAN M.D professor emeritus of patho-
physiology University of Chicago MARSHALL R
M.D associate clinical professor of surgery
ɔodics) University of California. Chicago Univer
Chicago London : Cambridge University Press
Pp 182 45s

the first of a new series of publications, The
Library Biology and Medicine' Dr Peter
Bruyn, the general editor explains in his
at the series is intended

ıde authoritative information about the growth and
various subjects in such a fashion that the indivi
es may be read with profit not only by the specialist
by those whose interests lie in other fields The
have been asked to assume a common level of
competence rather than to attempt popularization
bject matter

ean and Dr Urist have largely fulfilled these
they have not erred on the side of populari
he illustrations are not abundant, and the
level of scientific competence has to include
wledge of mammalian histology if the reader is
ome of the chapters.

the new technical methods now used in biology
no have been brought to bear on the problems of
14 consecutive chapters describe contributions
ology crystallography electron microscopy iso
and so forth. Each chapter is intended to stand
ugh they follow in more or less logical sequence
ı the histology of bone and each reviews briefly
y one aspect of the morphology or physiology of
title indicates, the book is mainly concerned with
but some pathological changes are discussed in
chapters and the one on fracture healing is based
e authors own work.

ors are naturally biased by their own studies
ctions but on the whole they offer a balanced
l assessment of the more important work,
ıapers published as recently as 1954 Their
ow is clear even though, on many points, it
rightly enough our ignorance rather than
edge As techniques become more complex
r finds it harder and harder to keep level with,
the significance of the results obtained by
ours. The morphologist, for instance, has
n assessing the significance of the results of
s with radioactive isotopes and the chemist
ce impossible theories on bone physiology if
ant of the cellular mechanism involved in
tion and deposition of bone By their well
ınd succinct account of much of the recent
ı bone, Dr McLean and Dr Urist will help
e partitions between compartments. But the
eir monograph considering its small size and
number of illustrations seems high

al Hospital

ly of Institutional Participation in the Treatment
hiatric Illness ALFRED H STANTON M D , MORRIS
WARTZ, PH.D London : Tavistock Publications.
Pp 402 35s

ok by a psycho-analyst and a sociologist in
ill do much to meet the growing interest in the
nisation of our mental hospitals. Dr Stanton
chwartz describe the social interaction in a
ward where fifteen female patients mostly
nics, were cared for by about the same number
Formal treatment was largely confined to a
no-analytic interview ; but the purpose of their
ich covered two years, was to examine the
he other 23 hours of the day In a painstaking
ıating way they try to piece together the
f the patient s behaviour as seen through the
patient himself of the other patients and of
of the therapeutic and administrative staff

A study of this kind presents enormous technical difficulties, but these are faithfully reported, and it is to the credit of the staff and administration at Chestnut Lodge a small private mental hospital near Washington D C that they have agreed to the publication of such a revealing story of staff patient interaction. Perhaps the most important principle which emerges is that it can no longer be maintained that therapy is confined to the treatment session with the doctor The interaction between the patient and other members of the hospital community both patients and staff, is just as important. How to develop such social interaction so that it aids rather than hinders the patient's progress is the main concern of this book The reader cannot fail to gain more understanding of what psychiatric practice looks like to the patient, and must see what powerful therapeutic weapons lie too often unused The principles outlined should infuse a new interest into mental hospital psychiatry, and if successfully applied might incidentally do much to decrease the shortage of nurses

Physicians' Office Attendants Manual

HENRY B GOTTEN M.D associate professor of medicine University of Tennessee DOUGLAS H. SPRUNT M.D professor of pathology University of Tennessee Springfield Ill Charles C Thomas Oxford : Blackwell Scientific Publications. 1955 Pp 91 27s 6d

As its title suggests, this book has been written for the lay assistant who helps the doctor to run his practice The background is medical practice in the United States, and while much of its content is universal much would be strange to British usage

The section on office work describes the duties and responsibilities of the secretary receptionist which include a number of tasks reserved in this country for a trained nurse The subjects covered range from office procedure to professional ethics and on the practical side there are illustrated instructions for the preparation of trays for examination. The second half of the book describes laboratory procedures. Over here some of these would be undertaken in a ward side room and most of them by a laboratory technician. In the few general practices in this country where laboratory work of this kind is done, red and white cell counts, for example, would probably be made by the doctor himself and not by a lay technician

Industrial Dust

2nd ed PHILIP DRINKER S.B CH E professor of industrial hygiene Harvard School of Public Health ; THEODORE HATCH B.S., S M professor of industrial health engineering Graduate School of Public Health, University of Pittsburgh and research adviser Industrial Hygiene Foundation Mellon Institute New York and London McGraw Hill. 1954 Pp 401 71s 6d

SINCE its publication in 1936 'Drinker and Hatch ' has been a standard textbook on the engineering aspects of industrial dust. The second edition will be welcomed in this country both by engineers and by doctors interested in industrial health ; for it bears the stamp of authority and is carefully written and produced. Perhaps its most noteworthy feature is the common sense which keeps breaking through the presentation of complex scientific facts.

In their preface the authors say that control of the dust hazard in industry is the joint duty of the physician and the engineer and they emphasise the coöperative nature of the problem by pointing out that though the design of dust-control apparatus is an engineering matter it is often the physician who finally appraises the success of the control system Not all doctors have the background to appreciate the sweet simplicity of the numerous mathematical formulæ used by Professor Drinker and Professor Hatch to illustrate their engineering points but they will undoubtedly benefit from the full and learned discussions of the effects of dusts and fumes on man the inert and toxic dusts the dusty trades ; dust retention by man ; and physical and chemical factors in pneumoconiosis

A doctor interested in industrial medicine should know about methods of ventilation how to take and analyse a dust sample and why dust respirators are regarded as only a second line of defence At the present time, too when pollution of the atmosphere is so much "in the air" this is an essential book because it contains most of the known facts about dusts and fumes

Klinische Zytologie der Thoraxkrankheiten

Heinz Grunze, senior physician Landes Tuberkulose-krankenhaus Heckeshorn Berlin Wannsee Stuttgart Ferdinand Enke 1955 Pp 190 DM 59

Dr Grunze does not deal only with the cytology of sputum and pleural exudates he also describes techniques for obtaining, by needle biopsy, material for examination from the soft tissue and bones of the thorax, from mediastinal and peripheral pulmonary lesions, and from enlarged hilar glands He demonstrates the necessity for studying cytological appearances in health as well as disease, and carefully considers the difficulties of distinguishing malignant cells from those originating in chronically inflamed tissue Staining methods in common use are described, and their relative advantages and drawbacks assessed The 151 illustrations, 56 coloured, are on the whole of high quality This work embodies the fruits of much practical experience, and there is an ample bibliography It is very useful to have such comprehensive information on this subject in a single volume

Hematology (2nd ed Springfield, Ill Char Oxford Blackwell Scientific Publications 195 £7) —In its second edition this textbook by D Sturgis of Michigan retains the advantages o author who draws freely on his own experie also distinctive in giving enough space to b of its subject Comparison with the first editi every page has been scrutinised and many ne made along with suitable deletions There is a really useful and wise discussion of the caus ment of anæmias secondary to other diseases, an on the treatment of anæmias in general can hard on The section on leukæmias is also notably up to date In these sections British contri noticed Some other sections, though good, are high standard Hæmorrhagic diseases are some ingly handled and a discussion on "does Hæm occur in the female?" ignores the British work this question in the affirmative four years ago of the term "malignant lymphomas" for what people call "reticuloses" may cause difficult illustrations are still not particularly good But this volume remains one of the most readable and textbooks of hæmatology available, and it ought desk of the clinician ready for use when he has time Unfortunately the notably high price is lik it on the library shelf

New Inventions

CARDIOPHONY OF THE EXPOSED HEART

When operating upon the heart I have found the need for something better than the usual sterilised stethoscope for placing over the desired areas of the pericardium or myocardium before and after intracardiac manœuvres Since I was trained as a surgeon and not as a cardiologist, I have often wanted a colleague to hear what I could hear and advise me

For these reasons a microphone (fig 1) has been devised which is extremely small, can be readily placed on the heart itself or slipped inside the pericardium and is capable of being sterilised It is connected to an amplifier (fig 2) which reproduces the sounds on a loud-speaker The actual design of the microphone and electrical circuit has presented some unusual problems, but these have been solved The main difficulty was to cut down extraneous noises but retain sensitivity over a wide range Amplification gives a 15-watt output free from distortion over a wide frequency range of 20 to 20,000 cycles per second The machine ('Metron S A 3')* has been designed by Mr Lionel Fothergill, to whom I owe much for his great skill and even greater patience in incorporating modifications as they became necessary

The general principle has been to reduce all controls to a minimum, and the apparatus can be switched on and adjusted rather more easily than the modern radio set It is of rugged construction and measures only 21 × 13 × 9 in over-all The microphone can be sterilised in most antiseptic fluids or formalin vapour and can also be produced in various shapes The one illustrated has proved the most valuable, the little rubber patch on its upper surface forming a convenient finger-rest when applying it to areas not under direct vision It has, however, been made in many other sh which can be slipped inside the chambers of t

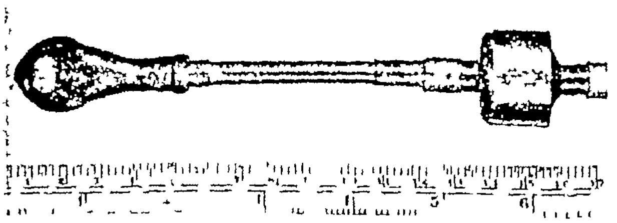
Fig 1

The instrument has a built in loud-speak other kinds of record are required outlets are p a tape-recorder or a writing instrument

It has been found very instructive to be the sounds picked up directly over healthy a valves and especially before and after mitral monary valvotomy It is of course most demonstrating these sounds to students. If the instrument can be used in the ward f purposes, when a different type of microphone on the chest wall

It must not be forgotten that clinical auscult the ordinary stethoscope is an art which takes

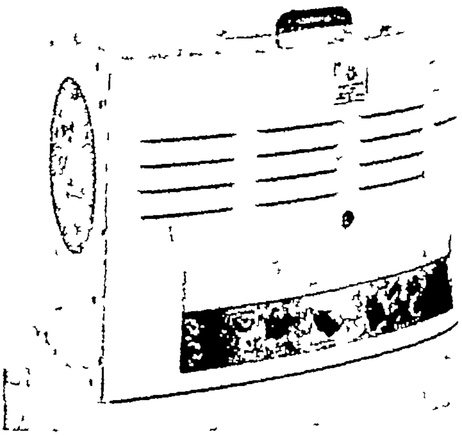
Fig 2.

to acquire, and likewise a certain amount of necessary before one becomes accustomed to cardiophone The human ear discriminates way, and its sensitivity is much greater in th frequency range, although the low tones (i magnified) will mask the higher ones The two range controls allow one to compensate for this

This apparatus is a useful adjunct to cardi enabling cardiologist and surgeon to cooper operating-theatre and at the same time possible to demonstrate heart sounds clearly to

SELWYN TAYL
M CH Oxfd, F R C
Surgeon to King's College
to the Postgraduate Medic
London

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* Now being manufactured by Surgical and Medical Electronics Ltd, 322 Barrington Road, London S W 9

THE LANCET

DON SATURDAY AUGUST 20, 1955

Management of Chronic Gout

g the past five years a more hopeful attitude
rged towards the management of chronic
d this is reflected in the title of the article
ARSON which we publish this week—Complete
Gout—and in a recent paper by BARTELS[1]
Now Amenable to Control) It is clear that
tinuous administration of uricosuric agents
most cases, reduce the size of tophi, reverse
graphic abnormalities and eventually control
tacks Apart from the choice of uricosuric
e clinician must decide at what point in the
f the disease this treatment should be started
long it should be continued Sodium sali
nd probenecid (Benemid) are at present
alternatives, and the choice between them
st on their relative efficiency the frequency
ich they produce undesirable effects and their
OUGIN MIBASHAN and HORWITZ[2] have lately
thyl biscoumacetate (Tromexan ') to the list
suric agents—an observation of considerable
al interest but hardly likely to influence
l therapeutics BARTELS[1] dismisses salicylate
ly (and, it seems unjustifiably) as not active
to restore the serum uric acid level to normal
n early or mild gout or when the uric acid
only slightly raised MARSON on the other
y giving salicylate in daily doses of about
has been able to maintain the serum uric acid
er level than was possible with 2·0 g daily of
cid[3], and he has produced impressive evi
hat salicylate treatment favourably influences
rse of the disease[4] With both methods the
erum uric acid levels were reached during the
v days of treatment and subsequent values
o be higher Reports[5 6] of antagonism between
o drugs when given together were not con
but there was nothing to be gained from using
n combination[3] In one of MARSON's cases
licylic acid seemed as effective as sodium
te, and the former certainly merits considera
a more convenient preparation
o matter of toxic effects MARSON's impression
enecid seems to have been less favourable than
other workers of 15 patients treated 2 had
hypersensitivity reactions, 6 had gastro-intes
mptoms (but not bad enough to stop treat
and 1 had unexplained pain in the loin[3]
and STRICKLAND[7] have studied the incidence
effects in 2502 patients treated with probenecid by themselves and others The most important of these were gastro intestinal symptoms (in 3·1%) rashes (1·3%), and reactions of hypersensitivity (0·3%) One group of incidents during treatment was an inevitable result of uric acid diuresis rather than a toxic effect Such incidents included costovertebral pain, renal colic, and hæmaturia—all attributable to the precipitation of urate crystals in the urinary tract BOGER and STRICKLAND advise scrupulous care in making sure that the urine is alkaline during the early weeks of treatment No deaths have been attributed to treatment with probenecid and there has been no reason to suspect any chronic toxicity It has been common to get more acute attacks during the initial stages of treatment with probenecid, colchicine (or, perhaps, phenylbutazone) can be given to relieve or prevent these The common toxic effects of salicylate are conspicuous with the large doses required, but MARSON is apparently able to induce most of his patients to accept these, and he finds that the symptoms become less troublesome in time On the score of cost salicylate wins handsomely a week's treatment of a hospital patient with probenecid (2·0 g daily) costs 13s for sodium salicylate (gr 90 daily in a flavoured mixture) the figure is 1s 9d

A sound theoretical case could be made for starting a uricosuric drug as soon as the diagnosis of gout is firmly established and for continuing it for the remainder of the patient's life It is impossible to be certain of the point at which deposits of urate first appear in the tissues and initiate the irreversible changes which may lead in the end to permanently damaged joints and perhaps kidneys On the other hand many will know of patients who have had years of freedom after a single acute attack of gout—it was as many as 62 years in a case described by BAUER.[8] To start lifelong treatment (especially with high doses of salicylate) after a single attack of gout would demand a singularly firm physician and a particularly amenable patient But there can be little doubt that frequently recurring attacks of gout, incomplete resolution of arthropathy between attacks, radiographic changes in bones, and tophi in the soft tissues are firm indications for starting treatment with probenecid or salicylate It is rational that treatment should be continuous but almost certainly unnecessary to supplement it with any close restriction of diet And it is important to bear in mind that treatment must be continued for many months before benefit can be expected

This notable advance in treatment has thrown little fresh light on the mechanism whereby a chronic familial defect of metabolism is punctuated by explosive episodes of acute gout Certainly such attacks can continue after the uric acid level in the serum has been lowered by treatment to well within the normal range This strengthens the evidence that uric acid itself is not responsible for acute attacks, and it has suggested to MASON[9] that a precursor of uric acid may be involved, the formation of which may be blocked by colchicine He points out that such a precursor must be abnormal for colchicine has no effect on the concentration of uric acid in the blood From experiments with isotopic glycine

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W I Strickland S C Arch intern Med 1955 95 83

[8] Bauer W New Engl J Med 1943 229 583
[9] Mason R W Ann rheum Dis 1954 13 120

Benedict et al[10] concluded that in gouty subjects there may be a more rapid mechanism for transforming glycine into uric acid than is normally the case, and they suggested that this transformation may be accomplished by a different metabolic route.

Research on Human Nutrition

In the 19th century, nutritional research was concentrated on energy requirements and the interrelations of the three basic foodstuffs—proteins, fats, and carbohydrates. In the first half of the 20th century the predominant interest was in the vitamins. After their discovery by **Hopkins** and **Funk**, knowledge of their properties accumulated rapidly, and consequently we now know enough to prevent the five major vitamin-deficiency diseases—beriberi, pellagra, scurvy, rickets, and keratomalacia. That these five diseases can still be seen here on occasion, and remain prevalent in some other parts of the world, is due to the great difficulty of applying new nutritional knowledge and in particular the need for more instruction on the subject. Today, in the second half of the 20th century, the principal problems in human nutrition about which the general public, the clinician, and the research-worker would all like more information include: (1) the relation of dietary habits to degenerative processes of ageing, and particularly to atheroma and the growth-rates of tumours; (2) the effects on health of the manifold chemical and physical treatments involved in the processing of all the common foods, which is inevitable in an industrial community; (3) the effects of various foods and dietary habits on the efficiency and working capacity of the industrial population; (4) the effects of diet on resistance to infectious disease, especially the common respiratory infections; and (5) the constitution of the diets most favourable to human growth and development at all stages from prenatal life to adolescence. The importance of this last problem was emphasised in the latest annual report of the Medical Research Council,[11] in which a section on the investigation of human nutrition is almost wholly devoted to kwashiorkor and the supply of suitable proteins for the young. In most of Africa, and in some other countries, probably nothing else is so important for the improvement of health.

A research nutritionist, if asked to tackle any of these problems, might well reply that this would be easy provided he had a suitable supply of volunteers, prepared to live on controlled diets for months or years. He might add that if he was expected to rely on the excellent equipment for housing and feeding small rodents, which he had inherited from his predecessors of the "vitamin era," he would have little hope of doing much towards their solution. In fact he can contribute new knowledge only by careful field observations, when circumstances permit, and by seizing the rare opportunity that may arise for a controlled experiment. Nevertheless, valuable contributions have been made in the last decade, including the field studies of **Smith** and **Woodruff**[12] in a Japanese prisoner-of-war camp, of the Cambridge school of experimental medicine in Western and of **Brock** and **Autret**[14] and others A good example of a careful attempt to with morbidity and mortality is the study and his colleagues[15] of the association incidence of coronary-artery disease and consumption of fats in many countries experiments, however, have been few and far The most comprehensive has been the experiment[16] on human starvation, but tests on such a scale rarely arise, though volunteers have been collected among con objectors in war time. **Widdowson** and controlled trial of the nutritive value of from various flours, carried out in post-war Germany, were excellent attem date a most difficult problem; but, as out the other day,[18] their results are none interpret and certainly give no clear cut those responsible for the regulation of mill

This week we publish a paper, by Profes and his colleagues from three centres in on the treatment of kwashiorkor. For years there has been no doubt that dry powder is an effective remedy for kwash skimmed milk is a complex chemical mixture nature of the active therapeutic agent uncertain. In this latest work a good trolled trials have shown that casein is the initiates the cure, and in this respect its proved to be independent of the addition vitamin mixture. A few further trials have that an amino-acid mixture alone can effective in causing immediate improvement with kwashiorkor. These findings will be physicians responsible for the treatment of cases of kwashiorkor in Africa, but they still more useful in planning preventive Milk is certainly an excellent prophylactic the disease; but in Africa, as in many oth it is impracticable to wait and hope for the ment of dairy-herds capable of supplying the children, especially in their critical When we can define accurately in chemical property of the substance or substances that is so critical for child development, then become possible to find alternative sour from vegetable products, and to plan as to enable prophylaxis to be carried scale required. The investigations of **Brock** colleagues are a promising start in the task out what the critical chemical agents are trials have been on a large scale in three cities. Good central organisation and a skilled staff—chemists, doctors, and been the factors responsible for the achieved.

Opportunity to elucidate the nutritional of our day is not easily found; and we

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[12] Smith, D. A., Woodruff, M. F. A. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 274, 1951.

[13] Members of the Department of Experimental Me bridge. *Spec. Rep. Ser. med. Res. Coun., Lond.* See *Lancet*, 1951, ii, 300.

[14] Brock, J. F., Autret, M. F.A.O. Nutritional Rome, 1952. See *Lancet*, 1952, ii, 1070.

[15] Keys, A. *Circulation*, 1952, 5, 115.

[16] Keys, A., Brozek, J., Henschel, A., Mickelsen, O., Biology of Human Starvation. Minneapolis *Lancet*, 1951, i, 95.

[17] Widdowson, E. M., McCance, R. A. *Spec. Rep.* *Coun., Lond.* no. 287, 1954. See *Lancet*, 1954, ii,

[18] See *Lancet*, July 30, 1955, p. 235.

nore that those who control grants will
e the necessity for financial assistance and
liberal scale and that they will not expect
be produced rapidly In this country, we
d fortunate in that the Medical Research
ias already done so much to support basic
on human nutrition.

Annotations

PLOUGHSHARES AT GENEVA

iternational Conference on the Peaceful Uses
s Energy organised by the United Nations at
s now drawing to a close after nearly two weeks
on in which about a thousand scientific papers
n read or tabled For the first time a good
it the design of nuclear reactors and atomic
tions has been made public and the machinery
his work offered for international sale Eco
and industrially atomic energy has become
t for national prestige and it seems that at
Britain leads in the export of radio isotopes.
ie interest of the conference was to learn what
he United States and Canada were offering

of the medical papers naturally enough were
iealth risks of radioactivity which is where
apy genetics, and physics join hands Others
h the biochemical and physiological results of
io isotopes in the investigation of intermediary
im usually mammalian a very great deal has
een published on such subjects as diabetes the
of hæmoglobin and the metabolism of steroid
and proteins In a third group of papers
energy was applied in medical practice—for
to the detection of cerebral tumours the
of a highly portable X ray apparatus requiring
icity the examination of thyroid activity the
communicable diseases in the field—a miscel
nd ingenious group of fruitful applications. It
t that many clinicians can hardly be aware of
nous quantity of work that has been done and
ublished in the past ten years Some of it is
affect clinical practice and research but it is
for the medical worker to know what oppor
atomic energy offers him not because of any
out because of the specialised language and
journals in which the work often appears.
a need for simple reviews which explain the
to the non physicist and perhaps for some kind
al advisory service like that already offered
ry

neva Dr E E Pochin gave an excellent brief
iodine metabolism For examination of thyroid
he recommended a simple test in which an
vely small dose of radioactive iodide is injected
hours later the degree of absorption by the
is estimated by a five minute count at the
neck and thigh Normally the kidney clears
na of iodide at the rate of 2 litres per hour while
id works at only 1 litre per hour but the thyro
yroid clears at 15 litres per hour The normal
hyroid (unlike that of rat and rabbit) discharges
e slowly over six weeks or more But the
ic gland discharges quickly (about four days)
loes carcinomatous thyroid which has a poor
however A similar method for assay of thyroid
is in use in the U S S R according to Dr M N
but in Russia the chief interest has been to
yroid activity in non thyroid diseases For
increased thyroid activity has been noted in
sential hypertension in 50% of patients with rheumatic carditis at the height of the disease and in acromegaly The test is useful in the differential diagnosis of anxiety state from thyrotoxicosis, since function remains normal in the neurosis Canadian workers advocated the measurement of radio iodine in the saliva twenty four hours after a test dose as a good guide to thyroid function

Urinary excretion of creatine in considerable amounts is one of the laboratory signs of thyrotoxicosis Dr DeWitt Stetten jun explained that creatine is normally made in the liver and taken up by the muscles where as creatine phosphate it takes part in muscular contraction A fraction of it is converted there to creatinine and excreted constantly in the urine Using isotope methods it has been possible to show that the creatinuria of thyrotoxicosis is due to overproduction by the liver under thyroid stimulation In muscular dystrophies on the other hand liver production is normal but the diseased muscle does not take up its creatine ration which consequently appears in the urine In another illustration of isotope work Prof A B Hastings described results in diabetic rats partly confirmed for human diabetics which show that in diabetes there is both an inability of muscles to use glucose and an overproduction of glucose by the liver which contains twice the normal amount of the enzyme glucose 6 phosphatase When insulin is given the muscle failure is corrected almost at once whereas the liver abnormality takes some hours to put right

In an equally interesting report Dr Dale W Jenkins described the labelling of mosquitoes and flies to determine their spread from a release point their life span their predators (which also become radioactive) and the total natural population (by dilution) In the same way many viruses and bacteria can be made radioactive and their survival in and dissemination by their hosts followed And in man erythrocytes can be labelled by contact with sodium chromate (Cr^{51}) and serum albumin with radioactive iodine as Prof W V Mayneord mentioned in a useful review of other isotope methods. He described how xenon 133 can be adsorbed on carbon and used to take radiographs without any source of electricity or large apparatus a radiograph of the ankle needed a ten second exposure Professor Mayneord also referred to the use of radioactive isotopes selectively absorbed by cerebral tumours, as did Dr G L. Brownell and Dr W H Sweet who have devised an ingenious way of displaying the tumours without opening the skull They inject arsenic 74 intravenously and this concentrates about ten times more in tumour tissue than in normal cerebrum

The many papers on the health effects of radiation combined to emphasise the impossibility of being sure that so-called safe exposure limits are neither too high nor too low Dr D E Clark reported 15 cases of carcinoma of thyroid in children under 16 all of whom had at some time had X ray treatment for benign conditions of the head neck or chest Dr R J Hasterlik and Dr L D Marinelli described 4 patients who got neutron and gamma ray overdoses from an accident at work None of them had symptoms of radiation sickness and only 1 showed a (transient) skin erythema Hæmatological investigation did not show a great deal either but there was a high and abnormal urinary amino acid excretion within twelve hours of exposure and this continued for five months and sperm counts on the men showed diminution or aspermia maximal at the tenth month with subsequent recovery As for genetic effects produced by the increased rate of mutation we really know nothing good or ill As Dr J F Loutit said New mutations are merely repetitions of the old which Nature has tried before When the environment changes, a mutation once deleterious may in fact be favourable

SKELETAL MATURITY

THE degree of maturity of the skeleton is of interest occasionally to the clinician and constantly to those investigating growth and development Such workers are increasingly aware of the shortcomings of present methods which are four in number

(1) Comparison of radiographs of the hand and wrist with standard films typical of different ages An "atlas" of such films was published as long ago as 1902 by Wilms [1]

(2) Measurement of the size of the bone images on a radiograph [2–5] This method is little used because it is inaccurate and time consuming

(3) Radiographs of all the joints on one side of the body, counting the ossified centres [6, 7] This is expensive and is unpracticable as a routine procedure

(4) A method, based on (1), in which the equilibrium of bone maturation is determined by recording the individual range in various bones This is known as the red graph method [8] It is complex and does not take into consideration structural changes in epiphyses

Investigations by these methods have yielded one vital piece of information there are sometimes considerable differences between the stage of maturation of different areas of the body Maresh [9] has shown that the long bones do not all grow at the same rates, nor fully mature at the same end-point The cause of these differences is not clear

Today the inspectional technique is most commonly used It is based on the fundamental work of Todd,[10] who published an atlas and standard of reference in 1937 after discussions with Hellman [11] and Flory [12] Todd described the exact image changes in the radiographs of the growing ends of long bones His publication concerned the hand and wrist, but he prepared excellent unpublished descriptions and standards for the elbow, shoulder, hip, knee, and foot In 1950 Greulich and Pyle [13] revised the atlas and added descriptions of the maturing round bones of the carpus This atlas is at present the standard work of reference In addition there is an atlas of standards of Dutch children by Speijer,[14] and a report by Mackay,[15] relating to East African children, which reveals another difficulty—the part played by racial, nutritional, and other influences

Acheson[16] has pointed to the shortcomings of the inspectional technique These are

(*a*) A fixed pattern of first appearance and subsequent development of centres is presupposed The *order* in which certain centres appear is known normally to vary widely, and thus comparison of films with the standards is difficult and a large subjective error inevitable

(*b*) The time interval between the standard films is too long Coarse grouping is an essential of the method, but this introduces further subjective errors

(*c*) Two sets of standard films are needed since the two sexes mature at different rates

(*d*) Acheson points out that bone cannot *decrease* in size during growth, so, he argues, skeletal maturity should not be measured with time as a yardstick, but should have units of its own

Acheson writes "To speak of the mean skeletal maturity status of a group of children aged 2½ years as 'skeletal age 30 months,' is no more reasonable than to speak of their mean weight as being 'ponderal age 30 months'" Both processes are correlated not closely, and he describes a new method maturity in which each round bone and considered regardless of the ossification patte increases of maturity are recorded, the sam are used for both sexes, and finally maturity yardstick of its own, the units being ter maturity units

This method was used in a pilot study of from the Oxford child health survey[17] Acheson et al [18] have applied it to children from birth to 5 years of age Scores bones in the hand and wrist joint for each in shape, maturity indicators described by work mentioned being used The principle is that of the units scored by any bone will indicate of maturity The knee is also used, and suggested on the basis of 1200 serial films (Sick's [19] account of this joint was not detailed) Stuart [20] and his co workers in the wrist unsatisfactory, are analysing hensive data with a view to producing the maturation of the knee, and we under another group in the U S A have just com atlas on this joint

Acheson is careful to emphasise that his computation is experimental At present it whether we can legitimately assume that and epiphyseal development proceed at a Again, different bone areas of the body may different rates, so should "maturity ind one area be added to those for another in a truer picture of the total maturity?

As Krogman [21] has said, a 100% level of maturity is inevitable in the healthy human, ingly Acheson suggests that when the whole of the growing human is investigated it would to express skeletal maturity as a percentage workers hold that final adult height can be assessing skeletal maturity during growth [22]) work shows the need for considering skeletal in terms other than time, and it clearly points out of the present unsatisfactory situation

NO SOVEREIGN REMEDY

IT can be harder work to ameliorate symptoms prescribe a complete and perfect remedy families, according to the fourth Southampton on the subject, have no single cause, and single remedy for them, nevertheless, the the survey—Mr E T Ashton, Mr C J Th Prof P Ford (all of the department of econom University of Southampton)—do not suggest amelioration of symptoms need be given up. asked by Dr H C Maurice Williams, medical health for Southampton, to study the problem "in the administrator's sense"—in the sense, th problems requiring solution they present from

The survey team have analysed all the case up to, and accepted by, the Southampton social tation committee as problem families between 1952, and Dec 31, 1953 There were 104 such but, as is pointed out, behind this "accepted is a much larger group of marginal cases difficulties of these families can be traced to the initial endowment, and emotional and history, of family members, and to the emot tions between them and "such intricate person cannot easily be expressed in averages, and slip through a fine statistical mesh ' Never ae analysis provides much information useful istrators

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[3] Baldwin, B T *Univ Ia Stud Child Welf* 1928 4, 1
[4] Sawtell R O *Amer J Dis Child* 1929, 37 61
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[6] Sontag L W, Lipford, J *J Pediat* 1943, 23 391
[7] Lurie, L, Levy, S, Lurie, M L *Ibid*, p 131
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[20] Stuart, H C Personal communication
[21] Krogman, W M *Child Develpm* 1950, 21, 25
[22] See *Lancet*, 1952, ii, 328
[23] Problem Families Oxford Blackwell Pp 51

vere 32 broken families with either a male or a ad only In the 72 natural families (consisting oman, and children) the parents were legally married s, and living together in more or less stable union s. The 104 families had a total of 470 children ard of them being illegitimate In 32 of the families iore of the members was mentally subnormal nilies (a fifth of the total) contributed 27 subnormal l 8 subnormal children In 4 families both parents ormal but the children were not In addition, l n each of 11 families had been treated for mental here were 102 reports of either neglect or cruelty 50 reports of neglect 35 cases of children sent and 17 cases of cruelty Of the 104 families 12 d 17 cases of juvenile delinquency (as compared ases for the population of Southampton as a whole) delinquents came from families in which one or nts had a police record Many of the families were difficulties—whether from actual poverty or from ement of income—and 74 received financial assist ome kind 60 of them in the form of emergency ts. Grants in kind—bedding clothing coal food vouchers, and the like—were given in 37 cases

eparate departments or statutory or voluntary could be called in to help these families The ted officer" responsible for securing full on between all such agencies varies in different the country in about half the local authority e children s officer is the designated officer the clerk of the council or the chief education In Southampton and several other areas the d officer is the medical officer of health The of the survey thought this a good choice, not use the M O H knows all the relevant bodies, n touch with adults as well as children but e is concerned with the conditions of the home besides great local influence. In Southampton, n visitors report changes and new needs to the abilitation committee and do much of the eded to set problem families on their feet— skilfully to the love most parents bear their advising on diet health and safety measures young mothers to feed and wean their babies, uading mothers to attend the child welfare d attend it regularly The survey team suggest s health visitors should be trained to work not the welfare but with the child guidance clinic mend the practice, followed in Southampton of problem families to graduate to decent homes s directly and sometimes by way of half way dation It has been possible to send some to training centres in mothercraft, such as the d Home in Cheshire the Mayflower Home uth, or Spofforth Hall in Yorkshire[11] Many others are in such poor health as a result of ildbearing that voluntary sterilisation it is might help some of them The children s nt the survey team thought cannot make rect contribution to *family* rehabilitation can do much for the children when the family en down It would be interesting to know his is the experience of most children s depart whether it is more usual for them to be l with the family as a whole

ain need of problem families is for someone hem run the home, plan meals arrange the and other household chores, and to organise rderly budgeting The parents of a problem fact, often seem to need good parents of their l in some cases the place of these can be supplied Service Units Where the parents are difficult npathic, however case work might be more iked the team suggest with mental or child guidance clinics. When all else fails, the children at least can be given the chance of a more normal home life in foster homes. Since there is no sovereign remedy methods must be varied and flexible. Where obstacles are great success is the more rewarding

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See *Lancet* 19 ° 1 1151 *Ibid* 1953 ii 460

A CORONER'S CRITICISM

A MAN with multiple injuries was taken to a small hospital The hospital was in the charge of a recently qualified house surgeon because the resident surgical officer was away for the weekend The house surgeon arranged for transfer of the case to a hospital with more senior resident staff and nearer consultants The patient died soon after arrival at the larger hospital At the inquest the coroner is reported[1,2] to have criticised the system whereby an inexperienced doctor is required to make such important decisions and he hoped for a return to conditions before the National Health Service when there was always someone of experience at a hospital to give emergency treatment.'

For some years past it has been apparent that the Law does not regard a recognised medical qualification as sufficient evidence of competence to carry out routine hospital duties This may always have been so in Law, but in practice it is only since the National Health Service began that it has been emphasised with any frequency It has already been held[3] that a recently qualified doctor is not necessarily responsible enough to administer certain anæsthetics and it would seem from other legal findings[4] as well as from the coroner s remarks, that a recently qualified doctor may not necessarily be sufficiently responsible to decide the disposal of cases which come to his hospital Hospitals are well aware of this, and are tending to appoint residents of greater seniority and experience to their receiving rooms and casualty departments The Health Service can hardly be blamed because as yet, there are not enough suitable men ready to fill all the jobs It may be that before the National Health Service every hospital had someone of sufficient experience available for the house-surgeon himself was usually so regarded. Many will recall the respect in which the house surgeon was held by the community in those days.

The alternative interpretation of the coroner s remarks in this case is that the establishment before 1948 actually provided better emergency cover in hospitals than it does at present, and if this is what he meant his remarks seem open to question We find it difficult to believe there is less—or less experienced—skill available in hospitals since the coming of the Health Service The present shortage of residents has several causes, but one of the most important is the considerable increase in staff establishments since the reorganisation of the hospitals and in particular since an attempt has been made to increase the efficiency of peripheral hospitals such as that to which the coroner referred We understand that the number and type of residents at the hospital concerned is virtually the same as it was in 1947, and that there is authority for one more when he becomes available. There are more consultants on the staff than there were eight years ago The misfortune which led to the inquest seems to spring from the fact that on the day in question one of the hospital s most important residents was on holiday This could have happened before 1948 as easily as today We have lately suggested[5] that arrangements for the reception and disposal of casualties in hospitals could be improved but we believe progress is being made The coroner s remarks imply that we are going backwards but we can see no justification for this stricture

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1 *Times* Aug 3 1955
2 *Manchester Guardian* Aug 3 1955
3 *All England Law Reports* (1952) (2) 125
4 *Brit med J* 1952 i 106
5 *Lancet* July 30 1955, p 233

Special Articles

ADMINISTRATIVE AND SOCIAL PSYCHIATRY

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> ' *Psychotherapy is a technique now widely practised and studied and one held in high prestige In contrast, administrative psychiatry, the influencing of 'the other twenty three hours' of treatment, is more widely practised but is little studied and is of relatively low prestige* '

Stanton and Schwartz's book *The Mental Hospital*,[14] from which these words are taken, highlights a trend that may have a profound effect on psychiatric thinking We are becoming more and more aware of the patient's social context as contributing emotional factors important in the development, treatment, and rehabilitation of mental disorders It is increasingly apparent that we must study the social organisation of psychiatric hospitals with a view to improving communications and integrating administration and therapy into a total treatment programme

In recent years the support of foundations and governments has made possible for the first time sustained collaboration between members of the theoretically oriented disciplines and those of the more practical kind As a result, research has been developing along many new lines Historical documents have been examined for trends in the incidence of psychiatric disorders, hospitals have been analysed as institutions whose social functions affect treatment, and empirical studies based on epidemiological designs have been set up in field laboratories The paired names of psychiatrists and social scientists have become common in the professional journals of both fields (e g, Hollingshead and Redlich of Yale,[4] Ruesch and Bateson of the Langley Porter Clinic [12])

Social scientists have collaborated with psychiatrists in studying staff-patient relationships in various hospital settings, and we are beginning to understand the informal processes of hospital life and their relevance to the treatment programme

Caudill,[1] a social anthropologist, was admitted as a patient to a private mental hospital in New England and studied the ward life from the point of view of the patients, while a psychiatric collaborator recorded the flow of events from the official viewpoint of the staff He notes that " while the staff exercised control over the patients, they did not give recognition to the patient world as a social group, but rather, they interpreted the behaviour of the patients almost solely in individual dynamic-historical terms The patient group, thus lacking an adequate channel of communication to the staff, protected itself by turning inward, and by developing a social structure which was insulated as much as possible from friction with the hospital routine Nevertheless, such friction did occur, and the subsequent frustration led to behaviour on the part of patients which, although it resembled neurotic behaviour arising from personal emotional conflicts, was, in fact, to a considerable extent due to factors in the immediate situation "

Informal social processes in psychiatric hospitals are more important to therapy than has usually been assumed

New Benefits and New Problems

Some psychiatric groups, which aim at harnessing these processes in the interests of treatment regard the " freeing of communication," almost as a pr this freedom raises fresh problems of its own c nications are free—problems of understandin ings of various types and levels of commun lems of handling and applying the knowled problems of reaching consensus about the go the knowledge is to be applied, and so on O hand there are clearly many areas in which th of free communications is antitherapeutic and demoralising for staff Stanton and S their long-term study of the life of a men ward, have fully demonstrated the impor social organisation

The ward which they studied was at Che a private psycho analytic hospital associated Washington School of Psychiatry It treats (mostly schizophrenics) with a staff of 4 (psycho analysis) 5 administrative doctors, nurses, 50 nursing aids, and 10 student nurs no hospital in this country could afford such staff even if it were considered desirable, and are not directly applicable to the practice they offer principles from which many ho derived

Administrative and Treatment Staff

At Chestnut Lodge different doctors are r the routine ward life and of the treatment of th This unusual situation gives a unique opp assess the therapeutic effect of each kind o on the patient

The explicit functions of the administrat enough, but too little attention has been implicit functions In mental hospitals bot and America the physician superintendent administrative duties which take up most o his time and energies, and he has little o clinical contact with the patients The ex he is in contact with his staff varies enormous to the personalities of the superintendent and the size of the hospital, and the established Moreover, on appointment as superinten switched suddenly from a therapeutic to a trative rôle, and, compared with his long psychiatric training for his former respons doctor has practically no training for The transition might be likened to an app Ministerial rank in the absence of any pe Service to guide and support the new Minister out his duties It is hardly surprising that adm difficulties should sometimes give rise to dis among the staff, who then inevitably act o their conflicts on the patients Faced with which seems insoluble, the inexperienced administrator may resort to defensive att may, for example, become more authoritarian temporarily relieve his feelings of insecurity expense of increased staff tensions The further lowering of staff morale and imp effective treatment

Stanton and Schwartz describe how pathological excitement occurred in schizophr at times when there were rivalries, disagree misunderstandings among the staff member were presumably communicated in a non- unconscious way) Even more important evidence that many hours spent in unravell tensions coincided with clinical improvem patients At Chestnut Lodge, where diff were responsible for administration and th unravelling of tensions depended on their m and capacity for working through difference tions, cleavages of policy, and failure of co Where such interest and/or capacity are lack with enough skill and authority to compel att

to work these difficulties through If he is to
nalysis and integration on non authoritarian
he *must be outside the immediate authority*
—perhaps an administrative officer or medical
dent trained in psychotherapy or an action
ocial scientist

st and Nurses

stnut Lodge despite a generous staff patient
of high calibre a great tradition for treatment,
nly organised system of seminars there were 2
episodes and 1 suicide among the trained
d 7 psychotic episodes and 2 suicides among
g aides, during a two year study

and Schwartz made a careful job analysis of
g roles in their hospital Like other studies
that the aides who had the lowest status in
restige salary and authority were the people
timate contact with the patient Much of the
n about the patients which they could have
ated to the doctors was not fed back because
l organisation made no provision for this
ties for collaboration between the doctors and
nurses were better This scale of diminishing
ation between nurse and doctor according to
s official status is found almost everywhere but
ation is increasingly questioned This tradition
any in our mental hospital system seems to
loped less through the treatment needs of the
an for the convenience of the staff

Patients

share the patient took in his own treatment
Lodge falls short of the most advanced trends
try Most of the patients are severe schizo
but this fact should not in itself limit their
ion as much as it seems to at Chestnut Lodge
Psychopathic Hospital even severely disordered
hare in administrative decisions as well as in
about their own amusement

perience at Boston[8] Belmont[7,8] and other
where patient-staff communication has been
reased shows that a complex of processes
ull of difficulties pain and anxiety excitement
knowledge When patients have been allowed
s their feelings about the treatment situation
relationships within it several kinds of things
acteristically happened

knowledge perhaps of a more accurate kind
made accessible to the staff about the problems
the ward life Thus if a noisy or aggressive
creating problems within the hospital, it is
ients who must live with him who know the
his behaviour most accurately their ability
e and develop relationships with him is an
criterion of whether he ought to be transferred
or not Moreover the patients have more
of the causes of ward tensions, and with their
re accurate diagnosis of the situation can be
In the more conventional system it might
ly happen that the wrong patient is sent to
rbed ward in an attempt to alleviate ward

ients who do participate not only achieve
relief, and often show clinical improvement
ble to participate in the treatment of other
The intimate relationships among patients
ve to open up difficult cases to psycho-
As patients come to share more in adminis
cisions and in the therapy of their fellows, as
planning their entertainments, they identify
ward and hospital to a great degree This
ion if developed in a programme that is
o rehabilitation rather than hospitalisation is
affecting treatment. In such a situation the
tions of psychotherapists and other staff may
readily accepted

(iii) Staff need to tolerate a higher level of anxiety and to treat their own problems through frequent and skilfully handled staff meetings The freeing of patient communications not only faces the staff with heightened forms of unsolved and unsolvable problems, but also inevitably directs toward them a large amount of hostility If they are deprived of their institutional defences, and the patients are allowed to question and scrutinise traditional prerogatives in terms of their relevance for therapy stresses often develop which might become unbearable unless adequate facilities for staff treatment exist

The freeing of communications often creates problems that are for the time being unmanageable and distressing On balance, however it seems desirable because whether they are recognised or not these problems do exist and must be faced sooner or later if the type of treatment outlined in this paper is to be carried out

With the exception of specialised organisations, such as the Veterans Administration Hospitals the rehabilitative aspect of treatment is not so well developed in America as in Britain Again the emphasis laid in America on the exclusive efficacy of the treatment hour hinders the practice which is spreading in this country of enlisting the help of the patient s family In centres where illness is seen to be a characteristic of relationships as well as a property of individuals patients relatives are being increasingly brought into the treatment situation Discussion groups of patients and relatives and at Belmont even the admission of relatives to the hospital for treatment along with the patient have grown in importance

A Fresh Approach

How can the psychiatric hospital be reorganised so that its therapeutic potential, implicit as well as explicit is used most effectively? Some administrative tasks have little relevance for therapy but others have a much larger relevance than has been supposed Administrative psychiatry in this country could come into play at two levels (*a*) that of the physician superintendent who is mainly concerned with over all hospital administration and the relation between the hospital as a whole and the external world and (*b*) that of therapeutic sub systems, such as wards firms and special units ordinarily under the direction of a consultant psychiatrist

Whether it is the physician superintendent or the consultant or some more detached person who is to be concerned with the administrative aspects of treatment he must be able to relate freely to both patients and staff To this end the general principle of semi autonomous treatment teams within the larger hospitals has been strongly recommended by the World Health Organisation expert committee on mental health[10] Such teams, enhancing face to face relationships are already common in some hospitals and where successful they achieve freer communication and integrated team work In our mental hospitals the ward psychiatrist usually performs both therapeutic and administrative tasks What is necessary to improve treatment once the relevance of administrative factors is recognised is the freedom for clinical teams to carry out programmes appropriate to their own ward or unit situations. Under the National Health Service consultants have full responsibility for the treatment of their patients It would seem desirable that wherever practicable they should develop a social organisation within their wards which allows the freest possible communication within the staff and between staff and patients Such a growth will depend partly on the relation between the ward and the larger hospital and partly on the treatment ideology of the ward itself The external relation of the ward could be coördinated by the physician superintendent if he were sufficiently aware of the therapeutic implications of his administration

Within the treatment wards or units the problems are different The careful selection of staff is, of course, a prerequisite for good treatment, but it is not enough Staff meetings and tutorials are necessary for the discussion of emotional involvements of staff in the work as well as for the communication of information relevant to treatment The reluctance of many doctors to give up their prerogatives of unquestionable authority has hampered these collaborative procedures The sharing of perplexities, anxieties and so on with the lower echelons of the staff has many mutual benefits It frees the flow of useful communications to the psychiatrists, and increases the clinical teams' effectiveness. *The Lancet*,[9] referring to the difficulty of recruiting and retaining mental nurses in even our most famous teaching hospitals, recently quoted the report of the Maudsley and Bethlem Royal Hospitals on the function and training of mental nurses which suggests that every student nurse might with advantage be attached to a psychiatric firm This would, it is hoped, allow her a greater share in treatment and improve communications between nurses and doctors Experience suggests that good rather than harm results from this collective approach which lessens the gulf between doctors and nurses in most of our psychiatric hospitals The nurse, whether experienced or not, is helped to find a treatment rôle and feels that she has a special contribution to make through her greater contact with the patient This is why she came to nursing and it is difficult to see why she should not play a useful part from the day she arrives on the ward, if interest and guidance is available through frequent staff seminars For many of the problems of nursing recruitment we have only ourselves to blame

The changes needed to reform the mental hospital system can succeed only with the support and good will of senior administrative personnel Physician superintendents, matrons, and others cannot give up their privileged defences unless they feel secure enough to expose themselves to the disruptive consequences of a permissive system The delegation of authority to semi autonomous treatment units will raise new problems of intra hospital administration, and these, like the others, can only be worked through by critical self appraisal, and freedom of communications from those most concerned—the patients and treatment staff

We are indebted to Dr Louis Minski, physician superintendent at Belmont Hospital, and to Miss P Arnold, Matron, for their coöperation in the development of social psychiatric practice and research at the social rehabilitation unit

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JOINT CONSULTANTS COMM

A MEETING of the Joint Consultants Com held in London on July 27 under the ch Sir Russell Brain

The committee received from a subcomm on exploratory discussions which had tak the Ministry of Health a few days earlier of hospital medical staffing At the begin discussions the Ministry had made the plans for reorganising the medical staff should not be used as a means of securing sal which were a matter for Whitley negotia members of the subcommittee had rep adequate recruitment of hospital medical of the fundamental problems, the ques ranges was entirely relevant and could not Apart from this disappointing beginning th had been useful and constructive

One of the major points made by the had been that the rigid training ladder ab ished, and appointments made according to the hospital To secure adequate training the ence in suitable appointments would be the of the aspirant to consultant status There limitation of the number or variety of po hold, and he would not lose his prospect solely by the operation of a time factor would be renewable in competition, or in the higher posts) of indefinite tenure, and parable with the present senior registrar po temporarily upgraded as necessary to retain of promising men, pending opportunities of to consultant vacancies

The Ministry had been critical of the there should be a comprehensive central establishments The previous reviews had entirely satisfactory, and the Ministry tho changing needs should be kept under conti locally and only special problems referred centrally The subcommittee had agree initiative should be taken at the hospital thought that past experience pointed to the over all planning

Among other matters which had been dis Ministry were the machinery for making and the means of attracting practitioners ba pital appointments after completion of Nat

The Ministry had undertaken to put its hospital medical staffing into writing as a further discussions

The committee also received a report of a the chairmen of the Regional Hospital Boards and Wales, at which the main subject dis been the development of suitable medical machinery at the regional board level. expressed on behalf of the Joint Comm meeting were published in these columns on

It was reported that, after discussions be sentatives of the Joint Committee and the the retiring age and superannuation benefits health officers, the 'Staff and Management Committee B of the Medical Whitley Council to delete from the terms and conditions of provision requiring hospital medical staff mental-health officers to retire at the age of of this is that mental health officers will special superannuation benefits but may con hospital service until 65 if they so desire

A request was considered for the views of mittee on the practice adopted by a num teaching hospitals of offering facilities for students to obtain additional experience holiday periods While reaffirming the opinion expressed to the Ministry that the employment ficers should in no circumstances be allowed ttee considered that the granting of facilities s to gain additional experience *as students* encouraged in every way Some hospital were tending to discourage this practice the fear of litigation but legal advice which the had obtained made it clear that the liability eaching hospital in respect of such students no way from that of a teaching hospital ons were received from the dermatologists ologists groups of the British Medical Associa urged that combined appointments in the ties should be opposed These resolutions had sed by the Central Consultants and Specialists and the Joint Committee agreed that n some areas there might be difficulty in tisfactory arrangements for the staffing of liseases departments the solution of the id not lie in the combination of venereology itology It was decided that the matter should d with the Ministry

natters discussed included the proposals for egistration of medical auxiliaries the operation oral obligation clause in paragraph 16 of the rvice, and the expansion of the senior registrar ent in anæsthetics and certain other specialties

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Conferences and Congresses

CAL ENDOCRINOLOGY IN U S A

h annual meeting of the Endocrine Society ed States was held at Atlantic City on June 2–4, presidency of Dr Allan T Kenyon The re strictly limited to ten minutes each and nded not only rapid reading but also high in the audience 24 papers being read on the one The mental receiving-sets in the audience tigue by practising selectivity and there was ing and going in the large auditorium

owing is an abstract of some of the papers inical importance

The Thyroid

lary Relations in Cretinism and Hypothyroidism

(George S A D'Angelo and K. E Paschkis ia) had demonstrated by tadpole bio-assay that, thyroid-stimulating hormone (T.S.H) levels were raised in hypothyroidism in some cases they were n absent Therefore a reduced or negative T.S.H. t be taken to indicate a pituitary origin for the dism. In some cases T.S H returned after thyroid l been started which suggested that the synthesis of T.S H may sometimes require the presence of rmone In the discussion Dr Paschkis observed ctions of the pituitary may not be equally affected n output of T.S.H. may occur in hypothyroidism.

c Implications of the Avidity of Solitary Thyroid r ¹³¹I

mutter and S L Slater (New York) had com ptake of ¹³¹I in non toxic nodules with the uptake odular area of thyroid tissue in the same patient was described as hot if the uptake was higher f the surrounding tissue and cold if the uptake al with the thyroid uptake The 22 malignant is assessed were cold Of the 97 non toxic were " cold and 32 hot

scussion Dr E B Astwood observed that it was nodules—those not avid for iodine—which nest to thyroid therapy

ation of thyroid hormone significantly decreases uptake of ¹³¹I in 95% of euthyroid subjects and in thyrotoxic patients.[1] Dr Perlmutter and Dr Slater ve applied this test to thyroid nodules. All the nodules and half the hot non toxic nodules showed no depression of ¹³¹I uptake after thyroid hormone While definite depression of the uptake curve indicates euthyroidism in nodular goitre an unvarying uptake does not indicate hyperthyroidism.

Deiodination of Thyroxine to Triiodothyronine by Kidney Slices of Rats with Varying Thyroid Function

F C Larson K. Tomita, and E C Albright (Madison) concluded from their researches with kidney slices in rats that there is a deiodinating system in the tissues which converts thyroxine to triiodothyronine; and they postulated that this enzyme system is adaptive, since deiodination is enhanced by increasing the amount of thyroxine present in the tissue

Metabolism of Triiodothyronine and Thyroxine in Plasma Pituitary and Central Nervous System of the Rabbit

J Gross D H Ford and M. Posner (New York) had shown by injecting rabbits with ¹³¹I labelled triiodothyronine and killing them at various intervals after injection, that the plasma activity fell rapidly and at four hours was predominantly in the form of iodide There was on the other hand, a rapid entry of radioactivity into the pituitary and the diencephalon. The concentration of ¹³¹I was highest in the posterior pituitary and lower in the anterior lobe which respectively attained over 20 and 7 times the plasma ¹³¹I concentration at four hours. Most of the concentrated radio-iodine was identifiable as triiodothyronine Dr Gross emphasised that these results did not necessarily apply to other animals in the same degree When labelled thyroxine was similarly injected the concentration of radio iodine was demonstrable only in the posterior pituitary

A Study of Endemic Goitre

M Roche F De Venanzi J Vera, E Coll, and M. S Berti (Merida) reported a survey in a goitrous region in the Venezuelan Andes. Palpable thyroids were found in 84 5% of 718 adults examined and in 83 0% of 641 school-children. In 44 2% of the adults and 31 4% of the children the goitres were visible as well as palpable Radio-iodine tests showed that the glands were avid for iodine the forty-eight hour radio iodine uptake in 100 adults averaged 74% and in 28 children 70% No statistical difference in the iodine uptake curves could be demonstrated between those adults with a goitre and those without Potassium perchlorate in doses of 300 mg two hours after administration of ¹³¹I decreased the radioactivity in the thyroid of 11 out of 13 goitrous subjects tested—a result which suggested that part of the thyroid iodine in endemic goitre is in the unbound state [2]

The Pituitary

Analysis of the Polyuria Produced by Hypophysectomy in Man

M B. Lipsett J P MacLean M C Li C D West B S Ray, and O H. Pearson (New York) reported that polyuria occurred in 67% of cases in which a complete hypophysectomy had been performed but it was not seen when the pituitary stalk remained intact They did not report the succeeding oliguric interphase described by Ikkos Luft and Olivecrona [3] nor did they observe that the subsequent polyuria depended on the presence of cortisone

Effect of Partial Hypophysectomy on Adrenocortical Thyroid and Gonadal Function in the Dog

W F Ganong and D M. Hume (Boston) confirmed the clinical observation that in lesions destructive of the pituitary gonadal function was depressed first then thyroidal and finally adrenocortical. They removed varying amounts of pituitary tissue in 31 dogs More than four fifths of the pituitary was removed before any abnormality could be demonstrated in the target glands. For complete suppression of adrenocortical activity it was necessary to remove the whole pituitary and minute fragments remaining were capable of supporting significant compensatory hypertrophy in the adrenal cortex.

Reproduction and Sex Hormones

Congenital Gonadal Dysgenesis Ovarian Agenesis Male Pseudohermaphroditism the Relationship to Theories of Human Sex Differentiation

M M. Grumbach J J Van Wyk and L Wilkins (Baltimore) had investigated 17 patients with ovarian agenesis by skin biopsy to determine the sex chromatin pattern, and found it to be male in 15 For these cases the name of congenital gonadal dysgenesis was suggested The hypothesis of Wiesner [4] and Jost [5] that there is an inherent tendency of the fœtus to feminise, which in males is counteracted by the embryonic testes was accepted The syndrome of ovarian agenesis was therefore due to gonadal dysgenesis and the authors suggested that this more exact name should be adopted The two remaining patients were transitional cases between gonadal dysgenesis and male pseudohermaphroditism

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[1] e basis of S. C. Werner s test for thyrotoxicosis (*Bull ead Med* 1955 31 137)

[2] These results are similar to those reported by J B Stanbury (*J clin Endocrin.* 1953, 13 1370) in a goitre survey in western Argentina

[3] *J clin Endocrin.* 1955 15 553

Urinary Excretion of Interstitial-cell-stimulating Hormone (I C S H) by Women with Normal and Abnormal Menstrual Function

J W **McArthur**, F M **Ingersoll**, and J **Worcester** (Boston) had assayed the urine of women for the presence of interstitial-cell-stimulating hormone by measuring the weight of the ventral prostate of the hypophysectomised male rat Two peaks of output were described the first just after the mid cycle and the second in the late luteal phase These peaks were remarkably constant in the same individual and abnormal patterns had been demonstrated in various gynæcological disorders Dr **McArthur** insisted, in reply to Dr **Segaloff**, that these peaks were not identical in time with those produced by prolactin

Eunuchoidism with Negative Follicle-stimulating Hormone in the Female

M P **Moldawer**, F **Albright**, P H **Benedict**, A P **Forbes** and P H **Henneman** (Boston) had discovered four female patients with eunuchoidism in whom there was no follicle-stimulating hormone (F S H) output They assumed a selective pituitary F S H deficiency comparable to that which occurs in males, but whereas the males responded to chorionic gonadotrophin, ovarian function in the female patients with eunuchoidism showed no such response

The New Steroids

19-Nortestosterone

Two papers were read on the effects of 19-nortestosterone

D E **Holtkamp**, A E **Heming**, and L F **Mansor** (Philadelphia) had compared its activity, both metabolic and androgenic, in castrated male rats By subcutaneous injection anabolic stimulation was identical but the androgenic effect of testosterone was five times greater than that of 19-nortestosterone By oral administration a satisfactory anabolic effect was attained with a still weaker androgenic effect

W H **Baker**, P H **Henneman**, B **Baggett**, L L **Engel**, D **Tibbetts**, and S B and M **Brown** (Boston) showed, by nitrogen, calcium, and phosphorus balances, that 19-nortestosterone was anabolic in a patient with breast cancer metastatic to bone However, androgenic effect also was observed, as shown by an increase in facial hair, flushing, and acne

In the subsequent discussion it was agreed that 19-nortestosterone was a potent anabolic agent and had less androgenic effect than any compound yet synthesised

Metacortandracin ('Meticorten') and Metacortandralone ('Meticortelone')

H S **Kupperman**, M G H **Blatt**, and H **Wiesbader** (New York) had assessed the effectiveness of meticorten in the adrenogenital syndrome, in comparison with cortisone and hydrocortisone, by the degree of depression of ketosteroid excretion at different dose levels They concluded that meticorten was twice as active as hydrocortisone which itself is 30% more active than cortisone

M M **Pechet** and F C **Bartter** (Bethesda) concluded from metabolic studies with these steroids in addisonian patients that both meticorten and meticortelone produced less sodium retention and less nitrogen loss than did cortisone and hydrocortisone in comparable therapeutic dosage

9-Alpha-fluorohydrocortisone

A. **Goldfien** and others had assessed the potency of this steroid in suppressing adrenocortical activity in various conditions In the normal only 1–2 mg daily was required, in women with mild virilism 2 mg daily, two women with the adrenogenital syndrome required 5 and 25 mg daily, while four patients with Cushing's synd significant decrease with 5, 6, 10, and 25 mg da

In the subsequent discussion it was gener 9-alpha-fluorohydrocortisone was the most pot of adrenocortical activity yet discovered, **Wilkins**, using it in doses of 1 mg daily hyperplasia had found that its action was prolonged and that 17-ketosteroids began to had found that 3 mg a day produced œdema with the adrenogenital syndrome

Aldosterone

G L **Farrell**, E W **Rauschkolb**, and (Cleveland) had found that after hypophys the rate of aldosterone secretion remains normal, which showed that the secretion of regulated by a physiological mechanism interrupted by removal of the pituitary

G W **Thorn** and his group (Boston) had aldosterone to normal and addisonian patients 1 mg daily Considerable sodium retention addisonian patient treated for seven days in weight and developed ankle œdema skin pigmentation occurred No decrease in secretion resulted in a normal subject and suppression of corticotrophin activity had occ

Diagnosis and Therapy

Addison's Disease with Normal Basal 17-Hydroxycorticoids

G W **Thorn** and his colleagues (Boston) desc of patients who enjoyed a state of well-being conditions but who showed adrenocortical stress These patients excreted normal qu hydroxycorticoids in the urine, but showed signs and symptoms of classical Addison's d increased pigmentation The diagnosis can administering intravenous corticotrophin for days, when these patients failed to excrete m of urinary corticoids

This method resolves the ancient controversy partial adrenocortical insufficiency exists, useful diagnostic tool The results were conf who joined in the discussion

Metabolic and Endocrinologic Consequences Cessation of Long-term Cortisone Therapy Arthritis

E **Calkins**, W **Bauer**, L L **Engel**, and (Boston) had studied electrolyte and nitrogen the effect of abrupt withdrawal of cortisone three years' therapy They concluded that trophin began to be effectively secreted on after withdrawal

The Prophylactic Use of Cortisone for Pituitary

P **Thorn** and E H. **Rynearson** (Rochester pituitary operations done at the Mayo Clinic years There were 127 adenomas, 25 craniophar 11 miscellaneous lesions 94 of the patients had insufficiency before operation 37 had mild and 22 had severe insufficiency 93 patients sone before operation. In patients with a cons of hypopituitarism this preoperative administ sone significantly decreased the incidence of endocrine complications

The Effect of Œstrogen and Androgen Metabolism During Cortisone Administration

P H **Henneman**, J W **Irwin**, D M K **W Burrage** (Boston), by estimating the calcium excretion, had studied the calcium 28 patients with chronic intractable asthma prolonged cortisone therapy A majority of had hypercalcuria Large doses of œstrogen or testosterone (300 mg daily) in the male calcium excretion to normal levels.

It was stated in the discussion that 200-300 daily for four years was required for the de clinical osteoporosis, and that testosterone in daily was effective in prophylaxis

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[illegible] Obstet Gynæc, Brit Emp 1943 41, 867

[illegible] Anat micr Morph exp 1947, 36, 271

In England Now

Commentary by Peripatetic Correspondents

(*Discovery* August, 1955) that much more about heavy water reactors is now available rst Commonwealth reactor was completed at r as long ago as 1945 With Dimple (Deu lerated Pile Low Energy) Harwell acquired vy water reactor last year Dido late E 443 mpe there—it looks like a gasometer—and a to, is at the planning stage Bepo of course two graphite-moderated research reactors at an old friend.

Dido Dimple and Zeep
Ve re all permitted to peep
l now that the Iron Curtain s down
lecurity officers scarcely frown
the Russians come flying into Town
o see Dido Dimple and Zeep

to is still but a pimple
And Bepo s not so simple
t if heavy water is your skink
lo to the Har Well s bosky brink
d gingerly geigerly take a drink
rom Dido Zeep or Dimple

neas made Dido weep
He was often a bit of a sweep
left her flat and he sailed the sea,
laying Plutonium s more to me
cross the Styx And I ll have all three—
Dido Dimple and Zeep

lly the subject of an Urbino majolica plate aich has long baffled me is now obvious At f three naked ladies, standing with arms id suffering from advanced pseudohypertrophic lystrophy there gush forth three springs of arly very heavy water On either side Sir roft and Sir Christopher Hinton, white-haired the nude sit looking at this opening ceremony atherly air Sir John is pointing an admonitory me error of technique

* * *

er Sunday afternoon the heat tempted me arden with a deck-chair and a paper back t random from the Penguin shelf I arranged behind my head and waited for industrious sounds from neighbouring Edens to lull me long came the serpent, disguised as four-year-

Would you like a *poum* Daddy? Yes, only to learn what a poum might be James to the end of the garden and came back with nedible windfall from our neighbour s apple ny do you call it a poum James? James s ous glance implied that in his herbarium a oum is a poum My paper-back I found was n or Chandler but R A Wilson s *The Miracle of Language*; but there was nothing in the it apples or poums, so I abandoned the idea l Sunday afternoon and went indoors with a tions fermenting in my mind

pome (F *pomme*) L *pomum*] Who brought sturbing book into the home? who pinched l *Golden Bough*? what did our ancestors call Robert Graves s *The White Goddess* is not a lot of ms that the Tree produced five different sorts of of them pomes, according to the day of the week

at evening the author of all the trouble solved riddle by bellowing from upstairs I wanta I hurried to satisfy his demand and to probe information Is that a poum James? I mentarily the sneer of cold command flickered ice then he nodded tolerantly towards the that shared his pillow Teddy always calls as, he explained but that s a brambly teeth in my offering from the fruit bowl I wooed sleep with pen and notebook:

om)—unripe apple Peripatetic A *The Teddy in Western Europe and the New World* (London (See Roosevelt T—U.S President) Why is there always a James involved in these language problems? J Peripatetic J G Frazer J Joyce William and Henry J Wasn t there a King James of Scotland (IV?) who had a theory on the spontaneous development of language? Did the Sanskrits or the Ugrians have a word for poum? Look up A of Discord Hesperides, golden A of Look up also ancient terms for poppy capsule

* * *

Main electricity has recently come down our lane The brilliant illumination did not entirely dazzle us we remembered stories of cuts to which we had listened with lofty cynicism when we were dependent on an old Lister engine We bought a second hand Aladdin lamp but before anyone visited the county town eight miles away to get a mantle—your servant, the writer who passes through it almost every day is considered incapable—we were plunged in darkness by a thunderstorm

There was some confusion we found an inadequate torch we fell over things especially over Storm the Siamese cat the dog which was suspected of having eaten rat poison appeared to be dying the lightning and thunder were magnificent.

When the rain abated we groped our way to the village and begged candles from an old inhabitant who has been on the main for many years and who therefore keeps a store On our return the light suddenly blazed and the dog seemed perfectly well

Our home-made light, always weak and often wilting never actually went out, but now we feel almost urban and have made suitable preparations.

* * *

I have long maintained that the gastric insults undergone by British stomachs—or rather by stomachs in Britain—are due to our dislike of making ourselves conspicuous, rather than to a lack of the interest in food and cooking shown for example by the French. After all since the war we never seem to stop talking about food and the standard in many private houses is high But confronted with nauseous coffee, myxomatous Welsh rarebit, or a lipsticky cup we mutter to our wives out of the corner of our mouths I don t think we ll come here again dear and leave it at that The Frenchman talks loudly and insistently He may even wave his arms about stand up and under extreme provocation throw a plate or two That gets action—of *one kind or another*

The same goes for the hygienic insults to which we submit so tamely We face anything from death to a mild touch of the Merrygowhimbles as a result of these unhygienic practices and 140 of us perhaps go down with food poisoning daily I was acutely embarrassed by the pungent comments of an American colleague on the food handling at a West End milk bar but I am sure they did good So roll up chaps and join the Society of Complainers—medical and legal expenses paid and the chance of an extra course such as I extracted from British Railways the other day They say that a copy of *Le Club des Sans-Club* under your arm works wonders in a French restaurant but when you come in with the badge of Querulous Types Inc. in your button hole, waiters and cats will turn pale and chefs will mutter out of the corners of *their* mouths Easy on the Chinese dried eggs Demetrios. Of course if you re a moral coward like me you may prefer to do most of it by correspondence but it s not so effective

* * *

Janis lay on the couch in outpatients. Just three weeks old this was her first attendance treatment for her club foot had started in the maternity ward In her mouth lay a nice fat dummy Who suggested that? I asked Dr S said Janis s mother I rashly told her that our four had all done very nicely, and had never seen a dummy But she had the last word. Dr S has five and they all sucked a dummy

* * *

The age of six seems to be gifted with peculiar penetration After a particularly busy day of much documentation, I mentioned to my twins of that age that I had signed my name hundreds of times on pieces of paper A few days later my reputation was finally blasted by their answer to the inquiry of a new acquaintance Oh Daddy s a doctor on paper!

Letters to the Editor

SEQUELS TO ANÆSTHESIA

SIR,—I think that it is high time that an advocate of nitrous oxide should reply to the criticisms which my friend Dr Bourne implies in his letters to you on that well tried anæsthetic agent, nitrous oxide

It is extremely unfortunate that Dr Bourne's letter of Aug 6 should have been noticed in the lay press here, the impression is given that nitrous oxide is a very dangerous agent, further, this impression has been strengthened by the remarks of Dr Bedford (Aug 6)

> "The occasional catastrophic effects of anoxia during nitrous oxide anæsthesia have been vigorously emphasised by Courville (1939) and Bourne (1952) among others Yet in spite of the condemnatory evidence *nitrous oxide is still widely used*" (The italics are mine)

Of course it is still widely used, and the reasons are obvious, but, before we consider the reasons for its continued use, let us analyse one or two of the "accidents" which Dr Bourne mentions in his letter

CASE 2—A healthy woman of 35 has an uneventful gas but becomes hysterical afterwards Screaming hysteria is a frequent concomitant of suboxygenation, and, although distressing, is quite harmless Persons rescued from mines filled with "choke damp" often are hysterical when brought to the surface Dr Bourne should read his history, both Beddoes (1799) and Davy (1800) report cases of hysteria after the prolonged inhalation of nitrous oxide

CASE 3—A child aged 3 years 9 months did not recover consciousness for one hour and three quarters after having one tooth removed I will hazard a guess that she had been in pain and had not slept for two nights This was deep natural sleep, which is often observed in these circumstances and which is, indeed, rather more frequent after the old fashioned ethyl chloride

CASE 4—A man aged 27, anæsthetised with gas oxygen, and trichloroethylene, became slate grey A clear case of vagal inhibition due to trichloroethylene

CASE 5—A strapping girl of 18 went into hysterical convulsions See case 2

CASE 6—A 4 year old boy was given nitrous oxide and oxygen "Breathing almost ceased, pulse a very faint flutter Artificial respiration instituted with oxygen, pink colour of skin returned immediately" Exactly He was nearly killed by a badly given gas, which resulted in gross hypoxia, but was restored by means of oxygen and artificial respiration

It is obvious that no one can be didactic without having personal knowledge of these cases Apparently, Dr Bourne has no personal knowledge of them, and therefore my "bet" is as good as his Dr Bourne has produced no evidence to show that any of these mishaps were due to nitrous oxide per se Three were due to hypoxia as a result of a faulty technique, one was due to pain and sleeplessness, one was due to trichloroethylene, or possibly to an unrelated vaso vagal attack

We now come to the reason why nitrous oxide is still used in spite of Dr Bourne, Dr Bedford, your own editorial, and the editor of the *Daily Express* It is because nitrous oxide remains the safest of all anæsthetics in minor surgery Figures can be made to lie, but certain facts are incontrovertible It so happens that I am connected with two of the major dental schools in London—those of King's College Hospital and University College Hospital In these two schools, there has only been one death during the past thirty years in the dental gas room, the post-mortem findings showed that this was due to a fractured sternum and several ribs, which suggests to me that resuscitation may have played some part in the fatality During this period of thirty years, the gases have been administered by dental students, medical students, and newly qualified housemen, it is true that someone skilled has usually been in charge, but not always I myself have given dental anæsthetics for at least two "sessions" a week during the last and during this time, I have been frequently almost out of my wits by empty oxygen students dreaming away while the patient black in the face, by throat packs thrust trachea, by mothers who state that their have had nothing to eat when, in fact, they large breakfast an hour beforehand Yet twenty years I have never seen or had ledge of a case of cerebral damage or prolonged I have never had to perform a tracheostomy to give artificial respiration

In the present state of anæsthetic tech is no other anæsthetic agent which can give of safety as this He who tries to replace in dentistry by any other known agent is disservice to the safety of anæsthesia

Yet, as Ralph Waters once said, "Fr pain is always bought at a price" There that the unskilled administration of nitrous occasionally be dangerous by reason of anoxia which such lack of skill may produce is not the fault of nitrous oxide, it is the teaching of anæsthetics Most dental tered by dental surgeons, the average complains, quite justifiably, that he cannot services of a doctor who can give a good So he gives these gases himself, and he extremely competent technician But he is technician, if he is faced with a crisis, he potent to deal with it The danger of in its safety, so rarely do these crises average dental surgeon cannot possibly experience in coping with them

The remedy lies in the reorientation of of anæsthetics The medical student much of his time in the operating theatre techniques which properly belong to the specialist and which will be of little or no in his practice He should spend the greater anæsthetic course in the outpatient dental-gas room, learning simple and safe anæsthesia from skilled teachers No student permitted to qualify without being able to such an anæsthetic

As a natural corollary, dental students be permitted to administer, or be taught to anæsthetics Only thus can the technician by the anæsthetist

F F CAR

Otford Kent

SIR,—Your leading article and Dr Bed require comment on similar grounds

It is loose talk to refer to the dangers of when you surely mean to speak of the occurs when it is given with insufficient support normal tissue requirements You that nitrous oxide may be a common factor operative dementias described by Dr Be "It is not entirely clear whether nitrous administered in all the cases of postoperative described by Dr Bedford, but apparently used"), and then you go on to recommend oxide should be denied to the elderly patient be as reasonable to deny us the air we bre many people die breathing it, or because there by the Creator, is dangerous if inhaled concentrations

Dr Bedford is on safe ground when he uncontrolled hypotension in the elderly his prejudices a little boldly when he extends to a general attack upon the technique hypotension as being "unjustifiable in peop group" In his case histories, anæsthesia and t as the chief causes of the postoperative but other possibilities such as fat embolism n from open prostatic veins the intrinsic steep Trendelenburg position, and aspiration either scarcely mentioned or ignored Thus scribed as having a normal blood pressure of collapsing when his blood pressure fell to r patients with a normal blood pressure of not collapse because their blood pressure 0/60 (I have walked about with a systolic 70 mm Hg induced experimentally in no fort and my electro encephalogram remained ing a ten minute period with the systolic 30) One is led to suspect that the real cause le in case 2 remained undetected or at any ted

ford would carry his studies to the operating uld see that controlled hypotension has an appeal to our emotions Hypotension like werful weapon is fearful if abused or uncon when properly used it also claims our respect to the patient Through controlled hypo difficult or impossible can be made possible ed and in cases of left ventricular strain or le pulmonary ventilation is increased and ade more tranquil [1]

Dr Bedford's remarks about hypotension stified He is entirely right about the need research into the safe limits of controlled but such research entails the use of expensive paratus which is all too rare in this country lso concur that hypotension should probably it too actively in the elderly, on the grounds ldom needed in these patients. Blood does wildly in the old as in the young as Seneca Pyrrhus's tidy butchery of Priam

> Vidi vidi senis in jugulo
> Telum Pyrrhi vix exiguo
> Sanguine tingi

'or was not troubled by much bleeding

P R BROMAGE

a pity that Dr Bedford should have marred excellent article by presuming to go into r nitrous oxide as an anæsthetic He is guilty eader on this point) of an unfortunately all example of muddled thinking Nitrous oxide mary anæsthetic—e g in dental outpatients only in so far as less than 20% oxygen is In other words it is anoxia that is deleterious oxide As used in modern anæsthesia as an thiopentone and relaxants it is given with gen, and this technique is in the main or the great advances in surgery—abdominal nial, and geriatric—during the last fifteen

urther and state that it would have been far Bedford had assessed the cases where histo like ether and trichloroethylene had been one hand and nitrous oxide/oxygen on the

oint, I am afraid is that no one is above ast of all the modern anæsthetist Dr s not state how many of his cases were under emergency conditions, by inexperi ts who may have shared his misconceptions ide

Dr Bedford is to be commended for once g the attention of all to the meticulous care s ought to receive—adequate preoperative full hydration, and replacement of blood t seems to be an all too frequent omission le operations In addition proper post operative care is essential sedatives are still too often prescribed for anoxic restlessness and perhaps the greatest pitfall of all is the way shocked patients are propped up in bed by an over zealous but misguided nursing staff, thereby cutting off the last vestige of blood supply from the already gasping cortical cells

St Bartholomew's Hospital
Rochester Kent
P G AZZOPARDI

SIR,—Dr Bedford has established that cerebral anoxia is a bad thing and especially bad in old people This is well appreciated by anæsthetists What he has not, I think established is that the cerebral deterioration in old people which sometimes follows accidents, surgical trauma or even hospitalisation is due to general anæsthesia properly administered

In the 18 cases he cites it is difficult to decide what part if any general anæsthesia played in the production of dementia, for adequate anæsthetic details are not given

Turning to your leading article on the same subject I am surprised Sir at your dogmatic condemnation of nitrous oxide That unpleasant sequelæ may follow the administration of gas or gas and-oxygen in the dental chair has been shown by Dr Bourne But this type of administration is frequently controlled asphyxia" rather than anæsthesia To inhale a mixture containing only 5% or 10% oxygen must inevitably cause cerebral anoxia Nitrous oxide combined with 25% to 50% oxygen is quite a different matter

Hastings
P DUNBAR JOHNSON

SIR —I write to request you to remove your edict on nitrous oxide (Aug 6) Why not forbid thiopentone which is the only anæsthetic agent common to all the cases on which you launch your strictures? It is a great deal more likely that the damage is caused by the hypotension which follows the induction with thiopentone than by a little weak nitrous oxide.

In any case dogma is not appreciated as witness what I heard in the theatre yesterday

SURGEON What are you giving?
ANÆSTHETIST Only gas.'
SURGEON Nothing that will explode?
REGISTRAR: Only the Editor of *The Lancet*

Gloucester Royal Infirmary
Gloucester
J SHEGOG RUDDELL.

SIR —The danger of cerebral damage from anoxia in elderly patients undergoing operations under general anæsthesia is a very real one. But neither in Dr Bedford's excellent article nor in your leading article is there any mention of a very simple solution—namely to perform the operation under regional analgesia. Any part of the body is capable of being rendered insensible to pain by modern analgesic technique and the omission of all reference to this is surprising The condition of an elderly man for example undergoing prostatectomy under a regional block is very much better than under general anæsthesia and provided that care is taken to maintain the blood pressure at normal level no harm whatever can come to the cerebral cortex

And in my opinion, the general well being of these patients is in some measure due to the fact that they are breathing air and not some vapour of doubtful oxygen content from an anæsthetic machine It has always seemed strange to me that the modern anæsthetist does his utmost to exclude from the patient the mixture of gases which he is physiologically best adapted to breathe —air

London W 1
MASSEY DAWKINS

SIR —On reading Dr Bourne's interesting lett Aug 6 on Dental Gas and Cerebral Palsy I am p to relate my experiences albeit on a much small

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[1] Bromage P R Awaiting publication
[2] Seneca Agamemnon l 658

I commenced giving gas and oxygen for a school dental clinic in March of this year, and at a rough estimate I dealt with about 15 children at each session every two weeks, up to the school holidays Out of all those children there was only one that made me think that my technique required overhauling

A girl under school age took her gas without any trouble, and the tooth was extracted But afterwards, instead of a healthy crying child, we had one who was quite stuporose, could be roused only with great difficulty, and eventually had to be taken out into the open air I was informed that it was about an hour before the mother was able to take her home

I assumed all this had been due to an error on my part or to some impurity in the nitrous oxide, but after reading Dr Bourne's letter I feel that the whole subject is worthy of further investigation by the powers that be

Rickmansworth A I BARRON

THE "WRONG" HOSPITAL

SIR,—Your leading article of July 30 is a timely reminder that the general hospital is the mainstay of the hospital service Yet there are many administrators, both medical and lay, whose tidy but short sighted minds consider that the dismemberment of general hospitals, by putting the various specialties in separate buildings scattered over a large area, is good planning If such planning is allowed to continue there will be an increasing number of reports in the lay press of patients being sent to the wrong hospital, for this regimentation encourages overspecialisation and the treatment of a disease rather than a patient

In one group of hospitals, the main "general" hospital of the group has been without its medical beds (apart from pædiatrics) since the war Because of bomb damage, these medical beds are housed in another building altogether, some distance away Rather than restore the damaged wing and thereby the medical beds the authorities are said to contemplate moving other special departments (such as obstetrics or pædiatrics) out of the "general" hospital to another building to make room for general medical patients—a process of robbing Peter to pay Paul which would leave the general hospital without the benefits of these specialised departments

A general hospital benefits by having its specialised departments, just as the department benefits by having the services of the "general" hospital Perhaps in no department is this more important than the obstetric wing, for here we have two patients, both mother and babe, who may need the services of the general surgeon or physician as well as those of other specialists and the ancillary services that a "general" hospital can supply

London, W 1 H H FOURACRE BARNS

LABORATORY TECHNOLOGISTS

SIR,—The conditions of service of many sections of the hospital staffs of this country have been mentioned many times in your journal over the past few years Whilst we have often felt that the case of medical-laboratory technologists should be brought to notice we have, up to now, refrained from doing so in the vain hope that conditions would improve and render such action unnecessary

Since the inception of the National Health Service over 700 trained technologists have left the service and the main reasons for their doing so have been those of poor salary and status Many have become commercial travellers and, whilst this may be of great advantage to the commercial interests which they represent, it means that the hospitals have suffered a grievous loss of trained people which can only be regarded with horror, especially as some of these people had devoted the greater part of their working life to the service of pathology

Whitley Council negotiations on these to go on for ever but never seem to ar factory conclusion One is forced to w this method of discussion will ever be whether it will continue until all the trained have left the hospitals and a generation of and unskilled bottle washers breeds in financially stagnant waters of the impo logical laboratories of the National Health

F Ra
J B R
J H R

Group Laboratory,
Royal Infirmary Preston

OUTBREAK AT THE ROYAL F

SIR,—I was most interested to read the announcement from the Royal Free the outbreak of an obscure infection nervous system The description is similar to that of a much smaller but no less puz at the Middlesex Hospital in 1952[1] and extent to those reported from Iceland[2] Coventry,[4] New York,[5] and Durban,[6] years Including the current epidemic four of these have commenced in nurs have struck when poliomyelitis was they have been remarkable for the absence the rarity of changes in the cerebrosp relatively prolonged active course of the the failure to isolate any known causal org virus type 3, was isolated in 1 of the Mid

Sensory symptoms and signs, retention or absent fever, and marked muscular p often in the presence of pyramidal signs features which on the present evidence see by the Royal Free and Middlesex Hos Normal lumbar puncture is a striking feat

The major difference between the pre and the others already referred to is the involvement of the lymph nodes, littl (I have no detailed information about epidemic) For this reason, I have re Middlesex case histories The following then considered sufficiently important to publication

Enlargement of lymph nodes (anterior triangle of
Ulcers in the mouth 1
Herpetiform lesions on the lips 2
Enlargement of the liver and spleen was not det

White-cell Counts (performed in 6 out of th

Case	*Total*	*Neutrophils (%)*	*Lymphocytes (%)*	*Monocytes (%)*
1	4800	51	39	4
10	11 400	81	15	11
11	7900	55	31	9
12	7700	66	25	4
13	10 900	69	27	7
14	6900	36	51	

Paul Bunnell Tests (4 cases)

Case		*Titre*	
10		1 in 7	
12	Sept 11, 1952,	1 in 56,	Sept 1
13		1 in 7	
14		1 in 7	

It is interesting to speculate how far the diagnostic bias colours the observations later be made in an obscure outbreak of original bias was in favour of poliomyeli disease rather than glandular fever We not surprised to find marked tenderness margins in 3 cases (as reported also in the break), with additional pleuritic pain over the lower ribs in 5 others.[1] Re

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1 Acheson, E D *Lancet*, 1954, ii, 1044, see also
2 Sigurdsson, B, Sigurjonsson, J, Sigurdsson, J, Gudmundsson, K R *Amer J Hyg* 1950 5
3 Pellew, R A A *Med J Aust* 1951, i, 944
4 Macrae, A D, Galpine, J F *Lancet*, 1954 ii
5 White D N, Burtch, R B *Neurology* 1954
6 Hill, R W Personal communication

ity of a tender enlarged, but impalpable er was not entertained in our series, and the variable changes in the white cells noted discounted

on of the identity of these recent outbreaks r relationship to one another (if any) and nised types of encephalomyelitis must come boratory worker The time is surely ripe assault on the problem

E D ACHESON

IC RESPONSF TO ADRENALECTOMY

n pleased that Dr Robson and his colleagues ve confirmed my conclusions[1] on the metabolic adrenalectomy The studies I performed on atients undergoing total adrenalectomy were test the validity of Ingle s concept of the ' rôle of the adrenal cortex These studies the initial postoperative loss of nitrogen and sodium was followed by a phase of sodium turn of the nitrogen balance to preoperative s biphasic metabolic response is typical of h intact adrenals undergoing surgery The ily dose of cortisone acetate was 80 mg d adequate for satisfactory clinical recovery on I suggest that if Dr Robson s study had ded beyond the initial postoperative phase nges in metabolism might reflect the action dose of cortisone rather than the response

Hospital E 1 A STUART MASON

SEASE WITH FEATURES RESEMBLING UMATOID ARTHRITIS AND A LIPOID ACCUMULATION

were to attempt to describe any one of the ases which I have in mind I should take up and give a very incomplete picture of a existence of which I should like to be able must therefore content myself with giving line of the most striking features

man of early middle age complains of esembling rheumatoid arthritis probably ite fever and cutaneous or subcutaneous ar which do not tally with the descriptions iown necrobiotic granulomata of rheumatoid iopsy examination shows that the collagen cutis are separated by large cells resembling and larger cells, like foreign body giant multinucleated cells of Gaucher s disease or roma But by special staining there is no erve fibrils in the nodules to suggest ganglion

o larger swellings an eruption of small illiary droplets may appear on the face on of warmth seems to favour the production igs, which may coalesce at the back of the oulders where the warmth is increased by pillows.

tudied by Freudenthal and Parkes Weber[2] found that the cytoplasm of some of the ve a faint reddish tinge with Sudan III that the cells in question might be regarded ioma cells destined ultimately to become

in question who received dietetic and other xact records lost through enemy action) sex Hospital during the second world war ved and when I saw him in November ellings had been largely reabsorbed and about well and do night watching though flex his right hip normally He still had knotty rheumatoid hands with nodules at the knuckles and over the elbows There was also a good deal of crackling when he flexed and extended his knee joints I found him still better in 1947

In a fatal case which I regard as of the same nature and which I was allowed to see occasionally the front wall of the chest collapsed towards the end[3] Other cases I have referred to elsewhere.[4]

The references quoted by Davies and Wood,[5] in their illuminating paper entitled The So called Reticulo histiocytoma of the Skin throw much light on the subject

On the whole I suggest that the case of Freudenthal and Weber was a new syndrome of a rheumatoid condition combined with a metabolic lipoid disorder in which the accumulating lipoid was of somewhat similar nature to the kerasin of Gaucher cells

London N W 1 F PARKES WEBER

THE DEATH PENALTY

SIR,—Sir Francis Walshe takes you to task, in his letter of July 30 for using emotive language But if emotive language will help towards doing away with this butchery let us have more and more of it Major Lloyd George has said that he will reconsider abolition when there is overwhelming public *sentiment* in favour of such a step If you Sir in your ' emotive editorial have contributed towards building up that sentiment, then you may well be satisfied

In the same issue, Dr Webster salves his conscience by hiding behind the phrase courts are courts of law not courts of morals ' But that is precisely the terrible thing about British law We are in the grip of a robot like inhuman automaton The button is pressed and the dial shows *death* Instead of judges, might it not be better to substitute electronic brains ? At least the judges would then be spared the ordeal ' they often complain of Surely Sir the law was made for man not man for the law And the law is supposed to be interpreted by human beings, not machines.

Dr Pinev (July 30) also has a neat way of evading the issue a way that does credit to us as a nation of horse and dog lovers Put the poor creatures out of their misery he says in effect No doubt he thinks it unfortunate that doctors have not quite the same powers as veterinary surgeons It would be as logical to recommend that all animals serving life sentences in the zoo should be put to death and, as a next step euthanasia for everybody in Broadmoor Actually in the case of Ruth Ellis, it appears possible that she did welcome death and might have committed suicide if given a chance—and most of us hope that this mercifully was the case But it is no excuse for us to aid and abet suicides by providing a qualified hangman for the purpose

We cannot make excuses for death under any guise Do not let us try

Geneva W NORMAN TAYLOR

SIR,—Fully appreciative of my deep personal indebtedness to Sir Francis Walshe I cannot allow his forthright remarks to go unchallenged My qualification ?—that of a student of human normality centred upon an area immediately adjacent to Holloway gaol Those who demonstrated outside the prison on the Tuesday before the execution of Ruth Ellis had not taken much personal action beforehand because until the day before there had been a general feeling that she would be reprieved But I have no doubt that most of the demonstrators were sickened by the impending execution

By the highest standards Ruth Ellis may have been a worthless woman but she had been living with a man with whom she was in love and a few weeks before

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Lancet (in the pre)

r F Freudenthal W *Brit J Derm* 193 30 52°

3 Graham G Stansfeld A G *J Path Bact* 1950 58 45

4 Parkes Weber F *In* Modern Trends in Dermatology London 1948 p 309

5 Davies B T Wood K R *Brit J Derm* 1955 67 205

the murder she had had a miscarriage Acutely agitated she decided on violent action, and, since she was a woman and physically inferior, this could be effective only with the use of an instrument The form of violence she chose required little physical strength but easily resulted in death But *ira furor brevis est*, and afterwards, because of her depression and desire to die, she actually assisted towards her own liquidation Here then was murder followed by what was tantamount to suicide —while the balance of her mind was disturbed It was disturbed because of a severe psychological trauma suffered by an acutely unstable woman after a recent miscarriage In almost any other country in the world she would have been shown sympathy and understanding It is the custom to do so in this country where a mother is involved in the death of an infant

Bad though it may be for a child to know that his mother is in prison for killing someone who had wronged her, there is a world of difference between this and knowing that his mother has been hanged I have knowledge of only one reprieved murderess She, after serving a life sentence (minus remissions for good conduct), is now doing a useful day's work But professional contact with a local hostel for youths from broken homes makes me suggest that it will be little short of a miracle if the ill effects upon Mrs Ellis's older child are not deep and permanent The labour involved to prevent them may be enormous "Off the record" conversations with magistrates of children's courts, probation officers, and a governor of a borstal institution would perhaps give one some idea of the potentialities of the situation

And what about some of the gruesome technicalities of the hanging? They must surely cause a further hatred of society in other prisoners already warped in mind and soul They include the scrutiny of an individual for height, weight, and bodily configuration, the sounds made the day beforehand, each time the "ceremony is rehearsed", and the changing into canvas underclothing by the condemned woman on the morning of the execution All these add to the barbarism of the hanging This is followed by an inquest—to *inquire* into the *cause* of death—somewhat redundant, one would have thought Lastly the notice is (or was) posted outside Much has been made of this There is little wrong in society publicising an outrage it has committed The crime lies in committing the outrage

One of my patients commenting on the hanging told me that something foul had been done for which he felt himself partly to blame Others, with equal feelings of revulsion, showed less dignity *Delicta maiorum immeritus lues*

London, N 7 I H MILNER

SIR,—No one is more appreciated for the accuracy of his aim and the penetrating power of his criticism than Sir Francis Walshe, but he was sadly off form in his letter of July 30 How could he say that you invited us to believe that Mrs Ellis's execution deprived her children of normal home life when you clearly wrote "The children, who must inevitably be deprived of the 'normal home life' of which we nowadays speak so glibly, have been dealt, in addition, a most shattering psychological blow"

Surely he can see that it is devastating for a child to grow up with the knowledge that Society, Authority, the State, call it what you will, after careful deliberation, decided to kill his mother? I agree with the Editor of *The Observer* who told his readers that each one of them shared the responsibility for these hangings, and I feel, Sir, that you should have told your readers that their responsibility is 1000 times that of the general public For of the three professions directly concerned in judicial hanging, the Church seems indifferent the bishops being content to leave the delicate duty of reconciling the [illegible] of Christ with their blessing on the hangman's labour to the prison chaplain, always places legality before justice

hope

For not only have we the public's ear behaviour but no man can be hanged explicitly or implicitly certifies him sane us can be compelled to give our opinion to do so

The extraordinary thing about this that Sir Francis appears to put himself side Yet, one needs to have come no back row of one of his clinical demonstr that he is a physician of the greatest humanity It is impossible to imagine care of a condemned man and then, day, handing him over to the executioner

The reason for the persistence of this lies, I suggest, in overspecialisation which each individual's responsibility to a The prosecutor, juryman, judge, doctor each does his part, though none surely willing to do the whole

We can most easily break the chain responsibility is the greatest

Droitwich J

SIR,—Sir Francis Walshe is severely who oppose capital punishment and he emotionalism, but one searches in rational argument to justify capital two letters, which occupy over 120 lines space

All moral systems include some "Thou shalt not kill" However, in the ments have found it "expedient" to under certain circumstances For instance we are instructed to murder our fellow large numbers as possible When there the government considers it highly moral the "rebels" (Of course, the rebels immoral) If a citizen commits a does not consider it immoral to murder —presumably on the primitive princip eye" and "tooth for tooth" The more sanctions to murder comes from enthusiasts, who would have us kill their consent (e g, cancer sufferers and express suicidal desires), and also without (e g, imbeciles, idiots, and dements) The is, should there be any exceptions to the ment? It does not require a meticulous history of philosophy during the past two to give an answer, as Sir Francis Walshe imply The answer should obviously be and it is indeed a terrible indictment of ethical development that we should this question

Park Prewett Hospital,
Basingstoke

Public Health

Poliomyelitis

IN the week ending Aug 6, uncorrected of poliomyelitis in England and Wales (paralytic 140, non-paralytic 101) week the total was 241 (paralytic 121, The continued increase in notifications general throughout the country, but the following places have been decidedly Barnsley, Hoyland Nether (West Riding), Willesden, Poplar, and Thurrock. an average year for poliomyelitis, but still confused owing to the unusually of non-paralytic cases Some of these meningitis not due to poliomyelitis

Obituary

THOMAS JEEVES HORDER
BARON HORDER OF ASHFORD
C V O M.D., B.Sc. Lond. D C L F R C P

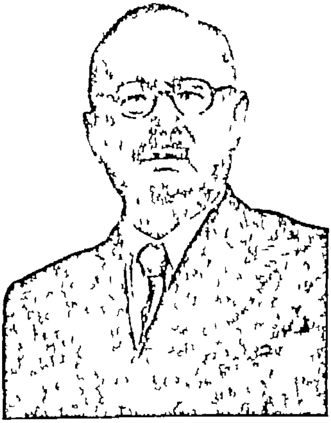
d days before specialisation got under way
always two or three physicians and surgeons
colleagues and the public regarded as a final
use of doubt or a last hope in desperate straits
r on medical merit was already reaching this
the reign of Edward VII, and his name has
sehold word as long
ople can remember
culiar conjunction of
lacity, and humanity
nense knowledge he
a legend but until
eas last Saturday the
nad to compete with
person living very
e present A great
will personally miss
his fun and his
as

orn at Shaftesbury
871, but his father
draper moved with
he following year to
ere Horder spent his
His formal educa
University College
03 he graduated
rst class honours in
He continued his
ies at St Bartholo
tal and qualified in
years later he took
a first-class honours
off gold medals in
dwifery and foren
These early suc
have strengthened
d many men in their choice of a career But
confessed to an audience of students his own
ncertainty

etimes wake in the night, he said in what is
e with more expressiveness than actual truth—
and with a sense of panic lest I may have
ocation. And I have even yet, never quite
for denying me what at the time I thought so
eisure and the opportunity of thinking out fully
the pros and cons of the profession into which
ere inveigled I remember how fearfully and
approached the final decision. I dallied first
then with physiology teaching both of these
finally committing myself Then when the
t taken I remember the qualms and the doubts
ne

ver his inward doubts his outward course
and effective After holding house-appoint
Bartholomew s Hospital and Great Ormond
ived his first honorary appointments when
staff of the Great Northern Hospital in 1900
er Hospital Fulham in 1906 He quickly
nsiderable consulting practice, and when he
egistrar at Barts he was able to afford a
which however he was in the habit of
parking a few streets away

tion he had established even before his
o the staff in 1912 was based largely on his
of the importance of pathology for clinical
was in fact a pioneer in clinical pathology
l of having deserted the bedside for the laboratory, he answered "on the contrary, I have taken the laboratory to the bedside Horder s box ' which became the talk of the town, contained test tubes culture tubes blood counting apparatus and blood-culture syringe One of his first important textbooks *Clinical Pathology in Medicine* (1910) summarised this side of his work.



At this period the infective diseases were his main interest, and most of his research was done in this field He was the first to cultivate streptococci from the blood in a case of infective endocarditis and he also helped his friend Mervyn Gordon in his classification of the streptococci and later in his studies on lymphadenoma

But it was as a clinician that Horder was supreme

When at the bedside it was his custom to remain quietly seated and he would often hold the patient s hand. While the patient talked, he would look and stare at the hand very much like a palmist but with his experienced clinical eye he would gather a great deal about the patient without him realising it The questions were always concise clear and consecutive, building up stage by stage through the history a likely diagnosis and a forecast of what the examination would reveal.

He was gentle in his inquiries and he would probe into the inner self of the person with all delicacy He would be equally gentle in his examination and there would be little of the machine in the examination When the examination was over the consultation would remain incomplete until the patient and he saw the situation with the same eyes The understanding between him and the patient would have to be a reality before there could be any discussion on treatment Diagnosis and that the correct one was the first step and to its problems he brought unusual powers of rapid and accurate assessment both of persons and situations, extensive information stored in a singularly retentive memory, and a balanced judgment He had absorbed the knowledge of Samuel Gee whom he greatly admired and added his own genius to it

Not all great physicians have been great teachers but Horder was both With him Barts always came first even in the early '30s when he was at the peak of his fame High officers of State diplomats or visiting Royalty might command his attention over the luncheon table but they could not keep him from his teaching round and that invariable visit to the post mortem room which preceded it

His success as a teacher lay partly in the simplicity of his remarks. Speaking slowly he would direct his pupils attention to essentials, whether in the anamnesis, the examination or the writing up of notes Legibly written orderly and concise his front pages ' must have served as a model for thousands of doctors. You were never confused with a plethora of detail Clinical medicine in fact seemed easy if you were with Horder It was open to everyone he held to take a perfect history and complete the physical examination skill lay in differential diagnosis and in prognosis and here his aphorisms were invaluable What a wealth of experience lay behind that remarkably compact little volume

Medical Notes—as trim and precise as himself! On the round he geared himself down to the mental pace of the student, with the result that a visitor might be deceived by the slowness of his delivery and of his methodical approach

The basic rules of clinical medicine were emphasised at each bedside "inspection before palpation, please," he would say, 'let us see how far we can get with inspection alone" And so a frail looking child was undressed for us to observe the pallor, the excursions of an enlarged spleen against a thinned abdominal wall, and the swollen lymph nodes in the neck and groins the presence of sinister livid patches on the skin served to complete the diagnosis which the blood-count soon confirmed He taught characteristically by quizzing the student "Have you excluded *lues*?" he would ask "Yes sir," would be the reply "Good", and then in a series of searching supplementary questions he would attempt to shake the man's confidence "no scars or syphilides?" "even at the back of the neck?" "no glossitis?" "not even a little patch far back?" "Are his epitrochlear glands palpable?" "did you look to see if he had a scar of a primary?" "vibration sense intact?" "Are you sure he hasn't a small popliteal aneurysm?" "have you felt?" Sooner or later the unfortunate would admit 'I am afraid I forgot that one, sir" "Oh," he would reply—and then one might discern that momentary but carefully concealed look of impish delight in having scored his point—"but you mustn't overlook important evidence, you know, even of a negative kind', and in this way, while trying to earn his confidence, student and houseman learned to search for circumstantial evidence of disease To reply to his initial question by saying that the Wassermann reaction was negative would be to invite such a homily on the fallaciousness of the laboratory as told of first-hand knowledge of the subject At other times he might say "Will you really place so much importance on a raised protein value? Perhaps the standards have faded or maybe they have reported on the wrong specimen" Similarly a slightly raised cell count in the cerebrospinal fluid might excite his interest "Are you sure they weren't red corpuscles which have taken the stain?" Though himself an able pathologist, he used the laboratory only to supplement or confirm his clinical senses and never to usurp their rightful place in diagnosis He would write up "enteric fever" on the bed board with confidence, and then ask for the laboratory findings "Thank you," he would say, "we can now add in brackets '*B paratyphosum B*' and give the titre, which in this instance is diagnostic"

To work with Horder and to learn from his teaching and example was an experience greatly prized, and his juniors gave him unswerving loyalty Forthright in his approach, and a master of the sardonic touch, he could, and did, make enemies as well as friends, but he revealed both to his patients and to his young associates a spirit of sympathy and understanding The dinner of his former house physicians, held on his birthday, Jan 7, has latterly become an annual event, testifying to continued affection

> "Each year the numerous stories which surrounded his name were retold until he even believed them His knowledge of those who had served him was boundless and to each he brought some remembrance of the past and with some twist of his own The passage of time left little mark on him, not so his house physicians, and at the last dinner he learned with impish joy of one who had had to decline the invitation because of advancing years"

Early in his career Horder became a doctor of other doctors, and not much later he became a doctor of kings To both these valuable and exigent groups of patients he offered clinical wisdom and honesty He was first called to a Royal patient when early in his career he attended King Edward VII An astute piece of detection and diagnosis won him recognition, and he was privileged to serve four succeeding monarchs and ma their families For his work for the Royal created K C V O in 1925 and advanced 1938 He also touched history thro Ministers and Statesmen who were amo When he once asked "who knows ho upon whether a Prime Minister's pipe is d the head of the Foreign Office has had sleep?" he was probably speaking fr Certainly he was the friend as well as Ramsay MacDonald, and he advised Ba to lay down the Premiership

These contacts and the deserved honour brought—he was knighted in 1918 and cre 1933—gave him the prestige and positi and counsellor Representatives of the G of other national bodies, who were often and patients, turned to him for advice on questions which marched with medicine consulting physician to the Ministry of chairman of the committee advising th Labour and National Service on medic connected with recruitment In the sec he was Lord Woolton's personal adv aspects of rationing and nutrition, and represented this country at international nutrition and at the Food and Agricultur of the United Nations He was also p Food Education Society

Another important war-time task was chairman of the shelter hygiene committee tries of Home Security and Health Th his 70s, he insisted on making arduous tour for as a confirmed clinician he would be nothing less than "bunkside" experience colleague who accompanied him to L Manchester in January, 1941, writes

> "After the usual trying train journey of th arrived in Manchester, had a conference wit went on during dinner, and was then ask Press 'I'd better see the shelters first,' he have something to say Come back at midni hours of visiting shelters in the blackout he hotel and held a wise, witty, and unhurried Next day he went on to Liverpool, repeating the programme with the addition of during the night, which he followed till dawn control headquarters"

This work too, he carried into the years his introduction to London's underground blitz led him to yield to Lord Ashfield survey the health of London Transport help to organise an industrial medical serv

Where his interest was engaged—and he many interests—he was eager to use his contacts to further medical research, many bodies with which he was associated founded, the British Empire Cancer C perhaps the nearest to his heart He saw humble beginnings, and at his death it most powerful organisations for the sup research A friend who has shared in th

> "Horder gave everything he had to the C this was indeed a lot First and foremost was which he communicated to all of us who contact with him This played a very great p of the Campaign, and it must be remembered year in which he presided over it, it distribut for research into the cancer problem Hor laboratory in the Campaign with care, and a direct personal allegiance to him While in any way, he was certainly a strict disc officers, and woe betide anyone who made a who drew conclusions on insufficient evidence has Jevons's *Primer of Logic* been waved vague But even after a prolonged pasting

lways be rehabilitated by the friendly twinkle pull

or men like Horder are usually treated with deference to what they have been in the past ot so in Horder s case Younger people knew ill better than they at their job and the officers m took no steps without a full consultation with of Grand Council

mpaign in which Horder took a valiant part against rheumatism and here too he was t victory could come only through know the Empire Rheumatism Council was set up came its first chairman and at the opening asked for a programme of comprehensive ted research backed by doctors and indus took an important share in the preparation l s plan for national action against rheuma ation was held up in 1939 but the plan d in 1941 war or no war for as he said rd considerations of humanity of national true economy plead for some immediate ck rheumatic disease The plan proposed inked treatment centres with a supervisory hildren When he resigned from the chair 1953 he was elected emeritus chairman rest in rheumatism was bound up his work h Association of Physical Medicine

s well as a physician he believed that a ing in the science and art of medicine and human contacts that he makes, enable him some general ideas which it is as much his vilege to convey to society as it is to be the ciety in his particular acts of diagnosis and Certainly Horder did his duty and there was the jest once made in an after dinner speech led over existence from its beginnings under Planning Association to its end as a puff of the Cremation Society Of the many y bodies dealing with social problems which l the Noise Abatement League and the ociety were probably his favourites

ve his name and time to so many different has been ascribed to his incapacity to resist People would come to him with a plan he lly suggest how it might be improved and ld turn round he would find himself chair e fact that he was already prominent in so councils and in the public eye may have son why he never quite secured the honour ired and to which his medical eminence —the presidency of the Royal College of A second reason may have been his some d criticism of colleagues. But it seems likely l late in life have been elected if his candi t been presented as a means of altering the tude towards the coming of a National ce. As exponent of an alternative policy ually differed more and more from those an agreement and eventually he saw his y that of leader of resistance Though some were saddened by this outcome others felt efence of professional freedom he reached est hour In the words of one of these

st ten years of his very full life Tommy Horder at part of his never flagging energies to the the profession to which he had dedicated his e first he had detected the danger to medicine of eme which threatened the freedom of medical n particular the sanctity of the doctor patient The danger was apparent to him from the Beveridge report was published, and he made d in the House of Lords and elsewhere on the k proposals, long before the much more bureau was introduced by the Socialist Minister of made it his crusade to fight the danger which he called the Bureau and lost no opportunity of criticising and suggesting constructive amendments to the Bevan Bill which was placed on the statute book with almost indecent haste in 1946

So it is no wonder that those who felt that there had been a capitulation by the profession in 1948 should turn to him in their distress. Lord Horder received 1700 letters from doctors and as a result the Fellowship for Freedom in Medicine was founded in November 1948 Though he was now approaching his 78th birthday he accepted the chairmanship that was thrust upon him He made it plain that the Fellowship would not be in any sense a breakaway from any other body If and when we are confident he declared that the B.M.A and/or the Royal Colleges accept and carry out the obligation to the public for which we ourselves stand we can dissolve into thin air

The Fellowship set to work under his direction to devise constructive plans of reform designed to promote the objects they had in view Every month the executive committee met at 6 15 P.M., after the day s work in surgeries and consulting rooms was done and deliberated until close upon midnight It was Lord Horder s pride that except during his August holiday he never missed a single meeting He was also in great demand at Fellowship meetings in the provinces.

He lived to see the Fellowship grow up into a healthy and respected body whose views could not be ignored. Not least among its achievements has been its contribution to the awakening of public opinion—and therefore of politicians—to the dangers of the control of a profession If the medical profession and the public are spared the ignominy of coming under the domination of a State monopoly if the ethical and professional freedom of the individual doctor is protected and his status preserved it will be thanks to the leadership given by Lord Horder at a moment when doctrinaire politicians were united to destroy what centuries of tradition and selfless devotion has built up

Opinions will continue to differ on whether Horder as liberal and humanist and philosopher might not more naturally have given leadership of another kind for if he was an individualist he was also much more (Mr Aneurin Bevan complained that though he had a heart of gold he had a mind of steel—and unfortunately it was the steel that the Government had to deal with) But, to his great credit political differences were never allowed to cloud his friendships or create animosity Moreover right or wrong everything he said about medicine demanded attention Like Burke he had the desire—and what is more the ability—to improve the state of things though always coupled with the desire to conserve He was much aware of the changes that beset us as a profession and even before the late war he recognised that the patient will not help to save the doctor since the patient has seen most of the rest of his life mechanized why not mechanize medicine ? But when the machine becomes greater than the man the patient perishes. ' While he encouraged specialists in surgical craft he looked with sadness at the growing specialism in medicine As firmly as he believed in the value of the family doctor being the family friend and counsellor so also he believed that a physician should remain general in his outlook and through this wide sight be able to contribute often in a non medical way in improving man s lot in the field of life—life social and life national as well as life individual Recognising that as the doctor speaks more and more on things social and contributes more to the life that he sees around him he inevitably becomes a public figure and may become a politician of one colour or another he warned his colleagues that for the doctor there can be no left or right ; for him there is only knowledge and a deep adherence to truth

An international figure in medicine he enjoyed meeting his colleagues from whatever country or climate And sometimes his utterances would hit the headlines When we recall the places and the times what he said often needed courage—which he never lacked Thus as the guest of the Pilgrims in New York in 1936, when isolationism had its adherents and there were rumblings of war, he ended his speech in a prophetic vein

"Granted that we in Great Britain are more vulnerable than you are here, this difference is only one of degree, and a degree that gets smaller and smaller every year when machines and chemists make security less certain, distance less protective and annihilation more easy Detachment is folly Isolation is suicide"

Anyone who met him, whether at the bedside, in the consulting room, or at some public discussion or debate, encountered a singularly direct and clear-thinking mind, displaying in a most uncommon degree the quality oddly called "common sense" As consultant he eschewed "frills," suavity, and the grand manner As clinician he gave priority to ears, eyes, and hands, to the common diseases, and to the simple fundamental essentials of treatment In affairs the same aptitude for stripping the trimmings from a problem, for declining to be led into byways, and for simple directness in speech and thought was apparent

But his brilliance was not attained without effort He worked everywhere and at all times—and he expected others to work as hard as he did himself

One by one his house physicians were taken down to his home late on Friday night On Saturday morning came the inevitable question 'Would you prefer to do some gardening or to sit quietly and read a book ? ' One answer alone was possible One man only in all the years said he would prefer to read a book, and made Horderian history in so doing

With this immense capacity for work went firm self discipline, and the gift of detachment His ability to focus his entire mind on a given problem was one of the things that made him so great a clinician He never wasted energy by allowing his thoughts to go idly round and round—which perhaps was partly why his mind remained razor-keen to the end of his long life He loved an argument and played it like a game of chess

Evangelical training in childhood had engendered a love of Biblical language which remained and helped to shape his admirable English prose style (He enjoyed quotation and could never resist the apt remark—sometimes too apt) But his youth had not been easy There were no State scholarships in his young days, and his early struggles had enhanced a streak of loneliness which sometimes made personal contacts difficult None the less, his life was never allowed to lose its savour Every day was an adventure, every dawn a time to be up and doing, and every moment a time for wit or wisdom

"The garden at Petersfield was very near his heart, and he had always time to instruct and convert any human being to become a lover of Nature His knowledge was quite vast—on trees (of which he had hundreds), on rockery plants, on the character of the soil, and on the ways and means of improving the soil. His garden is a vale with a river running through When I was last with him there, with the sun producing long shadows through the trees, and everything tranquil (a word he liked to use), I could not but remember some lines written by a Welsh poet, which translated go something as follows 'Oh God, thou wert a little unkind to make these vales and dales so beautiful and the days of a shepherd so few' "

With his tremendous zest for life, Horder regarded personal illness as something rather vulgar and a waste of time Not many weeks ago, when he had a slipped disc, he said that he knew the proper treatment was to go to bed for a fortnight, but at his age he had not the time Last Saturday morning he had a sudden and severe coronary thrombosis The pain was soon relieved, but the shock was too great for survival It was characteristic that during periods of consciousness he calmly reviewed his symptoms with exactly the same clear detachment he had used when teaching
bedside In the evening he died at peac
which overlooks his garden

Lord Horder married in 1902 Geraldine
Arthur Doggett of Newnham Manor, Her
1954 One of their two daughters is marr
Cullinan Their only son, Mr Mervyn Horde
succeeds to the barony A memorial servic
will be held at St Martin in the Fields on
at noon

THOMAS GORDON CAMERO
M C, F R C S

Mr T G Cameron, surgeon to the South
group of hospitals, died on July 10 at the

He was born at Sunderland co Durham
at Rossall School He studied medicine at
Medical School, Newcastle upon Tyne,
1940 In the same year, after holding
ments at Sunderland Royal Infirmary
E M S hospital at Ryhope, he was com
lieutenant in the R A.M.C He served
Light Field Ambulance until 1944 whe
regimental medical officer of the 13/18th H
Mary's Own He landed with the
Normandy on D-day and a few weeks la
an immediate
Military Cross
devotion to du
tinuous mortar
a complete di
own personal s
to render medi
to others." L
posted to the
Transfusion Se
command of
sion unit, and
of the Europea
worked for tw
Belsen concent
Afterwards he
to the rank of
made senior
of troopships,
S S *Strathc*
Cameronia Af
demobilisation
Territorial Army, and served with the
General Hospital T A, in which he hel
lieut -colonel

On his return to civilian life in 1946, h
specialise in surgery, and he became a de
the department of anatomy at Newcastle
began work with the professorial surgical
Royal Victoria Infirmary, under Prof F H
Mr Norman Hodgson, first as house-surgeo
registrar He took the F.R C S in 1940, and
was appointed senior surgical registrar at
While holding this last appointment he
surgical experience in a very short time
with the reader in medicine at Durham
made a detailed assessment of 400 case
gastrectomy and 300 cases after vagotom
enterostomy In 1953 he was appointed c
geon to the South-West Durham group
working mainly at Bishop Auckland Gen

A colleague writes "In 1953 Cameron c
Bishop Auckland, and soon endeared him
circle of friends We realised our great fort
amongst us a man whose skill, experien
counsel was much greater than his year
for work was limitless and he was alway
responsibility A man of great personalit
he was respected and admired by his c
patients, and friends alike His patients
too highly about him, and the excel
accomplished in South West Durham m
more than justified the confidence of those
him '

r colleagues, F G T and W W write who knew Gordon Cameron best, his capacity p was his outstanding quality and it is not nat his untimely death has left a grievous gap erse circles. If he didn t suffer fools gladly reated them with courtesy and his judgments considerate and kindly His sense of humour od him so that under all circumstances he t ease and was completely without any r An ideal companion whether doing an el in a Cheviot barn dinghy sailing in a gale rally or merely coping with an irate head ndarme in Carcassonne Under these latter es, his eloquence en français was remarkable ulting confusion invariably won the day We none of his listeners understood more than al phrase but Gordon understood even less! to imply that he was without his domestic hose of us privileged to enjoy the hospitality knew that there he had found his greatest

ron married Elizabeth Jordon and leaves a

STANLEY BARNES

So LL.D Birm M.B D.Sc Lond F R C P

arnes who died on Aug 11 at the age of 79 he great figures of the Birmingham medical physician teacher administrator and donor reely of his time energy and wisdom and of his money In particular his name will associated with the building of the Queen ospital and the new medical school

e second son of Starkie Barnes of Birmingham st brother was the late E W Barnes, F.R.S irmingham From King Edward s School n 1892 he went with an entrance scholarship n Science College ham He took nd with first- s in physiology he M.B Lond in erving as house- he Queen's Hos ingham he came or postgraduate eurology In appointed resi l officer at The ospital Queen are he worked ulings Jackson l Horsley In urned to Birm pathologist to Hospital. The which he had as a neurolo- ognised by his a few years staff of the Birmingham General Hospital een Elizabeth Hospital He quickly built onsulting practice which covered the whole ands He was also physician to the Birm Hospital and he chose ocular paralysis ect of his Middlemore lecture in 1912 In elected F R C P He held office as president ation of British Neurologists

he orderly progress of his career was inter s appointment as dean of the medical school rs during which he held the post coincided velopment of the hospitals centre and the the new school Each year he gave more his time to administration and planning In ioned his private practice; but as he later e limitations of his hospital work and research he pangs for ' to me it was the first element When he retired in 1941 he was presented rtrait by the United Hospital and in the r the University conferred on him the degree

[Elliott & Fry

who was his assistant physician for the best ty years writes: Barnes was a delightful was among the first to break down the barriers which precluded an assistant physician from holding beds and often from entering the wards of his chief, unless invited to do so He made me welcome and put beds at my disposal and from him I received much encouragement and a friendship which I have valued highly He was then at the zenith of his powers as a physician and neurologist with a big reputation and extensive consulting practice in the Midlands He was a brilliant teacher and an able exponent of physical signs His teaching was based on his earlier training at Queen Square under Hughlings Jackson, Gowers, and Horsley whom he was wont to quote and at times to imitate for he was an excellent mimic Indeed at his clinical demonstrations patients were hardly necessary

When he was appointed dean of the medical faculty the hour met the man and Barnes found his true vocation Abundant energy a remarkably rapid grasp and retention of detail a certain robustness, and a gift for leadership soon placed him in the front rank of medical administrators His enthusiasm and energy knew no bounds and many a Sunday morning did we follow him up ladders and along girders on the hospital centre site to see some unusual viewpoint or some new system of heating and drainage

He enjoyed life to the full, but it was not all work. He well knew the importance of leisure and recreation, and brought to them the same enthusiasm as he gave his official duties. He followed the advice of a physician of an older day to take a good holiday once a year, but not to be always away During his working years he played golf regularly and competently at the weekends, and in the spring and summer in company with a few special friends he would go to the outer Hebrides or West of Ireland for his favourite hobby fishing For the rest he rarely took a weekend off He was never idle and, even when physically restricted by the passing years and poor health he made simple but valuable researches into the breaking strain of nylon fibre Fishermen everywhere are in his debt for his small book *Anglers' Knots in Gut and Nylon* now in its third edition His last work was his *History of the Birmingham Medical Centre* beautifully produced and published at his own expense in 1952

Barnes had a great gift for friendship and his wide interests made him a delightful companion He was outstanding in any company for his distinguished appearance, genial manner courtesy, and conversation. His generosity was remarkable and his gifts many and varied; donations to funds connected with the university and medical school the furnishing of the chapel of the Queen Elizabeth Hospital, the beautiful panelling and furnishing of the faculty room in the medical school, hard tennis-courts, a cycle-shed and other amenities for the students and most recently a generous gift towards the building of a new stand at the Edgbaston ground of the Warwickshire County Cricket Club of which he was president at the time of his death These are well known Not so well known is the good he did by stealth. He had a great love for the young and an understanding of their difficulties, and there are many past students who bless his name.

A generation has grown up in Birmingham which knew not Stanley Barnes, save as a distinguished name in the annals of the medical school; but those of us who were his contemporaries or served under him recall with affection gratitude and pride the man and his achievements. The Queen Elizabeth Hospital and more especially the Birmingham Medical School stand as memorials to one who greatly gifted used those gifts in the service of his fellow men *Si monumentum requiris circumspice Ave atque vale'*

Dr E W AINLEY WALKER, for many years dean of the Oxford Medical School and reader in pathology in the University died on Aug 15 at the age of 81

Births, Marriages, and Deaths

DEATHS

HORDER —Peacefully on Aug 13 at Ashford Chace Petersfield, Hampshire Thomas Jeeves first Baron, G C V O dearly loved father and grandfather Memorial service St Martin in the-Fields, Monday Sept 5 at noon

Notes and News

STRUCTURE OF VITAMIN B_{12}

An important advance in our knowledge of vitamin B_{12} was reported last week[1] In the laboratory of chemical crystallography at Oxford, Mrs Dorothy Hodgkin, F R S, has analysed the molecular structure of the vitamin This is the outcome of research carried out in association with workers under Sir Alexander Todd at Cambridge, the Glaxo Laboratories at Greenford and the University of California in Los Angeles The whole structure of the molecule is now known, though there are one or two parts on which further work still needs to be done As a result, chemical synthesis may be possible before long, and new light may be thrown on the way in which vitamin B_{12} acts

COOPERATIVE EPIDEMIOLOGY IN GENERAL PRACTICE

An epidemiological study of epidemic winter vomiting glandular fever, and infective hepatitis is described by the research subcommittee of the South East England Faculty of the College of General Practitioners The authors admit that their work has produced no new knowledge, and that the number of cases of the conditions observed was small But the report is interesting as an account of an exercise in research method, in which diseases not statutorily notifiable are reported by a group of general practitioners

METHYLPENTYNOL ON POISONS LIST

From Aug 15 methylpentynol ('Oblivon') is added to part I of the Poisons List and the first schedule to the Poisons Rules[2]

WITH HILLARY TO EVEREST

Sir John Hunt's official record of the climbing of Everest was a remarkable effort Written in a month in response to strong demand, it contained all the facts—and nothing else, except of course its very beautiful pictures Unless the reader was thinking of organising the next expedition to Everest he would probably read its text rather with interest than with positive enjoyment Sir Edmund Hillary's book[3] is different Two years have gone by and the clamour for news has died down In the interval Hillary has been busy lecturing, bee keeping, getting married, nearly getting killed, and preparing for his Antarctic expedition, but he has found time to produce a book which contains the personal point of view which was necessarily lacking in the official record In consequence his book will be enjoyed by armchair explorers as well as by experts Hillary may lack the literary style of Shipton and the racy humour of Tilman, but he has allowed enough of himself to show through for us to understand something of the feelings of the writer and his companions on the mountain We can go "With Hillary to Everest" as half a century or so ago some of us went "With Roberts to Kandahar" and "With Kitchener to Khartoum"

Royal College of Surgeons in Ireland

The fellowship of the college has been conferred on Dr Philip Feanny

Medical Research Council

Dr H Stanley Banks, who has lately retired from his posts as physician superintendent of Park Hospital and consultant in infectious diseases to the South East Metropolitan Regional Hospital Board, will join the staff of the council in the autumn as medical officer (part time) in charge of publications

International Congress of Neuropathology

This congress is to be held at the Royal College of Surgeons of England, Lincoln's Inn Fields, London W C 2, from Sept 12 to 17, under the presidency of Dr J G Greenfield Further particulars may be had from the hon secretary, Dr W H McMenemey, Maida Vale Hospital for Nervous Diseases, London, W 9

University of London

Dr Roger Warwick, lecturer in anatomy of Manchester, has been appointed to the anatomy at Guy's Hospital Medical School

Dr Warwick graduated in medicine and of Manchester in 1937 Later he held resident professorial unit at Manchester Royal Infirmary Royal Mental Hospital During the late war lieutenant in the R N V R In 1952 he was for his M D thesis and the following year the the Anatomical Society of Great Britain. includes papers on the oculomotor nucleus of sarcoma of bone in the ring tailed lemur

Dr R H Gorrill, senior lecturer in bacteriology Hospital Medical School, has been appointed readership in bacteriology at Guy's Hospital

Dr Gorrill qualified from Charing Cross in 1944 and served as a surgeon lieutenant took his M B in 1946 and his M D two years up his present appointment at St Mary's registrar in bacteriology there He has pub mental staphylococcal infection in mice, and bacterial localisation in the kidney

On July 20 the degree of M D was Mendel

Middlesex County Medical Society

Dr T Rowland Hill will give the John Wednesday, Sept 14, at 5 30 P M in the London, S W 1 He is to speak on the Service and Its Problems—Lessons Learned doctors are invited

Health Clinic in Kent

On July 26, Mr Iain Macleod, the opening a health clinic at St Paul's Cray "The ultimate aim of the health service hospitals but to make sure that people don hospital" He paid tribute to the work of the preventive services "There tell how many children, mothers, and perhaps their sanity, and certainly their by the services put at their disposal by the authorities"

Corrigendum *14th British Congress of Obstetrics* —Last week in reporting Dr G F Abercrombie congress we said he had conducted personally The figure should be 268

Appointments

Anderson W D, M B Camb asst M O
Railways
Briggs Barbara M B Sheff school M O
Dodds R J M B Durh, D P H M O H
Johnston R N M D Aberd, M R C P
physician (consultant) tuberculosis
Arbroath area
Lodwick, Jane M B Camb school M O
Ramsay, T A M B Glasg, F R F P S
superintendent, Dundee Royal Infirmary
Hospital
Turner William M B Leeds school M O
Westcombe K C, B M Oxfd senior
and orthopaedic service, High Wycombe

South Eastern Regional Hospital Board

Harris, Philip M R C P E F R C S E,
Royal Infirmary of Edinburgh and
Kerr J M M D Edin, D P H group medical
Edinburgh southern hospitals board of
Marquis, R M M B E M B Edin. M R C P
physician department of cardiology
Edinburgh
Muir Agnes P, M B Edin D A
Lothian group of hospitals main duties
Walbaum, P R M B Edin, F R C S E.
surgeon based at the Eastern General

South Western Regional Hospital Board:

Reid A A M B Durh, M R C P, D P M
registrar Moorhaven Hospital
Robins R H C, M B Camb, F R C S, senior
Exeter clinical area
White, R H R, M B Camb M R C P D C H
St Martin's Hospital and the Royal
Rheumatic Diseases Bath

Manchester Regional Hospital Board

Charlton, Dorothy B, M B Manc D Obst
thetist, main duties in Macclesfield and
Cole Mary P M D Belf F F R D M R T
therapist, Christie Hospital and Holt
Tasker J H M B Camb F R C S
Crumpsall and Ancoats Hospitals

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1 *Times*, Aug 13 1955

2 Poisons List Order 1955 (S I 1955 no 1131) H M Stationery Office *2d* Poisons Rules 1955 (S I 1955, no 1135) H M Stationery Office. *2d*

3 High Adventure By Sir Edmund Hillary London Hodder Stoughton 1955 Pp 224 16s

INITIATION*

Richard W B Ellis
M.A M.D Camb F.R C.P F.R C P E.
OF CHILD LIFE AND HEALTH UNIVERSITY OF EDINBURGH

custom amongst most primitive peoples for
remonies marking the transition into adult
accompanied by an ordeal and an exhortation
h an oath of loyalty to the tribe secret
community of which the initiate has become
Often the initiates are dressed in new clothes
othes for the first time, having a quasi magical
they are paraded through the village,
w name or title and follow the ceremony by
unbridled feasting Today the first part of
on ceremony has been completed For you
has been mental rather than physical but
flagellation of the young Fulani herdsman
anhood is still symbolised in the gentle blow
eceived with the cap as it is in the accolade
od You have donned your new gowns
aken your oath you have received a new
tle You have proved your fitness for promo
en faith of your loyalty

is for me to welcome you to your new pro
anding or, if you prefer, to a world wide
ty which still retains something of a magical
, and hermetic mystery Although you still
to learn, you are provided with the tools
hich are now yours to use to the best of your
at with your new clothes you have donned
sponsibilities The world if not yet at your
much at your mercy If I may paraphrase
ector of this university when graduates in
heir alma mater they know little of the cold,
orld but when medical and dental graduates
he cold, merciless world must take care for

ent of stepping across the great divide which
ndergraduate from graduate, medical student
cian is also an apt moment to remember
ublic thinks of both and consequently what
nges society expects in you. This does not
urse, that society is necessarily right, or that
onversion or apotheosis actually took place
nd that the cap touched your head But it
in practice that whilst society is indulgent
variety of behaviour disorders in medical
hich fit in with a preconceived idea of what
student should be the indulgence is applied
different set of characteristics in one who has
the responsibility of care for the sick How
of the mark it may be the concept of a ribald
us studentry is too firmly fixed to be readily
t once you have entered the Victorian Gothic
professional life you become, willy nilly a
nod in omniscience radiating sympathy
maybe but never flippant staid sober
t; a pillar of society This you may well
ard to bear and a part which—robbed of the
d wooden stethoscope—may be difficult to
ut it is based on what society wants of you
may well prove a sad example of wishful

* * *

resent time in our history there is a highly
noclastic spirit abroad which has to some
ermined confidence in the professions more particularly when they are regarded as servants of the State But while the general public is more critical, it is also better informed Not all the criticism is ill founded some of it is intelligent and a small fraction is constructive The doctor the dentist, and the veterinary surgeon are regarded no longer primarily as isolated individuals healing the individual sick man or beast but as tools used in the building of a new social structure, having a collective impact on society as a whole helping to shape its destiny as well as to relieve its pain. It is for this reason that society is demanding sometimes unwisely a greater control of the manner in which these human instruments operate and the direction in which their energies are turned.

For you who are entering these professions the problems are much greater than for previous generations. You must accept society s inalienable right to determine policy in which you yourselves may be involved, whilst at the same time refusing to be biased or to yield to social pressure, in matters in which your professional judgment and integrity are directly concerned The distinction is not always easy, but it is of great importance if you are to maintain public confidence in your profession as a whole.

For instance if you feel on religious ethical, or economic grounds that it is wrong for the State to be spending three-quarters of a million pounds a year in legal aid in divorce cases whilst contributing less than a sixtieth of this sum to marriage-guidance organisations concerned primarily in keeping the family together you have the same and no greater right than any other enlightened citizen in a democracy to say so If on the other hand you can produce sound medical evidence that increasing divorce is producing greater numbers of emotionally deprived children who tend to become neurotic or delinquent, incapable themselves of forming a stable marriage and in turn spawning a further generation of the emotionally deprived, then you can speak as a doctor and demand the attention accorded to the expert witness. Sometimes your moral convictions and your expert knowledge will point in the same direction but even so you will be wise not to confuse the two Reserve your ex-cathedra statements for what you really know as a professional man or woman and your private opinions for some place where they can at least do no harm. You will find your ex-cathedra statements become surprisingly few but at the same time they will carry enormously increased weight

* * *

Mention of the family in the example I have given leads me to the rôle of the professional man as a stabilising factor and support of the community in which he lives The term family doctor ' has I believe little place in the terminology of the National Health Service, but is one hallowed by use and affection and it is in the hands of the doctor who cares for the family that the good name of the profession chiefly rests. It might indeed be said that the description general practitioner in the sense of one who practises every branch of medicine is rapidly becoming a misnomer in an age of increasing specialisation but that there is a greater need than ever before for the family doctor This arises from several causes The decreasing severity and incidence of many of the killing diseases, at least in early life and the virtual disappearance of others, call for a foresightful reorientation by the doctor if he is to fulfil his obligations to the community and at the same time consolidate his position within it He must in fact look objectively at modern society assess the ills from which it is suffering and set himself to apply his skills and knowledge where they are most needed If he does this he will inevitably find that an alarming proportion of social sickness now lies in the fields of juvenile delinquency and of emotional maladjustment, with all the dreary sequence of inefficiency, frustration, and psychosomatic distress which these entail These in turn often stem from a family unit or relationship which is incomplete, ineffective, or maimed

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*Promotor s Address, delivered at the graduation
ty University of Edinburgh, July 20 1955.

It is, of course, not new for the family doctor's help and advice to be enlisted in dealing with the stresses which tend to break up the family, but, as these stresses have enormously increased of recent years, so must the doctor be better prepared and more willing to treat the early stages of family-breakdown before it is too late He should come to regard a family which disintegrates with the same concern as a patient who has failed to recover from physical illness In some cases he will feel that he has done everything within his power, in others he may know *that the death of the family as a stable unit* could have been averted if he had acted sooner or more wisely

It is unrealistic to complain that the changing face of disease, the extension of the specialist services, and the introduction of the antibiotics have made the family doctor's life uninteresting or his responsibilities less, his responsibilities are certainly changing, but new problems are continually arising as fast as others are solved It is for him to recognise society's present needs and to equip himself to meet them as best he can On his success will depend, not only his usefulness, but whether he retains what is still a relatively privileged and respected place in the community

* * *

It should be borne in mind that, despite a number of minor irritations, such as form filling, the social revolution of the past twenty-five years has left the status of the professional man remarkably untouched

Take a village community In the 1920s, you would probably have found it dominated by a large mansion, around which a number of lesser communities revolved The doctor, the minister, a retired colonel, the school master, and two maiden ladies of modest private income would form one constellation, the farming community another, the village postmistress, grocer, carpenter, and baker a third Today you will find the mansion house taken over as offices by the National Coal Board and the laird earning a precarious living selling motor cars or vacuum cleaners, the village children travelling by bus to a central school, the retired colonel holding a minor post in the regional hospital board, the maiden ladies struggling to maintain life as underpaid organisers for a birth control organisation, the village shops replaced by a chain store, the best agricultural land ruined by opencast mining, the farmer spending his nights completing forms for the Department of Agriculture and paying his rent to an impersonal syndicate with offices in Glasgow, while the minister is trying to serve three parishes on an aged motor-bicycle The doctor, however, will live in the same house, belong to the same golf club, and drive a slightly larger car Though half his patients may now be miners or hydro electric workers with no roots in the soil and little permanency, he remains the village doctor—slightly more harassed, perhaps, and covering a greater mileage, but still indispensable and consequently secure

The same story might be told of other professional men The dentist may be more concerned with fluorides than with extractions, and the veterinary surgeon with immunisation than with the scalpel But, changing with the times and now looking more to prevention than to cure, each is still devoted to the relief of anxiety and the relief of pain For this, even the neurotic and disgruntled society of today is still capable of respect and gratitude, ju[illegible] as were the primitive communities from which this [illegible] nds

HOW TO WORK*

A E CLARK KENNEDY
M.D Camb, F R C.P

FELLOW OF CORPUS CHRISTI COLLEGE, CAMB
TO THE LONDON HOSPITAL, AND FORMERLY
MEDICAL SCHOOL

MOST university teachers assume that
how to work By that I mean, know h
their time and their minds in such a w
most profit from their lectures, reading
experience In other words that they know
Yet I have long since come to the c
is little justification for it Rather, I am
many have not the faintest idea how to
must not fall into the elementary error o
people's *mental and physical*
(One man's method of working may be q
to another) On the other hand, I do
worth while to stop working sometimes
attention to the fundamental question o
How should you organise the working of
the use of your time in such a way as t
minimum expenditure of effort (so as to
opportunity for other things) the know
to the profession of your choice?

Before I go any further, however, I
clear that I am discussing how to work a
medical curriculum should be organised.
is in urgent need of reform, but I am
with that problem now Rather I am
work within the framework of it as it st
other words, I accept the existing cur
obvious defects, your teachers with t
and our examination system with all its
Indeed, I shall be absolutely practical.
discuss how you should work in order to
your examinations with the minimum
effort on your part Further I would add
perhaps, that I am an unrepentant
examination system I do not say that
Indeed, it is clearly far from that But,
only the man who can rise to the occas
medicine you have to rise to a success
and pass the right kind of examination,
loose on the general public as a doctor
that, he would be well advised to cont
it is too late, and get started on some
profession

On Getting Interested

Now everyone should be sufficiently
able to work hard at something entirely
That is essential for the simple reason
necessity in most lives In medicine,
problem does not seriously arise For
should be, interesting from the start
be made more interesting If I had m
teach the preclinical and clinical subject
would experiment on frogs or dissect the
the morning, and come round the wards in
But I am confident that the teaching of
jects as at present organised should be
esting You have lost your interest?
"grind" has worn you down? That
and the clinical "grind" towards the
second clinical year, particularly if he
how to work properly in his first, does
him down But, if you were interested
have lost interest, I am quite certain th
you did not know how to work and
learned how to do it yet! Get working
interest, be it in your preclinical or

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* An address delivered to the London
Society on Jan 20, 1955

'eturn If you were never interested and
iterested, give up medicine *now* before it

On Having a Policy

start select a friend to work with you
licine wants a sparring partner like learning
ou cannot find one at once pick him up as
If your choice is unsuccessful, drop him
look for someone else When you have
ht one dissect with him Do your practical
harmacology and biochemistry together
art your clinical work see that the Dean
on the same firm Further choose someone
he same, or perhaps with a slightly better
certainly if possible with a greater capacity
yourself Learning medicine is like learning
me You should always if you can play
xample with people rather better than

start, be it your preclinical or clinical course
an of your school and get your time table
ulations for the medical degree of your
tudy them in relation to each other Then
preclinical student you will see how your
ysiology biochemistry and pharmacology
practicals lie ahead in relation to each other
lates of those terrifying examinations If
ting your clinical course find out about
which you and your friend are destined to
h the hoops on the clinical croquet lawn
cannot tell you that there is something
he organisation of your school) For obvious
tudents cannot go through all the hoops in
ler, but it is most important to know in
order in which you and your friend are
o through them Only if you know that,
use your working time

hing is to go and buy some books You
me of your own but take advice as to the
pending your money and when you go to
ke quite certain that a new edition is not
way out. Your teachers should be able to
books Do not hesitate to pick their brains
for that as well as for lectures and research
ou get conflicting advice (as you well may)
appear to you to be equally good although
fferent points of view have a look at them
before you make up your mind (That is
es of your library) Or if you still cannot
mind buy one yourself and get your friend
ier Then you can exchange when necessary

start to read any textbook from cover to
days of the readable textbook have gone
for ever! Learn how to refer to them,
ttempt to read them Organise your work
ctures and practicals and your clinical work
l books Use a loose-leaf notebook In the
ite your notes rewrite them and put them
nplify them if necessary from the textbook
ls start *writing your own book* And, as far
make it *one* book Remember that the
etween subjects—for example that between
physiology and that between medicine and
artificial based on convenience or necessity
rather than on any fundamental differences.
ave the important function of supporting
serving as a basis for the attachment of
but you learn about them mainly in the
artment Surgery is merely one branch of
ment. Pathology is not just morbid anatomy
scientific basis of clinical medicine There
is possible weld your medicine surgery
dwifery and gynæcology into one coherent
is far more overlapping than you suppose
in surgical knowledge will answer a medical
or medical a surgical question True that your teachers may be specialists (inevitably, I suppose but unfortunately), but on no account must you become a specialist as yet!

I repeat write your own book! If I had my way (I might say that I never get it), I would like every student to be allowed to take half a hundredweight of books into every written and one book into every clinical or viva voce examination Can t you imagine it? Candidates being weighed in before an examination like jockeys before a race! But would it really be worthwhile taking in many books? Looking up takes far too long Surely you would only take one And what would that one be? The book which you had written for yourself! Indeed in my considered opinion and I am speaking seriously, no other reform in the examination system would have a greater beneficial effect on medical education and on the intelligent working of the student s mind It would transform his outlook Instead of memorising facts he would marshal his knowledge in his mind and begin to think intelligently For he would have a free mind with which to think! Why does not the G M C require the licensing bodies to introduce this reform immediately? Examiners could not examine! Nonsense! Any examiner who could not set questions under that system should not be paid to continue at the job

On Getting Clinical Experience

I deliberately put getting clinical experience first Reading medicine and surgery should follow in its wake. And the only way in which to get it is to see as many cases as possible Never miss clinical opportunity Go into the wards whenever you can Stay there as long as you can Stop there until Sister bundles you out Go to outpatients as often as you can and stay *there* as long as you can Ask as many questions as you can Live as near the hospital as you can Clinical experience can only be organised for you up to a certain point Therefore hang about waiting for something to turn up If you wait long enough something will turn up Further when you are on a firm make a rule to become "firm conscious. By that I mean not only think of the cases allotted to you as your primary responsibility (you must always put yourself in your own mind in the position of the doctor in charge of them) but try to imagine the whole firm as your own practice Keep aware of what is going on all round Cultivate the art of turning up at the critical moment. Do not miss the minor operation the lumbar puncture or paracentesis or the sudden unexpected major emergency And always follow your own patient to any department to which he happens to be sent See with your own eyes what happens to him there Find out how the X ray examination is done Live in hope of getting a look down a gastroscope bronchoscope or cystoscope

Keep a ' firm book Buy one of those cheap pocket size notebooks and at the beginning of your time on a firm allot half a dozen pages to each bed After your first round fill in the clinical diagnosis of the patient in each one Next time alter the diagnosis, if it has been altered (you will learn most from your chief's mistakes) and enter each week what has happened to that patient When he is discharged leave a blank line so that you can follow him up For you should follow up your more interesting patients even at the student stage going out to see them in their homes if necessary (You will learn a lot from that) Then fill in the diagnosis of the next patient admitted to that bed Thus you will acquire a brief record of your clinical experience on that particular firm which will help to fix it permanently in your memory For remember you must cultivate the art of clinical memory Again and again the logical approach to diagnosis (which you must always attempt) breaks down and when everyone else is stuck someone remembers having seen a case just like that before! Indeed, being a good clinician, which every practising doctor must strive to be, depends largely on clinical memory Therefore cultivate it from the start, and with this end in view, I would not only keep a "firm" book, but I would also advise you to keep a more detailed record of your interesting cases Go on keeping records of that kind all your clinical life

Take your cases "blind" By "taking cases blind" I mean strenuously avoiding looking at the diagnosis on the admission sheet or the outpatient notes Indeed, try and get there first and take the history before it has been spoiled by too much taking, and examine the patient yourself before too much has been inflicted on him I know that it is difficult So many cases are "stale" and half-diagnosed before they get into hospital Hence the need on your part for a deliberate effort to take your patients "blind" Always make a diagnosis And what is a diagnosis? Strange, but I doubt that you have ever been given a definition of it So let me give you mine No, it is not a label like duodenal ulcer for example That kind cuts no ice! For a duodenal ulcer may be acute or chronic, the size of a pin's head or a shilling, may have perforated, bled, caused obstruction, or merely led to chronic pain Rather to my way of thinking, every diagnosis should be a brief descriptive statement of the patient for the purpose of prognosis in his case and his treatment Therefore it should start with the man, woman, or child of a certain age, continue with the most probable pathological process or processes from which he or she is suffering, and finish with the most likely structural changes and functional disturbances responsible for the symptoms of which he or she came complaining And all that on the evidence immediately available! You don't wait for the result of the investigations to determine the diagnosis Rather your diagnosis, on the evidence immediately available, should determine the investigations which you think worth doing

Further, having made a diagnosis, you should always estimate your chance of being right (for that largely determines what you do), and it is difficult to express it except in betting terms You are confronted, for example, with a case of chronic abdominal pain 10 to 1, you say, on it being colonic but there is a 1 in 10 chance of it being gastric in origin Now if pain is gastric, it is bound to be due to some organic pathological process, while if it is colonic (unless associated with diarrhœa), it is much more likely to be "functional" Nevertheless, if these are your estimates, the patient must have a barium meal With a greater degree of improbability, you might decide that it was justifiable to take a risk For surely a moment's thought reveals that action always depends on the degree of probability of a diagnosis being right, and the relative improbability of some less likely but possibly more dangerous condition Indeed, good clinical medicine depends on right estimates of probability Maybe you don't approve of betting and, in point of fact, I seldom bet, but an occasional clinical bet will compel you to make up your mind in a way that nothing else will One of your many troubles as students, as I see it, is that you have no actual responsibility for the patients allotted to you and, therefore, you are apt not to take diagnosis really seriously Indeed, it must be like playing bridge for love I don't play but I am always told by my friends, that playing for love makes for a bad game because nobody thinks seriously So, too, I believe, human nature being fundamentally lazy, with diagnosis Lack of actual responsibility makes for lack of serious thought, and the cure for that is to think in betting terms You need not actually bet, but thinking like that will help to compel you to make up your own mind on your own cases To do that is most important.

And how do you make a diagnosis? I often ask a cl "Take the history and examine the patient,"
comes the ready answer Right, and then
pause ensues until someone blurts out
investigations" To hell with them, I s
you know what to investigate until you
diagnosis on the evidence immediately av
the answer which I expect is *think* And n
you must start thinking diagnostically
you start taking the history, otherwise y
the right history (histories seldom tak
because you won't know what questions t
to ask them What is the most likely
these symptoms, you say to yourself, in ter
of function in this patient's body and,
interpretation, what is the pathological
likely to be responsible for them? And g
like that while you are examining the pa
is the most likely interpretation of the
of alteration of structure in this patient
granting that interpretation, what is the
functional explanation of them? That is
of your clinical teachers work, whatever, m
they tell you They start thinking diagnos
perfectly well, as soon as they set eyes
They don't keep all their thinking to the
you do that either If you do, it is apt to
Again and again I see a student take the h
down more or less what the patient says,
him systematically, and then go off to m
lunch without ever having thought, w
investigations (ordered by someone else) t
diagnosis But so often they don't, and
have not made a diagnosis on the history and
you are left standing, and nothing is wor

Remember, too, that our distinction betwe
and signs is largely artificial The only tr
are subjective sensations (Most are re
signs which the patient has observed hims
is the distinction between taking the histor
ing the patient It is based on difference
rather than on any fundamental divergence
Take my advice therefore and run the
other Don't sit down pen in hand to
history just as you get it Rather, keep
your pocket, and talk to the patient
running dry and feel that you are getting
to examine him Then talk to him again
have found any signs, possibly some
return to the examination, paying more det
to any particular system of his body which
to be at fault Only when the history
examination fit together in your thinking
most probable diagnosis, sit down to write
out And having written them both
courage in both hands However junior and
you are, state your diagnosis in the form
suggested You will find that you are
right, particularly in respect of the functional
than you ever dared to hope! Further
chances of being right, and the length of the
the more important improbabilities Fi
the investigations on which you yourself th
justifiable to spend some public money

You must cultivate four arts First, you
that of getting the patient to tell you the
is most difficult, and at your age you ar
handicapped Secondly, cultivate the art of
Observe nature, your friends, suburban
walk about with your eyes shut After a
much you can remember of all the thi
have passed Some people always have the
Others go through life half blind Thirdly
art of imagination Try to imagine what
in the mind of your patient what does
"the matter" with himself? Try to ima
logical process which is at work in his bo

t Imagine what you might do if you were
er or an advancing neoplasm !
and it is so important that it demands a
n its own cultivate methods of thought
ult Thinking is " beastly " difficult Nor
hat I can give you many tips, but I have
lard methods which I always mobilise under
imstances For example when a patient
pain I do not immediately start thinking,
t due ? Many people always seem to do
n and again their minds work too fast for
I say to myself in what part of his body
in originate ? For example if he is com
hronic abdominal pain does it originate in
or duodenum or in his colon For clearly
nportant to get the origin of his pain right
and the diagnosis of its pathological cause
und to go astray Similarly if the patient
rom fever I do not immediately ask myself
ue to ? Rather in what part of his body
e throat heart lungs gastro intestinal
neys ? If I can settle that the cause of the
n obvious And for cases of anæmia I also
lard method of approach I do not imme
guessing at its nature Rather I say to
he patient bleeding or is he failing to form
ifficiently quickly or is he destroying it

On Reading

already said and I cannot say it too often
read textbooks Read round your cases
and let me say in this connection that I
of those people who believe that all lectures
polished The average textbook is far too
or ordinary human consumption Lectures
l add perspective to it I believe in good
ntarily attended Rather instead of reading
lling write your own book and keep reading
to it Further you must have a reading
f work at one subject and then at another
sion of all the rest Naturally you will be
nly round the branch of medicine or surgery
u are engaged at the moment but always
ome medicine surgery and pathology Then
ubject which you are at will automatically
lf into your concept of medicine and surgery
nd take its right place in the book which
ou are in the continuous process of writing

too that reading obeys the economic law
ng returns. You cannot read for more than
gth of time, and the first hour, once you have
I am afraid that a reading policy demands
f some self-discipline) pays a larger dividend
nd. So have stuffy and light reading
currently the former for the first and the
e second part of your working evening
normally work four evenings a week.) But
to go on reading mechanically Personally
nothing of what I read unless I make notes
ar them up afterwards. The mere act of
s me to register what I read in my under
d I believe most people's mind are made
herefore sit at a table
r that to work well you must be able to
nd I am convinced that, particularly when
ng the mind works best when the body on
ased is fit Further I would go so far as to
your age you probably read best when you
ly a little tired. So devote some of your
ping fit Maybe you come from a school
mes were little encouraged In that case
pportunity to begin and so add to the fullness
yment of life Perhaps you are not good at
games ? But you can still enjoy playing them even if you play badly and even if you still don t enjoy them surely you can walk cycle or run ? Further, take steps to maintain your general education and here I would strongly advise you to keep a novel going ' Not one of the kind that interferes with your work, such a thriller that you just can t put it down Rather read classical novelists and playwrights Dickens, Thackeray Hardy Shakespeare, Sheridan Shaw The successful practice of medicine demands experience of life, and at your age you are inevitably deficient in it but reading novels and plays is a short cut to its acquisition. Further Dickens and Shakespeare and many others were great clinical observers much greater than the modern novelists who attempt to unravel the minds rather than describe the faces of their characters

On Revision

You are now, I will imagine within a term or so of your second M B examination or in your last clinical year *Inevitably you are becoming more and more* examination minded But don't panic and start reading and trying to memorise textbooks Read and go on reading and adding to your own book Now however the time has come to compare it with the textbook and see where the main gaps lie There are bound to be some Fill them in from the textbook or better still go to your medical tutor and find out to what extent they really matter Also see whether he cannot put you in the way of getting experience of the subject you happen to have missed because cases of that kind did not turn up when you were doing that firm or you fractured your something-or-other playing rugger Do not bother about rare diseases True that some fool of an examiner (may I be forgiven !) might for lack of being able to think of any other original question ask you something about one of them But the betting is against it Work on common diseases about which you are likely to be asked will pay a better dividend than " mugging up rare ones when your examination starts

Look at back papers Think out how you would start to answer some of the more awkward questions They are seldom as bad as they appear at first sight, and I think that if you study back papers, you will soon realise that there are really relatively few questions which you can be asked They look different because they are worded in a different way (examiners feel under a moral obligation not to set the same question again and again and therefore always try to dress them up to look different) but they demand the same basic knowledge to answer *It is all* a question of seeing how to adapt your knowledge to suit the question For example take diseases of the heart What are the three things about which you are most likely to be asked there ? Surely cardiac pain heart failure, and valvular disease Aortic aneurysm high blood pressure congenital heart disease and peripheral vascular disease are relative improbabilities Further remember that there are certain key questions which you might be asked and you will be a fool if you go into an examination without being ready in advance to answer them For example discuss the differential diagnosis of dullness at the base of one lung and what are the causes of acute dyspnœa ?

Further, if I were you as your examination day approaches I would *write out a certain number of* practice papers in full and in the time allowed Don t immediately throw in your hand in desperation as soon as you see the paper and rush to look up the answers in your book Take it quietly Wait think and the answer will suddenly dawn Thus you will gain confidence I used to work with a great friend Once a week we each set the other five questions to be written out in three hours and put them in sealed envelopes which we exchanged Then we each sat down one convenient evening, opened our envelope and proceeded to write out answers in the allotted time by the clock, strictly on our honour to each other not to look anything up Then we exchanged papers and corrected what the other had written, looking up in the book when necessary That was practice in writing out answers quickly and clearly in the allotted time Soon it became good fun, and I am convinced of this if you can set questions and correct the answers to them, then you know how to tackle the written part of an examination yourself

On Passing Examinations

In order to get through an examination it is no good merely knowing the necessary stuff Rather, it must be mobilised in your mind, ready for the rapid presentation, and you must be in a fit state of mind and body to get it out, both in writing and in that dreadful ordeal the viva-voce examination Indeed I am firmly convinced that most of you who fail in examinations fail not because you do not know your stuff, but because you cannot get it out in the time allotted, for the simple reason that you have not got it mobilised in your minds or, maybe, because you don't understand the form in which we examiners want it .Do try to realise that we don't really want a lot of pseudo scientific facts chaotically arranged, or expect you to discuss the pros and cons for the latest theory of this or that Rather, we are in search of knowledge of basic principles, common sense, and a capacity for thought so that as the years go by, you can go on learning for yourself Remember that in the written paper you must attempt all the questions which you are expected to answer Again, consider our now old friend the economic law of diminishing returns It is fairly easy to get half marks on any question, difficult to get the next quarter even on an easy one, and almost impossible to get the last quarter even on the easiest possible question So common sense says attempt all the questions, even to the point of guessing intelligently at the most difficult ones Further, stick to principles and your guesses will prove right far more often than you expected Divine, if you can the motive behind a "funny" question The examiner usually had some idea in the back of his mind when he set it, and there are lots of different ways of answering any question Hit off the examiner's motive if you can Anyhow don't just jot down disconnected facts Adopt a method Above all, don't run off the point Don't ensure against leaving something out by filling up your answer with a lot of irrelevant stuff You are not marked for length ! Be brief, concise, and to the point Don t write a rigmarole Every examiner gets "sick" of reading scripts, and all are familiar with the candidate who puts everything in for fear of leaving anything out ! It is impossible to judge a candidate who writes answers of that kind "Give him 45% and let him stand or fall on his clinical" is the invariable reaction, particularly of the tired examiner Finally, remember that a rapid succession of written papers is a physical strain on you So don't burn too much midnight oil, or to be modern, electricity, between papers Keep fit When I took my Tripos at Cambridge I happened to strike two three hour papers on three successive days Each evening after the second paper was over I must have bicycled at least twenty miles I am sure it *paid* !

Nevertheless in all pass examinations the written papers are relatively unimportant Most candidates, rightly, stand or fall on their clinicals and vivas, and mainly on their clinicals, and I will venture to give you some advice about facing them Go in looking neat and clean and tidy, as you would have your own doctor look when you are ill All examiners react, consciously or unconsciously, to your manners and appearance Remember, too, that many examiners examine for style They like to see a patient handled properly and well. So examine the case allotted to you from above downwards with reasonable agonise over percussion Don't listen f lungs "for hours" Don't jab with your p Swing it freely from the wrist ! I somet I would let any candidate through a clin who know how to get the knee and ankle How few do ! Therefore, cultivate always examining every patient you poss is no other way of acquiring it

Don't always play for clinical safety more maddening to an examiner tha always say that the breath sounds are (bronchial breathing is an uncommon what bronchial breathing is Be prepared t Don't confuse rhonchi, rales, and crep unkind examiner may "get you" Do that you can *just* feel the tip of the of the liver (when you can't), merely b afraid of missing one or the other No maddening than the candidate in a st that And above all don't say that the reflexes are "query extensor" If they ar extensor or the other signs don't fit, you they are flexor Say so Be definite The examiner prefers the candidate wh mind, even if he is wrong (provided he patient in the proper style), to the ca making up his mind at all

Handle the patient in an examination was in your own consulting room and doctor personally responsible for him. T of *his* disease and how you would treat in terms of the abstract concept in the orthodox treatment for it Don't ignore t of the patient's life Reveal your huma as your scientific knowledge Develop a th as to the diagnosis, investigations, and tre patient before you, and follow it up L examiner see your mind working He want to ask you a lot of questions, you out Ride your own line in your ow your examiner will follow it And by any chance you have ever been horse, you will have learnt to appreciate t of keeping him "collected" By that and responsive to you The uncollecte danger at any moment he may sh try to buck you off So, too, with an ex him collected ! Make him follow your tr He will be only too ready to do so, b awkward for you to be compelled to fol let him get off into his own country fol follow him Keep talking about your you hesitate, he may grasp the initiative some very awkward questions He does to do that He has probably been examin noon and may be hard put to think out a

Finally, remember, and take comfort that your teachers and examiners know than you suppose Indeed we are painfu our profound ignorance We, too, like lack of confidence What I mean is th qualified, perhaps I knew 20% of all med Now, after thirty five years of practice I that I know an even smaller proportio that I have not learnt a lot in that long t the field of medical knowledge has widen than my knowledge has increased Yo have all been driven into being speci can gain some consolation in the know are examined by specialists who are questions right out of their own spec which they don't really know very much moral obligation at an examination not to wn particular hobby horses too hard So y looking for ? Detailed knowledge ? I think have not got it Rather, they are out to you as I have already said knowledge of ommon sense humanity and a capacity for I can examine perfectly fairly by setting which I do not really know the answers not look up) and on clinical cases which I examined and which I shall never examine ! s that I can always tell, from the way the ackles a question or a case whether he is more or less right or wrong Further do I he is wrong ? If he can think right that is ters to me and I believe to most examiners '

Summary

nust be interested If you have lost interest on the lines which I have suggested and onfident that your interest if it ever existed, return

out a programme for yourself in relation to s which lie ahead and the examinations are required to pass Find out the order in are to be put through the clinical hoops -student to work with you

our working time accordingly but put aside your course and even in your final year for games cultural interests and reading assical novelists and playwrights as a short n experience

inical experience before reading Never miss *nity of seeing and examining patients your* ever you can take them blind Always nosis Keep a firm ' book and your own rd of your more interesting cases. Success largely depends on good clinical memory o imagine that you are personally responsible tient allotted to you

ading follow in the wake of your clinical nd lectures. Don t try to read the textbook vate the art of using it for reference Always things up Study medicine surgery mid pathology together and not in watertight ts. Use a loose leaf notebook and write your you go along

ur examination approaches compare the book have written with the textbook Get your you fill in any important gaps See where s lie but don t panic about the rare diseases ave not seen You are not likely to be asked Study the examination papers and think u would answer the questions. Get your nobilised in your mind ready for rapid Give your friend vivas. Do written papers seen by the clock

written paper attempt all the questions re expected to answer It is bound to pay e the motive behind the awkward question You may suddenly see daylight Always nswers Above all don t write a rigmarole rything in for fear of leaving anything l You are not marked for length

linical remember that you may be marked lot the history short and clear Examine systematically from above downwards at peed Imagine that *you* are the patient a that *he* is *your* responsibility Talk about nd *his* treatment and not about the disease Display your human interest as well as l knowledge Develop a train of thought aminer will probably follow it Thus you your knowledge He does not really want wkward questions !

Good luck !

INTRODUCING THE FAMILY DOCTOR*

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I REMEMBER once going to a film—I forgot what it was called or who was in it—but I can remember that, for me, it had rather a dramatic beginning It was early morning in an American small township and the whole scene was one of the sort of peace and quiet usually associated with an early spring morning in England The paper boy was cycling along the sidewalk throwing the morning papers down the garden paths to end up against the front doors There was no one else about to break the silence until a car was seen proceeding (as far as I was concerned) down the wrong side of main street, the cameras following it until the inevitable close-up revealed the village doctor as the sole occupant

This short scene filled me with a tremendous nostalgia my feelings could only be analysed as resulting from a sense of oneness with this celluloid doctor realising smugly that only he and I knew how gloriously satisfying it was to drive back in the early dawn after a night call (the comfortable sense of achievement entirely transcending the original upsurge of wrath with which the urgent telephone message was greeted an hour or two earlier !)

I wondered what he had been up to A P P H perhaps a cardiac asthma even an appendix any one of a hundred or more possible emergencies he had suddenly been wakened to deal with And any one could have been responsible for his present exultant mood

I was sure that he had left his house with that rather uncertain feeling always present when approaching an emergency Is the emergency bag in the car ? Is it fully equipped ? When was the patient last seen ? What was the condition then ? Will a transfusion or an anaesthetic be required ? So many thoughts criss crossing his brain as he drives—to the extent that he is probably unaware of any single detail of the journey

On arrival at the scene he has learnt to expect an ovation from waiting friends and relatives It not only indicates a polite show of confidence in his ability to deal with the crisis but it is also intended as a warning that every detail of the performance will be keenly watched criticised and discussed with neighbours for months to come So that, from the first he takes on the rôle of leading actor in the drama—no matter how worried he may be or uncertain he takes care that no sense of strain is allowed to reach the patient or the relatives Automatically the most sensible looking person is picked out to help him (it usually turns out to be a friend rather than a relative !), and after this all the others are given jobs to do to occupy their minds and their hands while the crisis is on Maybe after a short time maybe after hours all is finished By now everyone is well disciplined and under control there is a feeling of confidence in the air a sort of all boys together atmosphere there is a cup of tea downstairs and best of all a car standing outside ready and willing to proceed homewards

You may wonder why I have introduced the family doctor to you in this way You may think it would have been more appropriate if I had brought him to your notice as the man who spends all day dealing with the common cold the threadworm or the phenobarbitone tablet I don t blame you for these thoughts, in fact I entertained them myself when I was in hospital but I hope I shall be *able to persuade you that general* practice is a most stimulating exciting and worth while occupation for any man with a keen sense of adventure and a flair for hard work

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* An address given to senior students at St Bartholomew s Hospital London, on April 12 1955

A New Adventure

We have all heard it said that after qualification we must immediately forget most of what we have learnt about medicine, and start again I think this may be specially true for those who enter general practice It is not so much that one has to forget what has been learnt from books, lectures, demonstrations, and even examinations but rather one has to push them into the background, leaving plenty of room for all the practical knowledge needed for successful family doctoring

It is one of the weaknesses of our present educational system that the newly qualified doctor sees and knows very little of general practice until he has done his house jobs, after which he may suddenly find himself flung into a very specialised world as a new boy, and he consequently often displays an ignorance that would bring a blush to the cheeks of any prep.-school boy in his first term What I am trying to say is that today a student of general medicine qualifies to become, for at least two years, only one-third a doctor, and for these two years a heavy curtain is drawn between him and the rest of the medical stage He catches a glimpse of the family doctor when a pleading voice over the telephone asks for an acute appendicitis to be admitted, and he regards the medical officer of health as the man who controls the ambulances and the convalescent homes

But the awful day is bound to come when this part-of-a-doctor, working in a comparatively narrow sphere as a houseman is cast into outer light The changeover is remarkably and frighteningly sudden One day he is in the ward shielded by the sister the registrar the assistant physician, the senior physician, the radiologist, the pathologist, and the pharmacologist The next day he is alone

I shall never forget the day I sat down at a consulting room desk, all on my own for the first time There was a *Barts Pharmacopœia* secreted in the top drawer, together with some rough notes on how to compile a prescription I was equipped also with that knowledge of human nature usually to be gleaned from six years of undergraduate existence

To such a man are thousands of individuals entrusting their lives every day It is no exaggeration to say that both doctor and patient are inwardly most apprehensive —the patient less so than the doctor, for he at least has learnt from the predecessor in the practice what is wrong with him, and he has a fair knowledge of the treatment he should be given Moreover it is not beyond the bounds of possibility that he will clasp the new doctor to his bosom, taking up a sort of "I-saw-him-first" protective attitude, and telling all his friends that the young man is all right and knows his stuff As a matter of fact, he must be relied upon to do this It is the only hope The new doctor must cast himself on the patient's mercy, never pretending at first to know more about the illness than the patient does After all, a well trained patient will sum up a new arrival in a matter of minutes

It is then surprising how little the pharmacopœia in the top drawer matters (in any case, a wise novice will have contacted and made friends with the best chemist in the town within a few hours of moving in) and a vast and fascinating new vista is opened up, so that for the first time the whole stage of medicine is seen The prologue is over, and the play has begun The cry goes up "I am a doctor—how exciting!"

It takes very little time to convert a newly qualified and comparatively ignorant doctor into a knowledgeable and efficient family physician, wise beyond his years He soon becomes capable of dealing with any type of patient, any emergency, and any unpredictable situation, yet underneath it all the uncertainty and the excitement never go Each day is a new adventure, a new problem, each birth a new patient lost a new heartbreak

The Unwritten Attributes

What type of man is this family doctor

Last summer when I was on holiday I on a ferry, waiting for the cars to embark afternoon and everybody was obviously regretful that the postprandial nap had One just-past-middle aged man drove on dated, open two seater There was a perched on the front of the car and sphygmomanometer thrown on the back didn't need either to tell me that this doctor (You must forgive me if I don't practitioner," for I loathe the expression must have a bureaucratic origin and smack of different certificates, committees of Governmental "dos and don'ts," and various cedures so foreign and hateful to our pro

It was interesting to look at this man were a member of the general public, patients He looked very comfortable and there smoking his pipe, I decided that I no hesitation in trusting my life to him, didn't even know his name Most people know him and to offer him some sort of old lady even went so far as to lean start chatting, I reckoned I could have conversation word for word I doubt if a crisis of any sort in her family for generations which he hadn't shared. From spoke to him you could see that he doctor, he was her *family* doctor, an old honorary and ex-officio member of her time we had reached the other side of decided that this man was a very good didn't care which end of the stethoscope ears He stood out on that ferry for the that he *was* a family doctor, and in this fact his B M A badge and his sphyg were as nothing—they need not have been

I am sure that already you have noticed is a type of doctor who, by all the rules and Persians, and according to all the text his patients correctly and wisely—yet they On the contrary, there are those whose one to whistle through one's teeth with whatever the outcome of their adminis patients will never leave them Why is this

The answer is simple The man who goes doctoring and reckons he is going to make it merely because he knows a textbook by heart, or how to give a blood trans a breech with extended legs, is going to the day of his arrival in practice The go to make a family doctor do not appear books, they are not even discussed in any university medical curriculum, any pharmacopœia They can be inborn learnt the hard way In either case after of years they will appear on the face of sits in his car on a sultry summer's after luckier colleagues are on holiday

I must obviously describe these although to do this properly would take in itself In the main they can be groups of three

The first inseparable triumvirate is pathy, and understanding The ability to be as one with the patient in his illness across to him that, once having consult no longer alone in the struggle (And he not only has to know that you are with feel happy about it, and more secure as This is not, I know, medicine as you find but these properties form the foundation

ι general practice is built they are we
the container into which the medicine is
rom which it is taken

phere of indifference, a cross look, an
ic word a quick glance at the clock, a
written before the full story has been told
examine when the patient has prepared
n overhaul *a lack of ability to understand*
thise—and the container is cracked and
nd nothing that is put in it will do the
good

ars go by one is introduced to more and
problems One s tolerance grows and one s
is intensified The words left unspoken in
conveyed as it were by the worried look
to understand that more could be said if
ntail possible disloyalty to a husband or
of appreciation of the mother in law living
ves, inability to cope with the house keeping
the little human displays that have to be
fences to hide poverty or unhappiness from
the deaths and separations in the family
ith the happy things such as births and
d younger generation achievements. All
in the surgery sooner or later, wrapped up
ure form or another The majority of them
ut for compassion sympathy and under
uite often treatment can stop after a display
re of these three—nothing more is needed

a *one must look round for ingredients to*
containers and here we come to our second
all important non material agents faith
ve. (One would like to say faith hope
for since the introduction of the N H S
atest of these has most certainly been
am not mocking as I am sure you will
when I say that you *must* explain to a
you are giving him a certain medicine
er again I have noticed that a patient with
no complaint will come back in a week or
rong one cured unless a careful explanation
e beginning as to which one is being treated !
you are bound to meet patients who mistrust
s (particularly those suffering from true
xiety states, and so on) and consequently
ent by bottle or box is virtually doomed
t

ultant does not depend so much for his
hese agents he relies more on the build up
a You know the sort of thing You ll
it abrupt Mrs Jones, but don t mind him
bly clever and knows your sort of case
Mrs Jones carries with her to the hospital
hy and understanding together with the
pe you have given her She is delighted to
onfidence in this particular consultant and
ositively hate him not to be abrupt His
ness becomes part of the treatment she
him

you will be in difficulties when you first
e for you will not be a member of your
ilies you will not know them their little
faults peculiarities, their domestic scene
, and their troubles But you will get to
quite soon after your arrival—particularly
a point of delivering the babies (in spite
Act) piloting the kids through the whole
ectious diseases and the parents through
hich inevitably occur when two or three
s are gathered together in one place

In the Home

ngs us to the family doctor in his patient s
ac really to believe that he is restricted to the common cold the threadworm and the elastic stockings ? Of course this is nonsense There is no need for him to shift the responsibility for the care and management of his patient away from himself, from the first to the last stage of the illness He has at his disposal (and here I would urge you to contact these people as soon as possible when you arrive in a practice) district nurses and home helps medical officers of health—either in the administrative capacity or in their public health laboratory—radiologists pathologists and consultants and specialists by means of domiciliary consultations (one form of postgraduate education) There are in addition, midwives, health visitors, and one source of information so often forgotten his partners

All these being available, there are very few patients who need to be admitted to hospital except surgical emergencies and those whose home circumstances make it impossible for them to be nursed there Of course you can be shot of all of them at a very early stage if you are that sort of doctor But your consultant colleagues will soon get to know you

Only a few weeks ago I was in the outpatient department of a hospital talking to a casualty officer A nurse told him that Dr X from ten miles out was asking to send in an emergency Being a new casualty officer and knowing that Dr X was a village G.P he demanded all sorts of additional elementary information (and how my heart went out to poor Dr X who had been admitting cases to hospital long before this young man was born !) and finally decided against taking the patient Fortunately a registrar came by at this time He simply said : *If that is Dr X on the phone I advise you to admit his patient. He would not ring up unless it were necessary*

The other side of the picture is a sorry one : a consultant told me that he had had a patient referred to him by a general practitioner by means of a dirty envelope on the back of which was written Please see Mr Y He replied on the same envelope I have seen him

You must choose whether you are to be a family doctor prepared to stand by your patients no matter what the emergency or a general practitioner in possession of a pile of second hand envelopes

When you visit your patient and decide to look after him yourself remember that although you will only be seeing him for ten minutes each day he is going to be ill for the whole twenty four hours. In other words don t just leave him with a prescription and a few words of sympathy Arrange for a nurse to call Ask him if he wants a home help In fact so arrange the domestic scene that the patient is able to recover without his family collapsing from the strain of looking after him

Remember that it is not a sign of weakness to call in a consultant Quite the contrary (May I hasten to add that I would regard it as much more a sign of weakness to accept the consultant s opinion quite blindly and quite against one s better judgment I can think of three recent episodes in my own partnership where we have had politely to disagree with the expert with gratifying results) Never forget that you know the patient first and the disease afterwards Your expert colleague looks only at the disease he knows not the patient therefore his handicap is phenomenal It may well prove too much for him

When you are dealing with children in the home it is a good thing to get the district nurse to give any necessary injections not for the obvious reason that she will undoubtedly give them more expertly and painlessly than you but for the principal reason that the child is going to grow up (you hope) with you as his doctor and it is a bad thing for him to dislike you intensely from the word go ' For the same reason when you deal with a child never tower above him kneel sit or lie down so that your face is on a level with his never get straight down to business without a preliminary chat—with the child not his parents And leave exami nation of his tonsils until the last—if you don't you will be made to understand quite clearly that any further visits from you will be, to say the least of it, unwelcome

It is always difficult to judge exactly how many times you should visit a patient If you go too often he gets an exaggerated idea of his illness, and a pretty shrewd idea of your ignorance, if, on the other hand, you leave too long an interval between visits, you may well find the patient dead on arrival back at work, or transferred to another doctor The answer is, I think, that this difficulty is never really solved It is more or less a permanent headache, but it is made easier as one acquires a more intimate knowledge of each patient and his environment

One of the problems that will face you from day to day is how much to tell the patient Hospitals have an unhappy habit of discharging a patient with an incurable disease leaving it to the family doctor to tell the patient how incurable it is If you do not tell him he may lose confidence in you for not getting him better, if you do tell him it is not beyond the bounds of possibility that he will call you a liar and change his doctor anyway

As a general rule I usually face this problem by holding a family conference and going by the majority vote In any case, at least one member of the family must be aware of the true state of affairs I mention this side of general practice because it helps me to bring in another person with whom it is always possible to work in harmony the parish priest or his Nonconformist colleagues Many of them will deal with this situation most efficiently and effectively If the time arrives when I have to tell bad news to a patient I nearly always arrange that a priest is round the corner, on the spot or even in some cases, in front of me Naturally, one has to choose one's priest But one chooses one's consultant so no precedent is being created

The X ray department can be of immense value With the aid of the ambulance or car service it is nearly always possible to transport the patient to and from the department without much discomfort The report arrives the next day This, in conjunction with your own examination of the urine, together with my laboratory reports, prepares your patient quite adequately for the consultant's visit If, after the consultation, it is felt that more investigations are needed, that surgery must be resorted to, that more nursing is required, or that treatment must be given which is not possible in the home, you will know that you have done all you can and that the time has come when you must deliver your patient over to the hospital services You *must* do this, of course, but don't give him up entirely It takes very little time to pop in and see him in hospital Most hospitals don't mind, and all patients look forward to your visits You can explain so many hospital mysteries in the language you and he have learnt to talk together Moreover, you can continue to treat him with compassion, sympathy, and understanding—it works just as well inside the hospital as outside

Obviously I could say much more about the treatment of patients in the home Let me end by mentioning one person who can be the greatest asset of them all—the doctor's wife Tactful and diplomatic, helpful and sympathetic, patient and comforting, whether she is tackled in the street or on the telephone she can double the size of the practice and halve the amount of her husband's work What would we do without her, I wonder?

In the Surgery

The first hint is this treatment in the surgery begins from the moment the patient sets foot inside the door In other words, it is unwise to neglect the training of receptionists and it is as well to make sure the
waiting-room is always clean, tidy, warm,
able This sets the scene for a success
(I did not realise how much all this m
did away with old-fashioned surgeries in t
and started an appointment system It w
before the majority of patients settled dow
an hour's wait, and they were very re
being deprived of part one of the treatment

The next thing to say is this as a
you are not exonerated from examining
thoroughly A complete examination is no
or peculiar privilege of the consultant I
your responsibility If, in spite of th
ness of the diagnosis, well, at least you h
this you can either have special se
examinations, or you can furnish your
or three additional examination rooms (
latter is preferable

The same applies to note taking It is
that your notes should be efficiently comp
the consultant's should be, for the patient
from the cradle to the grave, and during w
hope will be a long life there will be freq
when you may have to consult your notes

Some Dangerous Dustbins

There is a danger, I think, of the ma
being cast into what I call three main d
"old age," "neurosis," "menopause" I
to put the lids on and so help the conten
common with a number of my colleagues I
use these dustbins I discovered years a
fill all three of them during the course o
and I received no satisfaction from so do

There is no individual of any age or
disease, recognised or undiagnosable, wh
to the surgery and go empty away Th
may have to cast him away (it is a
inevitable part of his job that he has to
time to time) but he will return to you
battle on Only two days ago a patient t
had taken her rheumatism to Dr X and
her there was nothing he could do about
and I were flabbergasted Such a remark
sultant would be understandable, from
it was little short of heresy

OLD AGE

At least once a day a patient will say
doctor, I know this is due to my age'
you agree The answer to that remark
—and don't just say it, mean it It
to keep patients as fit and active as pos
of their age They may be getting breath
walk upstairs, or pain in their calf mus
go out shopping, they may have a
knees moving in the mornings or their
at all Whatever their trouble, it is not d
If it is, it's your fault, and not theirs
have been moved into a flat long ago, the
department should be attacking their m
and the daily living department the
should be busy losing a stone in weight
help service should be at hand to help w
the cleaning, and the shopping Close
empty bin

NEUROSIS

If old age is indefensible as a diagn
inexcusable The pitfalls in front of th
this dustbin are innumerable Occasional
that if a consultant can find no satisf
for a symptom or group of symptoms h
there is a large "functional element"
is aided and abetted in this conclusion

hospitals or departments who have been a loss for a diagnosis Beware of joining in acy Anyone who has been in practice for ime as one year will tell you how dangerous Always bear in mind that sooner or later lled neurotic must cry wolf Remember the urgent call from a warm bed on a winter s oo the very one that you least expected

ith considerable shame once seeing one of my ics the day before going on holiday I was hum but for some reason in a blaze of pre-holiday ppose I decided on this occasion to explain to t the dyspepsia for which I and various con been treating him for many years was entirely enomenon and that I saw no likelihood of him ike similar complaints for as long as he lived int of fact quite accurate in my last remark, ated the ulcer during my holiday and was dead returned

ote to the Admiralty after seeing one of their tating in my youth and innocence that the suffering from an anxiety neurosis (a diagnosis glad to say, is no longer fashionable) but showed of suicidal tendencies He and I had actually her at the idea of allowing depression to reach m one would contemplate taking one s own life it the only time he did laugh Unfortunately my letter arrived the next morning he had by a rope from a beam in the ceiling for

e so-called neurotics are charming people nerous perhaps over self-centred solitary ilt and coddled in past years when such s were feasible unrealistic maladjusted ole of facing up to the stress and strain of Their greatest sin is that they take up too doctor s time But insufficient time to treat excuse for an unsympathetic or irritable should always try to have a few minutes a day for the lonely person who just wants to, to be advised or even quite often to A dismissal after ten minutes of chatting fective and lasting than a hurried prescrip o minutes of reproach And to descend t to the commercial, remember that the be either your best advertisement, or your nilly they constitute the group of people most it is nice to arrange that they say gs!

THE MENOPAUSE

d the indefensible dustbin and the inexcus- the unforgivable Never during the whole as a family doctor let a woman in the ink that she has come to you in vain or of your light-hearted and unsympathetic r peculiar symptoms she can never come No matter how difficult these patients may times they may trouble you or how nearly e you to drink on occasions always bear sooner or later they will meet you in the on the other side with a butter wouldn t uth look on their faces, as if they had trouble to you at all. In other words, re going to pull out the other side and will y have ever been through the menopause through it with them But in actual fact forget you and will be your most grateful

y symptom to them in the minutest detail never imply that only a weakling would such a little thing as a hot flush or an l above all if they come to you covered ety because they have missed a period and be pregnant avoid the pitfall of the l dissuade yourself from saying that no women of their age has ever been known to have a baby Treat their amenorrhœa with the greatest respect coupled with the firmest and kindest reassurance You will reap your reward, and will never regret that you bit the end off your tongue when they first consulted you!

Stress Strain and Staphylococcus

So many patients will present themselves to you with a symptom or group of symptoms recognisable at once as resulting from stress and strain It may be dyspepsia palpitations, headache, recurrent rash, insomnia, alopecia, or just plain weariness In all these you are expected to supply a remedy in the shape of a bottle or a box of tablets, whilst the stress and strain goes on How can one put a rest or a holiday with change of environment, into a box or a bottle? Well it has to be done for nearly all these patients are women They are bearing the burden of the home the meals the kids and in far too many cases of earning an addition to the family income to pay for that little extra of housekeeping, or the instalments on the furniture the television or the car If you tell a male patient to go to bed he will thankfully retire for as long as you can persuade him to stay there, thus casting yet another burden on the female of the species A similar instruction to his wife will require at least a week s notice before she can so arrange her duties that she can take herself off to bed without the family starving or going unwashed from start to finish of her illness moreover even then she will be out of bed four times a day to cook the meals and again to get the kids off to school or washed and up to bed Finally if you try to keep her in bed too long you will find that she has timed your visit to a nicety so that she is in bed for a maximum of ten minutes before you arrive, and thirty seconds after the car has driven away (One has only to be a family doctor for a week to realise of what poor stuff we males are made What is needed is a trade union of housewives—against it the hydrogen bomb would appear insignificant!)

Then there are the anxiety states, the melancholias, the depressives, and *Staphylococcus aureus* (penicillin resistant, of course) and the hæmolytic streptococcus Any or all of these may appear in varying forms once or often in the course of a four hour surgery And casting a shadow over the whole lot is the carcinoma from the tiny spot on the face doctor to the unexplained and vague abdominal pain For every one that is diagnosed too late somehow or other there must be ten diagnosed in time And this is the task of the busy family doctor He is the magician who produces the early carcinoma and presents it on a plate to the waiting surgeon who will reap the reward for saving the patient s life as surely as he will gain the sympathy of all the friends and relatives if the presentation is left until too late (May he be forgiven for that shrug of the shoulders which expresses only too clearly how much he could have done had he been called in only a week or two earlier!)

* * *

All this constitutes family doctoring—and so much more Life is an exciting experience from early morning until last thing at night Always the thrill of wondering what is round the corner The occasional bitterness after a lost battle the certain satisfaction after a victory and the exultation of an early morning drive through the country after a long and difficult night s work But that is where we came in

Family doctors may grumble and be full of pious misery in the winter months, but they are never so happy as when full of self pity never so contented as when overworked and never so miserable as when on holiday away from the all absorbing drudgery of medicine

Indeed a day s journey in the life of a family doctor is a very wonderful thing

THE EDUCATIVE VALUE OF RESPONSIBLE HISTORY-TAKING BY MEDICAL STUDENTS

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THERE is room for a wide variety of views on the content and technique of medical education But all can agree that its aim is to produce doctors A doctor is expected to have three qualities In the first place, he must have a certain factual knowledge and certain technical skills Apart from a common basis of essentials, this knowledge and these skills will ultimately vary greatly with the particular branch of medicine in which he practises, and they will, in fact, largely be learnt in that particular branch The facts and skills that the student acquires during his undergraduate education are therefore largely of minor importance in themselves Many of their details will be obsolete by the time he qualifies Their chief importance is as instruments of his education Secondly, a doctor must have an attitude of mind, definite but difficult to define It is compounded, on the one hand, of a combination of integrity a philosophy of life, sympathy, and a regard for the dignity of human beings, and, on the other, of a scientific outlook This attitude of mind cannot be taught didactically, but it can be encouraged by practice and fostered by example And thirdly, a doctor must possess the capacity to accept responsibility and make independent judgments It is with these second and third qualities, and the relation of responsible case history-taking to their development, that I wish to deal here

An Unwelcome Trend ?

A proper attitude of mind, independence of judgment, and responsibility, need nourishment and exercise for their development Medical education is always therefore much more than a passive transference of knowledge and skills from teacher to student It involves the fullest possible collaboration of the student with the medical team It involves giving him responsibilities, controlled but progressive, and the continual testing of his independent judgment And this principle of controlled responsibility is the chief virtue of the traditional English system of student clinical clerkships and dresserships

In the days when those of us who are now senior were medical students, the clinical clerks and dressers were largely responsible for history-taking (and also incidentally for surgical dressings) When we first entered the wards we had little idea how to approach a patient and elicit a proper history, and we had to pick this up as we went along Our indispensable guide was a solitary hard-worked house physician or house surgeon But between us we usually managed to produce an adequate record of the case and its progress for the chief's round We had plenty of responsibility The weakness was that owing to paucity of staff it often could not be adequately supervised and controlled Today all this is changed Before he starts his wards the student has an intensive course of some months on history taking and clinical examination When he gets into the wards, he finds an abundant staff of housemen and registrars, with abundant time to supervise and control his activities The conditions are thus ideal for the practice of the principle of controlled responsibility But all too often his responsibilities are negligible He usually has no responsibility for the patients' notes, he usually has no responsibility for the patients' dressings The large teaching staff in the wards has been used not to control his responsibilities, but to relieve him of responsibility This situation has often arisen gradually and not as a definite decision of educational policy It is my purpose to consider whether it does not indicate a trend that should be reversed

The practice which has gradually deve standard one in teaching hospitals is th physician or house surgeon to be respon taking He sees the patient on admiss history, and makes a full examination the official record of the case for pres hospital records The clerk or dresser patient and takes a further history and ma complete examination, which in theory of that of the houseman This student's official status, and on discharge of the pa back to the student It is claimed for this combines the advantages of satisfying record and educational requirements The preserve a record taken by a qualified doc student has the advantage not only of but of keeping them for further study

But the theory and practice of this s diverge The student may try to take a history but, if he does, often does so half k ing that it has no real place in the sche And the patient too is often puzzled and little resentful that something he has just fully explained is being gone over again to purpose And as a result the student in p does not take an independent history a independent examination, but takes large from the houseman's notes The case thus one for which he has any real responsibility he can exercise any real independence of j educational value thus becomes mere additional collection of facts

Controlled Responsibility

The alternative is a development of th system of responsible clinical clerkships a but using the increased house and regis available to guide and control the student's bilities Under this system, the patient seen by the houseman, who after having contact and a general assessment, hands h student for a detailed history and exam having been done, the houseman sees the with the student and his history, makes his tion, and checks and corrects anything the history and examination findings The makes a fair copy embodying these correct becomes the official hospital record of the record is again checked by the registrar, a to the consultant on his visit. The hesitate to criticise or modify, but in a system is working well the stimulus to a knowing that the consultant is going to final arbiter of the quality of the notes m modification rarely necessary This is the by a "responsible history taking"

The increased educational value to the system can hardly be questioned. K history he takes is going to become the o record, he has a sense of pride and resp a sense that is quickened when he knows ultimately come under the critical review the presence of his fellow clerks or dressers given the opportunity of exercising his judgment, though both his judgment and bility are carefully controlled And possib tant of all, in a subtle way too it helps t doctor's attitude of mind and a proper d relationship No longer is it a case of a exploited as teaching material From the of view, all that he tells the student will be any decision about treatment, and the st be regarded by the patient not as a nec but as a particular and valuable friend.

rongly this altered atmosphere in a ward in
nsible student note taking is practised

The Value of Notes

ction usually made to such a system of note
at it does not give an adequate record Before
to answer this question it may be convenient
the whole problem of clinical records The
l question that arises is of the values they
tes are, in the first place, obviously necessary
or observation and treatment of the individual
econdly, doctors particularly those with the
the facilities of teaching hospitals have the
to use their observations on patients as
active clinical research and for this purpose
ry that they should be complete and accurate
nt under investigation And thirdly when
to have value in the management of the
atient or as part of a record of active research
eserved as a historical record As such they
cal historical value and they may from time
ve a certain minor value for retrospective
But the main value of the notes has dis
The view sometimes uncritically accepted that
l notes have some great scientific value is
orted by evidence of frequent consultation and
ch notes. Once the patient and the research
present are dead they are for the most part
dusty files of medical history

v consider the two systems of note taking in
the above considerations it is not so much as
or the proper observation and treatment of
ual patient that the system of student note-
been criticised but as a research tool But it is
at no clinical records are of much value for
rch purposes unless the individual doing the
n is responsible He may undertake this
ty in various ways, direct or indirect But
ubstitute a newly qualified houseman for a
senior student does not help In fact if it
e chief neglecting to accept the ultimate
ty for the notes and rely entirely on his juniors
armful. The essential point is that the investi
himself see that the records are accurate, and
e does this it does not matter whether the
ent is a *medical student or a houseman*

An Effective Weapon

ble history taking by medical students is such
part of their education that it should be
erever possible Given a preliminary period of
such history taking together with a system
which should extend right up to the chief
te taking should achieve all that house
aking can It is often an advantage too for
be given a short course of instruction at the
f a new appointment on the special features
ng in the particular types of case they will be
course like all systems it should be used with
The continuation notes can be adequately
by the houseman And such parts of the
account of the operation are probably always
with by dictation Dictation to the student
bly the best method in emergency cases But
ntelligent flexibility it is my contention that
history taking by students can be made to
east as high a level as that by housemen and
ch a valuable educative weapon that it should
herever possible in both outpatients and
in all medical schools aiming to educate their
the highest level

ke to acknowledge my *indebtedness to students*
years have coöperated in trials of the different
ry taking; and also to thank students who have
onded to my request for an objective assessment
tages and disadvantages of the two main systems.

NOTES ON NOTE-TAKING

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AT Guy's Hospital in London where I was taught there are still several beautifully written notebooks by contemporaries of John Keats. Perhaps some of the poet's own notes are there too and that I am uncertain whether this is so or not shows how unaware I was of the significance of those exquisitely written pages when I had the chance to study them at leisure In Keats's day students were very proud of their notebooks, and the habit has continued for over one and a half centuries the vaults at Guy's used to be crammed with bales of clinical notes. I do not suppose that anyone ever reads them but if they do I wonder how often they find the notes either useful or legible? I do not simply mean that the writing may be hard to decipher but how often has the ink faded or been washed away by water that has somehow got in?

In Keats's time note taking was encouraged because textbooks were few and usually out of date and without notes of talks and bedside discussions (formal lecturing was a later development I believe) a student could not expect to learn It is odd that in our day for other reasons note-taking is still very necessary There is such a plethora of books that unless the student condenses what he finds in them and illustrates them with accounts of the demonstrations or patients he has himself seen, he can quickly lose his way The teacher of medicine has other good reasons for urging his students to learn the deceptively tricky art of note taking early in their career and to continue it over the years Obviously all clinical research requires accurate and clear note taking and so too must every properly run practice, whether special or general The doctor must be able to satisfy himself quickly what *did* happen to Mr X when he fell down stairs ten years ago—an event merged in his memory with dozens of similar ones but to Mr X the only really important accident Indeed good notes can be life-saving, and a clear and accurate history has been known to localise a tumour better than an *encephalogram*

Nowadays there is another and perhaps sadder reason for learning and maintaining the art of note taking Litigation by patients against doctors is greatly increasing Often only two things stand between a doctor and professional ruin—a medical defence association and clear well kept complete and convincing notes The doctor who does not keep such notes will always be vulnerable in court It may seem unnecessary to worry about written notes in an age of electronic aids and secretaries but these are not always available and it is even doubtful how well typewritten testimony taken from recordings will be accepted in court The man who can put his findings down clearly with his own pen will probably make good use of a recording machine when he has one

The Present Position in Medical Schools

So far as I can discover note taking is nowhere taught to medical students, yet we can reasonably assume that for a long time it will be a valuable part of clinical medicine I suspect that the trouble is that no-one wants the responsibility of teaching anything which is so important and also so unspectacular When these matters come up in the planning of curricula if they do ever come up the professors at medical schools pass the buck They complain that students should know these basic matters before they come to medical school and that if they don't know now, it is too late to teach them This piece of academic double talk avoids the effort needed to remedy a serious deficiency in the curriculum. There is no good reason why the rudiments of this skill should not be developed in the pre-medical courses

To encourage those who might be urged to prepare a course of note taking, I will discuss what, as a student, a general practitioner, a specialist and a research worker, I have learned about it

How Much do We Write?

Going back over my own notebooks and examining my own writing, I doubt whether many students write less than 1500 words a day on average, and I would guess that many write two or three times that number In a year this adds up to a minimum of over 500,000 words Most doctors practise medicine for at least thirty years and I should think that they certainly continue to write 1500 words daily Spread over a medical lifetime this comes to getting on for 20,000,000 words the equivalent, say, of over 100 medium sized novels It would be a wise investment of time and energy to prepare for this immense clerical task so as to obtain the best results with the least effort

The Tools

The Writing board

For years on wards and in lectures I was inconvenienced by having to write on desks whose surfaces had been marred by amateur wood carvers, on the backs of books which were too small and often inconsiderately embossed, or even on temperature chart holders (and that annoyed the nurses) It is only lately that I found relief by getting a writing board

The Swiss make an excellent one from aluminium with a long clip at the edge, but perhaps even more useful, and certainly much cheaper, is a piece of hard composition board about 14 × 9 in The paper is held by a $2^1/_2$ in bulldog clip which can be removed when the board has to be stowed in a brief case The board with the clip separated can be packed more easily than those in which the clip is attached with rivets It is cheaper too A further advantage of the board and clip is that by using a modern fine ball point pen very clear copies can be obtained with pencil carbon

Paper

The quality of the paper is very important for clear writing, and absorbent papers should be avoided The other essential is to use loose leaf notebooks, Pick a standard size of paper and stick to it This reduces the bulk of paper that must be carried around It is very convenient to have all one's notes on the same size binders

Ink

After paper comes ink—another neglected subject There are certain special requirements for medical notes and it is therefore good practice for the medical student to think of his early notes as he will have to think about his later ones when he is in practice Medical notes must be as permanent as the paper on which they are written, because they may have to be consulted many years later and much may depend on being able to read them Think of those old documents with the writing still standing out black and bold after centuries What should we expect ink to resist? The main hazards are air, ultraviolet light, water, time, and possibly infra red light It is desirable too that inks should stand up to chemical solutions at least as well as the paper on which they are written Recently a government department in a tropical climate discovered that their records written in "permanent" black ink were disappearing Investigation showed that the dye from which the ink was made was bleached by ultraviolet light

A simple test is to write in a variety of inks and expose them to an ultraviolet lamp and it will soon become clear which ink will stand brilliant sunshine Water can ruin records disastrously Recently I left an important notebook
in the pocket of a washable jacket It
detergent for four minutes, rinsed twice,
The episode proved very instructive because I
in this notebook with a variety of ball point
ordinary fountain pens, using several
one lot of writing survived this ordeal and
legible This was Swan Old English
"*permanent*" inks disappeared
washable ball point ink remained stubbornly
permanent records the ideal ink is one
removed by destroying the paper on which
It should resist all proprietary ink erasers
water Medical records may so easily be
ment that gets flooded and if they are not
information will be lost

The Writing Instrument

While the handy ball point pen is
for jotting, its ink is rarely permanent
produce the same quality of writing as
edged pen This type of pen nib, which
quill, allows one without any alteration
produce strokes of very different
with this pen that classical Italic or
developed This Italian hand, as Blunt (19
is the most legible, easily learned, and
hand known Recently at least two pen
made fountain pens cut like a quill
object that they already know how to
one can write or not is something that must
be judged by someone else Such
painful, but necessary The next objection
"I can't afford the time" The brutal
is that since one piece of bad handwriting
a patient, or lose a lawsuit, bad
tolerated Especially since it can be cured
all by remodelling one's writing with
painless teachers as Tarr (1052) and
It is a rewarding exercise for the writer and
he writes Medical schools clearly have
to see that students can write clearly
to read They have a very easy means at
that illegible writers do not practise
boorishness has been remedied They
this control in the public interest

It is a modern conceit that one learns
once—at school Yet for at least 500 years
have taught those who did not learn
do so The great beauty of the Italic hand
it has been learned, one has acquired a
not deteriorate nearly so easily into an
when one writes quickly as the common

Shorthand and Contractions

Having emphasised the resistance of the
to deterioration, however, there is no
any method that allows increased speed,
ing legibility The objection to the use of
hand or of one's own personal system of
is that in later years it may be difficult
to read them and impossible for anyone
doctors console themselves on the ground
won't discover anything, but if notes
should be assumed that someone will want
Journalists who face a rather similar
it many years ago by asking the Short
to develop a system which would be
for many of their profession know no
Short Hand Congress devised a system of
for journalists which printers would accept
is Short Longhand, the most quickly
useful, easily read, and (outside the world
least known brief writing I have used it
my only regret is that I was not taught
ago I am a prolific writer and certainly
one million words yearly Thanks to
I am saved writing about 160,000 words

n so little! I rarely manage more than words in an hour, but suppose I excelled wrote 1500 words hourly I would take 100 te those 150 000 words or say two working nd over a lifetime this means perhaps saving ed solely to writing and however improbable it is true One might suppose that such a cost much time and money but it costs less et of cigarettes and can be learned in four a desultory study What one learns can be ediately It is simple and consists of eighty l almost self evident abbreviations, combined ll number of contracted suffixes (some of iown in the example below) This saves it one word in six Although in his book * ot, Mr F Stowe suggests that on account of ilities of printers short longhand as presently be regarded as almost sacrosanct I am sure contracted suffixes should be used If this efficiency can be increased to save about five For example Mr Stowe uses – – – the suffix ent ' I suggest that the – – – iced should stand for the suffix ial a for the necessity of our age ism m then becomes exist^{tm} less than half y length I have also found that – – – is ognised as the –ible –able suffix and nfusion

ring is an example of short longhand taken we s book:

lge mt^{g} yest^{y} aft^{n} sd t / obj^{n} w^{d} h b^{n} o gen om^{e} tho / xtr^{y} circ^{e} agst it made / dif^{ce} betw^{n}

ion is

an of the large meeting yesterday afternoon said ation would have been of general interest for the hough the extraordinary circumstance against it erence between them difficult

Discussion

nt or doctor who has equipped himself in now ready to start taking clinical notes. ired all that is necessary—except patience, self-criticism The task is to develop a prose ate keen and evocative that it will preserve nce, mannerisms, the very flavour of a sonality and the peculiar nature of his at when a quarter of a century later the nd Mr X springs to life again Unless a at the very beginning of a medical career hose who teach medical students are them how necessary is this acquisition then many never attain something that almost all t a brief reading of some of those case century or more ago shows how sharp how ely they are compared with the stereotyped ptoms and investigations which so often ries now

few better guides to the craft of writing than wers (1954) He is the son of a famous neuro the course of a notable career in the public written two short and vivid books now *The Complete Plain Words* He does not that every trade has and must have its list erms which those outside it will not under es not pretend that one either can or should derived from Latin or Greek But he does ie that all who write have a duty to be ntelligible With Sir Ernest s advice for a there is no reason why anyone bright e accepted as a medical student should not his own language tolerably well

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m F G Stowe & Co 17 Kensington Hall Gardens 14 Price 1s 6d

No-one is too busy to inquire whether his system of note taking is such that it would convey a patient s present illness in ten years time to the writer himself or anyone else who chanced to read the record Every doctor should ask himself whether the notes that he now takes are sufficiently clear accurate, unambiguous, and legible to withstand the ordeal of cross-examination by a hostile counsel in a court of law It is here that the written record made at the time has a great advantage over the dictated record however soon it is made after an examination It is clearly wise to get into the habit of writing not only the date but also the time of day on notes. Those whose notes reach this high standard have no cause for worry I wonder how many doctors will feel certain that their notes come into this category?

Those who are unsure need not despair A very small expenditure of effort and money will bring an easier mind some saving of time, and many too will succumb to the pleasure of writing the Sweet Roman Hand (Blunt 1952) For those not yet practising medicine, a little extra and not very onerous work will result in an improbably large reward

Summary

I have discussed some of the prerequisites for success in taking medical notes, devoting myself almost entirely to the mechanical aspects of this important skill. My reason for this is that it is at present so far as I can ascertain almost completely neglected. I suggest that medical schools should insist that their students develop a legible handwriting which will deteriorate as little as possible when used at high speed There seems no writing better suited for this than the Italic hand, now being revived all over the world Not only must medical records be legible they must also endure at least as long as the paper on which they are written so some care should be given to ensuring that the ink used in these records is resistant to the usual hazards Since doctors have, in the course of their work, to write more than most people, they would be well advised to adopt a simple abbreviated writing such as Short Longhand which is standard over the English speaking world

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A STUDENT HEALTH SERVICE AT A COLONIAL UNIVERSITY

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M B PhD Lond
SENIOR LECTURER IN ANATOMY AND HONORARY MEDICAL OFFICER, MAKERERE COLLEGE KAMPALA UGANDA

A HEALTH service for undergraduates is now an accepted part of the life of nearly all British universities—and most American and European ones too The immediate task of the university medical officer is to keep the maximum number of undergraduates at the peak of their individual efficiency for this he needs a training in good general practice (with a special emphasis on preventive medicine and psychiatry) and he must be able to cooperate closely in matters of student welfare with his colleagues on the academic staff If this applies to a long-established university community it is even more true of the health service in a rapidly growing colonial university

Makerere the University College of East Africa is such an institution Students are drawn from the British

East African territories and the majority are Africans, but with widely differing social, tribal and geographical backgrounds Indians, Goans, Arabs and Europeans form a small minority of undergraduates Thus, conditions in the student's home area are of great importance in assessing his health at college

For example, in some areas malaria is hyperendemic, whilst in others bilharzia is exceedingly common Malaria in particular impairs the efficiency of many undergraduates Again African students whose homes are in the highlands at 6000-9000 ft often complain of decreased mental and physical energy when they come to the heat of Kampala at 4000 ft

Moreover the break up of traditional tribal law and custom means unstable urban social conditions, usually associated with a high incidence of venereal disease In freshmen and those returning after a long period away from university life this incidence is reflected even at the student social level, but significantly enough the incidence of venereal disease contracted during term is quite low

The undergraduates social background is most relevant to the mental stresses they meet at a modern university Over half the 1955 Makerere freshmen come from simple peasant village homes, a proportion come from more sophisticated literate or semi literate households of artisans and clerks and a small minority from a professional family In British universities an unhelpful home environment is thought to contribute to mental breakdowns Here a much greater disparity exists between home and college, and this stress is probably of more importance

Development of the Service

It has been possible to provide medical care for students at Makerere from the time it was a small technical school thirty years ago, because there has been a large hospital near by In 1952, with the growth of the college to 273 students, a sick bay was opened in one of the halls of residence Daily clinics were held by a part time nursing sister who referred patients to the medical officer for consultation But the increase in the student population soon made these quarters very crowded, and this year a new sanatorium comes into service, administered by a full time sister-in-charge

Here there are two separate units one is an 8 bedded ward kitchen, and sitting room for convalescent students, the other is a large clinic with consulting room, sister's room, staff day room, treatment room, recovery room, dispensary, laboratory, waiting room and office This accommodation will be adequate, not only for the general clinics, but for the research into the health norms of young Africans that is envisaged in the future

The Pattern of Sickness

During the past academic year there have been just under 1000 attendances for all causes at the clinic, of these, 140 were new patients The busiest term was the second term (from June to August), and the busiest period in each term was the first four weeks and the last week

There are three main types of patient First, there are those who come for mild acute conditions, and for whom treatment is usually neither complicated nor prolonged

Second, there are those with chronic disease requiring careful supervision and follow-up (for example, peptic ulcer, chronic otitis, and long-standing pulmonary or cardiac disease) This type of patient usually needs guidance about the management of his university life, in such matters as study periods, games, and diet By regular clinical assessment the student-patient can be guided to recovery with the minimum waste of his time and disturbance to his career

Finally, there are those who come repeatedly with a great variety of functional symptoms If treatment is to be effective, they are the most demanding in time and diagnostic skill Often the problem is at root not medical, and the assistance of hall warden, chaplain, tutor, or his own District Commissioner is needed to resolve the trouble These cases emphasise the importance of the university doctor being a resident member of the academic staff Ideally he should be able freely to
advise the student without being
academic requirements of his teachers
At the same time he should have free
relations with the other members of the
often help to relieve stress Difficulties
and the fear of failure are instances
discussion with the tutor is often of real
student. It is at this point that the
fairly small college community are seen.

But there are times when, despite the
social anthropologists, the doctor is hander
fact that the student comes from a
cultural and psychological background. I
and customs and a veiled half belief in
deep-rooted in the patient's consciou
thought, and may hamper conventional

"Student distress," as Malleson (1
familiar in most Western universities,
peculiar to African students although the
tology may well be I would estimate that
of "student distress" is much the same
that Malleson reports from London
home and cultural background of the
graduates and the social and mental stress
"man of two worlds," it is remarkable th
major mental or social breakdown

A certain proportion of African student
for consultation at the least sign of
complaining of the most transient ache
sensation A powerful reason for this
village African disease and sudden death
been an ever present reality every
examples of calamity visiting a village of
people The memory of decimating
sickness, smallpox, and yellow fever is
alive, whilst malaria and typhoid are still
of death in African village life It is
to the imaginative a tiny pain may signify
onset of disaster, and that he comes post

Some students, however, are so keen
that they ignore the most clamant
20 year old Kikuyu came with a fluctuating
abscess 6 in in diameter protruding like a
his loin There was advanced disease of
vertebræ A year later, with his back
demanding to be allowed to take his place
field and the running track

These attitudes illustrate the lack of
knowledge and lore in the educated popula
is one of the important contrasts between
colonial university and similar work in Brit

Nutrition

The administrative difficulties that the
have overcome to give the students an adeq
and palatable diet are enormous, for in a
munity every kind of food taboo and custom
for Before coming to college, some students
underfed in poor peasant homes dependent
local crops of maize and plantain Despite the
hæmoglobin level of 160 freshmen has its mean
100 ml ±1 30 (The altitude of their homes
sea level and 7000 ft, with an average at 4000 f
of course, an important factor) This result
with the findings of Holmes and Gee (1950)
the hæmoglobin of 30 third and fourth
students, and found the hæmoglobin level to
100 ml ± 1 81 The difference is highly
probably reflects a change produced by better

Tuberculosis

Mass radiography is not available
with symptoms suggestive of chest disease
at once Regular routine miniature films
would be costly in time and money but
occasional primary focus But the danger
present circumstances is that one negative
lead to false security, and allow pulmonary
arise de novo undetected.

graduates entering the medical school are tuber
as a routine In three years about two-thirds
to be negative During the past year negative
ing medical students have been inoculated with
10

or not the tradition that peptic ulcer is rare
ans is in fact true of the African peasant it is
untrue of the African university student at
Typical duodenal ulceration with classical history
most common serious illnesses. Often there is a
g back to the last two years at school It is of
most cases occur in Kikuyu students, though this
n a majority at the College In two years, 26 new
denal ulcer were diagnosed If ambulant treat
t produce remission, full bed rest in the college
or Mulago Hospital was instituted

Initial Examination

for a comprehensive medical examination for
eds emphasising Relatively few students will
examined before and few will have had the
tinuous medical care that is the rule in Britain
detecting gross disease (by no means uncom
examination shows the fresher that the health
source of help for the future
nination was planned on the lines used by
40) at Birmingham but with a number of
is. Each student had a letter from the
edical officer explaining the purpose of the
n and the working of the health service
here were questions about family social and
story with emphasis on past illnesses and
plaints He was then clinically examined by
year medical students, each of whom was
for one or two systems of the body This
hæmoglobin (M R C colorimeter) and height
were entered on punched cards The final
of history examination and re-examination
ated was the responsibility of the medical
this way each freshman received a compre-
nical examination and was able to see the
ice in action at close quarters

Health Teaching

aching to undergraduates is a most important
service Lectures in elementary public health
e are given in collaboration with the depart
eventive medicine This has of course been a
many of the secondary and all primary schools
rica for many years Most students accept
tific attitude to the causation of disease but
e traditional animistic-occult outlook may be
eaction to their own personal ill health This
underlines the need for continued general
on in the framework provided by a preventive
e university health service
ce is a significant practical demonstration of a
stitution as yet in its infancy in the East
ritories. It forms a model of what can be
ed without much money and shows medical
ore clearly than any lecture or textbook how
ool training-college and industrial health
n develop in the future and the lines on which
e organised in East Africa.

Research

progress in East Africa is much hampered by
data on biological normal values in anthro
atomy physiology and biochemistry At
here is a comparatively stable population of
le in good physical condition drawn from all
ritish East African territories. Students are
or three to four years, which is sufficient time
ngitudinal studies of individuals and groups
using the facilities available in the sanatorium and at the medical school This type of work has already begun

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MENTAL HEALTH AND THE BASIC SCIENCES

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O monstrous! but one half pennyworth of bread to this intolerable deal of sack! —*King Henry IV* part I

MOST people agree that mental illnesses form a very considerable proportion of the total illness in this country When we compare this state of affairs with the proportion of time devoted to mental illness in the training of medical students we find a striking contrast Such time as is spent on mental illness comes relatively late in the course and the training is overwhelmingly physical As far as what are called the basic sciences are concerned we find that they are exclusively physical There is no official mention of psychology or sociology among the subjects taught in the first year, and the same is true of the preclinical years Not until the student reaches his clinical studies is there any suggestion that he will be *dealing with persons and not with machines* But if he treats his patients as though they were machines he will be accused of bad manners and cruelty (Asher 1949)

Many patients (perhaps most) in British hospitals dislike and resent being treated as machines without feelings and preferences and if they are approached in this way they may become unhappy and unresponsive to medical treatment But until he arrives in the wards the medical student has been using a scientific vocabulary which has little place for such words as "unhappy" "feeling" and "preference"

There is thus a strange discrepancy between what is required of the student in his dealing with patients and what is taught in his early scientific training This discrepancy has not escaped the attention of those who have concerned themselves with the improvement of the medical curriculum In 1935 there was published the report of the conference of representatives nominated by the Universities of Oxford Cambridge and London the Royal College of Physicians of London the Royal College of Surgeons of England and the Society of Apothecaries of London on the medical curriculum This report said

> The Conference suggests that a short course of lectures introductory to the psychological aspects of medicine should be given towards the end of the pre-clinical period Attendance at this course of lectures should be obligatory *but no examination on their content should be held at this stage* It is believed that if the lectures were given at convenient hours they would be listened to with interest and constitute a useful introduction for the student to the psychological aspects of his future work as well as a contribution to his general education. Eight lectures, which should include advice in regard to the reading of books on the subject should be sufficient for the purpose "

This report was issued twenty years ago

Nine years later in 1944 the planning committee of the Royal College of Physicians of London prepared a report on medical education We read

> In the medical curriculum the study of the mind is neglected especially during the preclinical period to the

detriment of the future doctor It is desirable that during the preclinical period time should be found for a short series of classes in psychology The exact nature of these classes is less important than their existence, for their function is to interest the student in psychology "

The report of the interdepartmental committee on medical schools, issued by the Ministry of Health in the same year (commonly known as the Goodenough Report) stated

> "It is undesirable for a student to be brought into contact with psychological illnesses until he knows something about the psychology of normal healthy persons He should, therefore, be given a short elementary course of normal psychology during the pre clinical part of his training, in association with the course in physiology "

Four years later the medical-curriculum committee of the British Medical Association apparently believed that the recommendations of its predecessors had been implemented For it refers to psychology as having ' only recently been added to the range of subjects to be studied in the pre clinical period," and confines itself to a discussion of the form such instruction should take

Thus, in 1955, we have no official teaching of psychological matters during the preclinical period in the medical schools of the University of London in spite of the fact that one authoritative report issued twenty years ago and two reports issued eleven years ago unanimously recommended that provision for such teaching should be made Such teaching was introduced into the preclinical teaching in the Johns Hopkins Medical School in 1913–14 and since then many other schools in the United States have followed this example Moreover, the General Medical Council, in its Recommendations in 1947, recommended that "elements of psychology ' should be included in the instruction given during the preclinical period Is it not high time that all these recommendations be implemented ?

Actually the physical bias in medical education is even greater than I have suggested Children are now encouraged to devote one or even two of their last years at school to the study of natural science, in the hope that they will either be able to pass the 1st M B examination at school, or, thanks to the system of exemptions now in force, some other examination which will enable them to begin preclinical work as soon as they enter the medical school This means that they are robbed of another source of information about people—that provided by literature Years that would formerly be devoted to the study of the literature of their own and other languages are now given up to subjects which are, perhaps erroneously supposed to be more profitable for their future professional work

Although what I have said is correct as far as official printed syllabuses are concerned, some unofficial effort has been made to implement the recommendations of the 1935 report in the matter of preclinical teaching Of nine schools in London which provide for such teaching one gives *no* lectures in psychology, one gives *four*, five give *six*, one gives *eight*, and one gives *ten* lectures In one school these lectures are given in the third term, in another in the fourth , but in all the remainder they are at the end of the last term immediately before the 2nd M B examination, when the students are fully occupied with revision and are in no mood to attend lectures on a new and strange subject upon which they will not be examined In none of the London schools I have mentioned is there an examination in psychology When we consider the high proportion of mentally sick persons and remember the large amount of time devoted to the other basic sciences, the present unofficial instruction in psychology seems hardly commensurate with the importance of this subject, neither is it calculated to be helpful to the student or to
respect for the subject Yet Balint (1954)
that

> "It is generally agreed that at least
> work of the general practitioner consists
> pure and simple Some investigators put
> cent or even higher , but, whatever the
> fact remains that the present medical
> properly equip the practitioner for at least
> work he will have to do "

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ESSAY-WRITING AS A TEA TECHNIQUE

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IT is good for teachers of medical
occasionally the yearly round of teaching
at times into the value of the different
use Last session, in two of the three
was too near the final professional
asked the students in the pediatric
essays, and we were agreeably surprised
of the students to this method of teach
is widely used, of course, in the faculty of

Background of Teaching

The teaching of pediatrics in Aberdeen

(1) About thirty demonstrations in the
year at local authority clinics, where well
immunisation and vaccination methods
so on

(2) Thirty weekly lectures on health and
and childhood, including the infectious fevers
lectures typewritten synopses are provided

(3) Attendance in the final year for a
with obstetrics) at the children's, maternity
pitals During each week of this term each
as one of a small group ten clinics and
the wards and outpatient departments,
surgery and special diseases of infancy and

(4) Ten weekly tutorial sessions during the
is assigned to 5 or 6 students, and with them
hour each week various topics and difficulties

(5) Eight talks and demonstrations on the
doing obstetrics during the four months of
dence in the hostel on the common hospital

The Essays

The various essay subjects were chosen
essays could not be written by mere reference
textbooks Most of them involved the use
school library and the finding and reading
articles 1000 words were expected and
some essays went to 3000 A different
for each student and often it enunciated
principle in pediatrics Some students
how to approach a subject, and it was
quite a number of them had never used a
to any real purpose The tutors were
overmuch and just to start the students off
for references and information Each essay
list of references, compiled in the usual
books and articles consulted

A month was given for the writing
corrected in detail by the tutors and I
over Thereafter I discussed the essays and
(and many other things) with the students
at home of an evening in groups of 6, each

With our numbers of students this meant evenings during each of the two terms.

he subjects were:

l make a family doctor suspect primary tuberculosis
iscuss fully his duties in such a case.
incidence and types and prevention of accidents in
hildhood.
is the infant's environment. Discuss the significance

1 is seldom necessary and may be harmful. Discuss
ent work on the treatment of cœliac disease.
nt work on idiopathic myocarditis of infancy.
is *not* always due to rhesus incompatibility of mother
Discuss.
value of orthodontic treatment of children.
he modern views on death by "suffocation" in

relationship of tonsillectomy to poliomyelitis.
is not a sufficient diagnosis. Discuss.
know the cause of most cases of obesity in childhood?
hildren die from tetanus. Discuss.
is more dangerous than underfeeding in the first week
es.
ay be a dangerous place for a baby. Discuss.
know the causes of dental caries?
is a great hazard to an infant and to a child. Discuss.
r's department is of great value in a children's
use.
fibroplasia is a man made disease. Discuss.
rent recurrences of active acute rheumatism?

Results

est of the students was aroused and greater ivity was manifest—two very important ccessful teaching. Our medical school library quote the librarian, who also found life more during the month) as never before. The gan to learn how to use a library, and many the first time with surprise and with awe ere the numbers of medical articles. Several ought that such an essay project should be rlier in the medical course.

ng and discussion of essays are good for the social pædiatrics.

hod of teaching is time-consuming, but by all groups informally to talk over essays and ns they can raise, a teacher (especially a learns more about the work and characters nts than he would otherwise do.

usiastic help of a teaching staff and of the ool librarian are needed, and for that freely very grateful.

VISITING BY SENIOR MEDICAL STUDENTS

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years medical educators have bemoaned the picture of sickness which the student sees clinical training. His subjects are patients s some esoteric disorder bathed lying between in a good light with adequate nursing care d, at least temporarily, from the worries of the home environment. The obverse side of of a sick mother lying unwashed in the poorly lit living-room with ? a touch of and the fear of impending disaster while hild tries to cope with the household chores of the family, is seldom seen by students.

study of respiratory infections which had on in the working-class London borough of over a period of two years or more seemed portunity for family visiting by medical nd 20 volunteers (8 women and 12 men) in year at St. Mary's Hospital Medical School o the invitation to be attached each to one period of six months. The families to be visited, consisting of 2 parents and 3 children, were selected as suitable from some 50 families in our investigation. The student, after being introduced to his (or her) family by the doctor or nurse who already knew the families, continued the visits, usually twice monthly in the evenings, for 6 months. Every month a seminar was held at which three students spoke for 15–20 minutes about their respective families, followed in each case by a group discussion in which, besides the students, a pædiatrician, psychiatrist, epidemiologist, almoner, and nurse visitor took part. The teacher members of the team were incidentally surprised and impressed with the confident and often original and humorous expositions given by the majority of the students at these seminars. The group discussions were lively and pointed and were informative to both students and teachers.

At the end of the 6 months, to find out what the students had derived from and felt about this essay in social medicine, each student was asked to fill in a carefully designed questionnaire arranged to elicit knowledge and viewpoints about:

(1) Socio-medical and economic data concerning the family, including pastimes and hobbies.

(2) Housing conditions.

(3) Assessment of the family on such matters as parental intelligence and emotional stability; parental attitude towards the children and family life, including home making, housekeeping, personal and household hygiene; the family's socio-medical problems and its knowledge and use of the available social services.

(4) The place and value of family visits in undergraduate medical education.

The questionnaire was adequately and independently answered by all the students, sometimes with remarkable maturity and insight. It is fair to add that a goodly proportion of the men were ex-Service students. Regarding (1), they showed a good perception and grasp of socio-medical family problems, although there was a tendency to give more attention to the purely medical history rather than to its social counterpart. In other words, the students were inclined to regard the family as a series of individuals rather than as a unit, which may mean that they do not sufficiently appreciate the effect that family life and circumstances may have on the ætiology of disease. Some, however, noted the effect on the family of a mentally backward child, an ailing mother with chronic catarrh and bronchitis, or a shiftless father.

Part 2 of the questionnaire, dealing with housing conditions, required factual answers and was largely a test of the student's powers of observation. The appalling hovels in which some of the families lived naturally caused much worry and indignation among the student visitors. But poor housing is one of the socio-medical problems outwith the scope of the medical man who, except in special circumstances, can do little to help in securing better dwellings for these depressed and overcrowded families.

Some interesting answers came in part 3 of the questionnaire. It was at once apparent that students as well as parents and family doctors were largely ignorant of the social services available under our Welfare State. In some instances the liaison between the families and the local health authority services seemed poor or inadequate. On the other hand, there was considerable faith and reliance in the local children's hospital. The lack of knowledge or appreciation of the social services may be attributable to our poor education of the medical student *regarding these facilities and this is a weakness* which we hope to remedy.

In answering the last section most students felt that the time given to this social study had not been wasted.

It had enabled them to obtain an insight into family life which is otherwise denied them in their present curriculum, particularly since domiciliary midwifery has largely disappeared, they also appreciated that family visits were a useful complement to their clinical work in the wards Here is a fairly typical comment

> "The scheme allows students to visit in their own homes the type of people met in a hospital a grasp of their outlook on life, their hardships and mental make up is a very useful step towards a good relationship with patients in the wards The study of the effect of disease in one member on the other members of the family is rewarding"

The main criticisms made by the students were

(1) Visiting of only one family did not give enough basis for comparison

(2) The lack of a sick member made entry into the family rather difficult and some of the students felt that repeated visits were difficult to justify

(3) The best time for family visits would be in the second clinical year, not in the final year (as was done in this instance) when the students are concerned about the proximity of final M B examinations

Some students suggested that the visits might be linked with the pædiatric course when entry to the family would be easy through the medium of a sick child On the other hand a sick father or mother would be a more disrupting influence on family life, and the visiting might be better done during general medical and surgical clerkships through a sick parent Suitable families should be selected by the almoner who must introduce the student to the family and tutor him in the technique of interviewing and learning family histories

Regular visits to families in their own homes are now included in the curriculum of a number of American medical schools and have been found useful and interesting to medical students, they are particularly helpful in demonstrating the relationship between environment and ill health, the spread of infection in the home, and the practice of preventive vaccination Much can be learned about the diagnosis of minor illnesses or illness in its early stages, behaviour problems in children, the availability of statutory and voluntary social services in the home, and so on In addition, the general knowledge of family life, often under adverse conditions, which the students cannot help but acquire, will be of considerable value to them as doctors and good citizens

I should like to acknowledge the help, in running the seminars and in preparing the questionnaire and analysing the answers, of Dr M A Heasman, Dr D F O'Neill, and Dr Muriel E Port, and Miss M. W Windsor, and Miss E E Sumpter of the Almoner's Department

OBSERVER ERROR

ITS BEARING ON TEACHING

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UNDER this title *The Lancet* (1954, 1955) has drawn attention to recent work demonstrating the variation in the judgment of physical and other signs, both by different observers and by the same observer at different times The relevance of these studies to clinical practice is obvious, but it may be worth examining also their implication for the teaching and learning of skill in observation

The aim of this article is to give some examples of how the same retinal image can be variously interpreted and to attempt to relate this to observation in medicine

Is the Sign Present or Absen

"Most of us assume that, except in bor line cases, the signs we observe are present do not observe are absent However exp not support this view " said Fle reporting an investigation on the detec emphysema The phenomenon of a sign be one time and not at another for the sa been experimentally demonstrated by, Birkelo et al (1947) When five experts 1256 chest radiographs after a lapse of two was considerable discrepancy between the each observer For instance, one reader films as positive for tuberculosis in his firs 78 in the second 7% of his first reading negative on second reading, and 20% of his second reading had been negative on first changes were not consistent between observers—i e, three readers found more, fewer positives on second reading

Two crude examples of non medical illustrate that a "sign" may be present and absent at another *for the same observer* trate some of the factors that influence the the sign

The Three Triangles

In fig 1 most people at first read the wo in the spring," "Once in a lifetime" "Bird because these are familiar phrases, and the

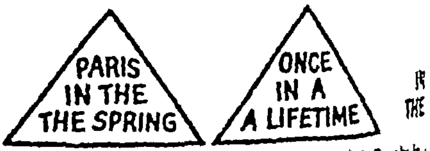


Fig 1—The three triangles (from Ralph Brooks

anything which does not fit in with them involves selection from the total pattern the retina and selection is made according to attributed to the pattern by the observer notice those things to which we attribute and to ignore those to which we do not necessarily conscious at the time of this pro what to select At first, we ignore in f that are redundant to the phrases we have past to know so well, but sooner or later we a new sequence of words The additional w seen as related to the trick which is being reader We can say then that what is se the store of information the observer the perceptual act

The Hidden Man

Fig 2 illustrates a second point, that depends also on information supplied ab visual pattern To most people at first is quite meaningless but the man may as you study the picture with the help of description of it (Porter 1954)

> "The upper margin of the picture cuts the top of the head is not shown The point of shaven and brightly illuminated, is just above center of the picture A white mantle or right shoulder The right upper sleeve is expo black area at the lower left The hair after the manner of a late mediaeval Christ"

Some people are not able to see the ex this verbal information is supplied, but ca an outline of the main features is traced on In this example the observer is helped to information presented verbally, a certain

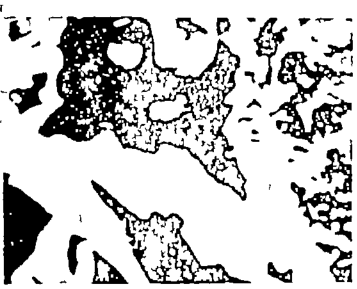


Fig 2—The Hidden Man (Porter 1954)

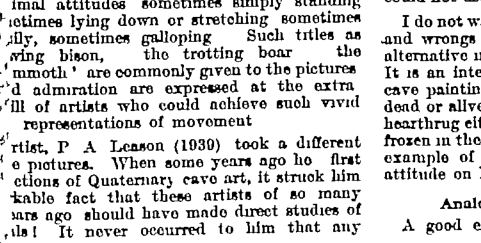
n in the same retinal pattern that was
before

wo examples one is not aware of ambiguity
s in the pictures, they are not like Fletcher s
borderline cases. One either sees the extra
es not, one either sees the man sharp and
at all—once having seen him one may lose
ut when he is there there is nothing indefinite
One may feel a shock of surprise that one
to the extra words or the face (the signs)
ving seen them one does not doubt that they
g there to be seen The same observer has
iterpreted the same retinal image a sign
e moment and present the next

ngs

omparable with the experiments of Birkelo
but most of the studies on observer error
oncerned with the differences in judgment of
ervers of the same material, and an instruc
dical example of this is provided by the
n of prehistoric art Cave paintings are
regarded as portraying animals in action
tudent of cave art, the Abbé Breuil writes
he Quarternary artist knew how to seize the
imal attitudes sometimes simply standing
etimes lying down or stretching sometimes
ily, sometimes galloping Such titles as
wing bison, the trotting boar the
mmoth ' are commonly given to the pictures
d admiration are expressed at the extra
ill of artists who could achieve such vivid
representations of movement

rtist, P A Leason (1939) took a different
e pictures. When some years ago he first
ctions of Quaternary cave art, it struck him
kable fact that these artists of so many
ars ago should have made direct studies of
ils! It never occurred to him that any other interpretation could be placed upon the pictures which bore none of the titles suggesting action, now given to them in archæological literature." Leason had chanced to make drawings looking down at a cat and a snake which had killed each other and remarked how vigorous the cat looked



rs from (a) photograph of a dead Sambi hind (b) the "bellowing bison" from Altamira (Leason 1939)

In his interesting and amusing paper he gives tracings of photographs of various dead animals for comparison with some of the cave paintings (fig 3) He notes that many features of the paintings—the position of the feet, the tail the tongue hanging out—resemble those of the carcasses. He contrasts the realistic treatment of the head which must indicate acute observation with the failure to make the feet look as though they are supporting the weight of the body Of the "bellowing bison he says the spectacle of some farmyard cow rising lightly on all four hoof tips and emitting a bellow is too much for the imagination ' And he goes on, ' Few if any, of the other animals in this Altamira frieze maintain what could strictly be called normal contact with the earth. Of twenty five standing and seemingly moving beasts represented in the colour plates of Breuil s publication not more than two or three suggest that they would have left normal footprints when they passed on; and even these raise some doubt as to whether their tracks would not have appeared strange to hunters well versed in their ways.'

Leason s arguments seem very reasonable. If the paintings were in fact made using carcasses as models, and not from memory after watching animals in the field certain other features of the paintings become consistent—for instance, that there is no attempt to show scenery, and the figures are seldom composed in natural groups. This point, and others such as the peculiar position of the feet, or the protruding tongues, are noted by the proponents of the ' live art theory, but they do not attribute the same meaning to them as Leason does. The points are not as it were blotted out from awareness as the redundant words in fig 1 are It is their *relevance* to the chosen interpretation of the pictures that they ignore It is as though they explain the matter away by assuming that the artists just preferred to paint the animals that way without background and the feet in twisted perspective, not quite as modern painters would Leason s hypothesis is a more comprehensive one, since it explains the position of the feet and tongues as due to relaxation of the muscles in death and the absence of ground to walk on to the fact that carcasses could not use it anyway

I do not want however to attempt to discuss the rights and wrongs of the matter but only to point out that alternative interpretations of the paintings can be made It is an interesting exercise to look at reproductions of cave paintings alternately as though the models were dead or alive or to look at a cat stretched asleep on the hearthrug either as though it were a carcass or as though frozen in the middle of a vigorous leap Here we have an example of the important influence of the observer's attitude on his interpretation

Analogies with Observation in Medicine

A good example of a sign being present for some observers and not for others according to their store of information is provided by Cochrane and Garland (1952) in their report of an investigation of the reading of chest radiographs The British readers called a smaller proportion positive for tuberculosis than the Americans did In conference it became apparent that the Americans tended to emphasise minimal shadows more than the British did and it is suggested that this was because they had previously conducted extensive studies on minimal pulmonary lesions and had become aware of the potential significance of very small and faint shadows Conversely in another study the American readers picked out fewer films showing pneumoconiosis than did the British readers, who had been conducting extensive surveys on coalminers and were on the alert for minimal changes Here, as in fig 1, we see that a selection is made from the retinal image, the reader has learned to select, in this case from experience of the clinical correlatives of certain features—that is, of their meaning or significance

Examining a patient with or without information about, say, exposure to infection is analogous to the "Hidden Man" illustration It is not only that with extra information the doctor knows what to look for, what signs to try to elucidate, but that he *differently interprets the same sensory data* in the light of other information presented at the same time

Garland (1949) reports that some of those who have studied observer error in radiology recognised the importance of attitude when they "accidentally stumbled" on it while investigating the effect of different methods of reading films on seeing a lesion By further tests they found that fewer positive films were overlooked (without unduly increasing the number of negatives wrongly returned as positives) if the readers were instructed to take a pessimistic attitude—i e, to call a shadow positive whenever in doubt A sign could be present or absent according to whether the observer's attitude was more, or less, pessimistic Certain features had been either not noticed at all, or regarded as irrelevant to the verdict—i e, given another meaning, as in the case of the cave paintings

Training in Observation

Consideration of these examples emphasises that perception is an extremely complex process The detection of signs involves human judgment, and it may be that a more radical search for the factors influencing judgment will help to improve the accuracy and comprehensiveness of observation

Now the difficulty is that we are usually unaware of many of the factors which affect judgment We are not aware of making the decision to ignore certain words when we first look at fig 1, it just happens that we do Our interpretation of the whole pattern is automatically the same as our interpretation of part only would be Initially we feel quite certain of our verdict This certainty may last only for a moment, or may last for several minutes, and we manage to see what is really there only after much urging to reconsider our verdict Left to ourselves we would not doubt In other cases we may notice certain parts of the pattern but ignore their possible relevance to our verdict, attributing a different meaning to them Again, this is usually because we have jumped to a conclusion without realising that other conclusions are tenable Alternative interpretations are usually not entertained spontaneously, but observation is more accurate and comprehensive when they are It is then possible to weigh consciously the different clues in favour of or against alternative hypotheses, as Leason did when he knew, long after he had jumped to one conclusion about the cave paintings, that other people had entertained another which had never occurred to him At the instant of making the interpretation one may not be at all aware which features are affecting the decision and so cannot rationally assess them This may be so whether the judgment turns out to be right or wrong

A useful way of becoming aware of the factors affecting our interpretation is through discussion among independent observers It becomes clear how many interpretations of the same material are possible The different factors that have influenced the judgment of each observer are brought to light, and their validity can be scrutinised This process is discussed at length elsewhere (Johnson 1953, 1955) It is significant makes clear some of the things that differences between judgments that we result of the observer error studies The kind of case (Garland 1949) in which is able to distinguish small fan-shaped branching blood vessels more easily than probably not have appeared until exper in discussion

The aim of such discussion would merely to get all the observers to agree other, but to get them to agree better far as it can be discovered by other patient

The suggestion that talking about might improve observation receives another source Gibson (1953) has survey of researches on how skill in of notes of different pitch) can be improved that there is good evidence that improved if the subject gives names different grades of stimuli This is perhaps finding for one tends to think of intuitive and remote from speech or less one often tends more or less automatic things one is studying to oneself and others would make more rigorous demands of description

Conclusion

The indications are that improvement observation might be facilitated if groups discuss their interpretations of the attempting to describe the features they to their decisions and testing their accuracy findings about the state of the patient advantages of dual reading of radiographs error has been clearly demonstrated (*The* The suggestion made here is that dual readings could also provide opportunity the factors which affect accuracy of Gregg (1942) wrote, "It seems at least we could collect and study some of observation, if we could find out accuracy and completeness of substantially improve the teaching and essential component of medical education practice"

Fig 1 is reprinted from *This Week* magazine of the Editor and Mr Ralph A Brooks and by the United Newspapers Magazine Corpora also been published in *The Reader's Digest* and by courtesy of the Editor of that journal permission of Dr P B Porter and the Editor *Journal of Psychology*, and fig 3 by permission of the *Proceedings of the Prehistoric Society*

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HE LANCET

SATURDAY AUGUST 27 1955

The Curriculum

r medical students are too good Certainly n rise manfully to the tasks that are set overloaded curriculum and the present tion system and there is a real risk that ley continue to do so the curriculum and tion system will stay much as they are ybody knows that a great deal could and lone to improve them Very possibly outbreak of hysteria among final year uld do more than anything to promote about which so much has been said done in this country in the past ten instead of hysterics our medical schools octors who know even more and more a remarkably high proportion of them idea of what it is all about This com ocess does not mean however that oint in factual knowledge is by any means g to reach or that the often emphasised oo much detail in the curriculum are not ones Rather than continue to test the eaking strain, we should be turning as real urgency to the application of the sing proposals that have lately been made im reform

ace of it the undertaking is deceptively ng for no more than a blue pencil and a ors, for there has been broad agreement should be done—in principle Two years port[1] of the First World Conference on ucation,[2] we noted a strong impression it on the need to unify and simplify the to reduce the memorising of masses of h stultify thinking and self education.'

so familiar a strain that many may be believe that something has been done about e curriculum goes on growing nothing out One reason for this inaction is that conferences may readily agree on broad it is a different matter for individual faculties to translate them into detailed leed as Professor O'MEARA has observed[3] are of little value and to produce good ommendations for improving methods of must be very specific All too often, of the curriculum in a particular school und a claim for more time from some or other The debate gets off on the and often the outcome is a few hours and there just because a case of sorts ade out So teachers struggle to keep their of time in line with that given to other st they appear to profess a subject of tance This approach is utterly wrong ne, we believe is that taken by a professor ogy in some remarks he made the other day He would be prepared he said to accept whatever time was found by experience to be enough to persuade students (1) that bacteria and viruses really exist, (2) that those of them that cause disease are transmitted in fascinating ways (epidemiology), (3) that the body's reaction to foreign protein is of interest and use (immunology) and (4) that it might not be too bad an idea to study bacteriology in detail after qualifying If he could be sure of really achieving the last object he added, he would be willing to take risks on how little time would accomplish the first three No doubt many professors have the same feelings at heart but naturally enough they are reluctant to be the first to put their hearts on their sleeves Nevertheless we suggest that many more of them must do so before real progress can be made in recasting the medical curriculum Experience has also shown that substantial changes are unlikely to be made in a curriculum unless each member of the faculty concerned is prepared having said his say, to fulfil the decision of his colleagues

What are the main defects that we seek to remedy? The trouble often begins of course, long before the student gets to medical school Professor O'MEARA[3] has deplored the almost exclusive instruction of physics chemistry and biology to intending medical students during their last year at school when this time should be used for "more general cultural instruction in languages mathematics history, and geography Moreover, as the Medical Teaching Committee of the Royal College of Physicians declared in their recent report,[4] in presenting the student with more and more knowledge, both premedical and preclinical teaching too often fail to develop those processes of thought and judgment that should be their main educational objective Regrettably often physiology and anatomy appear to many as subjects which provide one last examination hurdle before reaching the promised clinical land—no sooner passed than thankfully forgotten The Undergraduate Education Committee of the College of General Practitioners in their useful report published last year,[5] criticised this sharp division between preclinical and clinical subjects The basic aims it has been said should be to teach the student to observe as well as he did when a child and to show him how to integrate—or, more simply on what lines to think (and to think correctly Professor O'MEARA would add)—and to recognise at a glance the significance of certain appearances The student who has just finished his preclinical subjects can usually think but can seldom observe when he reaches his finals he may be able to observe but he relies on memory rather than thought The simultaneous instruction of anatomy and physiology with surgery and medicine might overcome these drawbacks and would certainly keep the basic sciences usefully in mind during the clinical years In clinical work the College committee noted with regret how the student's apprenticeship to a general physician or surgeon is being gradually replaced by multiple appointments in special departments He now has many more teachers to give him more information about more subjects but 'his knowledge is less coherent and less firmly rooted in experience' For

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3 ii 494

t of the First World Conference on Medical Education. Dr Hugh Clegg London 1954

A Q *Ibid* 1955 i 194

[4] See *Ibid* July 16, 1955, p 139

[5] *Brit med J* 1954 i 1146

surgical dressers or medical clerks the emphasis could be less on the subject of surgery or medicine and more on clinical instruction Systematic lectures in clinical subjects are surely superfluous the facts are in the books, and it should be one of the main purposes of a university (most medical students now belong to a university) to teach its members how to use books If we attempt less specialised teaching, eliminate systematic lectures, and blend preclinical with the clinical teaching, it may be possible to produce a basic rather than a comprehensive medical course In an appendix to their report the College committee outline such a plan The theoretical knowledge lost would be offset by the practical gain in the preregistration year If it is to succeed, however, this revolution would have to include a firm move towards simpler and less searching examinations at every stage The College's report speaks sternly too about our present examinations

> "At all stages of medical education, examinations now exercise an unhealthy dominance over the student's work and thought, but this is perhaps most damaging in the clinical years With a curriculum which was no longer overloaded, and with reasonable examinations, the conscientious student, properly selected could expect to pass, and would therefore avoid having his values distorted and his programme of study disturbed by having to prepare repeatedly for some mental marathon"

These are some of the aims What are the hindrances? As we have said, there is the understandable reluctance of teachers to reduce their own teaching time while others seek to increase theirs But the College committee point to a more important bar to progress—the belief that any substantial change in the curriculum would have to be made in all medical schools together It is most unlikely that medical schools could easily agree to a concerted change, and the General Medical Council would be reluctant to urge an untried curriculum upon them The first need therefore is for individual experiments promoted by the schools themselves In the United States, medical teachers and administrators have been exercised by much the same thoughts about overfull curricula, and they have been able to do a great deal in the way of experiments[6] [7] For example, in one of the most recent accounts of these American developments, Dr KARNOVSKY, of Harvard, has recorded[8] how the elimination of departmental barriers has been an enormous stimulus to both teachers and students In this country there has been much less to report This is perhaps because, as the College report suggests, the General Medical Council's *Recommendations as to the Medical Curriculum* have come to have the force of regulations, and because the restriction which they impose on the diversity, freedom, and responsibility of medical schools has, in fact, gone far beyond their original declared scope—"matters of general importance, such as the duration of study and the age at which the student should be permitted to practise" The Council are now considering whether changes should be made in the current *Recommendations*, adopted in 1947, and we hope they will decide to encourage experiments in curriculum reform by reducing the range and precision of their instructions Under the Medical Act, 1950, the Council have powers of inspection which would enable them safely to relax the control they now exercise by their *tions* Such a step would do more than we judge, to break the seeming dead medical schools to examine at closer of the possibilities about which they thinking for so long

On the other hand, if the present rath situation continues, there is a danger riculum will have to become very much we are moved to make it any bette cautious, as a rule we make no chang pressure forces us into it, and very ra we make a change because it would impr which is not already unendurably bad, this case, may even be called very For once, we should break the rule our students

Commonwealth Prospe

ON a later page we publish an article and his colleagues which tells the pros grant doctor some of the things he will about medical practice in Canada For tion about qualifications, medical schoo he can turn to a recent issue of the Can *Association Journal*[1] devoted to medi in Canada But he should also take the Editor of that journal has to prevalent idea that Canada is an country The results of a survey of undertaken last year have been Canadian Department of National He fare, and they show clearly that the sup has certainly kept pace with the increase tion The figure is 948 persons per docto compared with about 900 in England are good jobs to be won in Canada general practice, and elsewhere, by overseas, but it is plain that they are or so easily attained, particularly in some suppose And the competition elsewhere in the Commonwealth medical prospects in Commonwealth STANLEY DAVIDSON[2] has noted th increase during the past twenty years of practitioners registered in Australia South Africa, and Canada With the Canada, this increase has been out of to the increase in the population dur period In Australia, for instance, there that before long there may be more docto find a livelihood In our Students' Gu we include some notes about the Colo schools, and it is clear that in many schools will be able to supply an increa tion of the doctors for the medical serv part of the world Only in the African the need for considerable numbers of overseas likely to continue, and the expanding work that the African schoo makes it look as though it will not star very long No doubt the committee on power, which is at present considering th this country,[4] will bear in mind the

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[6] Sinclair, D C *Lancet*, 1953 ii 463
[7] Pemberton, J *Ibid*, p 469
[8] Karnovsky, M L *J med Educ* 1955, 30, 15

[1] *Canad med Ass J* July 15, 1955
[2] *Brit med J* 1955, i, 11
[3] Poate, H *Med J Aust* 1955, i,
[4] See *Lancet*, 1955, i 451

nmonwealth countries will be able to take
gly small proportion of doctors trained
try
inada then, that the young doctor looks
illy (or with least discouragement some
vhen he cannot readily see the oppor
seeking at home And the news of those
one there from this country in the past
s on the whole cheerful A visitor just
vs that those he met had settled down
vork is absorbing hospital equipment is
the chances of getting new capital for
iprovements or additions are better than
oe in this country For a wife things may
)e easy a new home with many unaccus
res, little or no domestic help (not such
change perhaps !) extremes of climate
isekeeping costs may weigh more heavily
her husband An income that sounded
oor may during the early years prove
o supply many of the things like refrigera
vashers television sets and lakeside
t Canadians have often come to regard
iries but essentials These considera
veigh more heavily with some families
and many may judge that the oppor
r on will make up for relatively humble
in with It is certainly a very ill advised
doctor who expects to leap at once from
olvency at home to easy affluence in
inada does not offer that but she offers
iose prepared to work hard in a hard
ntry

Annotations

HE PREREGISTRATION YEAR

Minister of Health spoke to the annual
ng of the British Medical Students Associa
vember he said that the time had come to
esults achieved by the regulations that came
Jan 1 1953 and provided for a year of
itments before full registration And Mr
ted the association to give him its views.
when information and opinions had been
m all medical schools in Great Britain and
land these were discussed by the executive
the association and the main points were
a memorial [1] which was presented to the

s of the inquiry showed that the large
medical students readily accept the pre
cheme but there were several criticisms
it some people have had real difficulty in
registration appointments—a difficulty to
rred at this time last year [2] Few complaints
l of unavoidable delay in getting a first
but second appointments were in general
nd it seemed that a considerable number
ere taking two months or more to find a
This the B M S A suggested could be
large extent if all medical schools were to
ogress of their graduates to advise them
to make applications, and to suggest suit
This advice could be based on cooperation
ospital boards who could supply details
be helpful to graduates in making their
spital These details together with the advice of their dean would perhaps enable graduates to make a more confident approach to appointments in non teaching hospitals. But as the association points out it is not always easy for a dean to keep close track of all his students Thus one London dean said that he was able to follow the progress of students who qualify with the London M.D. but those who take Oxford or Cambridge degrees or the Conjoint diploma have to be signed up by their various registrars and easily lose touch with him He would prefer he added to sign up all his graduates for both their house jobs He knew his graduating students better than the registrar in for example either Oxford or Cambridge and thus had a personal interest in helping them

Most of the information that the association gathered confirmed that approved posts provided the experience intended by the Act Teaching hospital jobs may offer less responsibility but many graduates considered that this was offset by the value of the teaching—indeed of the intrinsic value of a teaching hospital testimonial But in some approved posts too much time was taken up by routine administrative duties, and housemen were not able to take full advantage of the clinical experience available

In his reply to this clear and helpful document the Minister pointed out that over the country as a whole there were many more house jobs than people to fill them Wherever the Ministry had heard of graduates being unable to find suitable posts the regional hospital boards had been notified Mr Macleod did not know of any cases which had not been satisfactorily dealt with It was important that applications for second posts should be made well before the first post ended The Minister added that he was not aware of any proposal that the length of the preregistration period be extended

POSTGRADUATE STUDY FOR GENERAL PRACTITIONERS

ONE of the conditions of membership of the College of General Practitioners is that a certain time be spent every year on postgraduate study As a result many more general practitioners are seeking opportunities for postgraduate training and there has been a big increase in the variety of courses held both in the teaching centres and elsewhere during the past three years The 24 faculties of the College in the British Isles (including Southern Ireland) make it their duty to discover and stimulate the needs of members in this respect and to make contact with other members of the profession who can help Each faculty has its own postgraduate education committee and cross-representation between the faculty boards the teaching staff of medical schools committees of medical societies and so on is increasing so that by combining knowledge of the family doctor's educational requirements and the ways they can be met a suitable programme can be prepared for each region The courses which have been most successful have been those designed with close coöperation between the College faculties and the teaching bodies New experimental teaching methods are being developed All courses in which the College has played a part have been open to non members. In London the hon registrar of the postgraduate education committee of the College council enjoys the hospitality of the British Postgraduate Medical Federation at their headquarters at 2 Gordon Square W C 1 and here a record is kept of the doings of the faculties the medical schools and societies all over the country

This month a questionary has been sent to all members of the College to discover their particular needs what places of study are within their reach and what contribution they can make to help their fellow practitioners in this work Information is also being sought about the experience and suggestions of members in the matter of training assistants and trainee practitioners

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[1] *Brit med Stud J* 1955 9 4

[2] *Lancet* 1954 ii, 113

The Wider World

MEDICAL PRACTICE IN CANADA

WITH SPECIAL REFERENCE TO PÆDIATRICS

M McLandress
M D Manitoba

J K Martin
M B Lond , M R C P

J N Briggs
M D Lond , M R C P

From the Department of Pædiatrics, Winnipeg Clinic, Winnipeg Manitoba

IN its annual Students' Guide, *The Lancet* reviews the various ways in which medicine may be practised, and indicates the openings that exist in the various fields But little has been said about practice in Canada

Practice Requirements

The Medical Council of Canada was established by the Canada Medical Act in 1912 This body does not issue a licence to practice, but anyone who secures the licensing diploma of the Medical Council of Canada by examination, will be admitted to the Canadian medical register After the candidate has complied with the Provincial regulations and paid the registration fee he will be able to practise only in that province In order to sit the examination an "enabling certificate" is necessary This is obtained from the registrar of the College of Physicians and Surgeons of the province in which the candidate lives

Before 1919 all Canadian provinces accepted English qualifications which were registered, and in good standing, with the General Medical Council of England and Wales After 1919, however, there was a considerable influx of medical men from both the United Kingdom and Europe, and in many cases it was difficult to assess their training The provinces of New Brunswick, Ontario, British Columbia, and Quebec from that date required that any doctor, before he could be registered to practise medicine, must give evidence of his medical training by passing the examination of licentiate of the Medical Council of Canada (L M C C) The L M C C is now the only qualification accepted by all the provinces of Canada as a licence to practise medicine

While the L M C C gives a universal right to practise in Canada providing local regulations are complied with, the provinces of Alberta, Saskatchewan, Manitoba, Prince Edward Island, and Nova Scotia do not necessarily require this qualification if the applicant can comply with the regulations of the local Colleges of Physicians and Surgeons of these provinces

The requirements of the College of Physicians and Surgeons of Manitoba may be summarised as follows

(i) *Certification of registration* —Here, amongst other requirements, an English degree registered, and its holder being in good standing, with the G.M C is necessary

(ii) *Certificate of licence (temporary)* —This is available to any person employed in Manitoba under certain conditions—i e , a member of Her Majesty's Permanent Forces, a graduate interne employed full time in a hospital in Manitoba, &c

(iii) *An enabling certificate* —This is necessary for application to sit the L.M C C and requires credentials such as birth certificate, specific requirements in preclinical basic science education, a 12 month interneship (house physician or house surgeon in an approved hospital) The enabling certificate is essential for those who cannot comply with the certification registration under (i)

PRACTICE IN PÆDIATRICS

In order to apply for recognition as a pædiatric specialist a doctor must have obtained either

(1) The fellowship of the Royal College of Physicians and Surgeons of Canada

(2) The certification of the Royal College of Physicians and Surgeons of Canada

Amongst other requirements, before th
may be taken, the candidate must have
postgraduate training, which includes
pathology

SPECIALIST REGISTERS IN PRO

Many provinces have a specialist regi
in Manitoba, and to make application to b
pædiatric specialist in the province a do
one of the following conditions (1) F
atrics , (2) certification in the R.C.P.S.
(3) been on the register prior to
(4) or be admitted by a special committee
tion of the candidate's qualifications and

Pædiatric Practice

Pædiatric practice in Manitoba may
"general practice confined to children,
facilities" Thus the pædiatrician is m
with his patients Unlike the pædiatr
Britain, his work is not confined to c
another doctor He sees cases by direct r
patients are referred by general pract
pædiatricians, surgeons, and interns,
the office (consulting room) or in hosp
come direct In this way practice in
fundamentally from that in the United K

Clinic Practice (Lebbotter 1949, Thorlak
Probably many doctors still prefer to
dently There are, however, several "cl
peg—mostly separate buildings for a
operating under a partnership agreement

The Winnipeg Clinic has some 40 doct
the various medical and surgical specialt
facilities are available including labo
X-ray units, electrocardiography, and
graphy A physiotherapy department is
accompanying figures give an idea of th
lay-out The clinic has a large medical
executive and monthly evening medical
held, and since September, 1948, a qu
The Winnipeg Clinic Quarterly, has been

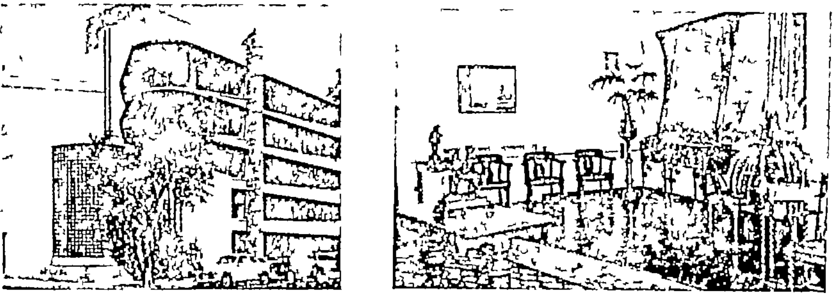
None of the medical members of the cli
The properties and buildings are owned b
Institute for Medical Education and Resear
deeded over to it by the Winnipeg Clinic
pays a rental to the Institute compatible
space elsewhere This income is being used
to establish assets and funds, which are be
medical research and postgraduate teaching
of Manitoba and affiliated hospitals.

The financial problems of the clinic are
finance committee of the partners subject
executive Group life and sickness insur
There is an adequate pension plan, the p
in part by the individual and in part by the
from active participation in executive
automatic at 65 The individual, however
practising in the clinic in a purely consult
that period The clinic also has a total
plan

There are satisfactory arrangements for t
vacation and attending scientific meetings
its members four weeks' vacation and two
meetings each year

Working in group or clinic practice, or
is basically a matter of temperament
practice within such an organisation
Clinic are financial security present
mutual advantage of easy consultation,
of working and discussing problems with
The following table shows the total
pædiatric department of the Winnipeg C

Office (surgery visits)
New patients
House visits



The Winnipeg Clinic.

30% of the work is made up of house calls, ainder is done in the office

figures do not give a full picture The work is much influenced by the telephone talled in practically every home in the city of the homes throughout the province The used much more than it is in Britain and eding and other problems is often sought in he pædiatrician is thus within easy reach of at all times and he must expect calls on ng problems at odd hours Of all the prac ted in Canada the pædiatricians are probably make a greater number of house visits on than the other branches.

o there are 4 physicians who confine their practice and gynæcology About 75% of all the newborn red are referred to the pædiatric department. ian sees them within the first three or four days the child is discharged from hospital the pædia s a routine examination at six weeks and regular intervals. He carries out the routine for diphtheria, whooping-cough, tetanus, and ination. In this way the newborn infant receives e pædiatrician care similar to that given at the ell baby clinics of a large pædiatric hospital in h baby is seen routinely seven times in the first life

iatric Practice

atric department of the Winnipeg Clinic ee pædiatricians and in Greater Winnipeg e population 350 000) there are some 15 ediatricians in active practice As yet there r registered pædiatricians elsewhere in the Manitoba or in Ontario west of Fort William rthur while in Saskatchewan there are none na Thus the pædiatric centre of Winnipeg a considerable area The consulting and iatric practice in Winnipeg covers a popula) 000–1 200 000

e practice in pædiatrics will consist in seeing tients in the office and making some 100 house nth Gross earnings average $10 000–18 000 From this must be deducted 40% in expenses nurse office car &c Income tax in Canada 17% on first taxable $1000 (i e., after all leducted) up to 30% on a taxable income of 0 The cost of living is about a third more Britain

ba the family in many instances has some epaid medical insurances The Manitoba rvice Association (Blue Cross) costs about onth. For this the patient receives bed hospital at full rate for 20 to 30 days and r a further 90 days per sickness per year es operating room fees and cost of all is

As far as doctor's bills are concerned there is also the Manitoba Medical Service to which many people subscribe. This is run by a board of elected lay and medical people Subscription rates vary with the amount of cover For a family, average monthly rates are around $6 00 At the end of each month the doctor submits his fees according to an agreed schedule drawn up by the Manitoba Medical Association According to funds available to meet these demands the doctors are paid a certain proportion of their submitted accounts This has varied throughout a 10 year period from 65 to 80%. From the patient's point of view such a scheme ensures adequate medical care and relieves him of the burden of costly investigations. The cost of drugs is not included in this service and is paid for by the patient On the whole the scheme works very well and is not abused by doctor or patient.

Hospitals

With one exception all the hospitals in Winnipeg are open hospitals to which any recognised practitioner can admit and treat his own patients The medical staff of each hospital is divided into different grades The courtesy staff have the privilege of admitting and treating their own patients subject to certain restrictions in major surgery The honorary staff have the same privileges but in addition take outpatient sessions and have charge of public (i e., non paying) or financially poor patients in hospital The majority of staff at some time have executive and teaching responsibilities. Beds are not allotted to the medical staff as in Britain Rather, the staff are placed on a rota on which they work 2–3 months each year at each hospital in charge of inpatients and outpatients Most pædiatricians are on the honorary attending staff of the children's hospital in addition to children's wards and maternity units in some of the general hospitals Thus throughout the year they will be spending a few hours each day in one or other of the hospitals in charge of non paying patients It should be pointed out that there are good hospitals in many of the smaller towns of Manitoba which are run by general practitioners Only the more serious cases are referred into the city from rural areas As regards private patients in hospital the pædiatrician is expected by the public to visit daily The routine is to visit each hospital and make house calls in the mornings attend the office in the afternoons, and make further house calls in the evenings Meetings are usually held during the evenings or as luncheon events luncheon being provided by the hospital at a nominal cost

University

The medical college in the University of Manitoba was founded in 1883 From the first the influence of the Scottish schools has been felt and there have been many fine teachers including William Boyd in pathology Grant in anatomy Cameron in biochemistry and Hunter in medicine Before entering the medical school the candi date will have done a 3 year university course in arts or science Physics, chemistry, and zoology are obligatory subjects and an over all average of 60% or more must be maintained in examinations Competition to enter the medical school has been very keen The first and second years in medicine are concerned with subjects such as anatomy, biochemistry, and physiology In the third and fourth year systematic lectures on medical and surgical subjects are given, and the student attends the three teaching hospitals for clinical instruction

Certified pædiatricians make applications to be enrolled as demonstrators in the university and to take part in clinical teaching This is an honorary appointment Promotion is to lecturer assistant, and associate professor —the latter receiving a nominal honorarium and taking increased responsibility in teaching The professor of pædiatrics is usually full-time with privileges of consultant practice There are a few oth employed by the hospitals, or by the clinical field A very active teaching pursued each year for undergraduate, postgraduate training Through the societies meetings are held in rural towns province each year

ADDRESSES

Full details of the practice requirements m be had from Dr M T. Macfarland, Royal Col and Surgeons of Manitoba, Room 601, Medical Winnipeg, Manitoba, or from the secretary Details about the fellowship and certificate be had from the Registrar, Royal College of Surgeons of Canada, Metcalfe Street, Ottawa

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THE REGISTRAR IN OUTPATIENTS

ANTHONY COADY
M B Manc , M R C P
LATELY MEDICAL REGISTRAR, CHASE FARM HOSPITAL, ENFIELD, MIDDLESEX

LIKE the rest of the first principles on which medical practice is based, the doctor-patient relationship should be kept under constant review, and that is the reason for this statement, admittedly personal, of how it confronts a junior doctor in a particular situation—the registrar in medical outpatients in a busy general hospital of the National Health Service If it be objected that one so inexperienced should not presume to give opinions on matters on which the wisest have hesitated before speaking, I can only answer that the problems discussed are common ones—all the examples are from a mere first year's registrarship in one hospital—and that makes me wonder whether any conclusions of equally immediate application ought not to be drawn

Some recent papers, though of great value, have tended to discuss the doctor-patient relationship in formal psychiatric terminology , this may have given a "specialist" aura to what is—the authors would be the first to insist—a thing of very general concern I have sought to avoid this (I am in any case not qualified to speak from a psychiatric viewpoint) though I would risk giving annoyance by observing that there is a regrettable tendency to ascribe *subconscious* motivation to the patient who is merely *inarticulate* which is really confirmation of what we were all taught by the best of our teachers—that the best doctor is the one who can coax the patient into finding words to express what he feels The psychiatrists reinforce this when they remind us of the therapeutic value of such self appraisal by the patient There is no cynicism in the recollection that often the patients who thank us most warmly for our explanations and advice are those who have done most of the talking during the interview, the medical listener having done no more than prod the patient into continuing the simultaneous process of self examination and articulation

* * *

It is now common practice for the registrar to conduct many of the first attendance interviews in his chief's clinic The family doctor refers the patient to the clinic usually without any spoken reference to who will see him—the doctor himself often does not know The patient, having made his purpose clear to someone in the discouraging, unconcerned bustle of the hospital, is led by the white overalled receptionist (who, in her well groomed, kindly anonymity, might be anyone from the matron or the senior lady doctor downwards) to the clinic, where he is confronted by the regis now ensues, because this youthful person of the wise, grey haired image around wh and fears revolved So often is this con only when the patient interrupts his stor are Dr A, I take it ?" with the face lo but I am Dr A's assistant," that I myself to the patient as he sits down moment a few civilities can be exchan more grave business of the interview few, however, for, as Sir John Park reminded us, the patient wants us to be him and his problems, not in any other it might be of absorbing common inter same patient is well

* * *

The course of the interview may illustrate difference in the approach of patient and problem of illness the patient so often rid of a discomfort the doctor first to possibility of the fatal or disabling dis secondly to treat the symptom True, many content to go on their way rejoicing th pain is not the heart disease, their stomach cancer they feared, without demanding tions , but for many, above all for those betoken unspoken (I shrink from the scious ") tensions, the diagnosis of exclu help and as such problems arrive at increasing numbers, on many days majority of cases, it is with them I to deal

The white coated anonymity in the paradoxically has access to confidences denied the trusted family physician, who of as "more like a friend", the reticence feel about straining a valued personal re a revelation which may, we fear, cast light on everything that passes between counts for less when the patient perceive considerations apply Thus, one learns particularly of the middle class patient golfing or drinking terms with his family whose view of the doctor's position "culture pattern" militates against the aspect of the doctor patient relationship are assured, so much of our rapport depe

Case 1—A middle aged industrial engineer headache and "rheumatic" pain in the first 'went to old John,' his family doctor before, since when various analgesics (and butazone) had been tried (with little avail evidence of serious organic disease, and he questioning that his affairs were in such a he wondered whether the Commissioners of or his creditors would put him out in the willingly accepted my explanation of the o his anxieties indeed when I asked him if I n anything he hadn t guessed already he replied ative

ough of course the inhibitions will not be overcome and sand may be cast into the eyes ital as of the home doctor

-A young looking 38 year-old wife of a professional lmitted urgently because of the severity of her hich she had had intermittently for twelve years roved to be tension headache After detailed the annoyance of an overcrowded flat was offered us cause it was only later that I learned (from lleague who knew her personally) of a thoughtless apped up in his professional preoccupations to neglecting her sexually and socially A reopened with loaded questions, confirmed that this was ase and the secret shared (Meares 1954) better established

patients however one feels that the family not been given the full story because he had the patient unapproachable or simply too ealing parentheses like and of course lot of worries lately are hints which the iagnostician neglects to take up at his peril may feel he or she should acknowledge the of the process of self revealment in some such really I don t know why I should be ll this but at which point the questioner with an air of uncommitted benignity briefly continue

A middle-aged plumber complained of wind o belch continuously and distending his abdomen some two years before and investigations else- een negative. There were no other symptoms years before married a widow with a grown up ed if his re marriage had affected his personal an Well now I m glad you asked me that nd told of how his newly acquired stepchildren nder in and out of the house inconsiderately the radio when he was trying to sleep (his s were irregular) He accepted my explanation esentments to his symptoms, and my affirmation ld control the belching by not swallowing air attendance three weeks later he declared himself oubled with wind but became distressed when that I would allude to his family circumstances to his doctor I think though I forebore to e feared that his doctor might intervene and family quarrel

A 33 year-old woman was admitted because of ma which responded indifferently to simple o therapy Skin testing yielded no clue but on o history in the side room she admitted to a feeling of hostility to her (admittedly congenial) ing she had intended seeking advice about this e With the minimum of prompting she told happily married mother had inculcated into her liest years a hostile attitude to men in general ly that it conflicted with her affection even for on—who should have been a girl She put plicitly that one had no difficulty in getting her her attitude was irrational and that her husband taken into our confidence so that she would o on hand at home with whom to discuss things rational feelings came upon her The husband disposed, and the lady then went home—to have tack she had ever experienced. Thereafter she s directed she sought and found in her husband though he confessed to me ruefully that he w responsibilities hard work, he also earned the e relationship as was desired.

n evident that these emotional tensions are the surface and require only a few simple ns of history taking technique to bring them problem of talking or listening while trying sly to make adequate notes is one which solution but in any case as Alvarez (1944) observes the gesture of putting away the pen and abandoning the notes before asking searching personal questions will often induce a greater sense of confidential rapport lifting the atmosphere of the police station interview that attends the questioning with writing at the unfamiliar clinic desk Meares (1954) points out some advantages of continuing the history when the patient is undressed and awaiting examination invoking the symbolistic association of physical and mental self revealment The doctor is also, for the moment doing nothing and can convey by his unhurried air the fact that he is concerned to give the patient enough time to recollect and express his feelings

Case 5 —A working class woman in her forties but not yet apparently menopausal complained of an ill-described feeling of strain localised to the rectum Although it had been present for more than a year no other symptoms had developed she recalled that she had had it when a year before she had attended the gynaecological clinic complaining of a vaginal discharge—significantly none was found In the examination room, a direct question on the satisfactoriness of the sexual relationship provoked a flood of tears and the story without further prompting of how she had married because she had to a man she did not love and that she had had five children in the hope seemingly not previously articulated that she would thereby create other more satisfying love relationships this hope was not fulfilled and she felt thwarted because she could voice no complaint against her husband who had been very good to her by any objective standard

This and the following case also illustrate another way of overcoming a common barrier When the patient s natural pudicity wars with his desire to offer the doctor the painful revelation it often merely requires some question the wording of which is only vaguely apposite to allow the patient to justify himself in yielding—clearly the doctor has guessed near enough already better make a clean breast of it

Case 6 —The 41 year-old wife of an accountant was admitted for investigation of bizarre episodic visual upsets for which in fact no organic cause was found Talking to her in the ward it was noted that she gave her history in a somewhat tense manner and volunteered in tones of anxious protest that she had every reason to be happy—an easy life in a good home with a garden dogs, &c But when she was asked whether her childlessness was from choice or no her eyes filled with tears I quickly bade her not to bother to answer and we adjourned to discuss the matter in a quieter place where she readily admitted to longstanding sexual frustrations Her husband was a man of stern upbringing and was unable to relate the sex relationship with the undoubted affection he felt for his wife and all he could tell her was that sort of thing is not for you and she had learned that he masturbated This had so affected her view of him that she refused to accompany him to church feeling that she would in a way be countenancing hypocrisy by so doing yet she protested that he was in every other way a devoted husband

An omnibus or blanket question like How about things at home ? may provoke a flow of vital information Often a hint in the letter from the doctor (who frequently guesses the nature of the conflict but cannot put his finger on the precise spot) enables one to frame a question of almost Socratic impact (In this context arises the striking exception to the rule about not asking leading questions)

Alvarez (1944) points out the advantage of getting over the embarrassing questions at the first interview for at subsequent meetings the doctor becomes better known to his patient and loses the value of impersonality In outpatients however the reverse may apply the patient having once taken the plunge and found the experience less harrowing than he had feared is, at a second attendance a more relaxed and sometimes a more communicative person He often volunteers apologetically something omitted from the original history

—often a fact of no importance but sometimes a suppression of great significance, about which he has had second thoughts

The psychiatrist, of course, relies a great deal on his social worker to fill in the highly relevant background, but in general medicine the consultant or registrar may have only the family doctor's note to give him a lead as to what the patient's story must be set against The difficulties of recall may be great ("all patients are liars"), but very occasionally this is literally true, particularly where it is thought that the powerful aid of the specialist might be invoked to the patient's profit

Case 7 —A 40 year old woman of an ethnic group classically very liable to tuberculosis, complained of coughing up blood, she also admitted night sweats and weight loss She said that some years before she had been under chest clinic care, but had omitted to attend for follow up because of pressing domestic obligations The physical signs were not impressive, the chest radiograph equivocal I therefore sent for her to return for a B S R, my apologies for the additional visit this necessitated were accepted with a cheering graciousness When, however, the B.S.R was reported as normal, and I congratulated her, she merely replied "Oh! So you won't be able to help me to get a council house then, doctor?"

Often the question posed by the family doctor, or inferred in his letter—"Is there, or is there not, an organic lesion?"—is not readily answered even with the aid of the special investigations at the hospital doctor's command, but often the diagnosis of exclusion can be made on the basis of simple consulting room tests the arm-tongue circulation-time, for instance, to determine whether heart-failure is the cause of dyspnœa, and (particularly) the Westergren erythrocyte-sedimentation rate as a screening test to exclude progressive infective and most neoplastic processes, it may be of more help than other more complicated tests

Case 8 —A middle aged man complained of eructation and epigastric discomfort of short duration There were no general symptoms, and I was rather disposed to think his symptoms functional, particularly as he admitted recent resentments at his work The Westergren E S R, however, was raised (54 mm in 1 hour), so I sent him an appointment for a barium meal and follow through In the next few days his condition deteriorated a great deal, and he was admitted direct from the X ray department The barium meal showed no abnormality of the gastro intestinal tract beyond a diverticulum of the duodenum, which was not unwound in the way often associated with cancer of the head of the pancreas Soon after he suddenly died of a pulmonary embolism, and at necropsy a cancer of the body of the pancreas was found

* * *

The bringing to an end of the registrar patient relationship poses its own special questions The need for a final opinion, explained in terms appropriate to the patient's intelligence, may seem too obvious to mention, yet how often does the patient leave the hospital with confused notions, or no notion at all, about what has been found? One has only to hear one's own opinion returned in a garbled form to realise how difficult this problem can be (Asher 1955) At the risk of suggesting yet another time consuming duty for the hard-pressed family doctor, I think that he might often be advised to invite the patient's account as soon as the hospital report is to hand as a control—thus many misconceptions may be nipped in the bud

The registrar must always guard against lending support to the impression that the hospital doctor is in some way the spiritual superior of the family doctor, mischievous demands for direct specialist reports by works managements and, occasionally, schools increase this danger, and have to be resisted The closeness of the professional relationship I attempt to indicate by saying
"I'll write to Dr so and so"
"I'll write to your doctor" and thereby
the latter is just another anonymous
material to our machine Too often,
the embarrassing experience of being
listening to the story the family doctor
hear This is a pity, for perfectly valid
accepted unwillingly if the patient thinks
cut short, he feels he is getting "ready-
for what is for him a unique problem
made" management Whitby (1954) has
fellow general practitioners that, time
this "talking out" has usually only to be
once, and when the background is
doctor knows often enough where to look
sequent troubles He quoted a case to
such knowledge may equip the family doc
the early changes of organic disease in the
which every practice is burdened A
toms were for the most part functional
standing was sent back by the hospital
however, being aware of the recent
content of the tale of woe, insisted on X
and the stomach cancer was unmasked.
not only general practitioners who need to
in history-taking twice in my short
have had the disagreeable experience of
colleagues say, to patients struggling to
selves, that they were "very busy"
an uneducated workman, once to an
ex-professor, grappling with the
in the bitter years of an unforeseen
known organic disease

Sometimes an undesirable dependence
doctor develops, or would do if the
directed to report again to his family
informed, will have the hospital report to
him in his treatment Occasionally one
some indication from the home doctor
wishes to treat the patient or whether he
the hospital to carry on with this.
catches a glimpse of the harm done by
false modesty of some doctors who make
observations In our society, whether
the rôle falls on the doctor which in
accepted by the paterfamilias, the
elder, or other figures—a relationship of
readily to be abdicated without hurt to
who appeals for aid

There are times when one could wish
tion as to whether the patient came
suggestion, a perfectly firm diagnosis
by the family doctor, or whether he
unwillingness born of fear as to what
may discover, at the doctor's insistence
category come the subgroup who attempt
to enlist the registrar's sympathy against
doctor When the latter's shortcomings
have spread over some years, I sometimes
why he hasn't changed his doctor,
not be a fair one, certainly I never
answer

My thanks are due to Dr T Simpson and
Jewesbury who, at Chase Farm Hospital,
helped me in the preparation of this paper,
clinics the cases were seen on which the
and to the family practitioners of Enfield and
their patients, who made my observations

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Students Guide 1956

Medical Schools

ORD UNIVERSITY the preclinical entry is now
(65 men and 11 women) The small increase
has been facilitated by the completion of the
logy department which was brought into full
first time in October 1953 High priority
ven to the extension of the existing human
department which will provide increased
oom space The established pattern of the
riculum under which students reading for
ing degree in medicine must first take a B.A.
ur school (which they do usually in animal
), continues as one of the distinctive features
ol On completing their preclinical studies
third of Oxford students pass into the Oxford
ool the remainder going for the most part
he London teaching hospitals for their clinical
The clinical section of the school also admits,
to Oxford students selected applicants from
and from certain other United Kingdom and
versities who read for the qualifying degrees
m universities

versity has sent a letter to the Ministry of
ing for improved facilities in the Radcliffe
and certain administrative changes in the
ford Hospitals as a whole As a result of its
o the Goodenough Committee and the report
mmittee in 1944 the University wishes to
pattern of the existing clinical school from
nary form which it now follows to one in
usual emphasis is placed on the scientific
This would be in keeping with the type
education provided in the preclinical depart-
especially in the honour school of physiology
t out in the University s letter to the Ministry
t would not be possible to proceed on the
osed until the University departments had
acilities in the teaching hospital and adequate
academic policy What the University
is that ultimately the greater part of the
e Radcliffe Infirmary should be under the
f full time staff appointed by the University
Radcliffe Infirmary should concentrate on
those services which are likely to prove most
om the point of view of teaching and research
he University should have a larger voice in
g the policy of the teaching hospital.

le the Queen has been graciously pleased to
of. G W Pickering professor of medicine in
sity of London as the regius professor of
Professor Pickering who will take up office
succeeds Prof A. D Gardner, who has held
ince 1948 New laboratories and offices are
built in the Radcliffe Infirmary for the regius
nd the board of governors has agreed to place
sal 35 beds. A much larger department than
is also being built for the Nuffield professor of
dicine, which will mean that the professor s
e fully met within the main teaching hospital.
appointed professor of surgery will also have a
ment which will consist of twin theatres and
s above two existing wards in the hospital
converted Accommodation for the depart
clinical biochemistry and pathology will be

UNIVERSITY OF CAMBRIDGE the number of
wishing to study medicine still greatly exceeds
r of places available (about 220 per annum)
lege entries are subject to a university quota.
es will not admit candidates for the degrees
r of medicine and surgery unless they have
secured exemption from three parts of the
before coming into residence This policy
student every opportunity to obtain a good class in part I of the Natural Sciences Tripos, whilst those who have the ability and energy are able to take part II of the Tripos during the third year of residence The first part of the final M.B examination—the basic subjects of pathology (including hygiene bacteriology epidemiology, and preventive medicine) and pharmacology and therapeutics—may be taken two years and three months or more after beginning clinical studies The clinical subjects—medicine, surgery, and midwifery and gynæcology—comprise the second part of the examination and may be taken after two years and nine months or more of clinical study Before a candidate can be admitted to the final M.B he must obtain honours in a tripos (or if over the standing for honours must reach the honours standard in part I of the Natural Sciences Tripos) In addition to obtaining honours in the Tripos he must also reach a qualifying standard in anatomy and physiology (or pass a qualifying examination in anatomy and physiology) and must also pass an examination in pharmacology A student who has: (*a*) kept nine terms (*b*) completed five years of medical study and (*c*) passed the final M.B examination is qualified to proceed to the degrees of bachelor of medicine and surgery (M B, B.CHIR) The medical student in Cambridge, after qualifying in anatomy and physiology, has excellent opportunities for preparing for clinical studies during the long vacation when he may attend courses in elementary clinical methods and in introductory psychology In the course in clinical methods the teaching is concentrated on the simple technique of making a proper examination of patients attending the general and special departments of a hospital. Lectures on The Career of Medicine, The Social Background of Disease Epidemiology and The Practice of Medicine in the Home are included

LONDON SCHOOLS

LONDON UNIVERSITY bears a different relation to its medical faculty from other universities whereas they have one school of medicine each London has twelve autonomous schools, each of which is closely linked with one of the teaching hospitals, as well as University, King s, and Queen Mary Colleges, all of which take medical students for some part of the preclinical course All the medical schools are now open to men and women students.

At UNIVERSITY COLLEGE which has the largest preclinical teaching and research staff in London medical students taking the preclinical course come into close contact with students in other faculties, particularly with science students and research workers who are specialising in anatomy physiology biochemistry and pharmacology Every encouragement is given to students who pass the 2nd M B examination with credit to spend an extra year s study for the B.SC (special) degree in anatomy or physiology Scholarships and exhibitions supplemented by the Ministry of Education are available for at least 10 students each year to take the B.SC course This provides an admirable introduction to research methods and outlook, useful to the medical graduate in the clinical as well as the preclinical fields. There are 10 places available in the first year (intermediate science) course each session and a total of 60 places in the 2nd M B course, of which 10 places are reserved for women students and 3 places for overseas students from the Colonies or Dominions Students accepted for the full medical course receive their clinical training at University College Hospital Medical School The dean of the faculty of medical sciences is Prof F R Winton

KING S COLLEGE provides courses for the 1st M B and 2nd M B examinations of the University of London Applications for admission to the faculty of medical science in October 1956 will be accepted from August to

October, 1955. The students of King's College undertake their clinical studies at either King's College Hospital Medical School, St George's Hospital Medical School, or Westminster Medical School, and no student is allowed to begin preclinical studies at the college who has not also been provisionally accepted by one of these hospitals for clinical training; students should therefore apply at the same time to one or more of these hospitals. One feature associated with the preclinical course at King's College is the participation in the fuller activity of university life offered, because there are faculties of arts, laws, natural science, engineering, and theology also in the college.

The arrangements made by the joint committee of QUEEN MARY COLLEGE and the London Hospital Medical College ensure that the teaching in physics, chemistry, and biology fits in closely with preclinical teaching. Most of the places are taken by London Hospital men and women, but applications from students with other hospitals in view are considered. During the 1954–55 session 51 first-medical students passed through the departments.

UNIVERSITY COLLEGE HOSPITAL Medical School is faced with the necessity of providing more space both for teaching and research. This much-needed extra accommodation may materialise in the near future, for there are plans to build a new dental school and hospital within the present precincts. Suitable accommodation now occupied by the dental school will then revert to the medical school and additional space for research may well prove to be available in the new dental-school building. An extension to the students' hostel has recently been opened and the hostel now has room for over 100 students. The new sports ground and pavilion at Hendon are in full use.

The rebuilding of ST BARTHOLOMEW'S HOSPITAL Medical College is still progressing, and this year a further section containing animal-rooms, histology laboratories, and the pharmacology department should be open by October. The next phase containing the last part of the physiology department and the biochemistry research laboratories, is already under construction. The governors have bought a linear accelerator[1] which is temporarily housed in the physics department while a two-year programme of research is carried out.

The college hall of residence, common-rooms, tennis and squash courts, and a cricket net make an excellent student centre on the college premises, and the sports ground at Chislehurst has facilities for all games. There are hopes that the removal of faculty requirements for matriculation in medicine will encourage students to study arts up to the time of matriculation, and the college offers a scholarship in these subjects. Internal scholarships are offered to a limited number of suitable candidates taking an honours B.SC. course in the year after passing the examination in anatomy and physiology. In the final clinical year students are encouraged to spend a few days with a general practitioner, and one lecture a term is given by a general practitioner. Owing to the limitation of the clinical entry to about 80, the numbers in the preclinical school have had to be reduced in order to give a sufficient number of places to clinical students from Oxford and Cambridge.

CHARING CROSS HOSPITAL Medical School can again report a very successful year, and the continued progress of the school is likely to be enhanced by the recent announcement by the Minister of Health that Charing Cross Hospital is shortly to be given financial assistance for the first stage of building the new hospital at Northwick Park. So far no decision has been made about the medical school and it will probably be some little time before the rebuilding of the school at Northwick Park begins; even so the additional hospital beds at Northwick Park will add still further to the 729 beds already available for teaching. Arrangements by which the Northern Polytechnic provides a separate course of instruction for the 1st M.B. students accepted by the medical school have again been a great suc permits integration of certain parts of the M.B. courses, which is proving helpful to students. In the clinical period the succes examinations reached a new high peak, at occasion over 88% of students passed There have been changes in the staff, bec the retirement of Mr Lennox Broster and Mr Jennings Marshall; these vacancies hav by Mr W. P. Greening and Mr A. R. M students of the school. Clinical research apace and the new laboratories have more the time and the money spent on them. Th put up a much better performance than for and the dramatic society gave a splendid at the Irving Theatre.

At ST GEORGE'S HOSPITAL Medical Sch alterations to premises have been carried out have emerged modern teaching and res tories, a students' refectory and club ro park, and an enlarged school, housing its pathology in a new building of three floors. of clinical teaching has been provided Hospital, at Tooting Grove, designated in 1951 and now in progress of rapid general hospital of 320 beds. With this and by firmly resisting heavy pressure to of firms, the St George's tradition of pers small classes at the bedside is maintained. fields and pavilion are in the making and athletic and games clubs flourish.

At GUY'S HOSPITAL Medical School the years of preclinical studies are designed to student for the clinical work which will particularly for the eventual practice of med is a close link between the medical school and the wards. Oxford and Cambridge admitted for the three clinical years. The has always been to encourage responsib moment the student enters the wards. A series of dresserships and clerkships are in general wards and in special departments accept supervised responsibility for pati emphasis is on bedside and outpatient te than organised lectures. There are, how and demonstrations organised by the di departments of surgery, medicine, obstetric and anæsthetics in order to cover the wh Preregistration appointments are availa newly qualified, and every encourageme men of promise to obtain the higher degrees It is a condition of entry to the medical students should join the Clubs' Union all athletic and intellectual activities membership of the Students' Club.

KING'S COLLEGE HOSPITAL Medical Sc clinical students for the London Oxford a degrees. Students for the London degree clinical training at King's College, Londo have the advantage of associating with all faculties. King's College Hospital, w beds, is situated in the heart of a resid it has one of the busiest outpatient de London. The dental school provides co B.D.S. degree and the L.D.S. diploma. 50 25 dental students are admitted each year year the medical school obtained the use of surgical, and obstetric beds for undergrad in Dulwich Hospital. The teaching is under consultants from King's College Hospital of the consultants of Dulwich Hospital. management committee at Dulwich has permission to adapt an existing building as logy laboratory. Two full time tutors, on and the other in surgery, help to coordin King's and Dulwich. The medical school submitted plans to the University for an ext medical school to provide additional recreational facilities for the existing numb and dental students and to provide acco

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[1] See *Lancet*, 1955, i, 909.

ical professorial unit which it is hoped to
rly in the next quinquennium An entrance
for dental students, value £160 has been
r the first time this year For some years
hool has used a manual dexterity test for
o the dental school and an analysis of these
being undertaken The number of applicants
on to the dental school continues at a satis
l and for the last two years all the admissions
for the B D S course The medical school
decided to increase the value of the Burney
o scholarship from £120 to £300 (£100 × 3)
ship is awarded each year to a male student
r Cambridge The value of this scholarship
reased in the hope that it may assist students
eligible to receive grants from local authorities
stry of Education A second sports ground
ised at Epsom The school s own ground at
l Hill has the great advantage of being only
inutes walk away but it cannot accommodate
by teams The academic board has again
he respective merits of three-monthly and
medical and surgical firms. It has always
actice to have six monthly firms a survival
renticeship system when the medical chief
r touch with his students than is now possible
dvantage of the three-monthly firms is the
ty of teaching Since the association with
ospital every student is taught by three
physicians instead of two The academic
ed to make no change in the practice of six
ms in general medicine and surgery

he past year the number of applications at
N HOSPITAL Medical College has remained
ication can be made at any time after reaching
sixteen or passing the general certificate of
at ordinary level whichever is the earlier
are interviewed as soon as possible after
and they are told of the result of the interview
w days. This policy is still proving of value
ants are not left in uncertainty about their
btaining a place Applicants who are unable
st M B exemption at school spend one year at
y College, but the number who need to do
r decreases For entry to Queen Mary College
B work, students must satisfy university
quirements, but application to go there should
rough the London Hospital Medical College
egration of the curriculum in the preclinical
been introduced during the past year and less
spent on anatomy and physiology This time
d for lectures which will form a bridge between
nd clinical studies It is the aim of the college
this form of integration including a closer
of anatomy and histology with pathology
ng of biochemistry is now at all stages the
ty of the professor of biochemistry Both the
s of physiology and anatomy now regularly
special) courses in physiology and anatomy
ships are given as a result of the 2nd M.B
n to enable suitable candidates to take part
urses There is no doubt that these senior
ling to the B.SC degree are of great value to
n their future careers. Research facilities
expand both in the preclinical and clinical
laboratories for clinical research under the
f the medical and surgical units have been
are proving to be of great value They have
lation with the newly established professorial
s of biochemistry and experimental bio
ensuring that the highest standard of chemical
be available to workers in the clinical field
arch fellowships have been established by the
tenure of which is normally one year so that
who have done their house appointments may
ence in and have opportunities for original
nder supervision The Central Recruitment
has coöperated in this new venture by enabling
of a junior research fellowship to obtain
of National Service where necessary There
difficulty in all the newly qualified graduates
n registration appointment

ST MARY S HOSPITAL Medical School recently celebrated its centenary and a history of the medical school, written by Sir Zachary Cope, has been published [1] The book has been widely acclaimed and the school has been fortunate to have this permanent record set out by one of its own most distinguished students A centenary fund has been launched to raise money to help towards the extension of the present buildings, which were constructed in 1933, and to provide additional funds for research So far over £110 000 has been subscribed or promised Wilson House a hall of residence for 88 students, was opened during the last session and provides much needed accommodation for clinical students It is hoped that another nine houses will be altered next year to give similar accommodation for preclinical students. Dr A Neuberger at present head of the biochemistry division of the National Institute of Medical Research, has been appointed to the new chair of chemical pathology and will take up his duties in October Dr R R H Lovell a senior lecturer in the medical unit has been appointed to the chair of medicine at Melbourne University and will be leaving for Australia shortly The number of applications for admission continues to be very great and over 950 applications were received for entry in October 1955

At the MIDDLESEX HOSPITAL Medical School the whole curriculum is covered including that for the 1st M B examination, and students are admitted either to classes for the 1st M B or direct for 2nd M B work Students who have carried out their preclinical course at Oxford or Cambridge are eligible for admission direct to clinical work The number of students seeking admission remains very high and far in excess of the number of vacancies available so intending applicants are advised to apply eighteen months to two years in advance of the date at which entry is required The school has an arrangement with the Central Middlesex Hospital by which clinical students may attend there as clerks or dressers for three months, and these additional facilities are of the greatest value both to the individual student and to the school In addition the authorities of Harefield Hospital arrange courses of instruction in pulmonary tuberculosis, and the medical superintendent of St Ann s Hospital gives instruction in infectious diseases These facilities are also very much appreciated. A limited number of students can be accommodated to follow a course for the B.SC (special) degree between the completion of their studies of anatomy and physiology and the beginning of the clinical course. There is an excellent athletic ground of over twenty acres at Chislehurst which affords very good facilities for rugby and association football hockey cricket and tennis There are numerous other clubs, and the Medical Society, which is the oldest of its kind in London being founded in November 1771 holds weekly meetings throughout the winter session

The ROYAL FREE HOSPITAL School of Medicine for the first time for some years, has had no major building work in progress during the session and the seal has been set as it were on this pause in expansion by the granting of a coat of arms incorporating the Lion Rampant and the Rod of Æsculapius and by the adoption of the motto *Virtute Fideque* Work has, however, been proceeding at the new athletic ground at Enfield the pitches have been in use since last October and plans are now in hand for the conversion of the house on the estate to provide changing and social rooms to replace the present temporary arrangements. The gardens attached to the house which are of considerable botanical interest are being maintained and in part used for research projects At the Royal Free Hospital work is proceeding rapidly on the restoration of the Victoria wing which will give additional beds and side-rooms for the wards On the student side there has been a revision of the introductory clinical course and teaching in gynæcology pædiatrics physical medicine and neurology has been added to the instruction in medicine and surgery At the school dental students have been admitted to the first-year and second year courses under a scheme of association with the Royal Dental Hospital,

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[1] See *Lancet* 1954 ii 587

School of Dental Surgery. During the year, 65 medical students have qualified, 5 having gained honours in the final M.B. examinations in April and October. First-class honours and a university postgraduate scholarship were awarded to a student on her results in the B.SC. special examination in physiology. There have been successes, too, on the athletic side and 3 students have gained colours in university teams. The school has received a number of very generous legacies and personal gifts during the year. As the result of a bequest, the Barrett research scholarship has been founded and the first award will be tenable in the department of physics. Gifts of £1000 from the late Dr Mabel Ramsay and of £100 from Mrs Macdonald will be added to a fund used to help older students who may not qualify for State grants. A legacy of £1000 from Dr Charlotte Brown has provided an endowment for an annual prize for a piece of clinical research carried out by an old student of the school, and Mrs Cunning, another old student, has offered prizes to the value of £100 to be awarded for an essay on a dietetic subject.

At St Thomas's Hospital Medical School the past year has seen no major changes. Accommodation for staff laboratories and an increase in library space remain the outstanding needs. Planning for reconstruction continues and the first stage will be completed during the coming year when the teaching laboratory, lecture-theatre, and balance-room of the department of biochemistry will be completely renovated and re-equipped. The number of applicants for entry remains at a high level; 76 students entered the clinical period during the year and 90 students qualified. Higher qualifications were obtained by 41 old Thomas's graduates. The final F.R.C.S. course maintains its popularity, especially with Commonwealth candidates, and its results are gratifying. In the academic world it is hoped to ease the burden of the preclinical terms by putting pharmacology into the early months of the clinical period. There have been a variety of visiting lecturers who continue to draw enthusiastic audiences. It is always refreshing to hear outsiders speak, for every medical school tends to suffer from some degree of parochialism. Student activities have maintained a high level of performance. In the athletic field the school has won the inter-hospitals hockey, squash racquets, and rowing trophies while keen support for the Arts has produced an admirable Christmas show and summer play, successful art and photographic exhibitions, and two excellent choral concerts. The Hospitals Symphony Orchestra continues to provide excellent opportunities for instrumentalists. For postgraduates there are still insufficient vacancies both for consultant appointments and for positions in general practice. The balance for the former is slowly being corrected, but there is little improvement towards ease of entry to general practice. The limitation of assistantships would, it is believed, undoubtedly help; it is difficult to believe that, in general terms, they are conducive to the best practice of medicine. There is a feeling that if some of the skill of highly qualified general practitioners could be applied behind the iron curtain which now divides the world of hospitals from that of general practice both would benefit considerably, and the ease of entry and the attractions of general practice for the best type of doctor would be much enhanced.

In the past year the position of the West London Hospital Medical School has been under discussion between the school, the University, and the Postgraduate Federation. The hospital, which is controlled by the board of governors of Hammersmith, West London, and St Mark's Hospital, was destined at the "appointed day" to share the responsibility of postgraduate education with Hammersmith Hospital. The school, however, has remained independent, and its postgraduate activities have largely been confined to students referred to it by the Postgraduate Federation and also by certain Government departments. There has also been some undergraduate teaching and at present there are a few undergraduates doing the whole of their clinical course at the school; but no students can be accepted for preclinical work. The school has taken these students largely as a result of pressure from the Colonial Office and other organisations responsible for training students in this country. It is hoped that this work m by the University, especially if it can students and registrars from the Postgr School of London can spend some of th hospital to enlarge their clinical exper experience in undergraduate teaching. tions between the various interested place during the next academic year that some final solution will be reached.

At Westminster Medical School th clinical students is 108, of whom 16 ar students are doing their preclinical st College, with a view to entering Westm clinical period. Some 500 applications year for an annual entry of 65. The Westm group comprises: Westminster Hospital which clinical practice in general medic obstetrics is undertaken (the orthop and ear, nose, and throat departments main hospital); the Gordon Hospital beds; the Westminster Children's Hosp which provide full facilities for instruction and All Saints' Hospital of 50 beds for th gynæcology and urology. A close Stephen's Hospital provides very valu clinical practice in medicine. Practical carried out at St Stephen's Hospital, the and St Teresa's Hospital. Instruction it the Western Hospital Fulham. A instituted on a voluntary basis by which reside for a fortnight with general practit see the work of their practice. Special tuberculosis is provided by a fortnight's King Edward VII Sanatorium, Midhurst. in mental diseases is given at the S.W.17. 10 vacancies a year in the West teaching group have been recommen registration posts, and competition for There is a new sports ground of 28 acres at Cobham; the ground is near the stat veniently reached from the hospital in

At the School of Dental Surgery of the Hospital of London, students who have medical examination devote one year to the and special anatomy and physiology. In th of the course, after preliminary instruction and practical, in dental mechanics, dental the properties of dental materials, and techniques required for dental conservation lectures and clinics on general medicine Charing Cross Hospital Medical School practice in dental surgery at the dental students attend for a further period of before completing their final examination.

OTHER ENGLISH SCHOOLS

In the University of Durham the ne the south wing of the medical school was time for it to be occupied by the departme at the beginning of the academic extension of the north wing, to house the department of anatomy, are now and it is hoped that before long a start The extension to the department of path situated in the teaching hospital, the R Infirmary, is now under way and will, completed in 1956. This extension will opportunities for teaching and research. final year students are now attached to in the region for one month's resident This scheme has proved very popular both and hospital staffs. During this period residence students are also attached for general practitioners in the area to learn something of their work. The first Grey T was delivered by Sir Zachary Cope in the Infirmary on May 19. He spoke of Some Museums. Before the lecture a plaque to Professor Grey Turner was unveiled in During the Easter vacation 10 members of of Durham Medical Society visited Denm tion of the International Medical Coöper en The visit, which lasted ten days was a . In addition to ward rounds and visits to ne teaching hospitals of the University of the party was entertained most royally l Society has again completed a full pro- s in recent years a party of students from the visit Oslo Medical School and hospitals in ing the summer vacation as part of the Student Exchange Scheme and a party of students from Oslo will visit Durham

IVERSITY OF BIRMINGHAM* the past session of consolidation rather than of new projects t the students organised an international ference which was a great success The appeal to industry resulted in over £470 000 ribed of the half million aimed at. With a this fund some progress has been made in ment of the division of pathological studies activities of the dental school continue to and deserved attention Mr Donald McInnes e staff as a research fellow and is investigating o of the fossil teeth he brought from East ns for the building of a new dental hospital ubmitted to the Ministry of Health and it at within a few years this long awaited l be completed In addition it is hoped to medical school by the building of the library cture-theatre At the end of the present chool will be losing the services of its director studies, Prof W H Wynn. His record in s unique for he has been connected with it or another for over 60 years Prof P C P res from the chair of neurology and Prof y from the chair of gastro-enterology Per- the most interesting developments during s been in the teaching of psychiatry Two chiatrists have been appointed lecturers to in this subject and provision has been made ission of suitable patients to the wards of hospital. In addition, the department of psychiatry under Prof J Elkes, has taken e building for clinical research on the hospital V Mayer Gross has joined this department low of the University and teaching will later ible in the new day hospital established onal board close to the University Two opments have been the establishment of the l centre at Smethwick and a department of esearch at Little Bromwich Hospital which by Prof L J Witts of Oxford

NIVERSITY OF LIVERPOOL* 75 men and 24 ergraduates were admitted in October, 1954, 47 entered the first year and 52 the second pite of the publicity about possible over- the profession there is no falling off in the applications for admission (665 last year and ring the current year) A revised final year which now includes three months orthopædic l one month each of senior medical clerking al dressing and casualty dressing in addition in the specialties came into force this voluntary scheme whereby students become local practitioners in order to obtain first ledge of general practice has been started t of the new medical school building is nearing and the departments of pathology bacterio- harmacology will occupy their new premises session opens. A lectureship has been estab memorating the work of the first professor of surgery in the University of Liverpool, rray former colleague of the late Sir Robert Henry Cohen is to deliver the Sherrington Nov 1 2 and 3 1955

ANCHESTER UNIVERSITY* 93 new students were October 1954 including 24 women There ing off in the number of applicants. The subcommittee of the faculty has submitted or the revision of the curriculum and it is ntroduce some of the changes during the sion Clinicopathological conferences have r some time and it is intended to experiment further with this type of teaching by introducing combined classes in which a number of departments will join During the session the University has reluctantly been compelled to close Lister House, the resident hostel for medical students. The duties normally undertaken in Lister House will now be covered by a clinical apprenticeship On the whole the system of preregistration appointments is working quite smoothly

At the UNIVERSITY OF LEEDS,* this year has seen the introduction of the revised clinical curriculum, and in October 1955, the new preclinical curriculum will begin It will now be possible for able students to obtain total exemption from the 1st M.B course and examination The preclinical course will now include organic and physical chemistry The total length of the course is five and a quarter years and so for those who obtain exemption from the 1st M B examination four and a quarter years. The year too has seen considerable activity in building At the beginning of last session the teaching laboratories of the department of pharmacology were moved to temporary premises in space vacated by another department. At the same time a grant from the Wellcome Trust made possible a substantial reorganisation, extension, and re-equipment of facilities for pharmacological research These new research laboratories were opened on Jan 6, 1955, by Sir Henry Dale, O.M. F.R.S., chairman of the Wellcome Trust. Meanwhile, an extension is being built using part of the courtyard of the school to provide common rooms for both men and women students. The present common rooms will be used to provide much needed additional space for the library Additional accommodation for laboratory animals is being built, which will provide better quarters for cats and dogs The increasing importance of this aspect of the work of the school is shown by the institution of a new post of superintendent of laboratory animals. The Passey prize in Art, to be awarded every third year to the student of the University who submits the best piece of artistic work was founded this year in commemoration of Professor Passey's tenure of the chair of experimental pathology and cancer research from 1926 to 1953

At the UNIVERSITY OF SHEFFIELD* structural alterations have permitted the re housing in an adequate manner, of the department of pharmacology and therapeutics and the space thereby freed, adjacent to the department of anatomy, will allow much needed expansion of that department. Building is proceeding satisfactorily with the new teaching block at the Royal Infirmary The chair of biochemistry lately vacated by Prof H A Krebs F.R.S has now been filled by Dr Q H Gibson formerly reader in physiology The title of reader has been conferred on Dr G Forbes, the head of the department of forensic medicine The University was pleased to welcome as a visiting lecturer in the department of medicine for a period, Dr F M Davenport, associate professor of the department of epidemiology in the University of Michigan Reference was made last year to the fellowship established by the Nuffield Foundation to enable a senior research worker to be attached to the Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases. It has now been decided to invite Dr H F West already director of the centre to take up this fellowship on a part time basis reducing correspondingly his routine hospital commitments

At the UNIVERSITY OF BRISTOL during the past year the new professorial unit in obstetrics and gynæcology has taken over the permanent accommodation built for it at Southmead Hospital A research laboratory for the department of anæsthetics has been opened at the Bristol Royal Infirmary with the coöperation of the board of governors. The scheme for the attachment of final year students to general practitioners for one or two periods of a week each has been continued,

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The entrance requirements for the Universities of Manchester Liverpool Leeds Sheffield and Birmingham are laid down in the pamphlet, *University Entrance Requirements 1954–1955* copies of which may be obtained from the Secretary to the Joint Matriculation Board 315, Oxford Road Manchester 13. Additional faculty requirements may however, be imposed details can be obtained from the dean of the faculty of medicine in each university following a satisfactory report on its first year's running The arrangements for preregistration appointments have again worked smoothly, except for one or two cases of difficulty in finding medical appointments for graduates who had completed an appointment in surgery The veterinary school produced its first set of graduates in September, and all members of the first final year completed graduation by December B.V.SC. regulations have been amended so that, starting with the session 1955-56, the final examination will be taken in June instead of in September Applications for medicine and veterinary science have remained numerous and those for dentistry have shown a welcome increase in numbers and improvement in quality

WALES

The WELSH NATIONAL SCHOOL OF MEDICINE has provided an additional floor in the new Institute of Pathology for the public-health laboratory of the Medical Research Council and has come to an arrangement, with the approval of the University and the Medical Research Council, whereby the director of the laboratory holds the chair of bacteriology in the school Collaboration is maintained with the pneumoconiosis research unit of the Medical Research Council at Llandough Hospital, the neuropsychiatric research unit at Whitchurch Mental Hospital, and the asthma research unit at St David's Hospital, members of the staff of each unit hold appointments honorary or otherwise, in the school At the joint invitation of the regional hospital board and the board of governors of the United Cardiff Hospitals the school has recommended the names of persons to constitute a clinical research committee to consider research projects requiring the assistance of the boards from State-provided moneys The committee has been approved and has already made recommendations about research schemes The large scheme for an entirely new medical school and teaching hospital is still in the hands of the Welsh Board of Health and the University Grants Committee The Minister has announced in Parliament that it has a measure of priority and, accordingly, it is hoped that an architectural competition will be launched at no very distant date

SCOTLAND

At the UNIVERSITY OF ABERDEEN the course for the degrees of M.B., CH.B. extends over six academic years Courses in premedical and preclinical subjects are given in departments located in Marischal College and in Old Aberdeen, providing instruction to science as well as to medical students Laboratory and lecture courses in the three clinical years are given in the University buildings on the Foresterhill site where the main hospitals are, and clinical instruction is given in all the hospitals in Aberdeen Few changes have taken place during the past year, though a number of important new projects are in course of completion or being planned Considerable progress has been made in building a new wing to the Royal Infirmary to provide accommodation, among other things, for an enlarged blood and fluid transfusion unit at present housed in the department of bacteriology Plans have been prepared for a new workshop a radioactive-isotope unit, and a special research department in clinical midwifery, the last mentioned to be staffed by the Medical Research Council and run under the honorary direction of the professor of midwifery[1] The number of students applying for admission each year tends to fall but is still above the number of places available During the year Emeritus Professor John Cruickshank retired from his chair and was succeeded by Prof A Macdonald, one of his distinguished pupils, who has returned to Aberdeen via the University of Liverpool where he was reader The four Scottish universities have been in consultation about the possibility of permitting certain candidates for admission to the medical faculty, under regulations to be made by each university, to sit the professional examination in physics, chemistry, and biology without attending university classes in these subjects To enable this to be done, a new ordinance has had to be drafted and has already been approved b Academicus. The policy of attaching stud- of a month to general practitioners in the c to be successful Fears that the patie to such an arrangement, have not been students have proved tactful in their doctors and their families and there is no experiment has come to stay

At the UNIVERSITY OF EDINBURGH, th been one of continuing activity The numbe for admission in October 1955, to the M.B. is as high as ever in relation to the nu available The demand for places in th School of Veterinary Studies for the B.V.M. exceeds the number available The numbe qualified applicants for admission to the B.D Surgery, however, is somewhat disapp reflects a trend which has been noted th country at present Students in medic and veterinary medicine and surgery all first-year course with professional ex physics and zoology in March and in th botany in July, and all students are s same regulations relating to class and prof minations A new procedure for the selectio students has been adopted and a majority are required to appear for interview by a c mittee before admission to the faculty Th for admission as students for the M.B. beginning in October, 1956, should submit t tions to the dean of the faculty by De limited number of undergraduate bursarie ships are available to students in the facult for advanced courses of study—e.g., an of instruction for the B.SC. degree

Present regulations governing the M.D. the lodgment of two copies of theses and ca be required to present themselves for exa may be a written oral, clinical, or practi branch or department of medicine to whic of the thesis relates The degree CH.M. req mission of a thesis and normally also exa surgical subject or subjects The Comm conduct courses of instruction leading to degrees, but facilities for clinical or other research are available The Edinburgh P Board for Medicine (see p 451), which is council to the University, provides courses leading to the higher qualifications granted Colleges of Edinburgh The University a graduate courses leading to the diplomas in diagnosis and in medical radiotherapy, ea over two years There are also courses of public health, of about three months' du certificate in public health, and of a furthe for the diploma in public health For th tropical medicine and hygiene the course is in two parts, each of about three months the diploma in psychiatry requires, under tions attendance at two courses, each of duration in the autumn term, in additi specified hospital experience There are al instruction leading to the University certif tutors and to the certificate in medical Graduate scholarships and fellowships are being open to graduates in the faculty of me university, to graduates in the faculties of of any university who hold an honours d licentiates in medicine The holders of suc required to undertake research work in within the faculty of medicine

At GLASGOW UNIVERSITY the numbers of for admission to the medical and to th School show little change from last year in excess of the numbers of available places for entry to the dental school, which h appointingly few during the past year a slight but welcome increase this year school, Prof T Symington has succeeded

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[1] See *Lancet* 1956, i, 1335

- in the St Mungo Notman chair of patho- o at the Royal Infirmary, and retirals at this session will lead to one or two changes e in charge of non professorial clinical teach The junior teaching staff has been augmented dditions in the lecturer grade to the establish lividual departments The principal develop e year in the medical school has been the a new department of surgery at the Western This building, which is contiguous with the stitute of Medicine will offer greatly increased e postgraduate study and research In the school the animal hospital and associated r clinical instruction are now nearing comple- he facilities for veterinary instruction and ve been further augmented by the purchase within reasonable distance of the clinical s There have been no major changes in the rriculum, but an organisation has now been eby senior medical students may during their obtain an attachment to a general practi period of at least a fortnight

NIVERSITY OF ST ANDREWS instruction in the the clinical years of study is given at Dundee premedical and preclinical subjects may be ner at St Andrews or at Dundee The course sts six years The annual intake of students lty of medicine is limited to between 70 and re that the hospital facilities available are allow of adequate clinical instruction being ach undergraduate The laboratory accom n both preclinical and clinical years has been tended and provides excellent facilities for Both at St. Andrews and Dundee there are which accommodate undergraduates from all Medical students in their early years are to reside in these to make contact with ates of other faculties.

IRELAND

UNIVERSITY OF DUBLIN considerably fewer e being admitted to the premedical year next Exemption from the premedical year will be ly in special cases. Full time *chairs in clinical* nd clinical surgery have been created this year e being made in the arrangements for clinical the hospitals. Reconstruction of the patho- physiological laboratories is in progress and oratory for pharmacology is to be provided hoped will be ready by the summer term of rther modifications in the arts course for udents include the introduction of a series on the history of medicine

HOOLS OF SURGERY DUBLIN including and Ledwich Schools are attached by charter al College of Surgeons in Ireland The college the preregistration classes approximately 100 ach year The normal method of entrance is ition in the preliminary examination but a mber of places is given to those with excep lifications and to certain students selected by al Office to which all colonial students should ause, owing to limitation of numbers they admitted to the entrance examination Nearly s take the Irish Conjoint Board s examination take in addition the London examination ls were inspected by delegates from London last year and as a result were recognised r period of five years. Students are medically at the start of the preregistration year before the start of the clinical years Two ve free medical care to students and there s warden and a lady dean of residence to nts in obtaining suitable accommodation and ays. The playing fields of 10 acres and the n among the best in Dublin During the past boratory space for chemistry and physics has led two rooms for advanced work have been he anatomy department and much additional apparatus obtained for the pathology physiology, and physics department In addition a large room has been constructed for the Men s Union.

The ROYAL COLLEGE OF SURGEONS IN IRELAND is in the unique position of being by charter an undergraduate school of medicine undertaking the full training in the basic sciences and in the preclinical and clinical courses. In the college buildings in Stephen s Green in the middle of the city are the laboratories for biology physics and chemistry, and for biochemistry physiology and pathology, as well as an unusually large anatomy department five large lecture theatres for formal lectures, examination administration and reception rooms the College library a restaurant for the students, and the Union common rooms for men and women For midwifery and gynæcology any of the three well known Dublin maternity hospitals are available to college students and for general hospital work any of the ten Dublin clinical hospitals and the usual specialist hospitals are available The Students Union caters for about twelve other societies—scientific, musical, dramatic, fencing boxing &c —and most of these compete with visiting universities, Irish or otherwise Students are examined radiologically on entrance, tuberculin tested and if they wish it given B C G The radiological examination is repeated before commencing clinical work. The great majority of students take the examinations of the Irish Conjoint Board and a few take the English Conjoint and the London University examinations.

At QUEEN S UNIVERSITY, BELFAST the number of entries to the medical school each year is restricted to 108 of which up to 20 places are reserved for the school of dentistry Priority is given to applicants whose parents are normally resident in Northern Ireland and a number of places is reserved for selected candidates from Great Britain and overseas Details of the entrance requirements may be obtained from the secretary Faculty of Medicine, 25 University Square, Belfast or from the clerk of admissions, Queen's University, Belfast. The professorial staff was increased during the year by the appointment of Prof G W A. Dick to the chair of microbiology The new Institute of Clinical Science which was opened in May, 1954 provides exceptional facilities for the clinical teaching of undergraduates and of research for postgraduates. The student health-service clinic continues to provide a comprehensive service for all students at the University Routine medical examination and Mantoux testing is compulsory for first year students. All students have an annual chest radiograph and this facility is also offered to the staff. A lodgings department has been added to the other auxiliaries of the service A roster of inspected and classified lodgings is maintained and all non resident students outside hostels are now accommodated through this department

The NATIONAL UNIVERSITY OF IRELAND has colleges in Dublin Cork and Galway

In UNIVERSITY COLLEGE, DUBLIN the feeling is that the difficulties of medical education increase apace The techniques of examination become more specialised and the schools are too often swayed by pressure groups who consider that the latest and as it has often proved in the past ephemeral outlook should be made the basis of teaching In an effort to protect the student University College proposes to reduce the number and scope of the examinations between the second and final and while ensuring that the student is acquainted with [illegible] branches of medicine the techniques of which are best mastered after graduation the aim is to discourage the good student from the vain pursuit of [illegible] available skills To ensure, in addition, [illegible] will meet with a patient without being able [illegible] pass him through a systematic [illegible] will reveal any defect, the tutor system has been established in two of the hospitals associated with the school Much thought is being given to the problem of the student who in spite of ample time and adequate [illegible] makes a mockery of the machine by failing [illegible] Should he be discreetly disposed of [illegible] exhibited until he is overwhelmed by [illegible]

COLONIAL SCHOOLS

Although higher education in the Colonies has a long history dating from the founding of Codrington College in Barbados in 1710, the publication of the reports of the Asquith Commission on Higher Education in the Colonies and of its West Indies and West African committees in June, 1945, has led to very rapid development during the last ten years In this post-war progress, four new University Colleges have been created—the University College of the West Indies, the University College of the Gold Coast, University College, Ibadan, Nigeria, and the University College of Rhodesia and Nyasaland In addition, Makerere College, Uganda, has been raised to the status of the University College of East Africa, and the Gordon Memorial College, Khartoum, became a University College affiliated to the University of London Four of these University Colleges have medical schools There follow short notes about these new enterprises and about some of their older Colonial counterparts

Ibadan

Few people have heard of Ibadan in Nigeria Still fewer know that during the past eight years a University College has been created there, housed in £2½ million worth of striking modern buildings, or that an associated teaching-hospital centre, costing over £3½ million, is in an advanced state of construction Having heard, they may ask why

Nigeria, four times the size of Great Britain, is the largest remaining British Colonial territory and, with its 32 million, the most populous part of Africa, with the exception of the Nile delta It is very varied in race, language, culture, and terrain, it is also, for the most part, very primitive With its gradual development the demand for trained men arose in all fields and was met by recruitment outside Nigeria and by the sending of a steady trickle of Nigerians to universities and colleges overseas But the supply has always been inadequate, and in few cases were establishments ever filled—a state of affairs that still exists Since the war the pace of progress has increased, and there is a dearth of skill everywhere Although Europeans occupy many of the positions of leadership and responsibility and will be required for many years to come, recruitment is capricious and the only solution is to train Nigerians and to train them in Nigeria Moreover, in a country of such size, progressing rapidly towards independence, it is the only reasonable solution Hence, the founding of University College

The college has faculties of arts, science, agriculture, and medicine, and provides courses and conducts examinations for degrees of the University of London The faculty of medicine began in 1918 Since then the preclinical departments have prepared students for the 2nd M B examination of the University of London, which they sit locally, with external examiners from London attending The clinical departments have worked in two local hospitals, totalling 300 beds, which incidentally, provide medical care for the 600,000 people of Ibadan Without such a foothold it would have been impossible to have come to grips with the peculiarities of local medical problems, to gain the confidence of the inhabitants, and to build up a hospital staff, medical, nursing, and administrative, but it was soon clear that these hospitals would never be suitable for clinical teaching A new hospital, specifically planned for teaching and research, had been included in the original scheme, but it was not until 1951 that funds were provided Work began on a site of 185 acres in September, 1953 Many of the ancillary buildings have now been completed, the shell of the main fabric is well advanced, and the hospital of 500 beds should be ready by the autumn of 1956 The teaching hospital, like the college itself, is an independent corporation, although deriving its entire revenue from the Nigerian Government Already most of the administrative organisation is in being and a nursing-training school, aiming at recognition by the General Nursing Council, has been in action for over two years For the time being, with the coöperation of medical schools in Britain, students who have completed their preclinical studies go to the United Kingdom for the clinical part of their training, pending the introduction of clinical teaching at Ibadan

Nigeria has few good secondary
hard struggle to reach the standard
college Although there are already
likely to be a sharp increase in the
students, up to the present 30 to 40
have been admitted annually
Ibadan medical student is a man
students' intellectual capacity is that of
anywhere, their diligence is remarkabl
often excessive The reasons for this
ground Very few are independent, in the
immediate families pay for their educat
State scholars, competition for schol
and failure means the withdrawal of supp
supported by family groups (the "exten
the anthropologist) or by tribal societies
expect results and the student who
humiliation and probably withdrawal of
Small wonder that these circumstances
an attitude of over-application

But the students are not held in
their books They are very keen on all
They play hockey, soccer, cricket, and
excel particularly in field events In
student won the high jump at the Emp
Vancouver, and another has twice be
wicket-keeper for Nigeria They are enthu
and great discussers and debaters Societ
being, some ephemeral, others more
study and discussion of almost every
African sun It may possibly be due to
education of many of the students from
they are enthusiastic churchgoers the
chapel is well-filled on Sundays A
chapel will soon be completed and althoug
nearly 50% Muslim, there are relative
students, a mosque is soon to be built

The college and the teaching hospital
costly ventures, but they have vast respo
their function is to graft on to tropical
stock the substance, atmosphere, and ethos
sity, with all which these connote The graf
delicate at first, has already taken sound
proceeds apace and, in time, a corpus
indigenous and applicable to Africa, will

West Indies

The past year marked the end of the
development of the medical school of the
College of the West Indies in Jamaica
batch of medical students graduated
1954, 13 out of the 15 students who entered
M B, B.S degree of the University of Lond
acted as a great stimulus to West Indians
at their own medical school and already
who apply for entry can be accepted
curriculum is that of the University of
students have to cover considerably more
equivalent students in Britain They not
learn enough to pass the London examinat
and often in considerable detail, about
in the West Indies Save for some indus
there are few conditions in Britain which
met with in the West Indies, although
(pernicious anæmia, for example) may b
other hand, there are many important
mon in the West Indies which receive
English textbooks such as sickle-cell
and lymphogranuloma venereum The
students started their premedical studie
and although entries to the medical school
since then, the proportion of both staff
students is still considerably greater than
school in Britain, and the majority of staff
Hence students get more individual attent
practical responsibility The training
approximate more closely to the appr
A long-standing criticism of British
has been the tendency to "in breeding"
ment of staff This cannot occur with a
medical school and the policy of the col
to get the best available man for the job
comes from

resting that medical schools in Britain have ncreasingly necessary to provide residential ition for their students, an arrangement which sity College of the West Indies has insisted on eginning Only during their last two years ts allowed to live out under special circum even then they may be required to return to luring certain clinical appointments.

progress has been made with plans to enlarge l from its present 315 beds to 450, and the clinical students has made this more urgent ears members of the Medical Research Council been working at the College and the M R C is ng a metabolic research unit so that they will ved facilities at their disposal including beds ess Alice Appeal in aid of the college and hospital, launched by the Chancellor in has already reached nearly £800 000 and will ther things, provide a considerable increase in r of scholarships available to medical students.

e College at Kampala Uganda, was founded in technical school under the Uganda Adminis On the recommendation of the Asquith Com 1945 it was decided that the college should e centre of university studies in East Africa of special relationship with University of as entered into in 1949, and the college then tle Makerere College, the University College of a.

s at the medical school first do two years in y of science studying the premedical sciences ics, and sociology and doing special English They then do two years of anatomy and , and three years of clinical work at Mulago (600 beds) where most of the clinical are attached to Makerere College They can me licentiates in medicine and surgery (East Before admission to the local medical registers, period of two years internship including lth work, is required Full recognition depends tion of the General Medical Council and it is t the council will arrange a visit in the near The rapid increase in the educational facilities frica has meant a bigger intake into the school year class is now 21 and larger classes are in the future Students include Africans, nd Arabs European students will soon be *Students of British medical schools visiting* ca in the long vacations have been offered ties to work in the school

ing good the damage done to buildings and t some years ago by an explosion, generous been received by other medical schools by onors, and by philanthropic foundations. This older medical schools has continued and gifts and journals have come from many parts of the y arrangement with other East African libraries al-school library provides access to over 17,000

building programme has been drawn up to ncreased space for the clinical and paraclinical ats and for more library facilities, and the overnment has pressed ahead with its plans for lding of Mulago Hospital on a site next to the tal The new hospital will provide additional lation for the clinical departments. The chool museum is being rebuilt and expanded al additions are being made to the old hospital tle malnutrition unit under Dr R F A Dean ly housed and actively at work ; and the liaison with the Hospital for Sick Children Great Street is in full operation The cancer survey, l by the British Empire Cancer Campaign has adily ahead A number of other grants for have been received by the school and much oing on Visiting research workers from India, and Guatemala have been accommodated and ing number of medical visitors from other s have spent some time at the school and ve lectured to staff and students. The need lised postgraduate training is being considered chool in coöperation with other bodies will try these needs.

Hong Kong

The University of Hong Kong was incorporated in 1911 but the history of its faculty of medicine goes back to 1887, when a college of medicine was established, with Dr (later Sir) Patrick Manson as dean and Dr (later Sir) James Cantlie as secretary Sun Yat-Sen Father of the Chinese Revolution, was the most widely known graduate of the college. With the establishment of the university the Hong Kong College of Medicine was included as its senior faculty The work of the university was interrupted during the late war, when most of its buildings were badly damaged and all equipment was lost, and a new start had to be made in 1946 Recovery has been complete and the university has advanced well beyond the point of progress it had reached before the war

A new pathology building is under construction When it is completed next year more space will be available for all preclinical departments which are at present much overcrowded A splendid new building for the Tsan Yuk Maternity Hospital, the principal teaching hospital for obstetrics and gynæcology, was completed and officially opened last June by Sir Alexander Grantham the Governor of Hong Kong A new casualty building is being built at the Queen Mary Hospital, which is the centre of most of the university s clinical teaching Work is expected to begin soon on a new outpatient clinic to replace the overcrowded and outmoded quarters at Sai Ying Pun, where *most of the outpatient teaching* is done

The medical course lasts five years Before they can begin students must have successfully completed one year of preliminary study in the faculty of science or matriculated at the advanced level in chemistry physics, and biology Beginning in September this year the annual intake of students is limited to 50 Teaching is in English, but students of all races are accepted though preference is given to those whose homes are in Hong Kong After the degrees M B., B.S have been conferred there is a compulsory internship of one year before registration About 55 approved hospital posts are available for internship within the colony but this number will increase as hospital facilities are increased in the near future

Khartoum

A medical school in the Sudan for training Sudanese doctors was originally suggested by Lord Kitchener in 1914 and on his death in 1916 a subscription list was opened to establish a school as a permanent memorial to him. £13 000 was contributed all but £2000 of which was raised by natives of the Sudan Government and other assistance produced enough capital for building to begin and in 1924 the Kitchener School of Medicine was declared open by Sir Lee Stack. 10 students were admitted that year The course lasted four years and the instructors were provided by the Sudan Medical Service and the staff of the Gordon Memorial College A compulsory preregistration year of house appointments *followed the award of diplomas* There was *no shortage* of potential entrants to the school and their calibre may be judged from the first class to graduate which included the first 2 ministers of health 1 member of parliament and the present senior obstetrician and gynæcologist to the Sudan Medical Service

Progress has been steady since those days and a flow of Sudan trained Sudanese doctors began to enter the medical service which had previously been staffed by British doctors and a few from other countries, chiefly Syria It became apparent that a four-year course was not long enough to maintain the standards that were desirable, though at first these did not specifically compete with the academic requirements of the General Medical Council Very careful watch was kept on the examination standards, largely through the careful selection of distinguished external assessors The course was therefore extended to six years and the first diplomates taking this longer course graduated in 1938 This also allowed recognition by the Royal Colleges of Physicians and Surgeons which agreed to admit graduates of the Kitchener School as candidates for their postgraduate diplomas and for the conjoint diploma after a further year of study in the United Kingdom. This recognition continues.

During the late war the school was able to carry on despite the fact that a proportion of the teachers were on active service. The next major development, which had been long foreshadowed, was in 1952 when the Gordon Memorial College became a University College affiliated to the University of London and the Kitchener School became a part of the new University College. This was in part the result of demands for increasing number of Sudanese doctors. Six chairs were established and the necessary staff appointed, but the Sudan Medical Service continued to contribute to the school as part-time teachers. New physiological and anatomical departments have been built in the grounds of the original Gordon Memorial College and the old buildings are being adapted to house clinical and pathological laboratories.

The students come from all parts of the Sudan though there is still a considerable preponderance of northerners. By 1958 the yearly output of doctors should be at least 21. So far 2 women have qualified. The Kitchener graduates now do house appointments for two years after qualification at approved hospitals and after that most of them enter the Sudan Medical Service on a permanent basis. In a large country with scattered population the bulk of the medical service of the country must be provided by the government, and there is little scope for private practice outside a few of the larger centres.

Malaya

This year the King Edward VII College of Medicine, which was incorporated as the faculty of medicine of the University of Malaya in 1949, is celebrating the golden jubilee of medical education in Malaya. The proceedings marking the occasion will be held during the week ending in the convocation on Oct. 15. There will also be lecture-discussions and medical, dental, and pharmaceutical exhibitions as well as many social functions during this week.

Since the late war, when the college graduated only between 20 and 30 medical and about 10 dental and 5 pharmaceutical students annually, the intake of students has been doubled. But it was widely felt that this was not enough to meet the needs of this country and surrounding territories, so a commission, headed by Sir David Lindsay Keir, considered the situation and reported that the faculty should aim at graduating 100 medical and about 40 dental students each year. Meanwhile the dental school has been considerably extended and fitted with modern equipment. Plans are going forward for the extension of preclinical departments, including the building of a new pathology centre, which it is hoped will be completed within this quinquennium.

Progress is being made in revising the medical curriculum in the light of modern ideas. For example, there is now a five-term preclinical course followed by a two-month introductory course on the basic principles of bacteriology, pathology, social medicine, and materia medica and pharmacology, and a three-month introductory clinical course. It is then hoped for the next two and a half years to introduce an integrated clinical course. There have been developments in postgraduate teaching too. A course, recognised by the General Medical Council, leading to the diploma in public health has been instituted. It is hoped to increase the number of postgraduate courses when staff and facilities are available. The present number of students—medical, dental, and pharmacy—is 403.

The aim is eventually to have a completely residential university, and an extensive building programme for hostels has been put in hand. Meanwhile, in the teaching hospital completely new surgical, pædiatric, and obstetric blocks have been built and further extensions to other departments are taking place, all with arrangements for teaching.

Malta

The medical school attached to the Royal University of Malta was founded in 1674 by Grandmaster Nicolas Cotoner in the *Sacra Infermeria* of the Order of St. John. It was then known as the School of Anatomy and Surgery and its primary object seems to have been the training of surgeons for service on the galleys of the Order and the Hospital of the Knigh University was founded in 1769 by Gran this school was incorporated as the facult During the French occupation, when the U suppressed, the medical school continued its own and it returned under the ægis of th with the establishment of British rule.

A peculiarity of the Malta system is th start every third year. The original re small number of candidates, but toda continues because of the limited resources of sity. Efforts are now being made to start a second year at least. The course takes which the first two are premedical, the clinical, and the final three clinical. The is carried out at the modern and well-equipp Hospital with visits to the isolation and hospitals. The curriculum is very similar to pattern, but each specialty has its own Teaching is in English. The qualifying d The proposal to have an M.B., to be followed by an M.D., was turned down partly on tradition, but mainly because it was felt th size of the island did not afford sufficient postgraduate study. A considerable numb —certainly all those who aspire to a teaching have specialist or consultant ambitions— United Kingdom for further study.

The University, and therefore the medical supported by the government, but since 19 sity has been autonomous. The Univers medical school are open to candidates of any without distinction of sex, race, or creed the number of students have been steadily The course due to graduate this year and the next course more than 80. This is resources of the school to the limit. Up has been no attempt at selection excep the examination, but if the present trend sort of pruning, either by competitive exam interview, will have to be introduced.

An unofficial preregistration year has b since 1940. So far it has been possible to graduates in the various government ho least one year. The medical and health d anxious to make this preregistration year but the action of the University in refusing number of medical students has made it d matter is still under consideration.

Degrees and Diplomas

EXAMINING BOARDS

English, Scottish, and Irish Conjoint Boar

The Examining Board in England by the R of Physicians of London and the Royal Surgeons of England examines candidates qualifying diplomas of L.R.C.P., M.R.C.S. satisfying the board's regulations in re preliminary examination in general ed eligible for admission to the premedical ex chemistry, physics, and biology, and are complete the professional curriculum subseq recognised medical school. Copies of the with a calendar showing the dates of exam be obtained, free of charge, from the sec Examining Board in England, the Exam Queen Square, London, W.C.1.

The Royal College of Physicians of Ed Royal College of Surgeons of Edinburgh an Faculty of Physicians and Surgeons of Glas arrangement by which, after one series of ex held in Edinburgh or Glasgow, or both, the obtain the diplomas—designated by the lette L.R.C.S.E., L.R.F.P.S.—of all three bodies may work for the examination of the Scott Board at any of the recognised medical sch Britain and Ireland. The course lasts includes, in addition to the preliminary ex the natural sciences—i.e., chemistry, phys essional examinations the first in anatomy ology, physiology biochemistry, and bio- o second in pathology and bacteriology and gy; and the final in medicine surgery mid isic medicine, and public health Details may the registrar, 18 Nicolson Street, Edinburgh

oint Board of the Royal College of Physicians nd the Royal College of Surgeons in Ireland ndidates for the qualifying diplomas of the d L.M L.R.C.S.I and L.M After passing an amination in general education candidates to do a one year course in chemistry physics these subjects being treated with special their applications in medicine After passing tration examination in these subjects a five- of anatomy and physiology follows There is linical term with an introductory course at and this is followed by three years clinical ere are three professional examinations are accepted from most of the recognised ome and abroad but in practice 90% of the are from the Schools of Surgery which are y the Royal College of Surgeons in Ireland peration of the Royal College of Physicians The Irish Conjoint Board thus differs from and Scottish Boards in that it has a large ool under its control

s Licences

ty of Apothecaries of London grants the nd to candidates who pass the primary (which is held quarterly) and the final Final examinations are held monthly eptember The minimum period of study five years The four parts of the final may be taken together or in any order and a schedule of the required courses of be obtained from the registrar, Apothecaries Friars Lane E C 4

hecaries Hall of Ireland is an examining didates for examination must be registered lents The diploma L.A.H Dublin confers the right of registration in the Medical Ireland and Great Britain An examination pharmacy is a compulsory part of the quali nation A course of lectures in the subject he hall prior to each session of examinations re held three times yearly—in March June, ber Further information can be had from 95 Merrion Square Dublin

UNIVERSITY DEGREES

Medicine and Surgery

niversities in the United Kingdom except Reading and Southampton offer bacca rees in medicine and surgery, conferred on f examination

HIGHER QUALIFICATIONS

have graduated in medicine and surgery are seek higher qualifications if they wish

Medicine and Master of Surgery

holding bachelor s degrees can take the ctor of medicine or master of surgery All with medical faculties in Great Britain and fer such degrees London University offers general medicine and in pathology psycho- icine midwifery and diseases of women tropical medicine; the M.S is obtainable in ery and in dental surgery ophthalmology ology otology and rhinology Liverpool thopædic degree of M CH ORTH

Midwifery

ty of Apothecaries of London grants the midwifery (M M S A.) upon examination in ediatrics, and public health The examina ld in May and November and regulations ined from the registrar, Apothecaries Hall Lane E C 4

MEMBERSHIP AND FELLOWSHIP

The Royal College of Physicians of London confers the membership (M R C.P), which is obtained by examination Examinations are held four times in each year and medical graduates and licentiates of the college over twenty three years of age may sit for it. Details can be obtained from the Secretary Royal College of Physicians, Pall Mall East London S W 1 Fellows of the college are elected annually at a general meeting of the college

The Royal College of Surgeons of England grants a fellowship to those passing the primary and final F R C.S examinations The primary examination is open to those who hold a qualification registrable in the British Medical Register and to graduates in medicine and surgery of universities and medical colleges recognised by the council Subjects of the primary examination are anatomy (including normal histology) applied physiology and the principles of pathology The final examination can be taken in general surgery, ophthalmology or otolaryngology To be admitted to the final examination in general surgery candidates must produce evidence of having been engaged in acquiring professional knowledge for not less than three years after taking a recognised medical qualification and of having held the requisite resident surgical posts during a part of that time Candidates for the final examination in ophthalmology or otolaryngology must have been qualified for three years and must have held general and specialist resident posts during an aggregate period of eighteen months The primary examination is held in February June and October, and the final examination is held in May and November The college also grants a fellowship in dental surgery The primary examination is open to those with a dental qualification registrable in the British Dentists Register and to graduates and diplomates in dental surgery of universities and licensing bodies recognised by the council Subjects of the primary examination are applied anatomy and applied physiology and the principles of pathology, with special reference to the teeth and jaws and of the final examination surgery oral pathology and bacteriology and dental surgery The Faculty of Anæsthetists has been formed within the college and the faculty grants a fellowship by examination Subjects for the primary examination are anatomy, physiology pathology and pharmacology and for the final anæsthesia and analgesia, medicine and surgery and the application of the basic sciences to anæsthetics. Copies of the regulations and full particulars may be obtained from the Examination Secretary, Examination Hall Queen Square, London W C 1

Medical graduates who desire to specialise in obstetrics and gynæcology may apply for entry to the Membership examination of the Royal College of Obstetricians and Gynæcologists (M R C O G) A minimum of three years residence in hospital posts recognised for the examination is required before application is made The Fellowship (F R.C O G) is granted to members who are judged by the council to have advanced the science and art of obstetrics and gynæcology

Graduates may become members of the Royal College of Physicians of Edinburgh (M R C P E) on passing an examination, particulars of which may be obtained from the secretary 9 Queen Street Edinburgh 2 The fellows are selected from among the members by the council of the college and receive the designation F R C P E.

Fellowship of the Royal College of Surgeons of Edinburgh (F R C S E.) is granted to medical graduates who pass the required examinations The examination is divided into two parts—the first on anatomy physiology, pathology and bacteriology and the second on the principles and practice of surgery and on one of four special subjects to be chosen by the candidate Particulars of the regulations may be obtained from the clerk of the college Surgeons Hall 18 Nicolson Street Edinburgh.

The Royal Faculty of Physicians and Surgeons of Glasgow grants after examination a fellowship qua physician and a fellowship *qua* surgeon regi the G.M C as an additional qualification

Admission is by examination and subsequent election Candidates for the fellowship in medicine must have been in possession of a recognised medical qualification for not less than three years, and must have been engaged during one of these years in full-time clinical work in a recognised hospital and have spent two other postgraduate years in approved medical work The examination comprises a clinical examination in medicine, written and oral examinations in the principles of medicine and medical pathology, and written and oral examinations in the practice of medicine and therapeutics Candidates for admission to the fellowship in surgery are required to possess a recognised medical qualification and to pass a primary and a final examination The primary examination consists of written and oral examinations in anatomy and in physiology, pathology and bacteriology Candidates who have passed the primary fellowship examination of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, or the Royal Australasian College of Surgeons will be exempted from the primary examination for the fellowship of the faculty *qua* surgeon For admission to the final examination candidates must have been in possession of a recognised medical qualification for not less than three years and produce evidence that they have been engaged, after qualifying for one year in full-time clinical work in a hospital approved by the council and for a further two years in the study of surgery The final examination comprises a clinical examination in surgery, written and oral examinations in surgical anatomy and surgical pathology, and written and oral examinations in surgery Alternatively, candidates may submit themselves for examination in one of the following subjects obstetrics and gynæcology, ophthalmology, or otorhinolaryngology Details may be had from the secretary of the Royal Faculty of Physicians and Surgeons, 242, St Vincent Street, Glasgow, C 2

Membership of the Royal College of Physicians of Ireland (M R C P I) is granted on the result of an examination, the details of which may be obtained from the registrar of the college, 6, Kildare Street, Dublin Fellows are elected by ballot from among the members, and receive the designation F R C P I

Graduates seeking the fellowship of the Royal College of Surgeons in Ireland (F R C S I) must pass in two examinations, a primary in anatomy, physiology, and the principles of pathology, and a final in surgery There are three examinations each year Exemption from the primary is given to candidates who have passed this examination since 1951 at either of the Royal Colleges of London, Edinburgh, or Australasia, or at the Royal Faculty of Glasgow A full-time four-month course in preparation for the primary examination begins on Oct 1 and March 1 each year the number of places is limited Further particulars may be obtained from the registrar, the Royal College of Surgeons in Ireland, Dublin

The Faculty of Radiologists offers a fellowship (F F R) to medical graduates of five years' standing who have spent at least one year in general clinical work at approved hospitals, hold a radiological diploma, and have practised radiology exclusively for at least two years after obtaining that diploma Candidates are required to pass an examination in radiodiagnosis or radiotherapy, and in general medicine, general surgery, and pathology Candidates who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery, or pathology Full particulars may be obtained from the warden, the Faculty of Radiologists, 45, Lincoln's Inn Fields, London, W C 2

SPECIAL DEGREES AND DIPLOMAS

The regulations for the following diplomas can be obtained by applying to the examining bodies concerned

Anæsthetics

The English and Irish Conjoint Boards offer diplomas in anæsthetics (D A) The Faculty of Anæsthetists grants a fellowship (F F A) on examination

Bacteriology

Diplomas in bacteriology are gr Universities of London and Manchester

Child Health

Diplomas in child health (D C H) are g National University of Ireland and the Irish Conjoint Boards

Clinical Pathology

The University of London offers a dip pathology (D C P)

Industrial Medicine

The Royal Faculty of Physicians and Glasgow, the Society of Apothecaries of Lo English Conjoint Board offer diplomas health (D I H)

Laryngology and Otology

The English Conjoint Board offers a d for those who have made a special stu nose, pharynx, and larynx The final ex the F R C S and for the F R F P S may b otolaryngology

Microbiology

The University of Sheffield awards a di subject after a full-time course of study ex one university session Entrants will expected to be graduates of a university, b may deem other qualifications as equival purpose

Obstetrics and Gynæcology

The Royal College of Obstetricians and G grants by examination a diploma (D OBST) with postgraduate hospital experience in ge or surgery and in obstetrics The Univers also offers a diploma (D G O) The hi granted by the Society of Apothecaries of already been mentioned The final F R F P S may be taken in obstetrics and gy

Ophthalmology

The English and Irish Conjoint Boards gr in ophthalmology (D O and D O M S respec final examination for the F R C S and for t may be taken in ophthalmology

Orthopædics

The University of Liverpool offers the de ORTH which is open to medical graduates of university who hold the fellowship in sur the British colleges or of the American Surgeons

Pathology

The English Conjoint Board offers a pathology (D PATH)

Physical Medicine

The English Conjoint Board offers a physical medicine (D PHYS MED)

Psychological Medicine

The Universities of London, Bristol, Dub Edinburgh, Ireland (National University), Manchester, and the English and Irish Co offer diplomas in psychological medicine

Public Health

A diploma in public health (D P H) is g English Conjoint Board and by all the u Great Britain, except Cambridge, Oxfo Sheffield, Nottingham, and Southampton, the National University of Ireland

Radiology

The Faculty of Radiology grants a fellow The Universities of London and Edinbu English Conjoint Board offer two dipl medical radiodiagnosis (D M R D) and m radiotherapy (D M R T) The University offers a diploma D M R (D) or (T) obtainab tion after a two-year course in diagnos after a further two years diplomates may the M RAD by presentation of a thesis

dicine

in tropical medicine and hygiene (D T M ted by the University of Edinburgh, by the f Liverpool jointly with the Liverpool School fedicine, and by the English Conjoint Board. ity of London has an academic postgraduate nd an academic postgraduate diploma in dicine and hygiene

Diseases

in tuberculous diseases (T D D) is granted by ty of Wales

DENTAL DEGREES AND DIPLOMAS

chools of dentistry at the Universities of London ingham, Bristol Dublin Durham Edinburgh eds Liverpool Manchester Sheffield and (at Queen's College Dundee) and at the olleges of Dublin and Cork in the National f Ireland London University offers a B D.S s it also prepares students for the L.D.S l College of Surgeons This college has a dental surgery (F D S) and a diploma in ortho- ORTH) A fellowship is also granted by the of Surgeons of Edinburgh Edinburgh Univer B.D.S and an M D S Leeds grants an L.D.S a degree (B CH D) and mastership (M CH D) and rants an L.D.S a B D.S an M D.S and also a dental science (D D.S) Glasgow University and y Colleges of Dublin and Cork grant a B D S and Trinity College Dublin, offers a B DENT SC and St Andrews no longer offers a diploma but in ccalaureate (B D.S) and it has also instituted a dental science (D D.SC) It continues to offer a blic dentistry (D P.D) and an M.D.S All the other entioned offer L.D.S B D.S and M.D.S Licences re granted by the Royal College of Surgeons of he Royal Faculty of Physicians and Surgeons of the Royal College of Surgeons in Ireland The y of Physicians and Surgeons confers a higher ental surgery (H D.D) and a diploma in ortho)

Postgraduate Education

versity in the United Kingdom with a ol is responsible for the postgraduate educa region in which it is situated Each has ate education committee with a dean or ostgraduate studies as its executive officer

IN LONDON

Royal Colleges and the British Postgraduate eration (University of London) coöperate r postgraduate education in the medical pecialties supplementing the opportunities the undergraduate schools and the teaching he services of the staff of the central office ation in advising on programmes of study g the necessary arrangements are available aduates, including those from the Common Empire, and from foreign countries. The ostgraduate Institutes included in the nd their provisions for postgraduate study below Each of the three Royal Colleges rses of lectures in the clinical aspects of its d provides expert advice on suitable hospital s and programmes of study for candidates qualifications

h Postgraduate Medical Federation

h Postgraduate Medical Federation which of the University of London comprises the Medical School of London at Hammersmith ith its university departments of general eneral surgery and pathology) and 11 ach associated with a special postgraduate pital or Royal College The numbers of t can be admitted to the clinical practice als with which the Institutes are associated resident clinical appointments are available to suitable students of the Institutes and provide the most valuable form of postgraduate education There are opportunities for research by selected graduates At all the Institutes courses of instruction are given throughout the academic year, they are suitable for graduates in the early stages of their specialist education and also for those who have completed their practical training Two or more years of hospital work in general medicine and general surgery after graduation are normally advisable before commencing work in the special branches The work at the Institutes is of an advanced type and is sufficiently comprehensive to enable graduates with suitable practical experience to prepare for higher degrees and diplomas. Emphasis is placed on clinical and laboratory teaching supplemented by lectures and demonstrations Each Institute has a reference library and takes the current journals relevant to its specialty The Federation awards annually a number of travelling fellowships, for the purpose of studying abroad to graduates working in medical or dental schools or teaching hospitals of the University of London Short courses for consultants for which no fee is charged are a recent innovation at some of the Institutes and in addition, short courses and other forms of continuing education for general practitioners and local authority medical officers are arranged at hospitals throughout the four Metropolitan regions, with the assistance of the regional advisers in postgraduate medical education The Federation has arranged a sixth series of advanced lectures entitled The Scientific Basis of Medicine, to be delivered two afternoons a week, at 5.30 P.M. at the London School of Hygiene and Tropical Medicine during the autumn and winter terms of the 1955–56 session. The lectures are designed especially for research workers and specialists in training and are open to all registered medical practitioners without fee. Further details are given in the advertisement columns of this issue.

It is essential for prospective postgraduate students from abroad to make their arrangements well in advance and those who desire the assistance of the central office of the Federation are advised to get in touch with the director of the Federation Prof Sir Francis Fraser M.D., F R C.P at the central office, 2, Gordon Square, London W C 1 (as from December 1955 the address will be 18 Guilford Street W C 1) as far in advance of their arrival in this country as possible Those sponsored by their universities, governments, or other official bodies receive first consideration in the allotment of vacancies Established specialists from overseas, here for a short time, who wish to see something of the practice of this country, are always welcome they are regarded as visiting colleagues and the experts in their specialties are always ready to receive them and let them accompany them in their work and teaching An information bureau of postgraduate activities in London and other university centres is maintained at the central office

THE POSTGRADUATE MEDICAL SCHOOL OF LONDON is associated with the Hammersmith Hospital. It has university departments in medicine surgery and pathology The teaching in the clinical departments, based on ward work, is continuous and is supplemented by lectures during three ten week terms starting in January, April, and October A course for the university diploma in clinical pathology lasting one year is available for a limited number of selected students. The department of radiology of the hospital provides courses for the diplomas in medical radiology of the Conjoint Board All these courses begin in October A year's course in anæsthesia consisting of lectures and clinical training is also available Facilities for research are available for selected students.

Address Ducane Road London, W 12

THE INSTITUTE OF BASIC MEDICAL SCIENCES comprises the departments of anatomy physiology and pathology of the Royal College of Surgeons of England The Institute coöperates with other specialist Institutes of the Federation in providing facilities for practical work and instruction in the basic medical sciences There are opportunities for research for selected graduates Full time or part time courses of three months duration, suitable for candidates for higher degrees and diplomas begin in February and September A two month revision course for primary F D S candidates is held twice a year, beginning in January and June

Address Royal College of Surgeons of England, Lincoln's Inn Fields, London, W C 2

The INSTITUTE OF CANCER RESEARCH ROYAL CANCER HOSPITAL comprises the Chester Beatty Research Institute and the departments of physics and radiotherapy at the Royal Marsden Hospital The Institute is concerned with all aspects of research into the causation and treatment of cancer, with the training of research-workers in this field, and with advanced teaching in biophysics and radiotherapy Postgraduate lectures and courses of instruction are held in biophysics for students studying for the M SC degree in biophysics, and for students studying for a diploma in medical radiotherapy These begin in October Facilities are afforded to those wishing to pursue research in the clinical and pathological aspects of cancer and for research into the physical and biological foundations of medical radiology There are laboratories for chemical, biochemical, and histological investigations into cancer and allied diseases

Address Fulham Road, London, S W 3

The INSTITUTE OF CARDIOLOGY is associated with the National Heart Hospital Six appointments of the registrar type are offered each year to physicians in training as cardiologists who already have a sound grounding in general medicine General physicians may enrol for full-time or part-time instruction for one term of approximately three months There are two courses annually, commencing in April and October Intensive courses of lectures and demonstrations, each lasting a fortnight, are held in February and November, and a fortnight's course for general practitioners is held in June

Address 35, Wimpole Street, London, W 1

The INSTITUTE OF CHILD HEALTH is associated with the Hospital for Sick Children and the Postgraduate Medical School at Hammersmith Hospital, the Queen Elizabeth Hospital for Children, Hackney, also participates in the clinical teaching of the Institute The Province of Natal, Model Welfare Centre, recently opened, offers facilities for the study and care of the healthy child The Institute provides tuition throughout the year in three terms of three months each, commencing in January, April, and October, and in addition a series of lectures by specialists in various spheres is given each term Clinical clerkships are available for selected students

Address The Hospital for Sick Children, Great Ormond Street, W C 1

The INSTITUTE OF DENTAL SURGERY is associated with the Eastman Dental Hospital The object of the Institute is to train dental practitioners in the special branches of preventive and therapeutic dentistry, both for children and adults, by means of clinical experience, lectures, demonstrations, and research Courses of varying lengths are held from time to time in children's dentistry, orthodontics conservative dentistry, periodontology, preventive dentistry, prosthetic dentistry, and oral surgery For candidates preparing for the F D S of the Royal College of Surgeons courses lasting eight months are held twice yearly, commencing in November and May For selected students junior staff appointments are available for this period In May and October there are revision courses, lasting eight weeks, suitable for candidates for the final F D S examination A course in orthodontics, of six months' or a year's duration commences in October

Address Eastman Dental Hospital, Gray's Inn Road, London, W C 1

The INSTITUTE OF DERMATOLOGY is associated with St John's Hospital for Diseases of the Skin Throughout the year clinical teaching takes place in the outpatient department, and tutorials and ward instruction are given in the inpatient unit at the Eastern Hospital There are also facilities for study and tuition in pathology, including mycology, radiotherapy, physiotherapy, and clinical photography Advanced students can apply for clinical assistantships, which are competitive A short course of lectures and clinical demonstrations is given in the

summer months, and a long and more
in the winter A discussion on cases of
to which students attending the course
takes place once a week

Address St John's Hospital for Dis
5, Lisle Street (Leicester Square), London, W.C

The INSTITUTE OF DISEASES OF THE CHE
with the Hospitals for Diseases of the Che
Hospital and the London Chest Hospital
enrol for one term or more on an appo
time course, and arrangements are made f
who intend to specialise in diseases of the
a whole-time comprehensive course during
beginning in October and January During
term there is a full time advanced
Courses consist of clinical work in wards and
departments, lectures, and demonstrations
for consultants in chest diseases and gen
lasting one week each are held yearly, o
Hospital in July, and one at the London C
in the autumn A small number of
adequate experience can be accepted fo
thoracic surgery Part-time instruction
of the chest for trainee radiologists only
term There are three terms annually, co
January, April, and October

Address Brompton Hospital, London, S.W.3

The INSTITUTE OF LARYNGOLOGY AND
associated with the Royal National Thro
Ear Hospital A comprehensive full time c
eight months is held twice a year, c
and September, the first three months ar
a study of the basic sciences of the spec
following five months are concerned with
aspect of the subject A part time adva
course lasting ten or twelve weeks, suitable
preparing for the higher qualifications,
yearly, commencing in February and Augus
special subjects, such as endoscopy and
are held from time to time

Address 330, Gray's Inn Road London, W

The INSTITUTE OF NEUROLOGY is associat
National Hospital and the Maida Vale
Nervous Diseases, which jointly form a
pital The teaching is mainly by attend
hospital practice, supplemented by lectures
strations Two courses in clinical neurol
annually commencing in January and Octo
instruction in neurosurgery is given throug
Courses of clinical demonstrations (two
held several times a year A course in the
clinical application of electro-encephalogr
jointly with the Institute of Psychiatry
Advanced students are appointed as clin
the wards or attached to the special depa
research laboratories

Address National Hospital for Nervous D
Square, London, W C 1

The INSTITUTE OF OBSTETRICS AND G
is associated with Queen Charlotte's Matern
the Chelsea Hospital for Women, and the D
Obstetrics and Gynæcology at the Postgrad
School The teaching is based on ward
supplemented by lectures and demonstra
two terms of thirteen weeks' duration wh
in March and September Short intensive
fortnight's duration, held in June and De
year, are suitable for students preparing f
qualifications A week's course for general
is held twice a year

Address Chelsea Hospital for Women Dov
London, S W 3

The INSTITUTE OF OPHTHALMOLOGY
the Moorfields, Westminster and Central
In addition to teaching by means of atte
hospital practice, a routine lecture and
normally covering two terms of approxim
weeks each, is held twice a year commen

the first part of the course is devoted to bryology histology, physiology, optics ry clinical instruction, and the second s bacteriology, pathology operative surgery, halmology and all aspects of ophthalmic -time revision courses in the basic sciences time to time Short courses are held in oscopy orthoptics and contact lens practice ing and lectures are given at a higher level students There are facilities for research ualified candidates

dd Street London W C 1

UTE OF ORTHOPÆDICS is associated with tional Orthopædic Hospital A complete thopædics to selected graduates who have trained in general surgery and the basic forded by means of clinical appointments iod of two or three years with opportunities For graduates requiring a less extensive ication in the specialty and especially for ve acquired practical experience overseas advanced courses are held at various times r These are of seven to ten days duration in April and September a short revision eek s duration in advanced clinical ortho- ld Both the central hospital in Great et and the country hospital at Stanmore by postgraduate students

oyal National Orthopædic Hospital 234 Great t London W 1

UTE OF PSYCHIATRY is associated with the al Hospital and the Maudsley Hospital ally covers two or three years, after experi ce in general medicine and is based on ospital duties under supervision Regular es and demonstrations are given throughout niversity terms; clinical training continues he year and includes seminars and case- tudents who because of previous experience o take the comprehensive two-year course ttend limited series of lectures and clinical For those who wish to specialise in child six month course is held twice yearly the technique and clinical application of alography is held jointly with the Institute twice a year A year s course in abnormal r the university postgraduate diploma in available to holders of an honours degree There are facilities for original investiga upervision in the clinical departments and logical neuropathological neuro-endocrino- physiological and biochemical departments.

laudsley Hospital Denmark Hill London

TUTE OF UROLOGY is associated with Paul s and St Philip s Hospitals Compre- uction is given in the wards, outpatient operating theatres, laboratories &c he year Weekend courses of demonstra ures are held from time to time for higher candidates. Lectures and demonstrations laboratory) are given in venereal diseases. rses, in coöperation with members of the ty for the Study of Venereal Diseases are als. In the winter months a series of lecture- urological subjects of interest to the whole held on Wednesday evenings at 5 o clock bers of clinical assistants are appointed time to individual surgeons for personal here are also research assistantships.

Henrietta Street London W C 2

LLEGES HOSPITALS SCHOOLS &c

COLLEGE OF SURGEONS OF ENGLAND has mber of lectures and demonstrations to be ollege A full time clinical surgery course the Central Middlesex and West Middlesex September and October 1955 and in 1956 This will be limited to 12 students In addition two series of 24 surgery lectures will be given during April and October and at the same time clinical conferences will be arranged at selected hospitals In anæsthesia two series, each of 40 lectures, clinical conferences, and discussion groups, will be given in October and April Courses extending over a period of from one to two years are arranged Periodic courses of 20 lectures in pharmacology are also arranged Lectures and clinical demonstrations in oral, dental, and general surgery will be held in conjunction with the Institute of Dental Surgery in May and October Lectures and courses are arranged during the year jointly with the Institutes of Laryngology and Otology, Urology, and Ophthalmology Specialists are available for consultation on postgraduate training in general surgery dental surgery plastic surgery and anæsthetics Facilities are now available for advice on postgraduate orthopædic training through the postgraduate orthopædic committee which has its headquarters at the college Residential accommodation is available in the college. The Institute of Basic Medical Sciences, formed jointly by the college and the British Postgraduate Medical Federation has arranged a programme of postgraduate teaching in the basic medical sciences (see above) Information on all these courses may be had from Mr W F Davis, Deputy Secretary, Royal College of Surgeons, Lincoln s Inn Fields, London, W C 2

The ROYAL COLLEGE OF SURGEONS IN IRELAND gives a four-month course in anatomy in preparation for the primary fellowship examinations. There are two courses in each year one starting in October for the February examination and the other in March for the July examination This is a fully comprehensive course In addition there will be less extensive courses in physiology and pathology Details may be had from the registrar of the college

At ST MARK S HOSPITAL, City road London E C 1 surgeons wishing to specialise in proctology may attend courses of one to six months, and postgraduate students working for higher degrees may come for one to four weeks whole-time study Intensive courses, each lasting two weeks are held in conjunction with the Fellowship of Postgraduate Medicine three or four times a year

The LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE offers a number of courses The following last for one academic year of nine months The course for the University of London s academic postgraduate certificate and diploma in *public health* commencing on Oct. 3 1955 is designed primarily for qualified medical practitioners who intend to engage in any branch of preventive medicine The examination for the certificate is taken at the end of the first three months. During the final part of the course students may elect to make a special study of one of the following (1) occupational health; (2) medical statistics and epidemiology (3) environmental control (4) child health; or (5) tropical hygiene The elective course in *industrial health* is recognised in part as qualifying for the examination for the diploma in industrial health The course for the University of London s academic postgraduate diploma in *bacteriology*, commencing about the beginning of October 1955, is intended to give advanced instruction to graduates in medicine, science (including veterinary science) or pharmacy who intend to follow a career in bacteriology There are now no vacancies on the 1955–56 course Applications for the subsequent session must be received not later than March 1956 The number of places is strictly limited The course of study for the University of London s academic postgraduate certificate and diploma in *tropical medicine and hygiene* is designed to give advanced training in tropical medicine There is a preliminary course of not less than four months which commences at approximately the beginning of October each year There is a final course of not less than four months which consists of advanced study in one of two fields—clinical tropical medicine or tropical hygiene A course for the newly instituted University of London's academic postgraduate certificate and diploma in *applied parasitology and entomology* will commence on Sept 26 1955 and thereafter about the beginning of each October

The course, which is open to candidates with acceptable qualifications in medicine, veterinary medicine, veterinary science, and science, lasts for an academic year of full-time study, the preliminary certificate course extending over about the first five months The course is planned mainly for people wishing to take up research or laboratory appointments abroad The course for the Conjoint Board's diploma in tropical medicine and hygiene is a continuous one lasting five months, and is held twice a year The next courses begin on Sept 26, 1955, and Feb 27, 1956 A course in *statistical methods* applied to medicine and epidemiology is held annually on two days a week from about the beginning of March to about the end of June Students without a medical qualification can be accepted A short course in *environmental control* will start on Sept 26, 1955 There are two courses a year, each of ten weeks' duration, commencing at about the beginning of October and March Although intended primarily for health inspectors from abroad, the course is so planned as to be of value to medical officers and others interested in the health aspects of environmental control both at home and abroad The course includes a series of lectures on the broad public-health field, visits to places of special interest, practical instruction with a port health authority, and work with both a county borough council and a rural district council Candidates will be expected to attend either the congress of the Royal Sanitary Institute or the conference of the Sanitary Inspectors Association

The ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE offers courses for the examination of the Conjoint Board of the Royal College of Physicians of London and of the Royal College of Surgeons of England for the certificate in public health, starting annually in March and October This leads to the courses for both the diploma in public health (in January and August) and the diploma in industrial health (in February and July) Candidates desiring a course for either diploma of the Conjoint Board are required by the board to produce evidence of being in possession of a recognised certificate in public health Any of the courses may be taken whole-time or part-time The next course for the certificate in public health will begin on Sept 30, 1955 The regulations and syllabuses (and those for diploma in industrial health of the Society of Apothecaries) and further information may be obtained from the secretary, 28, Portland Place, London, W 1

The TAVISTOCK CLINIC is an outpatient centre devoted to psychotherapy both of adults and of children on broadly psycho-analytic lines, and to providing training in certain skills in this field Special attention is at present being given to the development of techniques in handling parents of disturbed children, in marital problems, and to group therapy of adults In addition, the clinic and the associated Tavistock Institute of Human Relations are engaged in research in the fields of child development, personality, preventive psychiatry, and applied social science A number of registrar and senior registrar posts are established in the adult and the children's and parents' departments The following courses of training are available as last year (1) a one-year full-time course in child psychiatry (for registrars), (2) a two-year part-time course in elementary psychotherapy, including group experience (open to selected trainee psychiatrists from other N H S institutions), (3) introductory courses for general practitioners dealing with the patient-doctor relationship and with psychological factors in ill health, (4) a more advanced two-year course in psychotherapy in general practice for limited numbers of family doctors, (5) courses on psychogenic speech disorders for doctors and for speech therapists, (6) several courses in the Rorschach method of personality assessment (by arrangement with the Institute of Human Relations), open to doctors with relevant experience In addition there are training courses in clinical psychology, educational psychology, advanced social case-work, and child psychotherapy, open to graduate psychologists (non-medical) and social workers, in some instances during their tenure of trainee posts or fellowships Both sides of the clinic also conduct regular case-conferences and other types of instruction with their internal students which may be open to a limited number of suitably qualified professional workers from home or overseas on request mission Further information may be medical director, 2, Beaumont Street, L

The TAVISTOCK INSTITUTE OF HUMAN concerned with applied social research may cover the family, the factory, the community Further information may be the secretary, Tavistock Institute of Hu 2, Beaumont Street, London, W 1

The INSTITUTE OF PSYCHO-ANALY Cavendish Street, London, W 1, provides psycho-analytic theory and technique part-time and lasts about four years personal analysis, attendance at lectures (held in the evenings), and clinical wo supervision Students are required to psychiatric experience at other clinics since the Institute does not set out to of psychiatry Completion of the course to of the training committee qualifies the stude as an associate member of the British Psy Society Training in child analysis is avail students

The FELLOWSHIP OF POSTGRADUATE founded in 1918 The Fellowship, whose at 60, Portland Place, London, W 1, pro of general information on postgraduate arranges various courses of instruction to needs of postgraduates whose requirements by other existing programmes The arrangements include

(1) Weekend courses, occupying the whole and Sunday These are given in such subjects as infectious diseases the rheumatic diseases, orthopaedics, clinical surgery
(2) Courses specially suitable for, though candidates for the D C H, D OBST, (final) These include general medicine, proctology, midwifery, and children full time courses, lasting one or two spread over longer-periods, taking place mornings, afternoons, or late afternoon intended particularly for postgraduate full time study

The *Postgraduate Medical Journal*, the of the Fellowship, is published monthly special section devoted to general post and information about the work carried main centres of teaching throughout the The Journal can be obtained by subscription copies

The TUBERCULOSIS EDUCATIONAL INST composed of representatives from the Joint Council and the National Association for the of Tuberculosis The Institute organises demonstration courses at home and overseas and at home university centres for and health visitors, social workers, and Intensive three-day clinical courses for throughout the year at King George Diseases of the Chest, Godalming Glamorgan, Colindale Hospital, London Sanatorium, Scotland Short weekend are arranged locally for general practitioners of courses may be obtained from the of courses may be obtained from the Tavistock losis Educational Institute, W C 1 Tavistock Square, London,

PROVINCES

Birmingham

Refresher courses for N H S practitioners the large non-teaching hospitals of the Dudley Road and Selly Oak Hospitals, Royal Hospital, Wolverhampton, the shire Royal Infirmary, Stoke-on Trent, and Warwickshire Hospital These are of one or two half-day sessions a week for Occasional lectures are given at Hen

aumatic surgery are held at the Accident
course for practitioners on the obstetric
the Birmingham Maternity Hospital, and
e courses on industrial ophthalmology at
am Eye Hospital A weekend course on
ll be held at the Children's Hospital in
This University does not offer diplomas, but
he diplomas of the Conjoint Board are
n time to time when there are sufficient
Numerous postgraduate students from
een given facilities for higher education and
ne Director of postgraduate education is
ynn F R C P Medical School Birmingham,

te of Accident Surgery has been in existence
of 1950 It is associated with the Birming
Hospital and with the Board of Graduate
Medical School of Birmingham University
ned with teaching and research in con
the prevention and treatment of injuries of
ourses on accident surgery are held for
itioners industrial medical officers and
ll week s course on accident surgery is held
in May and December The Birmingham
pital is attended by postgraduate students
ne year

s of doctor of medicine (M D) master of
r), and doctor of philosophy (PH D) are
ical graduates of other universities but
e candidates who have pursued original
ne university for not less than two years
regulation means that these higher degrees
y to those graduates of other universities
pointments on the staff of the university
ne Bristol hospitals. The University grants
ublic health (D P H) and in psychological
M) The diplomas formerly granted in
diagnosis and in medical radiotherapy have
nued Courses for the D P M (Bristol) and
istol) are held when sufficient numbers of
pply but there is sometimes difficulty in
urses because of the lack of applicants
ourse for the D P H. will begin in October,
postgraduates are accepted for training for
and D.M.R T (Conjoint) and arrangements
s be made for suitable candidates to hold
ost in the Bristol hospitals while doing the
urse in child health lasting three months
s in October of each year The refresher
eneral practitioners have been continued
In addition to Sunday morning lecture-
ns, there have been two intensive weekend
at Exeter and one at Cheltenham The
edical postgraduate studies is Dr A H
iversity, Bristol

of Postgraduate Teaching and Clinical
present comprises the departments of
erimental medicine radiotherapeutics, and
y In the John Bonnett Clinical Labora
logical and biochemical services of the
idge Hospitals are provided by university
ers under the direction of the professors
nd biochemistry From their inception the
l and its constituent departments have been
with the United Cambridge Hospitals.
of Health s recent decision to make an
oney for the development of a new hospital
oad site has been received with great satis
een October and July in each academic year
s are devoted to teaching by all members of
staff of the United Cambridge Hospitals A
of undergraduate students are admitted to
sessions. Other teaching activities include
ogical conference held on the third Wednes-
month, which affords an opportunity for
tioners and others to meet the staffs of
hospital and of the various departments
l school One day symposia on subjects
interest to general practitioners are held
Saturdays throughout the academic year

These symposia usually take the form of lecture-discussions followed by case-demonstrations Residential courses in midwifery are available for undergraduate and postgraduate students at the Maternity Hospital All postgraduate courses and symposia are open without fee, subject to the terms of the Ministry of Health scheme to practitioners who are under contract with an executive council of the National Health Service, and who have not less than 500 (or in the case of a rural practice 250) persons on their N H.S lists. It is no longer necessary for a practitioner to submit an application for approval to the Ministry of Health before attending these symposia unless he wishes to claim for the employment of a locum A practitioner who does not qualify for a grant under the Ministry of Health postgraduate scheme is charged a fee at a rate corresponding to that which would otherwise have been payable by the Ministry The director of postgraduate education for the Cambridge region is the regius professor of physic, Sir Lionel Whitby Practitioners desiring further details of postgraduate facilities should apply to the secretary of the medical school, Tennis Court Road, Cambridge

Durham

The second part time course for the D P.H began last October 8 candidates are taking part and all were successful in passing the examination for the C P H in March The examination for the diploma will take place in March 1956 5 trainee psychiatrists are taking the part time course for part I of the D P M and will sit the examination in September Most of the successful candidates will begin the full time course for part II in October and will take the examination for part II in March or September 1956 depending upon how far each candidate can, in the time, satisfy the University requirements regarding clinical experience 2 students were successful in the part III examination held in March and thus qualified for the Diploma A joint psychiatric training scheme for registrars with the Sheffield Regional Hospital Board has been instituted This scheme provides practical experience under the supervision of senior consultants within the Board s mental health service and instruction in academic and clinical subjects is arranged by the department of psychological medicine in the medical school. Over the past two years there has been a notable increase in the number of candidates for the M D Only graduates in medicine and surgery of the University of Durham of not less than two years standing are eligible for the doctorate There has again been a big demand for postgraduate refresher courses for general practitioners. The postgraduate committee arranged four such courses during the year Three of these consisted of 8 to 10 consecutive Wednesday or Thursday afternoon sessions in general medical subjects The other was an intensive weekend course in paediatrics. In all of these courses emphasis has been laid on making the content attractive to practitioners, on bringing recent advances in treatment to their notice and on promoting free discussion of the subjects Cases were shown where this was practicable and in sessions dealing with obstetrics and child health ward rounds were arranged Nearly 100 different practitioners in the region have attended these courses this year

Leeds

The University of Leeds grants two postgraduate diplomas the diploma in public health and the diploma in psychological medicine Both are now part time courses, that for the diploma in public health being five terms the certificate in public health being taken after two terms. The course for the diploma in psychological medicine covers eight academic terms. Extended refresher courses for general practitioners comprising one half-day session a week for six weeks and weekend refresher courses on special topics are arranged from time to time both in the teaching hospitals and in regional hospitals. The secretary of the postgraduate committee is Dr T A Divine School of Medicine, Thoresby Place Leeds 2

Liverpool

Full time postgraduate courses have been held in general surgery (15 attended) orthopaedic surgery (18) anaesthesia (10) public health (18) radiodiagnosis (10) radiotherapy (5) and tropical medicine and hygiene (37)

The course in psychological medicine (16) which was held this year for the first time has justified its inclusion in the curricula Refresher courses for general practitioners—one weekend course (18) and four extended courses (average attendance over 10)—have been held this session, and during March a full-time refresher course in pædiatrics, lasting one week, was attended by 13 doctors working with the Merseyside local authorities The course in general surgery is suitable for candidates who have already completed the primary examination of the F R C S The course in orthopædic surgery is suitable for those who already hold the F R C S diploma and are working for the examination for the degree of M CH ORTH The courses leading to the D M R D and D M R T extend over two years candidates are allowed to hold suitable approved hospital appointments during the second year Similarly in the course in anæsthesia, postgraduate students are found appointments in recognised general hospitals for the purpose of gaining practical experience The two years' part-time course in psychological medicine, which can be taken in part or whole, is suitable for candidates for the D P M of the Conjoint Board Further information about postgraduate courses may be obtained from the dean of the faculty of medicine

The Liverpool School of Tropical Medicine offers a course of instruction for the diploma in tropical medicine and hygiene granted by the University of Liverpool Two such courses are held each year, starting in the middle of September and at the beginning of January and continuing for approximately three months Only those students who hold a medical qualification registrable in the United Kingdom or otherwise recognised by the university, and who have attended the approved course of instruction in this school, are eligible to sit for the examination for this diploma

The school also provides courses of instruction in public health parasitology, and entomology for students taking the diploma in public health granted by the University of Liverpool Courses of instruction in veterinary parasitology and entomology are given during each academic session to Liverpool University undergraduates taking the M R C V S diploma and B V SC degree Facilities are offered to certain graduates who wish to carry out individual pieces of research work

Manchester

Courses in preparation for the diplomas in psychological medicine, public health, radiodiagnosis, and radiotherapy have been held No intensive refresher courses for general practitioners have been held during the session, but Sunday morning ward rounds have been introduced at several hospitals and this type of instruction appears to fill the need The dean of postgraduate medical studies is Mr R L Newell, F R C S, who is available for consultation by appointment

Oxford

The school of clinical research and postgraduate studies in the University of Oxford consists of the Nuffield departments of medicine, surgery (including neurosurgery), obstetrics and gynæcology, anæsthetics, orthopædics, and plastic surgery Certain clinical appointments on the staffs of these departments are open to specialist-trainees from Great Britain, the Dominions, and the Colonies

In addition to the provision made in the above departments for the training of specialists there are 22 trainee-appointments in the teaching hospitals (the United Oxford Hospitals) and 11 in certain departments of selected non-teaching hospitals of the Oxford region These appointments (senior registrars) are in the following branches of medicine general medicine, pædiatrics, psychological medicine, chest diseases, pathology, general surgery, orthopædics and accident services, otolaryngology, ophthalmology, obstetrics and gynæcology, neurosurgery, plastic surgery, dental surgery, and radiology Six of these are "paired" posts, the holders of which spend part of their period of training in a teaching hospital and part in a non-teaching hospital

Facilities for the continuing education of general practitioners are provided in hospitals at Oxford, Reading, Aylesbury, and Northampton All departments of the Oxford hospitals are open to general practitioners on certain days and at certain times throughout the postgraduate year (September to July) On every day of th Sundays) there are morning and after at which instruction is given to general and other postgraduates by consultants. Practitioners may attend any of these and on occasions convenient to them take either an intensive course of a week duration (when programmes are arranged dual requirements) or an extended course number of weeks or months Fees on acc Health Service practitioners, for attend to 22 sessions, are paid by the Ministry Practitioners who are not members of the Service, and doctors from overseas, pay at the rates prescribed for National practitioners In addition to the facilities short courses are arranged for general pract the spring and autumn months A rounds, clinics, clinical and lecture conferences and short courses is circulated tioners in the region by local medical committees The postgraduate arrangements practitioners at Reading and Northampton of weekly afternoon sessions over period fifteen weeks

Practitioners wishing to avail the postgraduate facilities should apply to Committee for Postgraduate Medical Edu Road, Oxford

Sheffield

Weekly ward rounds for general held as before These are expected to intensive refresher courses, each of a are planned for September Courses fo and D M R T of the Conjoint Board are as before, and less formal instruction general medicine, and general surgery provided, by arrangement, for approved The question of the interchange of between teaching and regional hospitals studied, but several exchanges have in fact

At Roffey Park Rehabilitation Cen courses lasting one week are held for do The syllabus is divided broadly under two maintenance of fitness at work and (2) re resettlement Classes are modelled on the discussion group Inquiries should be ad secretary, Roffey Park Institute of O and Social Medicine, Horsham, Sussex.

WALES

Cardiff

The following courses are being arranged

(1) A fortnight's postgraduate course fo tioners in the spring and autumn.
(2) A six month course for the diploma diseases (January–June)
(3) A short course in tuberculosis and dis for men in H M Overseas Service (Oct
(4) A three month full time course for th public health (October–December).
(5) A twelve month part time course for public health (January–December).

A standing arrangement exists between school (through its professorial departments Cardiff Hospitals, and the Welsh Re Board for regional consultants to spend in Cardiff, this goes on throughout the postgraduate teaching is organised in some school departments in the United Ca during the academic terms Inquiries should to the dean of postgraduate studies, 31, Cardiff

SCOTLAND

Aberdeen

Fortnightly refresher courses are held for general practitioners, which cover rec medicine, surgery, obstetrics, pædiatrics specialties From time to time extended or ten weekly afternoon meetings are postgraduate training is that given to

of medicine In these posts registrars are
l the different wards and hospitals in their
y and also they spend periods of three
lated departments A surgical registrar
will go round the general surgical wards of
out will also receive training in thoracic
rosurgery orthopædics, pædiatric surgery
rology In the same way a medical registrar
time in a similar position in the children's
spitals

rsity of Edinburgh through the Edinburgh
e Board for Medicine on which the Royal
Physicians and Surgeons of Edinburgh are
arranges programmes of graduate studies
ffers courses in internal medicine general
medical sciences, and refresher courses for
itioners.
s in internal medicine lasting twelve weeks,
ing in April and October of each year These
rise lectures, lecture-demonstrations clinical
clinical pathological demonstrations; they
or graduates wishing to specialise in medicine
re a refresher course in the current outlook
medicine
es in general surgery are held each year
March and October These courses are of
s duration they have been completely
o as to provide coördinated instruction in
ry and in the specialist branches of surgery
uction in the wards of the Edinburgh Royal
l other general and specialist surgical units
as been arranged Graduates are thus able
eriod in each unit, following the work of
nt and obtaining systematic instruction A
e course in the medical sciences of anatomy
athology bacteriology and biochemistry is
mmer, three hundred hours of instruction
this course over a hundred of which are
ractical work. This course is suitable for
ng a final preparation in these subjects. It
hat those taking this course should already
able basic knowledge Similar basic science
n weeks duration starting in October and
rganised by the Royal College of Surgeons
gis of the board
en days general practitioners course held
year, has been completely reorganised with
either at the bedside or by means of lecture-
ns. Emphasis is laid on recent advances in
nd free discussion as well as constructive
members of the course is encouraged
by local general practitioners is arranged
the autumn term. In addition, courses of
uration on selected subjects, are held at
ughout the year Courses are often booked
months in advance so those intending to
do so at an early date Applicants should
particulars of their medical qualifications
uate experience to the Director of Post
dies, Surgeons Hall Edinburgh, 8

niversity Postgraduate Medical Education
epresenting the University and the Royal
hysicians and Surgeons of Glasgow propose
ollowing courses during the coming session
a part-time course of instruction in anatomy
biochemistry pathology, and bacteriology
as in previous years, from October to
The course is suitable for candidates pre-
he primary examinations for the surgical
and will provide a total of approximately
nstruction The course is organised primarily
staff of hospitals in the Western Region of
t it is also open to other applicants. If
onorary part time clinical attachment will
for members of the course who have no
ointment The medical school provides
urse for the diploma in public health and
for the diploma in industrial health in any
h there are sufficient applicants. Short
her specialties are arranged from time to
time when the demand arises, and are advertised in the medical journals For the ensuing session a short course in chemotherapy and a course in mental deficiency have already been arranged Training in radiodiagnosis and radiotherapy, recognised for the D.M.R.D and D.M.R.T., is available Refresher courses for general practitioners are held from time to time these consist largely of clinical demonstrations, but also include a few lectures on modern methods of treatment. All inquiries should be addressed to Prof G M. Wishart, Director of Postgraduate Medical Education the University Glasgow W.2

St Andrews

The type of education and training which is offered in the university and its associated hospitals differs somewhat from that in other parts of the country A large number of those in training in the university laboratories and attending postgraduate lectures are registrars and senior registrars within the hospital service of the region. There are, however, a certain number of vacancies always reserved for overseas students. The university has made available to first-year registrars laboratory training in anatomy and physiology with particular emphasis on one or the other, depending on whether the registrar has surgical or medical leanings. In the second year registrar posts, the university laboratories of pathology, biochemistry bacteriology, and pharmacology are open to the registrars, and they may elect to study two of these subjects during any academic year By arrangement with the regional hospital board the registrars are free from hospital responsibilities during several afternoons a week to enable them to receive further education In addition to this registrars of all grades attend weekly open postgraduate lectures and there are weekly colloquia and clinical pathological conferences The number of registrars attending any university department at one time is not more than six and this allows of personal tuition by the professor and his staff The director of postgraduate education is Prof R B Hunter, F.R.C.P.E. Medical School University of St. Andrews Small's Wynd Dundee

IRELAND

Dublin

The only postgraduate course at present available for other than Dublin graduates is that for the diploma in gynæcology and obstetrics. New regulations for this diploma have been introduced and the number of places in the course has been limited to 15 The diploma in psychological medicine is confined to graduates of the University The diploma in public health is temporarily in abeyance, but it is hoped to revive it in the near future

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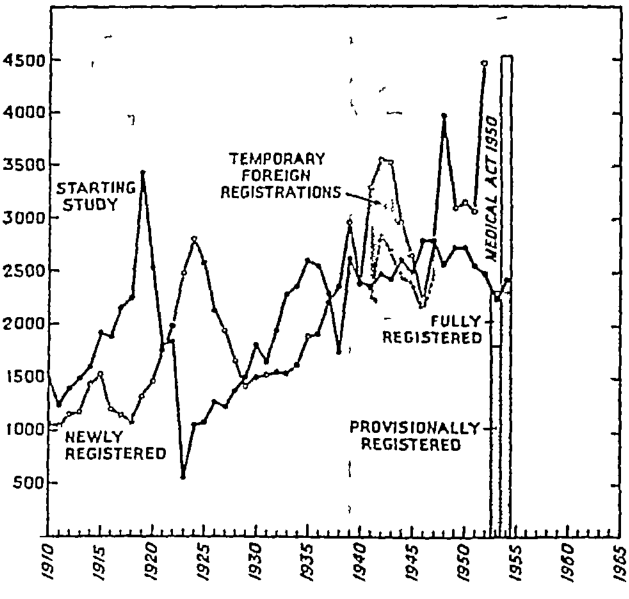
REGISTRATION

NO-ONE is a legally qualified medical practitioner unless his name appears on the Register kept by the General Medical Council In the field of medical education the Council has a statutory responsibility for ensuring that the courses of study and examinations for any qualification conferring a title to registration do not fall below a proper minimum standard The Council, through its Medical Disciplinary Committee is also responsible for discipline within the profession. The Medical Act 1950 and Orders and Regulations made under it, provide that a person will not be eligible for full registration until he has, after passing a qualifying examination, served as a house-officer in approved hospitals or institutions for twelve months During this period he would be provisionally registered

The approximate number of second year students admitted to medical schools in the United Kingdom and in Ireland was 2722 during 1947–48 2573 during 1948–49 2731 during 1949–50 2725 during 1950–51 2505 during 1951–52 2494 during 1952–53 and 2280 during 1953. In 1954 the examination returns showed that 2437 students began preclinical studies in England, Scotland, and Ireland.

The numbers newly registered (including Commonwealth practitioners) were: in 1948 3906; in 1949 3100 in 1950 3100 in 1951 3075; in 1952 4163; in 1953 2320 (507 fully registered and 1813 provisionally registered), and in 1954 4642 (2222 fully registered 2420 provisionally registered) The 1954 total in

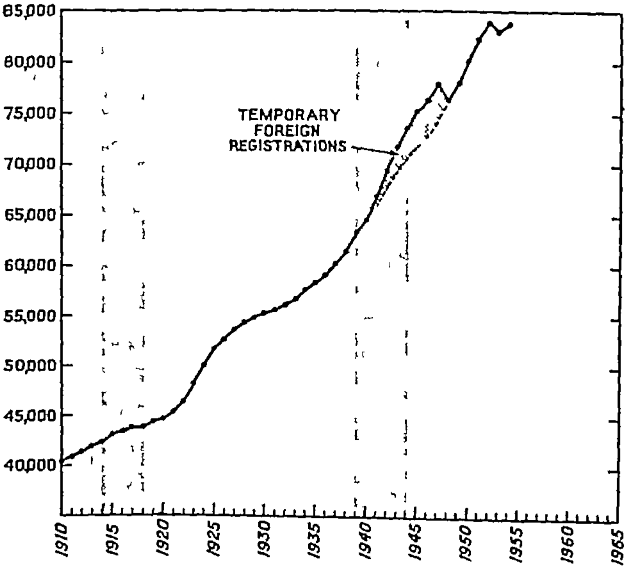


Numbers starting study and registering *

* Starting with 1953, the number of newly registered is divided into provisionally and fully registered This means that most of those shown as provisionally registered in 1953 appear again as fully registered in 1954 The numbers shown as starting study are taken from the Medical Students Register up to 1938 and since then from returns made by the medical schools to the General Medical Council Both forms of notification are incomplete for certain years Starting with 1953, the figure is based on the annual examination returns and covers the calendar year instead of the academic year as formerly

of course, a considerable proportion of those provisionally registered in 1953, and the same applies to the details for 1953 and 1954 in the accompanying figure By Dec 31, 1954, 1416 persons had become fully registered after provisional registration

The number obtaining provisional and full registration in 1953 was much lower than in the preceding five years This is attributable to two things (1) some people who would normally have registered in 1953 took special steps to obtain registration before the end of 1952 in order to avoid the preregistration year and (2) the lengthening of the curriculum at certain Scottish universities has meant that fewer than usual qualified and became provisionally registered in 1953 The striking increase in the number of newly registered doctors in 1952 (4193 as against 3075 in 1951) was largely due to the addition of 1452 names to the Commonwealth List in 1952 (as compared with 471 in 1951)



Number of fully registered doctors on the Medical Register

The Defence Services

Royal Naval Medical Service

The Medical Service of the Royal N
medical practitioners who are attracted b
of sea service and work with the Royal
opportunity to practise their profession
environment A background of naval tr
permeates the Royal Naval Hospitals and
Establishments, as well as Her Majesty's
serving on the permanent list are encourag
in all branches of medicine, and they
facilities to obtain higher qualifications.
graduate study are carried out not on
pitals but also at civilian teaching cent
wide variety of subjects comprised in the
medicine," and it might often be claimed
of these subjects are unique. They
medicine, the physiology of diving, the
of service afloat and ashore, commando
diseases, and last, but by no means
hygiene Furthermore, a naval medical
longer concerned with the care of the
must also have up-to date knowledge of
women and children so that he may atte
the W R N S, members of the Q A R N N S,
and the wives and children of Servicemen
personnel serving abroad

The Royal Naval Medical Service offers
with service on the active list up to
to 57 for surgeon captains, and to 60 for
surgeon rear-admirals Provision is made
tions for counting previous experience, b
professional All previous commissioned
medical officer in one of the Armed Forces
count in full, and all non medical comm
is allowed to count as to half Civilian hosp
and also experience of a special nature in
which is recognised by the Medical D
as warranting additional seniority, may
count up to a limit of seven years in all. W
United Kingdom, officers are granted 42 d
annum on full pay and allowances, with the
warrants If serving overseas local leave
the rate of 14 days in each year Foreign
at the rate of 2 days for each month abr
on return to the United Kingdom All
present being made as short service com
in the first instance

Short service consists of a period of
during which period a medical offic
surgeon lieutenant, R N, and is elig
for transfer, with full seniority, to the p
Medical practitioners who undertake
Service in the Naval Medical Service are
to apply to transfer to the permanent list.
career for a medical officer enables him to b
the full rank of surgeon lieutenant aft
service, and to surgeon lieutenant-com
further seven years' service In the
surgeon lieutenant-commanders are prom
commander by selection at about their
total service, and surgeon commanders are
selection to surgeon captain about their
total service Subsequent promotion to
admiral is also by selection

Rates of pay are shown in the accom
Medical officers are also eligible for allowan
to the basic rates of pay, on the same scale
same conditions as for other officers of
These include travelling expenses, subsist
and passages for wives and families. Offi
to permanent commissions after a mi
year's service will be paid a perman
grant of £1500 (taxable)

The maximum rates of *retired pay*
officers who complete certain specified p
In addition to retired pay, a terminal gr
payable to officers who have completed
20 years' service The following rates are
rates payable on compulsory retirement
limits

	Retired at age	*Maximum pension* £
ommander	48	500
nder	55	675
1	57	875 (Under 6 years in rank) 1000 (Over 6 years in rank)
miral	60	1200
miral	On vacating office	1400

owed to withdraw, who are ineligible for vill be eligible to receive *gratuities* as follows

ull pay (short) service	£600 (tax free)
full pay (permanent) service	£1000
ete year in excess of 10 years	£150
gratuity	£2350

ormation may be obtained from the Medical Admiralty, Queen Anne's Mansions Park, London, S W 1

ROYAL NAVAL DENTAL SERVICE

ers are entered for Naval service under similar those applying to medical officers Information nditions of service can be obtained from the rtment of the Navy Queen Anne's Mansions rk London S W 1

Medical Corps

ficers in the R A M C can enjoy a career etire on pension Service up to the age of 57 5% of regular medical officers and 5% of ntinue to the age of 60 After retirement, continue up to 65 years of age as civilians y appointments with the R.A.M C Short rs are provided with a short career followed t with a gratuity The basic commission is of which any period from 2 years can be active list and the balance with the Regular o of Officers with the exception that doctors tional Service must apply for a minimum n the active list Service in the Regular ve of Officers entails no annual training tered medical practitioners who are British itizens of the Irish Republic are eligible for

r commission if they are under 33 years of age ho are over 33 years of age will be eligible if their former commissioned service in the Armed deducted from their actual age gives a figure

-service commission if they are under 45 years

pplicants are appointed in the rank of ut receive higher rank if eligible Those *experience* after full registration can be antedate up to 7 years, which counts for n pay and promotion *Former service* in the Armed Forces on full pay as a medical officer counts for pay, promotion and, if a regular officer, for retired pay Previous commissioned service in the Armed Forces other than as a medical officer counts as half for pay and promotion, and in full for retired pay for regular officers Promotion is to captain after 1 year and to major after 8 years reckonable service. Promotion to lieut.-colonel and colonel is by a selection after approximately 17 and 23 years reckonable service.

After appointment to a regular commission from short service, National Service, or direct from civil life, officers will receive a special grant of £1500 (taxable), on having completed one year's satisfactory service as a medical officer Officers who have one or more years commissioned service as a medical officer to their credit will receive the grant immediately on appointment to a regular commission

Regular officers can earn retired pay at the following annual rates

Rank	*Minimum service required*	£
Major	22 years	500
Lieut -colonel	24 years	675
Colonel	26 years	875
Brigadier	28 years	1000
Major-general	30 years	1200
Lieut -general	30 years	1400

In addition to retired pay regular officers with 20 years reckonable service receive a resettlement grant of £1000 Short-service officers are eligible to receive a gratuity, as follows

For 2 years' service	£240
For 3 years' service	£150

Plus £150 for each completed year over three years.

Every year during their service officers are eligible for 42 days leave on full pay and allowances without the necessity of providing locums and three free travel warrants. If serving overseas for three years a maximum of 75 days leave including disembarkation leave can be earned This can be taken with a free travel warrant immediately on arrival in the United Kingdom after completion of the overseas tour of duty

Officers are required to serve in any part of the world The normal tour of duty either at home or overseas is 3 years In the United Kingdom the chances of obtaining married accommodation are very good At most stations overseas furnished military married quarters are available but officers may have to wait for a short period before their families can join them.

About one-third of regular officers are employed on clinical specialist duties—i e. medicine surgery gynæcology &c They are allowed to continue in the practice of their specialty up to and including the rank of colonel Some continue to do so in the rank of brigadier and major-general Officers who are not specialists are

ANNUAL TOTAL INCOME OF SERVICE MEDICAL OFFICERS *

Rank and Service			Single			Married		
l Navy	R.A.M.C	R.A.F	Non spec st	Army and Navy † Junior spec st	Army and Navy † Senior spec st	Non spec st	Army and Navy † Junior spec'st	Army and Navy † Senior spec st
			£	£	£	£	£	£
lieutenant	Lieutenant	Flying officer	765			903		
mant	Captain	Flight lieutenant	875			1012		
(after [illegible] yr)	(after 2 yr)	(after 2 yr)	920	1009		1067	1140	
nant-commander	Major	Squadron leader	1285	1358	1504	1433	1498	1648
nder	Lieut -colonel	Wing-commander	1660	1748	1888	1797	1890	2016
n	Colonel	Group-captain	2070	2070	2180	2190	2190	2305
	Brigadier	Air commodore	2399	2399	2399	2518	2518	2518
lmiral	Major-general	Air vice marshal	2637	2637	2637	2746	2746	2746
lmiral	Lieut -general	Air marshal	3184	3184	3184	3294	3291	3294

are based on Army rates: there are slight differences between the three Services for certain ranks.

n the Royal Air Force are granted antedates of seniority which count towards promotion and increments of badly the effect of these is to make R.A.F specialists pay the same as that in the other two services.

minimum rates of pay for each rank. Increments certain ranks are given at two year intervals income is based on the assumption that:

gle officers are not accommodated in a military s nor receiving rations in kind.

rried officers are not accommodated in Govern it quarters or Government hired accommodation, over 25 years of age and are not receiving rations in kind (The marriage allowance for short service and permanent commission officers under 25 is 56s. per week.)

(c) If accommodated in a military officers mess, single officers receive accommodation and rations in kind but their annual total cash income is reduced by £282 up to major by £337 up to colonel, by £392 up to brigadier and by £447 for general officers employed on general-practitioner duties and later may assume command of medical units or administrative appointments.

PROFESSIONAL TRAINING

Great attention is paid to advancement of professional knowledge during service.

Specialist Officers

All permanent commissioned officers attend, within a few months of joining, the junior-officers course, which covers purely professional subjects. This course, which lasts ten weeks, is followed by an examination on the result of which depends an officers selection for training in a specialty. After a probationary period selected officers become trainees and their advance to senior specialist is through the following phases:

(*a*) Gaining experience under the guidance of a senior specialist at recognised military hospitals.

(*b*) Attending the basic sciences course at the Royal College of Surgeons for primary F.R.C.S. or at a selected institution for M.R.C.P.

(*c*) An overseas tour follows during which, having practised his specialty under supervision for two years, the officer may be classified as a junior specialist.

(*d*) On return to Britain the senior officers course follows. This covers a period of seventeen months when instruction and further postgraduate experience may be by either or both of the following methods: (i) attending courses at recognised civilian institutions preparatory to sitting for higher qualifications; (ii) attachment to a civilian hospital in an appointment of the senior registrar status.

The officer having obtained his higher qualification and the necessary experience is eligible for classification as a senior specialist.

Non-specialist Officers

After attending the junior-officers course, and having served for approximately five years, the officer is selected for the senior course. This takes the form of a five and a half months refresher course at the Royal Army Medical College and selected civilian institutions. The subjects taught are military surgery, tropical medicine, preventive medicine, pathology, and psychiatry.

Further information may be had from the Assistant Director-General, War Office (A.M.D. 2), Room 130, Lansdowne House, Berkeley Square, London, W.1 (Grosvenor 8040, ext. 548).

ROYAL ARMY DENTAL CORPS

Registered dental surgeons of British nationality or citizens of the Irish Republic who are liable for service under the National Service Act may apply for short service commissions for not less than 3 years on the active list, with a reserve liability up to 8 years from the date of their appointment. Those (both men and women) who are not liable for service may apply for short-service commissions for varying periods of between 2 and 8 years on the active list. An antedate of seniority counting towards increments of pay and time promotion will be granted for postgraduate civil professional experience up to a maximum of 7 years and in addition for previous commissioned service in the Armed Forces. A tax-free gratuity is payable (£200 after 2 years, £375 after 3 years, and £125 for each year's satisfactory completed service over 3 years). Officers or dental surgeons (male) may be appointed to permanent commissions direct or at any time during the short-service or National Service engagement. Until further notice, those so appointed will be paid a special grant of £1250 (taxable) after one year's satisfactory service as dental officers. The period of their short service commissions will reckon towards ultimate retired pay and service gratuity, but will not entitle them to short service gratuities. Dental surgeons who are eligible to apply may obtain full particulars and application forms from the Under Secretary of State, The War Office (A.M.D. 6), London, S.W.1.

Royal Air Force Medical Branch

The Royal Air Force offers commissions to fully registered men and women practitioners who are British subjects or citizens of the Irish Republic and are below the age of 33, but candidates above that age will be considered. Appointment is usually to short-service commissions in the first instance, but exceptionally suitable candidates may be granted permanent com[illegible] first appointment. Medical practice in the Service brings medical officers into clo flying, parachuting, the carrying of sick by air, and mountain rescue work, as medical treatment of Service families. medical officers may be selected for p flying personnel medical officers. There a all the main clinical specialties and in a and physiology, hygiene, and Medical officers may serve at R.A.F. types, including hospitals in Great limited numbers at stations and the Middle East, East Africa, and the F dates may apply for commissions during provisional registration, but will not be they are fully registered. Applications f commissions will also be considered from for National Service. Medical officers service or National-Service commission any time for appointment to permanent Short-service officers may choose to ser 3, 4, or 5 years on the active list. The pe chosen may be extended to complete years up to a maximum of 8 years, at th the Air Council. On completion of their on a short-service commission, officers ar serve for 4 years in the Royal Air Force Officers. Candidates for permanent be able to complete at least the 20 years' se to qualify for retired pay. Antedates, towards pay, seniority, and time promo given to short-service and permanent full period of previous commissioned as a medical officer in the Armed Forces Medical Service; for half the period of any commissioned service on full pay in the and up to 7 years for civil experience professional appointment after full following basis:

(1) Up to 4 years in a recognised appoint of appointment in full.

(2) More than 4 years, but less than 10 plus half the additional period.

(3) 10 years and above—7 years (maximum

Candidates who hold specialist appoint allowed to have their civil experience different basis, but within the same

Officers will normally be commissioned flying-officer with promotion to flight-lie one year's reckonable service. Promotion leader is after 8 years' total reckonable promotion to wing-commander and the by selection. Medical officers whose rec on entry is one year or more, will be pr appropriate higher rank with retrospective date of commissioning, immediately the short introductory course which follow to a commission. Officers selected for R.A. appointments will be granted an additi of 2 years in the rank of flight-lieutenant leader and, if subsequently promoted to wi a further year. A tax-free gratuity, at the a year for each year of satisfactory acti is payable to short-service officers on th reserve. Arrangements exist to preserv under the National Health Service (Su Regulations, 1950. Officers appointed commissions will be given a grant of £1 income-tax, after one year's satisfactory service in the Medical Branch. A permanent earns retired pay and other benefits aft of service. Permanent officers may be al year's study leave, on full pay and allow approved postgraduate courses. They ca career as clinical specialists and may e promotion for professional or scientific Moreover, medical officers serving in appointments but having experience o specialty may be given the opportunity on specialist duties with the object of R.A.F. specialists. Further information ma the Under-Secretary of State, Air Ministry 2/8, Richmond Terrace, Whitehall, S.W. 8811, ext. 6674).

OYAL AIR FORCE DENTAL BRANCH

are available in the Royal Air Force Dental
didates of either sex who possess a degree or
ral surgery of a British university or licensing
o are registered under the Dental Act in force
Kingdom Dental officers in the Royal Air
nty of scope for all the aspects of dentistry in
a trains its own technicians and maintains its
es under senior dental officers Dental officers
t service or National-Service commissions may
me for appointment to permanent commissions.
the period on a short service commission and
ired in the reserve on its completion is the same
officers. Similarly dental surgeons may be
ment commissions if they can complete at
service qualifying for retired pay Antedates
nk on appointment and terms of promotion
hose set out above for medical officers A tax
t the rate of £125 a year for each year of satis
list service is payable to short service officers
the reserve Dental officers appointed to
mmissions are encouraged to pursue their
graduate research and may be allowed up to
study leave on full pay and allowances to take
graduate courses Short service or permanent
cers who have the appropriate higher qualifica
requisite experience may be recommended for
intments which also attract the additional
to specialist medical officers Further informa
ed from the Under Secretary of State for Air
(M.A.6) 2/8 Richmond Terrace Whitehall,
ar 8811 ext 6669)

Iealth Services at Home

PUBLIC HEALTH

legislation has brought many changes in
medical officers of health, and the prospec
to the public health service will wish to
current trends in development. Responsi
been lost: the National Health Service
sferred the control of hospitals and the
of infectious fevers, tuberculosis, and
ses to the regional hospital boards; other
passed to the newly created children's
nd to the Ministry of Agriculture In their
scope has been created in the personal
es and as a specialist in preventive and
no the medical officer of health retains
in the community

t changes have taken place in the work of
county boroughs Under part III of the
lth Service Act these have been designated
authorities and they must provide clinics
vices for mothers and children, domiciliary
alth visiting home nursing immunisation
on facilities, ambulances and domestic help
me have preliminary schemes for health
h of this work has grown rapidly, particu
bulance, home-nursing and domestic help
their importance to the community is great
s these authorities wide powers to initiate
he prevention of disease and the care and
sick persons The responsibility for the
n of all these services falls on the medical
h In most areas he is also the school medi
l is thus able to coordinate the preventive
s to cover children of all ages In some
coördination has been secured by placing
's social welfare services also under the
r of health

mental hygiene the duties of the medical
lth are comparatively unchanged These
s have gradually evolved over the last
s, but in contrast to the early days when
officer of health was personally concerned
ition of many sanitary duties, health depart
n organised to free him from much of
work which is performed by trained lay
en transferred to the care of other depart
he case of water-supply and sewage disposal
extent of this devolution of responsibility
must vary widely, and in rural areas problems of water-supply and sanitation are a major concern of the medical officer of health The supervision of housing conditions is also a health-department responsibility All this work must remain under the general control of the medical officer of health and he must supervise the purity of water-supplies even though their production is not his concern Though less concerned with detailed work supervision must be far wider than that by his predecessor of a hundred years ago

Control of infection has always been one of the principal functions of the medical officer of health. Bacteriologists have made great advances in the identification of different strains within certain pathogenic species, and these new techniques applied to epidemic control have given him an instrument of precision in much of his epidemiological work. The application of specific prophylactic measures against various acute infections is now an important function of all health departments. Drastic reduction, if not the complete extinction, of certain infectious diseases has become a feasible target for all health departments

Recent developments have increased the opportunities for the young medical officer to obtain a comprehensive training in public health. Additional posts of senior medical officer grade have been created in many of the larger towns and in counties schemes of divisional administration have been evolved The work of the medical officer of health to a number of county district authorities is often combined with an appointment as assistant or divisional county medical officer of health The holder of such a post obtains a detailed knowledge of the community under his care and, while retaining a high degree of individual responsibility he suffers none of the disadvantages of rural isolation

A sound clinical background is an essential qualification for the new entrant and a course leading to the diploma in public health should be taken at an early stage since this qualification is necessary for anyone seeking an appointment as a medical officer of health For doctors engaged in clinical preventive medicine a diploma in child health or in obstetrics and gynæcology is an advantage

Individual progress in a public health career depends largely, if not entirely upon the doctor's personal qualities for, as adviser to his authority the reputation of the medical officer of health depends on the soundness of the advice he gives. Quite apart from his statutory functions, he has an important part to play in promoting the health education of the community and in helping to secure full coördination between the branches of the health service in his area. He is assisted by the regular liaison meetings, which are held in most regions between the hospital boards and the county and county borough medical officers of health Most hospital boards rely on the medical officer of health to determine the urgency of the social grounds for admitting patients to hospital especially in maternity cases and when considering the chronic sick. Many medical officers of health have been appointed as members of hospital medical advisory committees or of hospital management committees and through the National Health Service Act, a closer relationship with the general practitioner services has now become possible No other person is so well placed to survey the whole range of medical activity in an area

INDUSTRIAL MEDICAL SERVICES

In November last year the Minister of Labour and National Service announced in the House of Commons that he had decided to take steps to stimulate the further development of industrial health services in work places covered by the Factories Acts. He also said that he was appointing a standing advisory health committee to advise him on developments, and that it was his intention with the assistance of this committee, to carry out a review to ascertain where industrial health services most need to be extended and to promote surveys and field investigations to determine the need for preventive measures or research. His general aim was close coördination with the preventive and curative health services provided by statutory bodies, to [illegible] industrial health services on a voluntary [illegible] would also consider making use of his [illegible] under the Factories Acts

It is to be hoped that the deliberations of the industrial-health advisory committee will lead to the creation of more posts for doctors interested in occupational medicine These posts fall into various categories, such as those in the Civil Service, the nationalised industries, research organisations, the universities, and factories But, though the importance and opportunities of industrial medicine are increasingly recognised, it cannot yet be said that in salary or prospects the openings in this work are always as favourable as those in the National Health Service For industrial posts within the Civil Service, the prospects may improve after the Royal Commission on the Civil Service reports, but at present this service does not offer enough senior appointments to assure promotion to all who earn it Moreover, as things are at present, the top posts in the medical Civil Service are often filled by doctors who previously held appointments outside the service, and this is a discouragement to those who are contemplating entry through the basic grade

The appointments as medical officers to factories and other industrial organisations vary in attractiveness, both as regards opportunities and salaries In some the conditions and prospects are good, and the British Medical Association has laid down a scale of minimum salaries

The main Government department supervising the health of industrial workers is the Factory Department of the Ministry of Labour and National Service This department, which up to 1940 worked under the Home Office dates from 1833 and administers the Factory Acts (1937 and 1948) with regulations on accident and sickness prevention, hours of work, amenities and canteens The inspectorate numbers about 412, of whom 16 are doctors Members of the department, whether lay or medical, take part in the activities directed towards the prevention of illness and maintaining the health of the factory population The medical inspectors are stationed in London Birmingham, Sheffield, Liverpool, Bristol, Manchester, Glasgow, Leeds, and Wolverhampton , and from these centres they are able to deal with factory health and conditions in any part of the country Under them 1750 general practitioners give part-time service as appointed factory doctors (previously called examining surgeons) examining all young entrants into industry, and periodically all those engaged in specific dangerous processes In addition there are about 300 doctors employed whole-time in factories or groups of factories, and about 3000 (may be more) in part-time work An interesting development in recent years has been the setting-up of medical services for looking after workers on trading estates Three such schemes, at Slough, Hillington, and Bridgend are well established and others are projected to serve the trading estates at some of the “ new towns ” It has been a common criticism of the industrial medical services that the workers at small factories are not catered for and these three group services might well form a model for a national service It is well to bear in mind, however, that even in factories where there are no doctors a close watch on conditions is maintained by the factory department

Apart from the factory department, other government departments deal with various aspects of the industrial medical services For instance, the Post Office, which employs more workers than any other department has had a medical service since 1855 , and since it deals with engineering and manual workers in addition to office staffs, it is partly an industrial medical service The Post Office medical staff is now directed by the chief medical adviser to the Treasury, who has in addition a staff of 15 doctors which deals with the health problems of the Civil Service The Inspectorate of the Ministry of Fuel and Power has a medical section with a few full-time medical inspectors The National Coal Board provides a comprehensive industrial medical service for the industry which now has a large staff of whole-time doctors The Ministry of Supply Medical Service with 40 doctors, deals with the health of the workers in the Royal ordnance factories, and in the research stations The Ministry of Pensions and National Insurance has a medical staff both at headquarters and in the regions, which advises on compensation for industrial injuries as well as for other causes of ill health The former silicosis and asbestosis board is now a part of the medical service of the Ministry On the staff of the pneumoconiosis medical panels, as they are now called,
time medical officers who deal with th
certification for compensation of cas
asbestosis, and some other forms of
They also carry out periodical medical
workers engaged in some scheduled occup
cases of pneumoconiosis are likely to aris
from which the panels work are Swansea, C
Manchester, Sheffield, Bristol, and Edi
the newly nationalised industries have esta
services—for example, the London Trans
a part of the British Transport C
London Transport Executive employs a
officer with 9 full-time doctors The
Labour Board also has a medical servic
full-time medical officers and 1 part-time
Some, but not all, of the regional boards of th
gas industry have appointed whole-
doctors to look after the health of the
is on foot to set up medical services in
during the year several new appointme
made

In addition to investigations and research
diseases conducted by medical inspecto
mines medical officers, and works doctor
mental research into environmental cond
carried out by the investigators of the In
Research Board of the Medical Research C
and field studies made under the aegis of
industrial pulmonary diseases committee
into the pneumoconiosis of coalminers a
of cotton workers The London Hospital
research in industrial medicine was es
and a few years later, in conjunction with
Fuel and Power, a bureau for research in
coniosis of South Wales coalminers was
Other units of the council dealing with
include the toxicological research unit
groups for research in industrial physio
logy in Manchester, Cambridge, and Le
industrial medicine research unit at th
Accident Hospital There is also a unit
climate and working efficiency at the
human anatomy at Oxford, a social m
unit at the Central Middlesex Hospital,
research unit at the London School of
Tropical Medicine Problems on the he
atomic energy are being dealt with at Har
into industrial health matters is also b
by the university departments mention
Institute of Social Medicine at Oxford
under a joint board, also undertakes
various aspects of industrial health
devoted to industrial or occupational med
set up at Manchester and Durham. The
medicine at Birmingham includes indu
within its terms of reference, and the
Sheffield has appointed a professor of soci
medicine Students are likely to hear
subjects in their undergraduate course
courses are held in London, Birmingham
Manchester, and occasionally at other ce
in Industrial health (D I H) have been in
Society of Apothecaries, the Conjoint Bo
Colleges of Physicians and Surgeons, Edi
sity, and the Faculty of Physicians and S
gow The Association of Industrial Med
formed some years ago by doctors intere
health, and branches have been establi
parts of the country, the *British Jour*
Medicine is sponsored by this association The
with the British Medical Association The
also since April, 1951, published a quarterly,
the *Transactions of the Association of In*
Officers, which is devoted to the d
information about the practical aspects
medicine rather than to original research

PRISONS AND BORSTAL INSTI

THE medical service is a part of the
class of the medical Civil Service It
immediate control of the Director of
Services at the Prison Commission The

dical officers, senior medical officers medical part-time medical officers Whole-time med are appointed to the larger prisons and Bor t the most important establishments there dical officers, assisted by one or more medical senior medical officers also have advisory and in connection with small groups of establish

medical officer is also required to pay sanitation and the general hygiene of the o keep a close watch on food and nutrition of psychiatric assessments the provision and psychiatric reports and the giving of court when called upon are important he work Surgical and psychotherapeutic tablished at selected centres Candidates y qualified and registered and should possess owledge of medical and surgical practice given to those who in addition have had experience in psychological medicine e in accordance with the general Civil Service

er* £1500 × £75–£1800 £100–£*100
al officer £2200

o 35 minus £50 for each year below that age and increment for each year above that age but not age 40

nents are pensionable Unfurnished quarters ble, are provided at a moderate rental ts are made by the Civil Service Commission on Gardens, London W 1 to whom all uld be addressed

naller prisons and Borstals no whole-time ers are employed local practitioners are inted as part time officers Further particu appointments can be obtained from the missioners Horseferry House, Dean Ryle lon S W 1 Revised scales of salary for edical officers have been agreed with the cal Association

Services Abroad

MAJESTY S OVERSEA SERVICE

s for medical officers occur in nearly all ritories the greatest number being in tropical Nigeria Kenya Uganda, Tanganyika, &c) who wish to make their career in those may become members of the medical branch ersea Civil Service and in that case the ven by the Secretary of State in Parliament ions of service and pension rights will apply erritory in which the officer is serving attain ent.[1] Candidates must ordinarily be British ling medical qualifications registrable in the dom and have completed their preregistra They must normally be under 40 or 45 years ding to the age of retirement in the territory ey are appointed In West Africa this is d in most other territories 55 In many fficers may serve beyond the age of retire- e Governor s permission Contract appoint ort terms are available for candidates who he age-limits or who while being within do not wish to commit themselves to a er at the outset. Doctors in the National ice may also avail themselves of a scheme een brought into operation in many colonial whereby they take up appointments up to thout loss of pension rights in the National ice. The scheme provides for the payment on leaving the service but those who are who wish to transfer to the permanent and establishment of a Colonial Medical Depart ave opportunities to do so. The service l opportunities and experience not obtainable d that experience will be of great value to in practices and in hospital appointments to return to this country Officers appointed anent service are normally required to take tropical medicine and hygiene either before as or during their first leave

Medical officers are usually appointed in the first instance for general duties, which require all round ability and a balanced outlook upon both preventive and curative medicine Such duties often imply the charge of a district hospital and responsibility for the medical administration of a district, although many officers are employed on clinical duties in the large hospitals. Some posts are concerned purely with public health work and for these the possession of a D P H or special experience in preventive medicine is necessary In the general field there are ample opportunities for original investigation, and subsequent specialisation is encouraged Opportunities are offered wherever possible for officers to study for postgraduate qualifications in approved branches of medicine, surgery or public health

A large number of specialist appointments exist which are normally filled from within the service by officers with the necessary aptitude and qualifications For these appointments a very high standard of professional attainment is required Senior administrative appointments are also almost invariably filled by the promotion of serving officers Promotion takes place in the administrative or specialist branches either in the territory where the officer is serving or on transfer to another The scope for promotion is therefore considerable. An officer need not transfer if he does not wish to The total of the establishments of the various government medical departments amounts to some 800 European medical officers and an even greater number of officers appointed locally

Officers possessing qualifications or experience in pathology would be considered for appointment to the laboratory establishments Workers in the laboratories carry out pathological and biochemical examinations for clinical forensic and public health purposes In this branch has been carried out a great deal of the research work which has led to important advances in the knowledge of tropical medicine and local health problems. Vacancies exist from time to time for women doctors especially for those with special experience in obstetrics school health child welfare, and nutrition, although their employment is not necessarily confined to these subjects.

Naturally in tropical and subtropical countries diseases peculiar to hot climates predominate in the general pattern of morbidity; but the whole gamut of pathological conditions found in temperate climates occurs in the tropics, and doctors in the service are expected to keep abreast of the trend of modern medical opinion in Britain

Of late years progress in the control of tropical diseases has been so rapid that Europeans can now live in comfort and in hygienic surroundings in areas which two decades ago were notoriously unhealthy There is still however a great deal to be done and with the expansion of medical services to raise health standards in all colonies the service offers special opportunities and ample scope for initiative and original observation in clinical subjects preventive medicine and research Full particulars of terms and conditions of service may be obtained from the Director of Recruitment Colonial Office Sanctuary Buildings, Great Smith Street, London, S W 1

FEDERATION OF RHODESIA AND NYASALAND

THE Federal government took over the administration of the health services previously maintained by the Governments of Southern Rhodesia Northern Rhodesia and Nyasaland on July 1 1954 The rates of pay for full time officers are

Secretary for Health (1)	£3[illegible]50
Directors of medical services (3)	£2850
Deputy directors of medical services (3)	£[illegible]650
Directors public-health laboratories (2)	£2[illegible]50
Ophthalmologists (2)	£2550
Medical superintendents (3)	£2550
Senior medical officers (9)	£[illegible]50
Pathologists (2)	£25[illegible]0
Radiologists (3)	£25[illegible]0
Specialists (surgery medicine leprology psychiatry venereal disease and tuberculosis) (10)	£[illegible]550
Provincial medical officers of health (5)	£[illegible]3[illegible]0
Ophthalmologist (1)	£[illegible]50
Medical superintendents (4)	£[illegible]0
Radiologists (2)	£2250
Pathologists (3)	£[illegible]250
Medical superintendents (5)	£1875–2000
Medical officers of health (6)	£1650–2000
Government medical officers (1*3)	£1200–1800
Schools medical officers (2)	£1200 1800

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[1] ial no 306 of 1954 H M Stationery Office

Government medical officers are permitted private general practice in the rural areas, the value of this varies considerably and may exceed £1000 a year but where the net receipts fall below £200 a year an allowance is paid up to that figure In other areas no private practice is allowed and an allowance of £200 a year is paid in lieu Medical superintendents and certain specialist officers are allowed consultant practice, the cash value of which is not great

The duties of government medical officers include the supervision of general and special hospitals African clinics and dispensaries, and attendance on police and certain other officers of the Federal and Territorial governments who are entitled to free medical attention, boarders in government schools, and prisoners Vacancies are normally advertised but, where possible, the more senior posts are filled by promotion within the services Further details may be obtained from the secretary to the High Commissioner for Rhodesia and Nyasaland, 129, Strand, London, W C 2

MEDICAL MISSIONARY SERVICE

CHRISTIAN medical men and women who wish to offer their services where the need is greatest will find opportunities in medical missionary work There are university medical schools, central and rural hospitals, and many opportunities for public-health work and research Christian missions played a major part in giving China a modern medical profession In India and Pakistan they have helped to maintain high ethical and professional standards, and have specialised in nursing and medical education *In Africa and other of the less-developed* regions they have pioneered rural health services and the training of subordinate staff In many parts of the world the work is becoming integrated with the government services though still maintaining its identity For undergraduates pledged to this service there are hostels in London and Edinburgh After qualification, a period of eighteen months or two years in resident appointments is advised for all and also special diplomas or higher degrees for some Under certain circumstances exemption is given from national service Special missionary training is required by some societies Service is for terms of from eighteen months to five years, according to the country and climate, there are opportunities for postgraduate study during furloughs Offers for life service are preferred, but short terms are considered Salary is on a missionary subsistence basis with allowances, free passages and quarters, and pension provision There are schools for missionaries' children at home and in some of the fields Applications from students or qualified men and women should be made either to the secretary of one of the denominational or interdenominational missionary societies, or through the local branch of the Student Christian Movement or the Inter-Varsity Fellowship, or to the Chairman, Medical Advisory Board of the Conference of British Missionary Societies, Edinburgh House, 2, Eaton Gate, London, S W 1

THE MEDICAL RESEARCH COUNCIL

THE Medical Research Council, originally established in 1913 as the Medical Research Committee, is appointed to administer the funds provided annually by Parliament for the promotion of research in medical science The council is under the general direction of the Committee of Privy Council for Medical Research, of which the Lord President, as chairman, is the minister responsible to Parliament.

The members of the council are appointed by the Committee of Privy Council for a period of four years There are 12 members in all, 9 are chosen for their scientific qualifications, and the remaining 3 are lay members, one of whom must be a member of the House of Lords and one a member of the House of Commons

The council is not constitutionally a Government department, its staff are selected and appointed by the council itself and are not Civil Servants The position which the council occupies enables it to foster effective relations between science and the State, and its activities in medical research are unrestricted by territorial or departmental limitations of function The council main-
tains close touch with those Governmen
responsible for public health, it is ab
rate freely in subjects of common in
sister research organisations, the Departm
and Industrial Research and the Agricult
Council, and to have direct relations
organisations in other countries In pro
research the council is advised by the C
Board, appointed in consultation with the
ments A joint committee of the council a
Office advises upon research on health p
tropics

The council's administrative headqu
38, Old Queen Street, Westminster, Lond
the scientific staff are housed in more th
ments located mainly in hospitals an
throughout Great Britain The council
laboratories in the Gambia, Uganda, and J

The council's central research esta
National Institute for Medical Researc
divisions of biochemistry, organic che
therapy, bacterial chemistry, physiolog
logy, human physiology experimental b
logy and virus research, physical chemis
and optics, and biological standards The
independent research units range from
laboratory subjects, such as biophysics, to
of clinical research and of social and indus
The council's annual report, published by H
Office, gives a summary of the work in pr

The close association of most of the co
ments with hospitals and universities is
many points of view, especially in the
provides for collaboration in joint schem
Senior members of the council's staff
given the status of honorary physicians o
in which their units are situated, while m
accommodated in university department
cases given honorary university app
participate to a limited extent in teachin
total scientific staff numbers nearly 500, o
third are medically qualified Its res
ments vary widely in size The largest is
Institute for Medical Research at Mill
average research unit consists of from
workers with a number of technical
assistants

The aim of the council is to provide th
for a career equivalent to that offered in th
to men and women of equal ability a
The council's *salary scales* for scientific
are based on this principle, and althou
common scale for all the universities
Kingdom, the council's salary grades corre
mately to the ranks of professor, r
lecturer, lecturer, and demonstrator Th
of a director of one of the council's es
equivalent to that of a whole-time profes
with an honorary contract as a consultant
Health Service The salary of a non-c
would normally be equivalent to that of
clinical or purely scientific chair Apart f
there are other posts in the council's
ments, and particularly at the National
Medical Research, which carry remunerat
the professorial level For the most part
not fixed in relation to particular posts b
reference to the qualifications, experience
bilities of the individuals Promotion to
may be awarded on such grounds with
post

New appointments to the scientific staff
case of senior posts, are normally ma
periods or are subject to review at inter
the possibility of a permanent career w
is considered, and in suitable cases whe
degree of seniority has been attained, the
express its intention of continuing em
the normal retiring age of sixty has been
the possibility of extension to sixty five
provision—normally under the Federated
tion System for Universities—is made f
ments of substantial duration

JBLIC HEALTH LABORATORY SERVICE

of the Ministry of Health the council ie Public Health Laboratory Service, which set up as an emergency service in 1939 e become permanent. There are over 60 ratories in England and Wales In addition ine duties, members of the staff of the e salary scales are normally equated with National Health Service, undertake research gy and epidemiology The service also number of special laboratories which act centres for particular infections and are ly in research

giving details of the opportunities for to the council s scientific staff is available on the secretary Medical Research Council n Street, *Westminster London S W 1*

PRACTICES ADVISORY BUREAU

National Health Service Act came into dditional procedure for entry into general considerably modified—particularly by the he sale and purchase of goodwill It soon rent that there would be a need for some of information which could give advice to seeking openings to those desiring to trans area to another and to those seeking to set anded practice It was felt that advisory his kind should be undertaken by a body t linked directly or indirectly with central nment but whose status and resources were ld enable it to establish and maintain on with executive councils local medical und the Medical Practices Committee and time to command the confidence of the o meet this need the Medical Practices eau was established at the end of 1948 as a the British Medical Association, under the a member of the medical staff of the

ns of the bureau are twofold firstly to nformation service about openings in the of medical practice and to introduce stants and locums and secondly, to dividual and personal problems associated o and the conduct of medical practice A dvice is sought on the various forms of con reements between practitioners. Although unction of the bureau to give legal advice, y questions concerning partnerships and where the advice of a doctor with experience well as that of a lawyer All doctors are ek the advice of the Bureau at B M.A ock Square London W C 1, or any of its Those who are not members of the equired to pay nominal charges for the s

RITISH MEDICAL STUDENTS' ASSOCIATION

tion was founded in 1912 and its member- ides over 90% of the medical students of It is purely a professional organisation means of communication between the he different universities and hospitals and ritish students and those in other countries. the medical students viewpoint to the sion to Government departments, and to d bodies. The organisation of the associa on an annual general meeting, at which ommittee is elected, and on four regional h clinical and preclinical conferences are time to time and these are appreciated their academic interest but also for the which they provide for meeting fellow the different medical schools. Local e constituent organisations of the associa- tures, visits discussions, and the showing e B M A and other film libraries Amongst are the *British Medical Students Journal* once a term the B M.S A Diary and an annual list of vacation appointments for those members requiring work in hospitals during vacations

The annual general meeting was held at B.M.A. House London last November and Sir Cecil Wakeley F R C S, was elected honorary president for the year The meeting was addressed by the Minister of Health, the Rt Hon Iain Macleod, who said he had watched with interest the responsible approach of the B.M.S A to the Medical Act 1950 He invited the association to submit to him its considered views on the Act and to make suggestions for the future The views of students in all medical schools in Great Britain and Northern Ireland were sought and a document was submitted to the Minister in April, 1955 The Minister s reply has indicated the efforts which are being made to help the preregistration arrangements to work smoothly and has expressed Mr Macleod s personal interest in the association's views on matters which are of concern and interest to him. The Minister s address and the subsequent correspondence are being published in this year's issues of the *British Medical Students Journal*. The Minister's address and the document submitted by the B.M S A. have been sent for information to the General Medical Council and to the Licensing Bodies in Great Britain and Northern Ireland.

The B.M.S A, is keenly interested in the grants problems of its members and cases of hardship are investigated The association is hopeful that local education authorities will respond to the encouragement recently given by the Minister of Education who urged that maintenance allowances be raised to the level of those granted by the Ministry of Education. There has been wide divergence in the amounts paid by different local authorities to students whose needs are similar Some authorities do not yet pay an extra maintenance allowance to clinical students to cover the extra time they necessarily spend at hospital over and above the length of the academic year

The association is represented on the medical students and newly qualified practitioners subcommittee of the B.M.A and on the undergraduate education committees of the College of General Practitioners. The association maintains its close interest in the British Student Tuberculosis Foundation of which it is a sponsoring body In the field of sickness and other insurance the association has made arrangements with an insurance agency, set up by the profession for its own guidance, for the development of a special section to advise medical students

The B.M.S.A. is a founder member of the International Federation of Medical Student Associations whose membership now includes most of the countries of western Europe as well as Yugoslavia and Turkey The B M.S.A is the chairman nation of the I.F M.S A for the second time since the federation was formed four years ago The I F M.S.A. is developing successfully and is recognised by the World Medical Association and by UNESCO The general assembly of the I.F.M.S A is held annually usually at the same time and place as that of the W M.A The B M.S.A. does all it can to facilitate visits by British students to foreign hospitals and to clinical and preclinical courses abroad Courses have been held this year in Holland Denmark, Sweden and Yugoslavia The B M S.A makes arrangements for many foreign students to visit hospitals in this country and the number of applicants increases yearly The newly established Student Travel Fund began to function this year and nine scholarships to a total value of £50 were awarded to assist students who had made plans to attend courses and hospitals abroad It is hoped that the fund will function on an increasingly large scale each year to the direct benefit of individual students. The association sent a delegation to the International Medical Film Festival held in Brussels in February The generosity of the donors whose gifts make possible the international activities of the B.M S.A. is greatly appreciated.

A national clinical conference is held annually for British students and Glasgow University was host to the very successful conference held there in January This year s annual general meeting will be held in St Andrew s on Nov 12–14 and it is hoped that all member schools will send full delegations. Observers from the four non member schools will be very welcome The honorary president elect for the year 1955–56 is

Prof Robert Walmsley, F R C S E , professor of anatomy in the University of St Andrews.

The address of the association is B M A House, Tavistock Square, London, W C 1.

EMPIRE MEDICAL ADVISORY BUREAU

THE British Medical Association has set up the Empire Medical Advisory Bureau with a view to making the stay of overseas medical visitors to this country as profitable and pleasant as possible, by welcoming them and providing a personal advisory service. The bureau, which is at B M A House, Tavistock Square, London W C 1, caters for Dominion and Colonial medical men and women who are staying in this country for postgraduate education or other purposes. Information is obtainable about postgraduate education and courses of study for higher qualifications, and inquirers can be put in touch with the organisations and authorities providing postgraduate education. The visitor who wishes to see something of the latest medical work in his own specialty can be put in touch with the appropriate experts.

A register of suitable hotels and lodgings is maintained by the bureau and every effort is made to help visitors to solve the problem of finding somewhere to live. By social functions and in other ways doctors from the Dominions and Colonies are enabled to meet each other and prominent members of the profession in this country. General information about travel, sports facilities, exhibitions, theatres, &c , may also be had. The bureau can be of greatest service to the visitor if he writes as long as possible in advance of arrival, giving information on the following lines: projected date of arrival, mode of travel, whether accompanied by wife, period of stay, objects of the visit, and in what ways assistance is desired. On arrival a letter of introduction from the local hon. secretary of the visitors' medical association, although not essential, would be welcome. The medical director of the bureau is Brigadier H A Sandiford, to whom all communications should be addressed.

INTERNATIONAL MEDICAL VISITORS BUREAU

To further cooperation with fellow member associations of the World Medical Association, the British Medical Association has set up the International Medical Visitors Bureau to provide a personal advisory service to doctors visiting the United Kingdom from countries outside the British Commonwealth. The bureau, which is at B M A House, Tavistock Square, London, W C 1, offers information on postgraduate education facilities, while visits to hospitals and clinics can be arranged and help given in finding accommodation. General information on travel, car hire, theatres, and exhibitions is also available. The medical director of the bureau is Brigadier H A Sandiford, to whom all communications should be addressed.

THE MEDICAL WOMEN'S FEDERATION

ALL medical women on the British Medical Register are eligible as members of the Medical Women's Federation, which has active local associations all over the country and in Northern Ireland, as well as a large London association and an overseas association linking up members all over the world. The federation is non-political. It provides medical and social meetings for its members and publishes a quarterly journal reviewing subjects of special interest to women doctors. These naturally cover a wide tract of social medicine, including maternity and child welfare, women in industry, the care of children and of difficult and delinquent children, the management of nursery schools and day-nurseries, women in prisons, children in approved schools and remand homes, the illegitimate child, and many related subjects. Advances in obstetrics and gynæcology, and psychological studies of women and children are naturally of special interest to women doctors; recent work in these branches of medicine is reviewed in the journal. From time to time the federation undertakes social studies and publishes the results. It is also able to protect the interests of its members by presenting arguments in any cases where there has been discrimination against women doctors. The federation's headquarters are at Tavistock House North, Tavistock Square, London, W C 1.

In England Now

A Running Commentary by Peripatetic

THE *bruit d'airain* of pneumothorax all medical schools, although extensive recently cast discredit on its value as a Commonly known as the "bell" or would seem that more is involved than th of one coin on another.

The position of the coin in relation to th is an important and much neglected de photo-electric thoracometer with a dif potential of ten decibels, it was found th waves in a fur-stripped cat were no pneumothorax than in a dead animal. both lungs with a mixture of oxygen uranium was it possible to produce a low undertone, likened to the rumble of dist

Such factors as the rate, force, and percussion were also considered in great electrically powered percussor was devis 6 patients could be strapped at one ti it was hoped to eliminate individual common in an experiment of this kind clusively shown that, with a frequency per sec at a pressure of 300 lb per *bruit d'airain* was indistinguishable from by borborygmi in the sigmoid colon, central heating, or the time signal on the

Ambitious experiments were also metallurgic properties of plessor and interesting phenomenon occurred in when a 10-franc piece was struck with pengö. The result, paradoxically, could be by the sound made when the lid of a is lightly tapped with the wooden hand gauge screwdriver. The investigators if this physical sign is to be elicited at penny must be discarded in favour of peso. It would appear therefore that th narily performed gives no reliable ev the chest.

* * *

Written examinations are a challenge to knowledge and ability. To the unfortu they are a time of unrelieved boredom. three-hour session was no exception. One the hall unceasingly like a policeman on th for trouble, for one appears so untrust when one really has the feet of a polic boards creak so badly.

A medical journal held my attention for only, and the morning paper for another one of my strolls I noticed that left hand to be unusually prevalent in the cla commendable scientific curiosity I be I strolled, and found that 6 of the 20 women wrote with the left hand. 11

It was my academic colleague who the hair partings were "good for another so I embarked on another census. the hair on the left, 12 on the right, 1 2 did not take the trouble. 13 of the left and 7 the right, not for them course or no course at all. Strange to say, were not statistically wed, for all 8 had the hair on the popular left side.

The final census should have been laterality with examination results. technically difficult. It would have the table numbers of those in the The task was too complex for my unaid and I had no wish to snoop round with taking notes. Relief of boredom must with loss of good will and reputation.

I have begun already to plan my investigation, which will reveal how exams with their jackets off, how colours of ink, how many sketch the question paper, how many doodle. as you can see, and I'm almost looking next three-hour session.

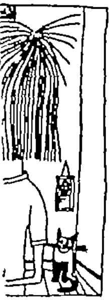
1

Fig 2

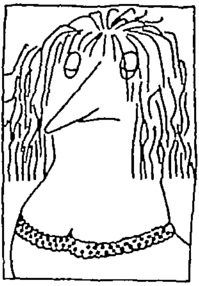
Fig 3

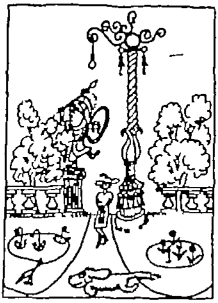
Fig 4

ors, it seems to me don't always play fair Some—with or without conscious intention nphasise what they want to show—for blocking out the background in one pic in another Others quite maddeningly omparison the same thing at different different sizes A few commit both these

ay I came on a friend listlessly holding a n one hand and the rejected article in the other The article went like this

CASE 1 —Fig 1 shows the patient before treatment and fig 2 after four days treatment (200 mg daily)

CASE 2 —Fig 3 shows case 2 before treatment and fig 4 the patient at follow up after a month's treatment (175 mg daily &c &c)

We have had further cases but have not had time to follow these up We believe however that the results have been excellent since the patients have not returned The two cases illustrated are typical of the whole series

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ch seems to have been done into the ospitals. Statistically I find that, out of Health Service hospitals in England and ing convalescent homes but excluding about 0% bear the names of saints This carrying the names of places derived from s St. Austell or St. Helens Hospitals. aimed hospitals with contractual arrange- N.H.S to both totals we get a slightly tage—i e 7 5%—since no fewer than of these (22 4%) have saintly eponyms out the reasons for yourselves By far lar is Mary with no less than 35 (if we ry Abbot and St. Mary Magdalene) with (second with 10 But two Johns are n of God and if we take them out, Luke with 14 Next come George and Joseph —if we exclude St George-in the East —but all 10 of the Josephs are disclaimed hich again you can work out for yourselves. meses, 7 Catherines (plus 1 Katherine) 1 Michaels, and 5 Davids, Peters and group include among others St. Bartholo- ss 2 (which ?) St Clement 2, St. Stephen (but is the Scarborough one St Thomas ?), St. Francis 3 St. Raphael 3 and Lastly we come to the long list of single prisingly there is only one Christopher, one Faith ; but who would have expected udry, Cammillus, Editha, Oswold, Woolos, *lans cette galère !* The staffs of these no doubt pass an oral on their patrons, until the Clinical Research Board gives he purchase of Alban Butler's *Lives* And o be fobbed off with a mere 12 volumes I shall want the original 60 volumes

* * *

lld I see Lord Horder disconcerted nsulting practice took second place to at Barts, and it was at the end of a large d been going on for two hours or more me into the ward and said in a loud voice Banbury presents his compliments and whether 'e should wait any longer stark screen in your consulting room !

* * *

mpleted a refresher course in Bugs

ived at breakfast through the courtesy of ring house and I was impressed to see how wide our knowledge of bacterial morphology has become I had been sent a rogues gallery of germs, each a horrific blood shot black colour with numerous eyes on stalks. Arms, legs and ill-defined appendages sprouted generously from all areas and each individual quivered with cretinous malignancy like a bunch of choreic all in wrestlers performing a Maori haka. Also they had been issued with tridents.

My breakfast ceased to appeal, and I retired upstairs to ponder these matters

There I was treated to Lesson Two this time through the courtesy of some people who make a sanitary cleansing powder The packet earnestly informed me that even now intransigent germs were assembling in the convolutions of my drains—indeed it added to avoid being invidious, they assembled in everybody's drains—unless stupefied repeatedly by handfuls of sanitary cleansing powder I feared that these freebooters would rush out at embarrassing moments and assault me indelicately with their tridents.

Clearly there are more things in sewers and drains Louis Pasteur, than is dreamed of in your philosophy

* * *

LAMENT OF A CHEMICAL PATHOLOGIST

Illegible forms, in a horrible state
Unsigned no history name ward or date
What do you want me to test for I cry
Fill them in properly else I shall die

Blood comes in tubes labelled red white or blue
Look at the samples and see they won't do
" Hæmolysed late insufficient " I cry
Send a good specimen else I shall die

Testing the urines by day and by night
Drop in reagent and see it's all right
Negative normal there's nothing I cry
I must have a positive else I shall die

Please see this man he's de-endocrinated
Too much potassium or dehydrated
You can't add up ounces and c.c.s I cry
Use milliequivalents else I shall die

Just one of four students turns up for the class
One's pregnant one's shopping one sleeps on the grass
Ignorant lazy discourteous I cry
One keen apprentice please else I shall die "

Notes and News

STUDENTS FROM ABROAD

MANY of those who come from overseas to take postgraduate courses in this country have little previous knowledge of Britain and that can be a drawback that hampers their work At the London School of Hygiene and Tropical Medicine the department of public health has taken steps to help overseas students on the D P H course to adjust themselves more readily to the British background In the first term the student s experience and interests are carefully ascertained, and the extent to which he is adapting himself to the new social and academic framework is noted It is thus generally possible to spot early on those students who are having special difficulties

Group discussions, which begin early in the first term, are designed to enable the overseas student to act as an expert and to take his rightful place among his colleagues as a man of special experience and interests The topics for discussion are changed from year to year, but the school s new syllabus emphasises that the principle remains the same—world health is indivisable, and the problems of one corner of the globe have their impact on those that face another In addition, *small tutorial classes are organised at which students can* discuss the difficulties they have had (perhaps through the misunderstanding of a lecture) and also some elementary facts taken for granted by the Englishman In addition, study groups are formed every year and each group undertakes a selected project In choosing the members of the groups, care is taken to ensure that each one contains representatives of as many as possible of the various racial, cultural, and professional elements in the class

It has been found that these methods quickly encourage an extensive exchange of information between students and staff, and it then becomes much simpler to guide each member of the class into the course which is most appropriate to his interests, his ability, and his plans for the future

POLIOMYELITIS

UNCORRECTED notifications of poliomyelitis in England and Wales in the week ended Aug 13 totalled 358 (paralytic 194, non paralytic 164) In the preceding week the total was 307 (paralytic 146, non paralytic 161) Up to and including the week ended Aug 13 this year there have been 1878 uncorrected notifications in all The corresponding figures for the preceding five years were 1163 (1954), 2574 (1953), 1911 (1952), 1510 (1951), 2986 (1950) The continued increase in notifications has again been fairly general throughout the country The incidence of poliomyelitis this year must now be regarded as above the average The next week or two should show whether or not the upward trend will continue

APPROVED NAMES FOR DRUGS

THE British Pharmacopœia Commission has issued the following new supplementary list of approved names

Approved name	*Other names*
Aldosterone	11β 21 Dihydroxy 3 20 dioxo 4 pregnen 18 al Electrocortin Aldocorten
Amiphenazole	2 4 Diamino 5 phenylthiazole Daptazole
Bemegride	β Ethyl β methylglutarimide Megimide
Demecolcine	Deacetylmethylcolchicine Colcemid
Glutethimide	α Ethyl-α phenylglutarimide Doriden
Normethadone	6 Dimethylamino 4 4 diphenylhexan 3 one
Oxycinchophen	3 Hydroxy 2 phenylcinchonic acid

University of Cambridge

On July 30 the following degrees were conferred

M D—B G Ackner T N Fison, J H H Glynn, J G Holm, R E Irvine, G W Pickering, C G Scorer

M Chir—W R Probert

M B B Chir—R H Pont D W I M Sandilands *A D Scott, *F D D Shaw, K W Taylor *D M Watney, *J W Wingate

M B—*Eva D Alberman, *J S Bevan J W Bennett *Monica M. Brain *E W G Davies Jacobus Dominion D A Earnshaw, *Gillian J Earnshaw, P M S Gillam D O Heap, D S McGuigan *Veronica Mercer, J R M. Millar, D J Palmer *Stanley Sheldon, *G W T Smith, *Martin Spiro, *Kathleen M Wilson, *M T C Wright

* By proxy

University of Saskatchewan

The University of Saskatchewan has hospital building within its campus, and preclinical departments, a complete envisaged The first group of clinical their training

Royal College of Obstetricians and G

On Friday, Sept 23, at 2 45 P.M., at the Anne Street, London W 1, Dr Benjamin P of midwifery and diseases of women in New York, will deliver the William lecture He has chosen as his subject the mortality and morbidity in the past fifty

Society of Apothecaries of London

At a meeting of the society held on Linzi was elected master, and Dr Dr Reginald Fisher were elected warden Perry was appointed examiner in medicine

The following diplomas have been granted

L M S S A—I A Watts E S P Willbery Marsden, P K Bhaduri P C Green, J D J El Kabir, R M Saldanha, I B K A W A. Kaysi, L D Church

D I H—J Attard, J C Graham C V A. Mair, H K P A M Riad, G L J P Tredoux

Chartered Society of Physiotherapy

This society will celebrate its diamond at its annual congress which is to be held Town Hall, London W C 1, from Sept particulars may be had from the secretary Tavistock House South, Tavistock Square,

Congress on Medical Ethics

The first international congress on the in Paris from Sept 30 to Oct 3 There will professional diciplines, and comparative The programme of the section on medical discussions on professional secrecy, the doctor's independence, and the moral new diagnostic and therapeutic particulars may be had from the secretary Conseil Nationale de l Ordre des Médecins Latour Maubourg, Paris VII

Simpson Smith Lecture

Dr Russell Fraser will deliver this Oct 25, at 5 30 P M at the Royal College Lincoln's Inn Fields London, W C 2 Tests of Thyroid Function

Coroner of Her Majesty's Household

The Queen has appointed Dr W Coroner of Her Majesty's Household Colonel W H L McCarthy, who has

Appointments

BISHTON, R L, M D Birm consultant area

DAVIS STANLEY, M B Lond, M R.C.P, D.M.R. consultant radiologist Royal Free Hospital

DEAS PAMELA M B Birm, D C H asst school education committee

DISON, GERALD M C, L.R.C.P.I., D P H city and M O H and deputy school M O, city

ELWOOD, W J, M.B Belf, D.P.H. divisional Lancashire County Council, and M.O.H. urban district of Irlam

GANGULI PRAFULLA, M B Calcutta D.M.R. registrar (radiodiagnosis), Southmead Bristol

SOMNER, A R M D Edin M R C P E. burgh respiratory diseases unit

WRAY, MARY L M R.C.S D M R D department Royal Free Hospital London

Welsh Regional Hospital Board

ADAMS, A S, M B Lond, F F.A R.C.S. Glantawe H M C

JONES, A M M B Wales D.M.R.D. Glantawe H M C

JONES F J E, B M Oxfd, D P M St David's Hospital, Carmarthen

RILES, R L F R C S consultant surgeon, West Wales and Mid Wales

RY DISEASE IN RELATION TO METALLIC OXIDES*

KENNETH M A PERRY
M.A., M D Camb F.R C.P
THE LONDON AND ROYAL MASONIC HOSPITALS
YSICIAN PAPWORTH VILLAGE SETTLEMENT

o substances to which workers are exposed
pation a few enter the body through the
r still through the alimentary canal but most
the respiratory tract I propose therefore,
seases which develop in the lung as a result

It is important to get these diseases in
spective: in England and Wales in 1953
ple died from fibrosis of the lung of occupa
compared with 15 128 (343 per million of
rom carcinoma of the lung and 7011 (170
rom pulmonary tuberculosis Mortality
r, do not accurately reflect the importance
al diseases though the fatal cases may be
ge of the hazards may enable much ill
revented

new substances are continually being
one of these substances is toxic to the
e first affected may go to many different
l thus no individual doctor may see the
Hence it is only by constant alertness,
of the possibilities, that a new occupational
e detected and preventive measures will
peration before large numbers of people are
difficulty is all the greater because occupa
can mimic every other kind of pulmonary

is devoted to the metallic oxides, because
ne rarer metals are coming into industrial
propose to say very little about silicosis
con dioxide, because so much has already
ut it.

Inert Dusts

graphy of the chest became a satisfactory
nty five years ago it has been a great help
is of most lung diseases If as dust, the
als are inhaled into the lung and remain
ties they will throw X ray shadows, the
ich varies with the atomic weight of the
s such as calcium (atomic weight 40 08)
d in industries using limestone marble
and gypsum produce little radiological
most a little arborescence.
are dissolved and are excreted by kidney
out others remain and cause shadowing
may be inert and may not give rise to
we must suppose that they do to some
o with elasticity Indeed it seems possible
no matter how innocuous in low concentra
large enough quantity eventually over
fences of the lung and impair function
accumulation of inert foreign material.
whether any worker does in fact ever
dust to render his lungs non-elastic
hat a man can have much opacity in his
old age without symptoms Nevertheless
reason to attempt to keep the air of our
owns as clean as possible

BARATOSIS

an atomic weight of 137·4 Exposure to
de occurs in the manufacture of paints
fireworks, dyes and inks depilatories
d rat poisons glass and linoleum, and in the rubber industry Exposure to the dust in association with silica occurs during mining It produces the densest nodular lung shadows yet recorded Arrigoni (1933), Pendergrass (1938) and Proti and Talini (1939) have shown that inhalation of barium oxide will produce extensive radiological changes and Pendergrass and Greening (1934) described the case of a man who had worked for twenty years in the grinding department of a lithopone plant, inhaling dust which was 97% barium sulphate

Barium peroxide is not widely used in industry, and therefore few radiological changes have been described arising from it It has, however been used as a base for the Pitressin ' snuff used in treating diabetes insipidus and has in this way given rise to X ray opacities in the lungs

SIDEROSIS

Exposure to iron dust and fumes is common in industry It occurs in welders oxyacetylene cutters polishers tool makers, cutlery makers foundry workers, and hæmatite miners. The last two occupations involve exposure to iron dust and fume associated with silica, and in consequence silicosis is a recognised risk in iron foundries and mines Zenker (1866) was the first to show that iron (atomic weight 55 84) was deposited in the lymphatics of the lung tissue but it was Doig and McLaughlin who in 1936 first drew attention to this condition in this country when they reported well developed reticulation and nodulation in 6 electric arc welders Since that time many more cases have been described by Britton and Walsh (1940) Koelsch (1941) Cramer (1942) Humperdinck (1942) Groh (1944), and Jones and Lockhart (1944) and the condition is well recognised in a bulletin entitled the Health of Arc Welders in Steel Ship Construction produced by the United States Public Health Service in 1947 Enzer and Sander (1938) have given the only published account of the necropsy findings.

The welder who died from an accident had during life shown the changes characteristic of welder's lung Post mortem, there was finely distributed black pigmentation throughout both lungs Histologically, the lymph-glands showed irregularly distributed pigment almost all of which was in large macrophages In the lungs there was much amorphous pigment in the periarterial and peribronchial lymphatic channels and the alveolar sacs but no fibrosis was found either in the glands or in the lung tissue The blood vessels were undamaged even where the pigment was densest Chemical analysis of the lung showed only infinitesimal amounts of silica but a prussian blue reaction for iron was obtained.

In 1945 Harding by intratracheal injection of iron oxide in the form of rouge produced X ray opacities in the lungs of rats These opacities were due to iron in the lymphatics and there was no fibrosis in the lungs.

In 1948 Doig and McLaughlin reporting further on the 6 cases, stated that of 2 who had given up welding the abnormal shadows had disappeared in one and lessened in the other Siderosis it would seem is not necessarily permanent and if no more iron dust is inhaled the iron oxide is gradually eliminated from the lung parenchyma. They further showed that the 4 men who had continued to work as welders had remained in good health and had not become short of breath

The Registrar General's Supplementary Report on Occupational Mortality 1931 shows that there were 123 deaths among 11 452 welders compared with an expected 101 on the basis of age rates for all males From all this evidence we may conclude that iron oxide is essentially an inert dust

STANNOSIS

The atomic weight of tin is 117 8 Pendergrass and Pryde in 1948 recorded a case of a workman aged 45 who for fifteen years had been bagging tin oxide dust

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Henry lecture for 1955 delivered before the
ge of Physicians of London on June 21

obtained by treating tin cans with caustic The patient was discovered by having his chest radiographed, and he complained of no symptoms, even though, on screening, the domes of his diaphragm scarcely moved at all. Scattered throughout the lung fields there was nodulation resembling but rather denser than that found in arc welders Further reports came from Czechoslovakia (Bartak et al 1948) concerning 6 men engaged in burning tin in a furnace and from America (Dundon and Hughes 1950) of X ray nodulation in men calcining scrap tin The tin content of their lungs was 13·4% Robertson and Whitaker (1955) found that out of 215 workers at a tin smelting works in Liverpool 121 who had been exposed to tin oxide dust for more than ten years showed nodular shadowing, but none had symptoms The lungs of 2 men who died showed that tin was deposited in the lymphatics of the lungs but did not give rise to fibrosis In rats identical changes in the lungs were produced experimentally, and, though tin could be demonstrated in the periarterial and peribronchial lymphatics, there was again no fibrosis This condition may be regarded, therefore, as a benign pneumoconiosis similar to the siderosis of electric-arc welders

ARGYROSIDEROSIS

Silver polishers use rouge which is iron oxide, and are thus exposed to a dust consisting of a mixture of silver (atomic weight 107 88) and iron McLaughlin et al. (1945) reported on 4 men who had been polishing silver-plated articles for between twenty and forty years. All had coughs with copious rouge coloured sputum Radiography showed the typical picture of reticulation One of these workers, after a partial gastrectomy for a gastric ulcer, died with bronchopneumonia, and his lungs were found to be emphysematous with a uniform grey-black cut surface Microscopy showed no fibrotic changes, either collagenous or reticular, which could be attributed to the dust (Barrie and Harding 1947) There were collections of inert iron in the lymphatics Of greater interest, however, was the intra vitam silver oxide staining of the elastic tissue in the arterial, alveolar, and bronchial walls, and there is little doubt that part of the X-ray changes seen in these workers were caused by silver The ash obtained from the lung (about 10% of the dry weight) contained 72% iron and 6% silver

Pneumonia

The oxides of manganese, beryllium, vanadium, and osmium can all cause a chemical pneumonia

MANGANESE DIOXIDE

Manganese is mined in the United States, Cuba, Brazil, the Gold Coast, India, and Russia It occurs as the oxide in the ores pyrolusite, braunite hausmanite, and manganite It is an essential substance in plant and animal nutrition Its most important alloys are spiegeleisen and ferro manganese, but silico-manganese and silico spiegel are used in certain grades of steel Manganese bronze is used for marine construction and mining machinery where corrosion is serious The metal is also alloyed with aluminium, tin, arsenic, antimony, bismuth, and boron Manganese oxide is used for bleaching glass, and other salts are used in dyeing calico, in printing, and as an oxidising agent in making organic products, while manganates and permanganates—produced by the action of caustic soda on manganese oxide—are used for preserving wood, for bleaching textile fibres, and for disinfecting and oxidising

Chronic manganese poisoning was first described by Couper in 1837, and since that time some 353 cases have been reported Most attention has been paid to disorders of the central nervous system, the commonest being parkinsonism (Charles 1927, Owen and Cohen Fairhall and Neal 1943)

TABLE I—MORTALITY (PER 100,000) FROM PNEUMONIA IN VARIOUS LOCALITIES HALVORSEN 1943)

Sauda, Norway, 1924–37	Oslo, 1924–36	Norway, 1924–36	U.S.A., 1933–3	19
326	106	82	82	21

In 1921 Brezina drew attention to th manganese dioxide to pneumonia ha 10 men working in a pyrolusite mill 5 had monia within two years The high prev monia among workers making dry b ascribed by Baader (1933) to mangane Elstad (1939) observed that the erection of plant for manganese smelting in Sa was followed by a tenfold increase in the mortality-rate of the area A pall of smok manganese oxide with particles less than 5 overhung the town Immediately before Buttner (1939) observed that the pne 17 per 1000 per annum in men working pyrolusite mine They had a pneumonia of 6 3 per 1000 per annum compared with in a control group from Leipzig Heine (19 the high prevalence of pneumonia in Ge handling pyrolusite to manganese dioxide.

Riddervold and Halvorsen (1943) descr an isolated village in western Norway a furthest end of a deep fjord and surr hills Sudden changes in weather are c the rainfall is 78 in per annum During the factory in 1915 Sauda had 1500 inhab population slowly increased to 4500 The production in 1923 and during that year of lobar pneumonia affected the town. E the village has had a relatively high mor pneumonia (table I), though the dis neither in bacteriology nor in age-dist events illustrate the fact that fume produ tends to be extracted through chimney the atmosphere to be inhaled by ordinar

In 1946 Lloyd Davies investigated th rate in men handling manganese dioxid facture of potassium permanganate a with the pneumonia rate in men empl occupations by the same firm (table II).

TABLE II—INCIDENCE OF PNEUMONIA IN A M (LLOYD DAVIES 1946)

Year	Manganese plant			Othe
	No of workers	No of cases of pneumonia	Pneumonia rate per 1000	No. of workers
1938	47	3	63	5991
1939	40	2	50	6349
1940	67	1	15	6396
1941	101	3	30	6618
1942	124	3	24	6751
1943	101	2	20	4899
1944	70			5005
1945	75	2	26	4845

He also investigated the dust which w at work collected by an electrostatic had a manganese dioxide content of 41-6 particles were below 1 μ in diameter, 5 0 2 μ Besides the increased pneumonia had frequent attacks of nasopharyng bronchitis, the symptoms of which after removal from exposure to the dust pneumonia was not unusual except th prolonged—sometimes taking up to t

ie response to penicillin and sulphon
probably because the organisms affected
were no more than secondary invaders
pulmonary changes were observed
ed to manganese dust (Lloyd Davies and
the histological picture of the lungs was
iking Mononuclear infiltration of the
was followed by intense mononuclear
ration with many dust laden cells Large
lidation developed and hæmorrhage
lete disorganisation of the lung structure.
were always greatest in close relation to
e cells lining the bronchi themselves were
wing hydropic change
dust is phagocytosed in the bronchi,
is contained in the phagocyte it is harm
wever the phagocytic cells die—possibly
xic influence of manganese—the dust
ie interstitial tissue and damages the
nchial and alveolar epithelium causing
iclear proliferation and infiltration and
olidation of the lung with necrosis and

VANADIUM

ntoxide is extensively used in making
is an ingredient of the best grades of high
hich it exerts a degasifying and deoxidis
notes fineness of grain and causes a stable
ides to form in the iron matrix It thus
alloy resistance to fatigue and to shock
on of strength and hardness when hot
alloys there is no satisfactory alternative
It is also used as a catalyst for various
ses
g paroxysmal cough with severe hæmo
attributed to vanadium by Dutton (1911)
ibed toxæmic symptoms and thought
is was a complication It was not until
that a comprehensive review by Symanski
es from a metallurgical works in Germany
lained of an acute, irritant cough followed
nchitis.
ge occurring in labourers working over
containing vanadium was reported by
Molfino (1942) In England, however
first drawn to disease from vanadium
Wyers (1946) He reported 10 cases of
ase among 90 workers manufacturing the
atients complained of cough and shortness
ome had hæmoptysis and 3 developed
n which 1 of them died Some showed
ticulation resulting from the action of
toxide as an inert material Its atomic

OSMIUM

one of the precious metals. Neither it
miridium is toxic, but osmium tetroxide
atile and irritating Raymond (1874)
l case of poisoning in a man employed by
is The fume had given rise to a capillary
l necropsy revealed a confluent broncho
Brunot (1933) confirmed this finding and
al (1946) described the irritating effects
troxide in 7 men They complained of
itum but no chronic or cumulative effects
apillary bronchitis and bronchopneumonia
iced in rabbits with osmium dust

BERYLLIUM

as discovered in 1797 but only in recent
ecome important in industry Beryllium
osion resisting non rusting non sparking
etic and has good electrical conductivity
gh strength and astonishing resistance to

fatigue. It is used in precision instruments, altimeters aeroplane pipe lines, carburettors, and telephone switch boards, and also in aircraft production Beryllium steel has such remarkably valuable properties that it will doubtless receive much commercial attention Beryllium plays a part in the production of atomic energy, being used to make atomic piles Zinc manganese beryllium silicate is widely used in the manufacture of warm strip lighting

The principal ore of beryllium is beryl, and beryllium oxide is extracted from it by processing at high temperatures with concentrated acids and fusion methods resulting in fume and dust Weber and Engelhardt (1933) first showed that this dust could damage the lungs in guineapigs and Fabrioni (1935) coined the term berylliosis ' In a full investigation of the toxicity of beryllium compounds in animals, Fairhall and his colleagues (1943) succeeded in producing pneumonia experimentally

Gelman (1936) gave the first account of a disease similar to metal fume fever occurring in industrial workers in Russia These workers were using beryllium oxyfluoride and they had an extensive broncho alveolitis Berkovits and Izrael (1940) recorded 46 cases in which the symptoms were fever subsiding in a few days followed by a second phase characterised by cough scanty sputum shortness of breath, temperature up to 103°F and cyanosis of the face and extremities Râles were heard at the bases Radiography showed small ill-defined discrete opacities, especially in the middle and lower areas. Anæmia developed and there was leucopenia with relative lymphocytosis Necropsy showed blockage of the smaller bronchi by inflammatory exudates leading to minute areas of collapse with compensatory emphysema Usually the patients recovered within 2 months and in most cases resolution was complete but in a few fibrosis followed

Fuller accounts of this form of pneumonia have been given from Germany (Meyer 1942 Wurm and Ruger 1942) and from the United States where Van Ordstrand et al in 1943 first gave a full account of 3 cases of chemical pneumonia among workers extracting beryllium oxide In 1945 they described symptoms including dermatitis, observed in 170 workers in three plants during a period of four years. Of these 38 had chemical pneumonia, and 5 of these died. Bronchoscopy showed a hyperæmic mucosa with some œdema. Radiographs showed diffuse haziness of both lungs, followed first by soft irregular areas of infiltration with prominence of bronchial markings then by absorption of the soft infiltration and the appearance of discrete large or small conglomerate nodules scattered throughout both lung fields and finally by clearing of the lungs fields after one to four months though Aub and Grier (1949) showed that they sometimes persisted for as long as a year Striking features of the lung tissue sections were an abundance of plasma-cells with a relative scarcity of polymorphs, diffuse pulmonary œdema and hæmorrhagic extravasation : fibroblasts with evidence of organisation were present The beryllium content of the lung varied between 0 20 and 1 89 mg per g of dry tissue

One such case has been reported in England by Royston (1949)

Sarcoidosis

Beryllium sarcoid a most interesting syndrome was first reported by Hardy and Tabershaw in 1946 Other reports have come from Gardner (1946) Hardy (1947) and Machle et al (1948) In the first account 14 men and 3 women were recorded as having developed a delayed pneumonitis, from which 6 died The condition may arise some months or as long as two years after acute symptoms : indeed in some cases there has been a latent period of several years after exposure Chesner (1950) reported 3 fatal cases in people who were either living near the factories or belonged to the families of men employed in them *Eisenbud et al (1949) reported that* the atmosphere concentration of beryllium may be as high *as 0 1 µg per c mm three quarters of a mile away from* the factory The symptoms were shortness of breath on exertion, cough, fatigue, and loss of appetite The shortness of breath is often severe Rales were usually audible at the bases and in the axilla, and in some cases a pleural friction rub has been reported Radiographic changes fall into three stages In the first there is a fine granularity uniform and diffuse, extending to the periphery In the second stage there is diffuse reticular pattern on the granular background, the hilar vascular shadows become fuzzy, indistinct, and slightly enlarged In the third stage distinct nodules appear uniformly throughout the lungs giving the appearance of a snow-storm, the hilar shadows appearing large and indistinct There is also enlargement of the liver, spleen, and lymph-glands, and the diagnosis can be confirmed by finding granulomatous changes in sections of the liver obtained by puncture Of the cases so far reported, death has occurred in about a third from right sided heart-failure, concurrent infection, and cachexia, while another third have suffered permanent disability from pulmonary fibrosis and emphysema With clinical improvement the radiographs may show gradual clearance of the nodules during one to four months but even a mild respiratory infection may postpone the clearance for as long as a year Spontaneous pneumothorax has been recorded The differential diagnosis is established by finding beryllium in the urine and tissues

Necropsy showed focal and diffuse chronic granulomatous inflammation of all lobes of both lungs, with organisation and fibrosis, diffuse chronic granulomatous inflammation of hilar lymph nodes with fibrosis right ventricular cardiac hypertrophy and dilatation, subacute progressive focal and diffuse hepatic nephrosis, and splenomegaly with fibrosis There was apparently focal intra alveolar granulomatous change, characterised by centrally and eccentrically located giant cells of a foreign-body type, together with epithelioid cells, plasma-cells, lymphocytes, and mononuclear cells infiltrating the lesion throughout Histologically the condition is identical with Boeck's sarcoidosis

A full account of the only case reported from England was given by Agate (1948) Lloyd-Davies and Harding (1950) produced pulmonary granulomata in 23 rats by intratracheal injection of 50 mg of beryllium oxide, and the injurious effect on animals of beryllium oxide mixed with traces of beryllium fluorides has also been demonstrated by Policard (1950)

Some workers have reported improvement following treatment with corticotrophin and cortisone, but on the whole these drugs have proved disappointing (Slavin 1952) Attempts to increase the rate of elimination by injection of dimercaprol (BAL) have been equally unsuccessful

Emphysema

CADMIUM DIOXIDE

In recent years cadmium has assumed increasing importance as an ingredient of metal alloys and as an electroplating material Exposure takes place in smelting the ore, in making alloys, in electroplating, in making paint pigments, and in welding, where the cadmium may occur as the plating on the metal being welded or as an ingredient of the welding-rod

Sovet in 1858 first reported that cadmium dioxide can give rise to acute pulmonary lesions An acute chemical pneumonia may develop within twenty to thirty hours of the inhalation of high concentrations of cadmium dioxide This has frequently happened in fires, and Spolyar et al (1944), reviewing the literature, showed that the usual symptoms are chills, irritation of the throat, cough with purulent sputum, pain in the chest, dyspnoea, vomiting, headache, *In fatal cases necropsy* has usually haemorrhagic oedema of the lung, and been produced experimentally in animal period of the illness is usually reached ab day, and if the patient survives ten days th complete recovery Huck (1947) found pational origin reported in the literature,

Chronic disease was first recorded by S in a man who complained of cough with shortness of breath, weakness, and loss necropsy he was found to have a chron nephritis Further reference to the con by Mancioli (1940) and by Nicaud et al believed, however, that the chronic emphysema of their patients were not relate Barthelemy and Moline (1946) and Pr studied cadmium workers mentioned van but concluded that cadmium does not e health It was not, therefore, until Hard (1947) investigated a group of 5 men ex eight years to cadmium dioxide, and no ed chronic cough, that serious consideratio this oxide as a cause of chronic disease F 1950) found that of 58 men making of cadmium and iron for the negative p tors, 43 complained of shortness of brea of the mouth All of these had emphys proteinuria, with recognisable impairmen tion in 9 In later experiments Friberg by means of radioactive cadmium that the metal excreted in the urine was gr when proteinuria appeared

Baader (1951) attributed to cadmium emphysema he found, with proteinuria workers in an alkaline accumulator factor In a man aged 30, who had been disabled of breath for eight years, necropsy emphysema fatty infiltration of the nephritis It was Lane and Campbell (who recorded this syndrome in detail 2 fatal cases of emphysema in men cadmium alloy, and give a detailed necropsy in a man who had severe unusual type It was unusual in that th the lung was spared and the gro central -There were no emphysemato surface of the lung, or in a zone 2 cm pleura There was no evidence of chr The cadmium content of the lung was of tissue The symptoms had developed of exposure to cadmium, and the pati six years of the onset This led Bonnell (gate 100 men employed in two factor where alloys of copper and cadmium were and he found 23 with emphysema gressive shortness of breath, their protein complex of low molecular weight cases death was from cor pulmonale or In the necropsy which he describes he lobes of the left lung and the lower lobe showed great but uneven emphysema zone was not spared

Buxton (1955) found that the mean the residual air expressed as a percenta lung volume, were significantly greater been exposed to cadmium for more than in a control series; though the total no greater The mean vital capacity the control group, but the mixing within normal limits These findings in chronic obstructive emphysema, where volume is increased and the intrapu coefficients are abnormal uce suggests that cadmium dioxide produces nal form of central emphysema associated nent of respiratory function

Fibrosis of Lung

ALUMINIUM

ı is extensively used in making paint and cing explosives and incendiary mixtures. (1930) exposed rabbits to metallic aluminium icle size below 5 μ and showed that no produced On the other hand Belt and from observations on rats thought that the ed as foreign bodies and that fibrous tissue round them Nevertheless, inhalation of ust is used widely with the idea of preventing

ilton Perry and Thompson (1944) endeav ess the effects of aluminium oxide dust by effects on the lungs of grinders of Duralu ane propellers Though the average con f dust close to the operator s mouth was ıbic metre of air of which 1 mg was less iameter no symptoms and no X ray changes n the 92 workers examined Similar results und by Middleton (1930) and others at a nufacturing aluminium In Pittsburgh l. (1944) investigated 125 workers employed of up to twenty five years in Pittsburgh and found that their health was as good as other workers in the plant They had no id no X ray changes.

be little doubt then that in general xide does not cause any lung disease Being o weight it does not throw X ray shadows oralewski (1939 1940 1941 1943) Jager 1941) and Koelsch (1942) have reported ıy that workers exposed to high concentra unium powder had dry cough with pain on hortness of breath and poor appetite showed a rapidly progressive and extensive ny of these patients developed spontaneous x and several died The illness appeared within three months of starting work The owder was made by a stamping process in to the shortage of stearine in Germany at paraffin like substance was used In the ıe lungs showed coarse branching hyaline ibres which enclosed phagocytes containing rsely granular particles distinguished from les by their jagged outline Animal experi this dust by Jotten and Eickhoff (1942) imilar histological picture

haver and Riddell in Canada reported 35 ilar disease seen in men making the abrasive In the manufacturing process bauxite (alum is ground and mixed intimately with iron ıe mixture is shovelled into large iron pots rbon electrodes are lowered The mixture bout 2000°C with evolution of dense white ining aluminium and silica These men of extreme shortness of breath and later ough with frothy sputum, retrosternal pain s of appetite and cyanosis Of 344 men the factory 23 developed symptoms and al spontaneous pneumothorax There were in men who had been exposed for less than the dust The signs in the lungs were consisted in poor movement impaired ote râles and rhonchi tachycardia and n the well established cases radiographs sive fibrosis with areas of gross emphysema. the emphysema was found to be mostly ceral pleura Microscopical examination of the lungs (Wyatt and Riddell 1949) revealed profound emphysema accompanied by an overwhelming fibrous tissue formation endarteritis, proliferation of alveolar epithelium and bronchiectasis There was fibrous hyalinisation of the interlobular septa but no nodular fibrosis The ash from the lung consisted of 3% silica and 46% aluminium Pratt (1950) showed that the dust in the atmosphere contained 32 3% silicon dioxide and 56% aluminium oxide the silicon being almost entirely in the amorphous form

This condition remains very much a mystery Most of the considerable numbers of industrial workers in contact with aluminium oxide dust have taken no harm *from this* exposure Yet in these two instances in Germany and Canada exposure of two quite different kinds has given rise to illnesses of identical character

Carcinoma

In the 16th century Agricola and Paracelsus described a lung condition, occurring among miners in the Erzgebirge in Saxony which they called mountain disease In 1879 Haerting and Hesse identified this as cancer of the lung and showed that it was responsible for 75% of the deaths of miners in this area developing usually after twenty years work in the mines Between 1869 and 1939 there were more than 400 deaths from lung cancer among the Schneeberg miners (Hueper 1942) Arnstein (1913) and Schmorl (1928) showed that the lesion was a carcinoma and not lymphosarcoma or endothelioma as so many tumours of the lung were called at that time It was seen only in the miners, who all knew, therefore that it was caused by their occupation Peller (1939) found that that half the miners in this area had lung carcinoma at necropsy

In Schneeberg the main ores are sulphides and arsenides of nickel and cobalt speiskobalt ($CoAs_2$) wassnickelkies (Ni_2As_2) and rotnickelkies ($NiAs$) while at Joachimstal on the southern side of Erzgebirge there is a high content of pitchblende and radium It is probable that the disease is caused by arsenious oxide dust : Rostoski and Saupe (1926) showed that bore dust of these mines contained up to 0 45% of arsenic Hueck (1939) pointed out however that the multiplicity of tumours so frequent in arsenical cancer does not occur in Schneeberg miners and since arsenic could not be demonstrated in the urine hair and nails or lungs (Pirchan and Sikl 1932 Zeil 1935) it has been suggested that the radioactivity of the dust rather than its arsenic content produces the tumours (Lorenz 1944)

TABLE III—STATISTICS OF A TOWN WHERE MANUFACTURE OF ARSENICAL SHEEP DIP WAS PRINCIPAL INDUSTRY (HILL 1948)

Percentage Deaths

	Arsenic workers	*Agricultural*	*Labourers*	*Artisans*
Diseases of heart and circulatory system	22·7	[illegible]	25·5	31·5
Diseases of respiratory system	25·3	21·9	23·0	21·5
Diseases of nervous system	8·0	[illegible]	0·2	11·1
Diseases of digestive and genito-urinary systems	4·0	4·4	5·0	6·7
Infections and general diseases	4·0	0·4	10	0·1
Violence	6·7	11·3	12·2	8·0
Cancer	29·3	11·4	13·8	[illegible]
Total	100·0	100·0	100·0	100·0

Percentages Cancer Deaths by Years

	Arsenic workers	*Other occupational groups*
1910–19	[illegible]	12·1
1920–29	37·6	11·5
1930–43	31·3	13·0
Total	29·3	12·9

Percentages by Occupation in Arsenic Workers

Chemical workers	39·0
Engineers and packers	30·0
Others (office staff printers &c)	18·3
Total	29·3

Amor (1938) reported 10 cases of carcinoma of the lung, and numerous cases of carcinoma of the nose and nasopharynx, among workers exposed to arsenical dust, over an average period of six years, at a nickel works in South Wales The concentrated nickel-copper sulphate matte from Sudbury in Canada containing 2% of arsenic for twenty five years had the copper extracted by the addition of sulphuric acid which contained arsenic as an impurity The grinding and calcination of the arsenical residue resulted in the escape of much dust from the apparatus in use The arsenical content of lungs removed by pneumonectomy was 3 82 and 3 40 parts per million

The most convincing evidence, however is the statistical work of Bradford Hill and Faning (1948) which showed that in a town in England where the principal industrial work was the manufacture of arsenical sheep dip the mortality rate for carcinoma was twice as high in the chemical workers handling arsenic as it was in the rest of the population (table III) The whole of the difference was made up of carcinoma of lung and skin

Arsenic may account for the world wide increase in the mortality-rate for carcinoma of lung in males, which has risen sixfold in Great Britain in the past ten years McConnell et al (1952) have shown that cigarette fume contains 2 5–3 5 mg arsenious oxide per cubic metre

There is also much evidence that monochromates (chromium trioxide) are carcinogens Mortality data have been studied in the United States by Machle and Gregorius (1948) and Baetjer (1950) Of 193 deaths in 1445 workers employed in seven chromate plants, 66 were from cancer and 42 of these (64%) were from cancer of lung In a control group of 773 deaths among industrial insurance policy holders in 1946 only 10 (9%) of the deaths from cancer were from cancer of lung In chromate workers over 50 years of age the mortality-rate for cancer of lung was forty times that for a comparable industrial group In plants, however, where the exposure is restricted to bichromates and chromic acid, there was no cancer of lung, which is strong evidence that the carcinogenic substance is the monochromate

Newman (1890) first recorded the occurrence of carcinoma of the nares in a chromate-worker in Scotland, and reports of carcinoma of lung came from Germany (Pfeil 1935, Alwens et al 1936, Gross and Koelsch 1943) Gross and Alwens (1939) reported a total of 39 cases and estimated that 3 9% of workers in the chromate industry since 1880 had developed cancer of lung

Baetjer (1950) studied cases from Baltimore hospitals and collected 122 cases from the literature 109 worked in the chromate-producing industry and 11 in the manufacture of chrome pigments 63 cases occurred in Germany, 57 in the United States, 1 in Switzerland, and 1 in Great Britain The average duration of exposure to chromate was between ten and fifteen years In Great Britain certain residues containing as much as 1% of monochromate are discarded instead of being crushed and dried as happens in Germany and the United States It is interesting, therefore, that Bidstrup (1951), in examining clinically and radiologically 724 out of 765 men employed in the chromate producing industry, found only 1 case of carcinoma of lung Buckell and Harvey (1951) found that both soluble and insoluble forms of chromium were present in greater concentration in the atmosphere of the factories in Great Britain than in the United States (Bourne and Yee 1950)

Conclusion

With the control of the spread of infection and the use of antibiotics, the infective diseases are declining, and more importance attaches to the degenerative and neoplastic conditions In this lecture I have tried to show the diverse pattern of pulmonary disease which may result from exposure to dust and fume of metallic oxides in industry

In the prevention of these diseases the are extracted from the air in the fac through chimneys into the atmosphere Norway, this is known to have increased t of pneumonia in the neighbouring popu people living near beryllium factories been reported

In the week following the dense fog on deaths in London in excess of those usual of year were more numerous than those Great Plague in 1668, and they have b to acute bronchitis and its complications the inhalation of the dioxide and toxi extruded by factory and domestic c report 1954) Certainly the prevalence bronchitis and its resultant emphysema industrial areas than in agricultural areas side area the rate is more than 1600 per less than 600 per million in East Anglia and

The presence of arsenic in cigarette fu for the higher prevalence of carcinoma cigarette smokers

Control of these various fumes, besides for preserving the citizen's health while is also important for preserving his health at home It is possible that they play in the production of ill health than is mised, and if this is so, they will play an in the future

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EPIDEMIOLOGY OF INFLUENZA

COMPARATIVE SEROLOGICAL OBSERVATIONS IN ENGLAND AND THE UNITED STATES *

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It has previously been suggested[11] that in group A influenza viruses many antigens are shared among the different strains, and that the serological specificity of a given strain is conferred by dominance of one or more of these common antigens. With the passage of time the dominant antigens of influenza viruses have undergone successive changes The rather dramatic disappearance of influenza A after 1943 and the appearance of influenza A prime in 1946 is a familiar example Further it has been inferred that influenza viruses antigenically resembling that of swine influenza were prevalent before during and after the pandemic of 1918 and probably persisted until type A strains appeared[4 12 13]

The distribution by age of antibodies against swine and of A and A prime strains of virus was determined in sera collected in Michigan U S.A during 1952 It was found that the type of antibody characteristic of each of three cohorts of the population was that developed against the major antigens of strains presumably prevalent only during their childhood Thus in children less than 10 years of age—i.e those born after 1943—A prime antibodies predominated The principal antibodies of persons aged 10 to 30 were of type A whilst antibody to swine influenza virus appeared at age 30 and shortly became the pre-eminent antibody

These phenomena were explained on the thesis that throughout life antibody response to influenza viruses is persistently oriented to the dominant antigens of strains encountered in the initial infections of early childhood Subsequent exposures to strains of varied but related antigenic composition reinforce the level of primary antibody whilst the response to major antigens of more recently encountered strains is relatively damped[4 5 11] Hence by determining the age of appearance and period of high prevalence of antibody against strains of virus representative of the three antigenic groups in pools of serum collected currently by consecutive ages a population's past experiences with influenza viruses may be serologically recapitulated[4] In such a serological record the episodes of major shifts in the antigenic composition of influenza viruses are delineated Moreover the range of antibody found at several periods of life has been shown to correlate with the attack rate of influenza at these ages[4 7] The amount of antibody to swine type A or A prime strains found in the population seems to afford a useful index of the intensity of exposure to these viruses

An opportunity to extend these observations by simultaneous comparison of antibody levels in a British and an American population was eagerly accepted since much is known about antigenic variation in relation to the epidemics of influenza which have recurred in England

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* These studies were conducted under the auspices of the Commission on Influenza, Armed Forces Epidemiological Board and were supported by the Office of the Surgeon General Department of the Army Washington, D C. They were presented in part at the 27th annual meeting of the Central Society for Clinical Research at Chicago on Oct. 30 1954

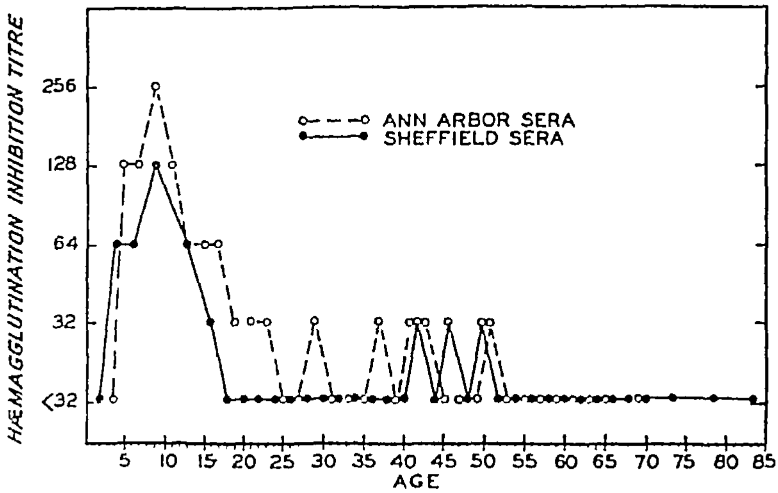

Fig 1—Type A prime antibody patterns found in sera from England and U.S.A test strain Liverpool (A' England 1951)

and the United States By such a comparison it could be established whether major shifts in the antigenic composition of influenza viruses had consistently occurred in both countries at the same or at different times These data might also provide a basis for estimating the relative frequency of experience with influenza viruses in the two populations (A comparison of the impact of influenza on two populations by mortality or morbidity data alone is notoriously difficult) Finally, it was of interest to determine whether differences in the serological records correlated with differences in epidemic experiences of the two countries

Materials and Methods

Sera from Ann Arbor were collected on the wards and from the serological laboratory of the University of Michigan Hospital † and aliquots of sera were pooled by two year age intervals from the first year of life up to and including the 69th year Sera from persons 70 years old or older were included in a single pool Each of the 36 pools contained sera from 50 persons and the collection represented 1800 persons

Sera from Sheffield were collected from children attending welfare clinics and from samples submitted to the regional Public Health Laboratory from children or adults attending hospitals in or near Sheffield Aliquots of sera were pooled by intervals of four years from age 7 to 14 Sera from persons 71 to 85 years of age were pooled by five-year intervals For the rest of the 36 pools from Sheffield, a two year interval was chosen 25 of the pools contained sera from 50 persons while the other 11 contained sera from between 23 and 48 persons The number of sera in the Sheffield collection was 1650

Both sets of sera were heated twice at 56°C for twenty to thirty minutes and stored in the frozen state for several months The shorter interval of heating was carried out with the sera from Sheffield, and the period of storage was also shorter Before use, sera were thawed and stored at 4°C Sodium merthiolate (1/10,000) was added to the Sheffield sera as a preservative and a few pools contained 0 08% sodium azide

Hæmagglutination Inhibition

Non specific inhibitors of hæmagglutination were destroyed with trypsin, using a modification of the method described by Sampaio and Isaacs.[11] Tr were diluted by one of buffer Buffered trypsin solution cont phate at pH 8 2 and 8 mg of 1/250 per ml The mixture was for thirty minutes

Hæmagglutination inhibition then carried out on the tr ing to the method described mittee on Standard Procedure Testing[3]

Viruses

The strains of virus used in from the files of the Strain S the Commission on Influenza Michigan, and have been pre The strain of swine influenza from Dr Richard E Shope of t Institute, and is a line of virus the early passages of strain 15 well adapted to eggs by passage cally in 11 day-old chick embry the older strains had also been p or mice

Results

Comparison of Levels of Antibody Measured Strains of Influenza Virus in the Ann Arbor Collections of Serum

The titres of hæmagglutination inhib determined in both sets of sera with Liv (England, 1951) are plotted by age in fi Sheffield sera, antibody was not detected of 4 The amount then rose and reached a tration at the age of 9 Thereafter, the lev from age 18 onwards antibody was rarely d lowest dilution of sera tested The results Arbor sera were similar but differed in respects While the onset of measurable the peak of antibody concentration collections at approximately the same a the peak was higher and antibody remain a longer span of years in the Ann Arbor results were obtained when compar content were made with Cam (Australia (Holland, 1951) and Cuppett (U.S.A. 1 London (England, 1951) and Sweden (viruses, the Sheffield pools were found devoid of antibody However low level with these strains in the Ann Arbor sera ages 4 to 16 A more complex pattern w certain A-prime strains of intermediate ter which react in sera pools with antibod to A strains, and to swine influenza viru

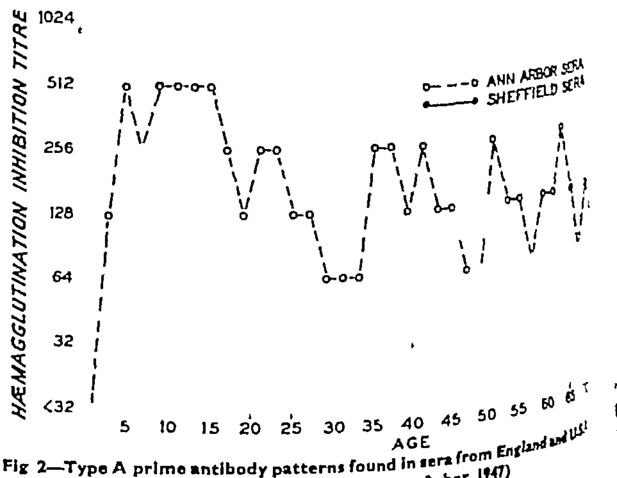

Fig 2—Type A prime antibody patterns found in sera from England and U.S Rhodes (A Ann Arbor 1947)

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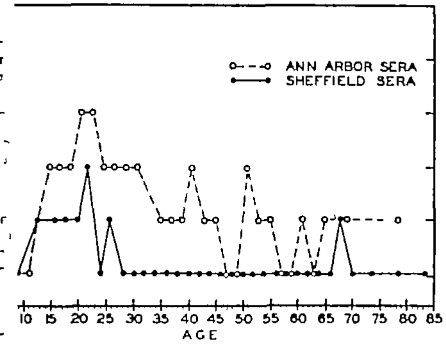
† It is a pleasure to acknowledge the coöperation of the personnel of the Serologic Department, directed by Dr Rubin Kahn

‡ Dr Keith E Jensen kindly provided seed employed



ntibody patterns found in sera from England and U.S.A. Test strain : Talmey (A England 1935)

virus (U S.A 1947) are shown in fig 2
with FMI (U S.A 1947) Moraveo (U S.A
right (U S.A 1953) were similar As with
ne strains, antibody was detected in both
the 3rd or 4th year of age However with
roadly reacting strains the peak level was
ended to be maintained longer Around 13
the concentration of antibody began to
the sera from Ann Arbor a secondary rise
ntibody level is seen extending from ages
was previously shown in sera pools collected
this interval marks the attainment of and
the maximal levels of antibody measurable
is A comparable secondary rise is not seen
om Sheffield although in the same interval
ains measurable at low titres The absence
ry rise and fall in the age period 10 to 29
eld sera suggests that this segment of the
lation has had less experience during child
pe-A strains that are closely related anti
these broadly reacting A prime viruses. At
5 to 30 an increase in antibody is found in
ons of sera, and moderate levels are then
or the later ages From the age of 35
h levels of antibody to swine virus are found
ra [4]

these data duplicate those of the previous
idies which delineated the time of life when
inst most A prime strains appear and are
h levels. Again they illustrate the striking
between the known high
influenza in childhood and
t epidemics of influenza in
tates and Great Britain since
een predominantly influenza
reover the higher and broader
ntibody distribution found in
rbor sera suggest that the
perience with A prime strains
ter in that population

of Antibody Levels with A

dy patterns determined with
strain (England 1935) of
are shown in fig 3 In the
enting the first decade of
y to A strains was virtually
he dilutions tested From
12 antibody levels rose
aximum in both sets of sera
years As with the A prime
eak levels with the A strains were higher in the Ann Arbor sera Furthermore, the duration of the interval when antibody was detectable was longer in the sera from Michigan Results similar to those illustrated were obtained in comparisons with PR8 (Puerto Rico 1934), Berry (England 1941) Gideon (Hawaii 1940) and Taylor (England 1941) strains

A peculiar saddleback antibody pattern was found in the Sheffield sera with a few A strains In fig 4 the results with Melbourne (Australia 1935) are reproduced Similar data were obtained with Weiss (U S.A 1943) and BH (England 1935) The pattern of antibody distribution in the Ann Arbor sera was similar to that measured with the Talmey strain (fig 3) except that the peak level attained was higher and antibody was sustained at approximately the same level between the ages of 25 and 72 In contrast with the sera from Sheffield relatively low levels of antibody were found at 13 to 28 years of age From 30 to 40 antibody content is diminished but thereafter the levels rise and at most ages they either equal or exceed the peak levels found in the second and third decade From the age of 30 onwards the level of antibody to swine virus is known to rise [4] and the pattern seen in the Sheffield sera after 30 probably represents swine antibody that cross reacts with Melbourne virus (see below) It is noteworthy that antibody levels in the Ann Arbor sera between 30 and 40 years of age do not show a similar decline It will be shown that this difference cannot be attributed to differences in the swine influenza antibody content of the two collections. Therefore it seems likely that the disproportionate low levels of antibody to Melbourne virus found in the Sheffield sera between the ages of 30 and 40 represent a difference in the intensity of experience of the two populations with an unidentified strain of group A influenza virus which occurred during the childhood of this cohort of the population

Additional evidence of a disparity in the intensity of the experience of the two populations with A antigens was obtained with other strains For example with Christie (England 1937) and Gatenby (England, 1937) antibody did not appear in the Sheffield sera until the age of 18 rose to a titre of 32 and persisted at that low level until the age of 27 After that virtually no antibody was found In the Ann Arbor sera antibody appeared to Christie at age 13 and to Gatenby at 15 In other respects the patterns with these strains were like that illustrated with Talmey With WS (England 1933) and Baum (U S.A 1940) no patterns of antibody distribution were

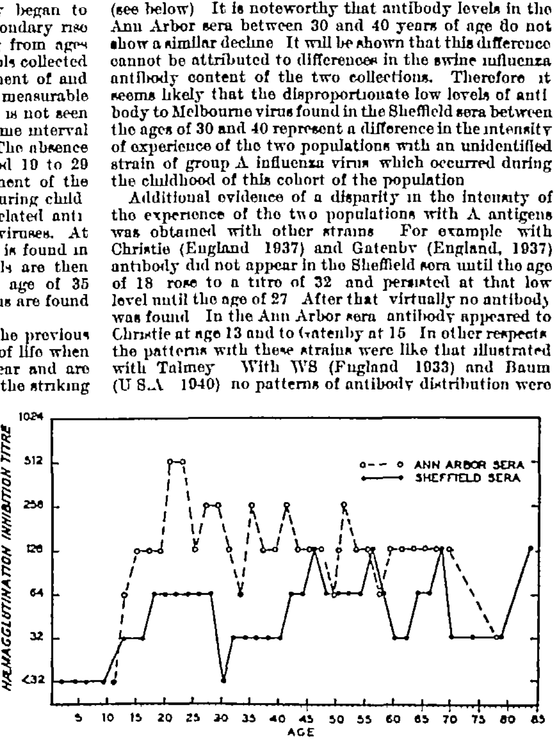


Fig 4—Type-A antibody patterns found in sera from England and U.S.A. Test strain : Melbourne (A Australia 1935)

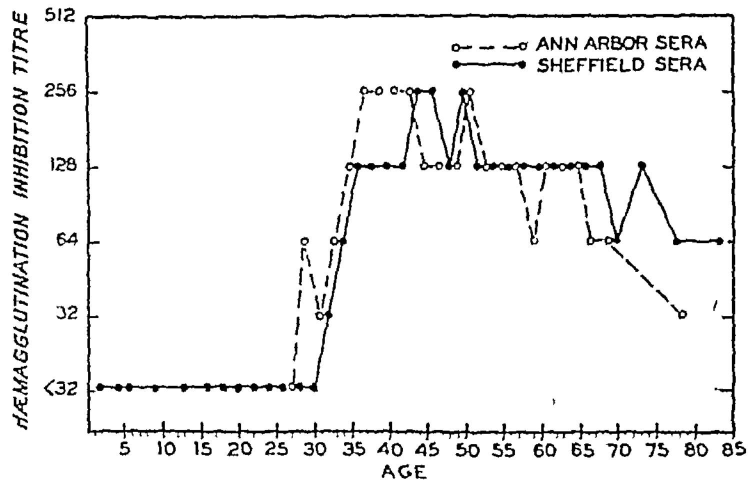


Fig 5—Swine-influenza virus antibody pattern found in sera from England and U.S.A Test strain swine 1976 (Iowa 1931)

discernible in the sera from Sheffield, since titres were generally below 32 However, in the Ann Arbor sera, the pattern found with Baum and WS was like that found with Talmey except that the appearance of antibody to WS was delayed until 18 years of age In all cases the amount and duration of measurable antibody were greater in the sera from Ann Arbor, which suggests that the amount of experience with A strains of influenza virus was greater in the American population

The virtual absence, in both sets of sera of antibody to A strains in children aged 10 or less in 1953 correlates with the disappearance in 1943 of influenza A from England and the United States

In addition, it is evident that with the passage of time there has been a progressive shift in the age at which antibody against A strains is found in both populations Thus, with sera collected in 1935 from the United States and England, it was shown that antibodies to the WS and PR8 strains were often present in the first few years of life[1,8] In 1948[13] they were not found in the sera of American children until the age of 7, and in the present study, with sera collected from both countries in 1953, antibodies against that strain were not measurable until 12 years of age It is expected that this shift will continue, since fundamentally it results from the lifelong persistence of the orienting effect of the dominant antigens of the strains responsible for the initial infections of childhood, which modify the antibody responses following subsequent exposures to antigenically different but related strains of influenza virus The gap created by this progressive shift has been filled by antibodies to A-prime strains because the experience of children born in both countries after 1943 has been limited to strains of that antigenic character It will be noted that levels of A-prime antibodies begin to decline about the age of 12 when the level of antibodies to A strains is rising, and that antibody levels to A-prime strains are low or undetected at ages when concentrations of type A antibodies are high This reciprocal relationship is seen in both sets of sera Clearly, antibodies to A strains found in the second and third decades tend to limit infections with and antibody response to the currently prevailing viruses

Comparison of Antibody Levels with Strain 1976 of Swine influenza Virus

The antibody patterns ascertained with strain 1976 of swine influenza virus are shown in fig 5 Antibody was first detected at the age of 28 in the Ann Arbor sera and at 32 in the Sheffield sera The level then rises promptly, and between the ages of 35 and 70 high and equivalent concentrations of antibody were present in both sets of sera Thereafter, a tendency toward lower antibody levels was discernible The observation can be made anew from these and ot
has been a shift in the age at
to swine-influenza virus are
collected in 1935 from England
States, antibody to swine-in
not usually detected in persons
old[1,15] In sera pools collect
countries in 1953, antibody wa
until 28 to 32 years of age The
age at which antibody is
again marks the passage of time
accuracy The shift in age inc
bodies to swine virus repre
example of the persistence of
effect of the major antigens of
tered in the initial infections of
previously pointed out, high le
are found in persons aged
maximal levels are maintained
age of 50[4] The persons wit
titres are those who were chil
adolescents in 1918, the year o
incidence of pandemic influenza.
Shope[15] first suggested the possibility
influenza virus was the strain responsib
human epidemic The age incidence of ant
strain is now determined supports th
The data also indicate that strains of vir
similar to swine virus and the virus of the
were probably prevalent before and afte
antibody levels are high for several decade
the persons showing antibody to swine
after 1918

Discussion

The patterns of distribution of antib
with many strains of influenza virus in sera
from England and the United States
remarkably similar in several respects.
ages at which antibody became measurable
and A viruses and with a single strain of
virus were approximately the same in the
High levels of antibody to these test str
in both sets of sera at similar period
antibody to A and A-prime strains wa
Ann Arbor sera at a greater concentration
longer period Since the age at which
prototype strains begin to appear indicat
the period of prevalence of strains antig
related to these prototypes, it follows that
the dominant antigens of influenza virus
enced in both countries at about the
inference is supported by the observa
prevailing type of influenza virus chan
A-prime in both countries between 1943
serological records obtained in this stud
about thirty years ago a major antigenic
both countries In this shift the A gro
became the dominant ones, while the
with swine-influenza virus became minor
ponents of strains which then prevailed
basis for this inference is that around
antibody to swine influenza virus begins
concurrently, levels to A strains tend to
collections

The most striking differences found
content of the sera from Ann Arbor and Sh
three categories

*When antibody patterns were discern
of sera with a given strain of type-A or A
virus, antibody levels were slightly
period of measurable antibody was
sera from Ann Arbor*

In other instances, no antibody pattern
ible in the Sheffield sera, while pattern

re found with the same strains of A prime
n sera from Ann Arbor
re is the curious gap in measurable antibody
d with certain A prime and A strains in
sera, which extends from around age 17

supposed that these differences were an
d either by errors in sampling of the true
ent of both populations or by denaturation
the Sheffield sera in the course of collection
rage or transport While neither of these
an be ruled out both seem highly unlikely
collections of sera from Ann Arbor yielded
antibody patterns [4, 6] Hence the number
ed in each age group for the present study
provide a reliable sample of the antibody
e populations studied Nor does it seem
e lower antibody levels found with A and
s in the Sheffield collection can be explained
ion of the sera The antibodies which
gglutination by influenza viruses are quite
eservative had been added to the Sheffield
their antibody content
o differences in the antibody patterns
sera from Sheffield and Ann Arbor were
Approximately the same levels were found
us, and the differences found with A strains
nately greater than differences found with
ns These systematic differences are not
utable either to errors in sampling or to
Sampling errors would produce random
d denaturation would be expected to lower
els to all strains of influenza viruses
y
cal explanation of the differences found in
erns with sera from Ann Arbor and Sheffield
—an explanation supported by data from
tudies Since the antibody patterns deter
vine influenza virus in the two sets of sera
r the amount and the period of exposure
lations to strains antigenically like swine
sumably comparable However the lower
patterns of antibody distribution found in
Sheffield with A prime and especially with
gest that the Sheffield population has had
with strains of these types With respect
with A strains this inference can be
Thus antibody to the PR8 strain of type A
s was not found in approximately half of
cted at random in 1949 from adults in
gland when diluted 1/40 [16] In contrast
90% of the sera collected in 1953 from
higan showed antibody levels of 1/32 or
same strain [6] Since it has been shown that
ls to type A strains are not significantly
exposure to A prime strains unless the
posed has had previous experience with
[4, 6] the difference in frequency of antibody
ugh observed in different years, indepen
orates the concept that the population in
had less experience with those A strains of
ses that are antigenically related to PR8
publications [4, 7] attention was called to the
en the age incidence of influenza and the
tibodies found in the American population
s Thus the sera of children were shown to
odies of limited scope essentially oriented
ominant antigens of the strains recently
pparently antibody of this limited character
immunity since the incidence of influenza
as been consistently higher in childhood
g age and repeated infections by antigenic
luenza virus the older American population
a composite of antibody against a greater number of antigens In consequence, the serological foundation of immunity becomes broader and concurrently the incidence of influenza is lessened in the older age groups irrespective of the strain in circulation [4]

It will be recalled that antibody levels with A prime and A strains of influenza virus were lower in the sera from Sheffield and that the duration of measurable antibody was always less in that collection Moreover with some A prime and A strains essentially no antibody was measurable in the Sheffield sera while moderate to high levels were found in the Ann Arbor sera with the same strains As a result the composite of antibodies in the Sheffield population did not attain as high a level as that found in the Ann Arbor population If these findings are representative of antibody levels in both countries as they are believed to be then it would be expected that the incidence of influenza at present in England would not show the striking decrease with age which has been repeatedly found in America

Only two comparable studies are available to test this hypothesis Hope Simpson has reported on the secondary attack rate of influenza in 100 families observed during the epidemic of 1951 in which an index case had occurred [10] In these circumstances, the secondary attack rate was found to be essentially the same at all ages. In contrast, in a similar study made in America during the epidemic of influenza A prime in 1953 [2] the secondary attack rate was shown to decline progressively with age. If the results of these studies are typical of the current age incidence of influenza in England and America the epidemiological events are in agreement with our explanation of our serological findings

The low levels of the composite of antibodies found in the sera from England may help to explain the disparity in the intensity of recent epidemics of influenza in England and the United States. Since 1932 the annual influenza mortality rates per 100 000 population in England and Wales have been consistently greater than in the United States [6] The most striking disparity was seen in 1951 when there was a severe epidemic in England but only a mild one in the United States The greater incidence of influenza in England correlates with the lower levels of antibody found in the Sheffield sera

Finally the disparity in levels of antibody in sera collected from England and the United States and the differences in the incidence of influenza in the two countries poses the question whether it is desirable to widen the spectrum of antibodies found in the British population by vaccination against influenza

Summary

A comparison of antibody levels observed with prototype strains of influenza viruses in sera collected during 1953 from persons in Sheffield England and Michigan U.S.A indicates that :

(1) Similar shifts in dominance of the antigens which comprise group A influenza viruses occurred in both countries at the same time

(2) Levels of antibody to type-A strains were considerably lower in Sheffield. A lesser difference was observed in antibody levels to A prime viruses, while the amount of antibody to swine-influenza virus was essentially the same in the two populations.

(3) The lower levels of composite antibody found in the Sheffield sera correlates with and may help to explain the apparently higher incidence of influenza in England

This work would not have been possible without the assistance of those who so willingly supplied blood samples In particular we would like to thank Dr F H Gillespie and Dr L P Clarke of the Public Health Laboratory Service Dr Marion C Taylor of the school medical service Sheffield Dr B Snell and other medical officers of the Infectious Diseases Hospital Lodge Moor ; and Dr J L Lm ry of the Children s Hospital, Sheffield ; and members of the staff of the Department of Medicine of the University of Sheffield.

Reference overleaf

HÆMATOGENOUS OSTEITIS IN THE NEWBORN

WALLACE M DENNISON
M D Glasg , F R C S E , F R F P S
BARCLAY LECTURER IN SURGERY AND ORTHOPÆDICS IN RELATION TO INFANCY AND CHILDHOOD IN THE UNIVERSITY OF GLASGOW , SURGEON IN CHARGE OF WARDS, ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW , PÆDIATRIC SURGEON, ROYAL MATERNITY HOSPITAL AND STOBHILL HOSPITAL, GLASGOW

As a result of the successful treatment of septicæmia in the newborn, more small infants are living long enough to show clinical evidence of hæmatogenous osteitis In the years 1945–51 19 cases of neonatal osteitis were treated in one surgical unit of the Royal Hospital for Sick Children Glasgow (Dennison and Macpherson 1952a) Since then 22 other children have been treated, and the further experience so gained has led to modifications in treatment

Fraser (1924) stated that osteitis of the newborn was almost always fatal, whereas Dillehunt (1935), Cass (1940), and Stone (1942) regarded it as benign and gave a good prognosis for life and function The confusion was clarified by Greengard (1946) and Thomson and Lewis (1950), who showed that it could present in either a benign or a severe form, the latter being called generalised osteitis of the newborn

Of the 41 patients admitted to this unit in 1945–55 22 can be classified as benign because at no time did the lives of the infants appear to be seriously endangered The actual bone and joint lesions however, were not always benign, and a few children have been left with permanent bone and joint deformity The focus was in such cases usually single, and the sites are shown in the accompanying table As these patients present no new problems they are not considered further here

SITE OF BONE FOCUS IN 22 CASES OF BENIGN NEONATAL OSTEITIS

Site of bone focus		No of cases	Result
Staphylo coccal *	Strepto coccal		
Maxilla	—	8	Complete recovery
Humerus	—	5	Destruction of head of humerus in 3 cases
Clavicle	—	1	Complete recovery
Femur	—	4	Destruction of femoral head in 2 cases Destruction of distal epiphysis in 1 case
Calcaneus	—	1	Complete recovery
Talus	—	1	Complete recovery
—	Femur	1	Complete recovery
—	Ulna	1	Complete recovery
Total	—	22	—

* Resistant to penicillin in 16 cases

Of the 19 severe cases, 4 children were no longer seriously ill when admitted to the surgical wards The septicæmia had been controlled by one or other of the wide spectrum antibiotics , The septi sented as pneumonia or as gastro-enter appearance of a swelling of a limb or a patient to a surgical unit Of the 19 pa born in an institution (hospital or all of them had left the care of the there was evidence of serious infection.

In many instances it has been possible spect to reconstruct the sequence of pyogenic bone infection The infection an anaerobic hæmolytic streptococcus and in 1 patient the organism was not remaining 17 patients the organism positive *Staphylococcus aureus* this penicillin in 2 cases, the sensitivity not and it was resistant to penicillin in 14 case

Of the 19 patients 4 died Rec sequestrum formation, and epiphyseal damage led to a high morbidity

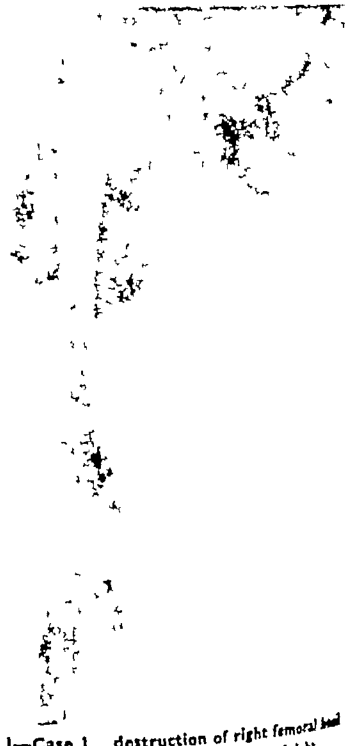


Fig 1—Case 1 destruction of right femoral head hip , destruction of lateral condyle of right of left femur leading to gross valgus

Typical Cases

Case 1 —A boy, aged 3 weeks, was over the left clavicle, swelling of both in both knee-joints His mother had a abscess but did not breast feed him.

On admission he was treated with three hourly until the staphylococcus was reported resistant to penicillin. stopped and treatment with chlorte mg six hourly substituted The normal within twenty four hours, and improved rapidly Seven days later chlortetracycline and he was treated days During this period his temper condition deteriorated until ch restarted This treatment was fourteen days, and pus was evacuated region, from the right hip, from a and from both knee joints The right destroyed, and there was gross damage both femora, leading to genu valgum of varum of the other

Osteotomies have been performed on there is still gross deformity (fig 1).

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boy aged 3 weeks de
on A week later there
the right shoulder and
d to hospital with severe
l gross swelling of his
nicillin resistant staphy
rown from his blood his
rectal swab He was
hlortetracycline at first
and then by mouth for
us was evacuated from
nd from a subperiosteal
he left tibia On the
there were signs of
mia, and radiography
ive osteitis of the tibia
etracycline therapy was
continued until the
y The infant remained
three months At the
hs his left kidney was
ross pyelonephritis and

questrectomy was per
he boy was a year old
years he is well with no
with satisfactory kidney
re is no radiographic
ive disease of bone

boy aged 3 weeks de
inguinal abscess and
ee days later his left leg
and red and he was
spital and treated with
o days, until the staphy
d from the blood was
nt to penicillin Peni
was discontinued and
o therapy started and continued for four weeks
ame deeply jaundiced and bone lesions were
left tibia and right radius. Metastatic foci
right arm, left hand and right wrist and he
monia. A long sequestrum was removed from
months after admission the wound healed
nd the infant was sent home
ext three years he was readmitted to hospital
He has had 37 recognised metastases, involving
g bones his scapula, his spine and his pelvis
reated with chloramphenicol and the tetra
penicillin streptomycin (Crystomycin) with
with stock and autogenous vaccines He is
with soft tissue abscesses of the thigh but no
s have been seen in the past two months.

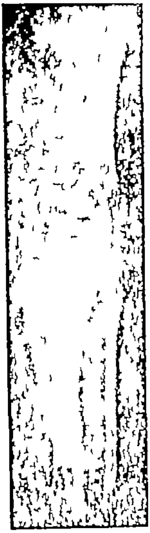

Fig 2—Case 2: extensive osteitis of left tibia.

Case 4—Eight days after this girl was born her mother had a septic throat and coagulase positive staphylococci were grown from the mother's vagina At the age of 10 days the baby was cross when lifted and next day there was swelling of her right thigh and knee and right wrist She was given penicillin 800 000 units and transferred to the children's hospital next day There was no radiographic evidence of bone disease on admission and as the general condition was reasonably good, systemic antibiotics were deliberately withheld Pus was evacuated from the femoral subperiosteal abscess and from the knee and chlortetracycline solution was instilled locally A penicillin resistant coagulase-positive staphylococcus was grown from the pus. The infant remained apyrexial for nine days, but an abscess then appeared over her right scapula Radiography revealed bone disease of her femur radius, and scapula Pus was aspirated on several occasions from her right shoulder thigh knee and wrist Treatment with oral chlortetracycline was started twelve days after admission and continued for fifteen days The limbs were immobilised, and she remained in hospital for thirty-eight days.

eformity and shortening
ght femur

During the next eighteen months she was readmitted twelve times. Her femur is still grossly deformed (fig 3)

Case 5—A boy was born with a swelling over his sternum; his left leg became swollen on the 7th day; and on the 18th he had diarrhoea and vomiting and a generalised rash Next day both arms were swollen and his eyes were puffy At the age of 21 days he was admitted to the medical wards with a diagnosis of septicæmia A penicillin resistant staphylococcus was grown from his blood and blood-culture remained positive throughout his brief life He was treated with chlortetracycline for five days, with chloramphenicol for seven days and thereafter with oxytetracycline (terramycin) until transferred to the surgical wards fifteen days after admission. Both his arms were paralysed and radiography revealed osteitis of both femora with arthritis of his shoulders Pus was aspirated from many sites but in spite of repeated small blood transfusions, the general condition steadily deteriorated. Erythromycin was given during the last ten days of life and he died at the age of 10 weeks

Necropsy revealed bone lesions in the clavicles sternum, humeri, three ribs three vertebral bodies and both femora There were no pyæmic abscesses in the heart lungs or kidneys

Discussion

After the first week of life, infection is the most *important single cause of neonatal death pneumonia and* gastro-enteritis being of outstanding importance It is perhaps not generally recognised that either pneumonia or gastro-enteritis may be the presenting signs of septicæmia and, if treatment is delayed or inadequate pyæmic lesions may form in any organ Before the introduction of antibiotics the prognosis in septicæmia of the newborn was poor and few babies lived long enough to show evidence of bone infection

The fœtus is usually bacteriologically sterile until the membranes rupture although there is evidence to show that intra uterine infection may be more common than is generally appreciated (Douglas and Stander 1943, Corner et al 1951) After rupture of the membranes the fœtus may inhale or swallow infected liquor amnii or may encounter virulent organisms in the vagina After delivery there are many possible sources of infection particularly the skin and upper respiratory tract of the mother and attendants. Before there is evidence of severe infection paronychia skin pustules or infection of the cord stump may be observed Minor staphylococcal infections appear in 10–15% of infants born in maternity units (Nelson 1952 Barber et al 1953 Forfar et al 1955) and the incidence of such infection is increasing (Capon 1955) Such apparently minor lesions must be treated seriously by the obstetrician or the pædiatrician because major infections rarely develop until the mother and child have gone home At present there appears to be a very inadequate follow up of the infant during the two or three weeks after discharge from hospital

Although the infant may be born with congenital immunity to certain organisms to which the mother is immune, the capacity for antibody formation during the neonatal period is generally very poor In the first 7 of the present 19 cases the infants were treated with antibiotics for three or four weeks, and prolonged treatment with chlortetracycline had no apparent adverse effect on the infants (Dennison and Macpherson 1952a) Shortly afterwards there were repeated recurrences Long-continued use of a bacteriostatic antibiotic in an infant who had inherited no immunity from his mother appeared to deprive him of the opportunity of acquiring immunity to the staphylococcus Metastatic foci appeared while the infants were receiving the recognised therapeutic dose of chlortetracycline Commercial preparations of antitoxin and autogenous vaccines had no apparent influence on the infection

In the surgical wards of this hospital severe toxæmia is most commonly seen in acute hæmatogenous osteitis and in diffuse peritonitis following appendicitis In acute osteitis, apart from the neonatal age group the causal staphylococcus was resistant to penicillin in only 4 of 140 cases (2·8%) treated since 1945 Penicillin was undoubtedly the antibiotic of choice, and antibiotics of the tetracycline group were used in only 6 cases The impression was gained that these newer preparations were less effective than penicillin in dealing with the local focus of disease in the bone A serious objection to the tetracycline group was the lack of an effective method of assaying blood and bone marrow when judging the correct duration of antibiotic therapy (White and Dennison 1952) In the 19 cases of severe neonatal osteitis the sensitivity of the causal staphylococcus was tested in 16 of the 17 staphylococcal infections The staphylococcus was resistant to penicillin in 14 patients (87%) Chlortetracycline controlled toxæmia in most cases but appeared to have little effect on the foci of disease in the bone In diffuse peritonitis, particularly in children under the age of 3 years, chlortetracycline was life saving (Dennison and Macpherson 1952b) In view of the reports of staphylococcal enterocolitis following the administration of the wide spectrum antibiotics particularly of the tetracycline group (Hay and McKenzie 1954), the use of the tetracyclines was temporarily stopped in October, 1954, and a penicillin-streptomycin preparation was substituted Such preparations as crystamycin and 'Seclomycin' appeared to be as efficacious as chlortetracycline in combating the toxæmia of diffuse peritonitis In the surgical unit concerned in this report the chief use of the antibiotics is to save life, and they are usually discontinued as soon as toxæmia is under control During the past six months we have, as a routine, used bactericidal penicillin streptomycin preparations for all patients with neonatal septicæmia and diffuse peritonitis

Potter (1954) described 6 cases of osteitis of the newborn, of which he classified 5 as "benign" Although no antibiotics had been administered before admission, the general condition of these 5 infants never gave rise to anxiety Nevertheless "benign" is hardly a satisfactory description of a condition which is often characterised by recurrences and not uncommonly leads to permanent deformity The present cases have also been divided into "benign" and "severe," but I feel that this is a very personal classification Almost a quarter of a century ago, the late Eric Lloyd, discussing acute osteitis, pointed out the difficulties in comparing reports from different centres

> "There is no hard and fast line between what is acute and what is subacute or even chronic At one end of the scale is the author who includes such smouldering fires as osteomyelitis of the jaw and at the other is he who almost comes to believe that no case is acute unless the patient dies! It is not a question of dishonesty but of ignorance" (Lloyd 1932)

I cannot be sure that my own standard of "benign" and "severe" has remained constant during the past ten years In my own mind I feel sure that any of the present 19 patients in the "severe" group might have died if antibiotics had not been available There was in fact a 21% mortality It would be almost impossible to compare them with cases from another centre

Summary

Hæmatogenous osteitis in the newborn appears to be increasing The causal organism is commonly a coagulase-positive staphylococcus resistant to penicillin in over 80% of cases

41 cases of neonatal osteitis were trea
They have been divided into 22 "benig
"severe" This is essentially a person
There were 4 deaths in the series

Septicæmia in the newborn may pre
or as gastro-enteritis, and, if treatm
inadequate, pyæmic lesions may appear

All but one of the "severe" cases we
born in an institution This may be a
reported increase in minor staphyloco
maternity units

The prolonged use of chlortetracyclin
as advocated by Dennison and Macph
now thought undesirable A penicil
preparation is recommended but, wha
is used, treatment with it should be dis
as the blood infection appears to be con

My thanks are due to my medical colleag
and referred many of the cases, to Dr
and his staff of the hospital department of
to Dr James Howie, regius professor of
University of Glasgow, for invaluable advi

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ANTICOAGULANT THER

DETERMINATION OF MAINTENAN

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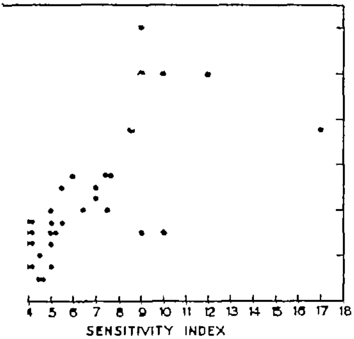
ONE method of prescribing anticoagula
rule of-thumb relationship with the dai
times This is not very satisfactory
sensitivities to an anticoagulant vary co
no single rule is applicable to all. A
method is based on the assumption th
prothrombin level can be maintained by
anticoagulant which will remain consta
ticular individual, though it will vary
to patient (Bjerkelund 1953) This do
by considering the movement of the pr
in relation to treatment throughout the
illness

According to Bjerkelund (1953) and To
daily maintenance dosage is related in co
rapidity of fall in prothrombin levels du
stage of treatment, presumably because
sensitivity to the anticoagulant The
concerned with the mathematical nature
ship, and its possible application to thera

Material and Method

52 patients have been studied, 39
infarction, 4 with angina decubitus and
venous thrombosis (2 with pulmo



ty index to maintenance dose of phenylindanedione.

one has been used exclusively Dosage
w early cases has been 50 mg six
he first twenty four hours, and 50 mg
during the second twenty four hours
index

$$\frac{\text{ontrol prothrombin time}}{\text{tient's prothrombin time}} \times 100$$

amed daily prothrombin times being
lick s one stage method The prothrombin
d of approximately forty eight hours has
a sensitivity index calculated by dividing
nticoagulant used up to that time by the
othrombin index the initial level in all
med as 100%
nticoagulant has been prescribed daily to
rombin index as far as possible between
At the close of treatment the daily dose
p the prothrombin index steady at this
oted
ty indices have finally been plotted against
tenance doses to produce the scattergram
ccompanying figure

Discussion

ram which emerged from this work shows
t strictly linear relation between the daily
indanedione needed to keep prothrombin
nstant level and the initial sensitivity to
revealed by the sensitivity index Quite
hnical causes a fundamental reason exists
ion should not be mathematically exact
an anticoagulant seems to be increased in
re seriously ill maintenance doses which
mate at first are not uncommonly found
at at some point during recovery from such
present scattergram is based on the final
ose
, the relation has been found of some
py by assisting an earlier arrival at the
aintenance dose Cases are now divided
ups with sensitivity indices respectively of
0 upwards The third day s dose in the
as been 50 100 and 150 mg respectively
ents are made in the light of subsequent
e prothrombin index The keeping of a
prothrombin indices and doses of anti
be found visually helpful
ation of the above scheme has been found
ses of phenylindanedione much higher than
are not now employed, since with such
ems to be a tendency to hæmorrhage at
rombin level A final prothrombin index
–40% has to be accepted in such cases

Summary

An index of sensitivity to an anticoagulant (phenyl indanedione) has been determined by dividing the dose of anticoagulant employed in the first forty eight hours of therapy by the fall in prothrombin index during the same time It has been found that this sensitivity index is related in some degree to the daily dose of anti coagulant subsequently needed to keep the prothrombin index constant The relationship has been found useful in predicting the daily dose of anticoagulant which will be required in maintenance therapy

We are grateful to Dr J F Heggie for laboratory facilities and in particular to Miss A Christie who has carried out most of the very large number of prothrombin estimations required We wish to thank Miss I M Prentice of the Central Middlesex Hospital for the diagram

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THE "L E -CELL" PHENOMENON IN ACTIVE CHRONIC VIRAL HEPATITIS

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THE introduction of the lupus erythematosus cell (L E cell) test by Hargraves and his colleagues in 1948 led to increased recognition of and interest in systemic or disseminated lupus erythematosus (D L E) There is still debate however about the specificity of this test Klemperer (1952) Dubois (1953) Hargraves (1954) and Harvey et al (1954) regard the demonstration of L.E cells as pathognomonic of D L E On the other hand there are reports of L.E cells being demonstrated in penicillin sensitivity reactions (Gold 1951 Walsh and Zimmerman 1953) during the treatment of hypertension with hydralazine (Reinhardt and Waldron 1954 Shackman et al 1954) in the newborn infant of a mother with D.L.E (Bridge and Foley 1954) and in the blood of apparently normal persons (Butterworth 1953)

Though the nature of the L.E cell phenomenon is not yet fully determined there is considerable evidence that it depends on an antigen antibody mechanism L.E cells are often found in patients with a high serum gamma globulin and the L.E factor in serum seems to be an immunologically distinct gamma globulin (Haserick and Lewis 1950 Hargraves 1954) The transplacental transmission (Bridge and Foley 1954) and occurrence of L.E cells in acquired hæmolytic anæmia is consistent with this Finally Finch and his colleagues (1953) have produced L.E cells by the action of rabbit anti human leucocyte antiserum on normal human leucocytes

We report here the finding of L E cells in blood from two patients with active chronic hepatitis probably of viral origin

Case report

A housewife aged 37 was admitted to the Royal Melbourne Hospital on Oct 26 1954 with a two-month history of nausea anorexia abdominal pain, and jaundice For ten years she had had recurrent severe headaches often associated with vomiting and considered by her physician to be migrainous For eight years she had had some flatulent dyspepsia especially after fatty foods Three years and again eighteen months

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* Working with the aid of a grant from the National Health and Medical Research Council of Australia

TABLE I—LABORATORY FINDINGS IN A PATIENT WITH ACTIVE CHRONIC VIRAL HEPATITIS AND THE

Date	Hb (g per 100 ml)	White cells (per c mm)	Serum bilirubin (mg per 100 ml)	Cephalin flocculation	Serum-albumin (g per 100 ml)	Serum-globulin (g per 100 ml)	Serum γ-globulin (g per 100 ml)	Serum alkaline phosphatase (K A units)	E.S.R. (mm. in 1 hour)
Oct 27, 1954	13 0	7000	1 5	+ + +	3 7	5 1	2 8	16	
Nov 8 1954	10 0		0 2	+ + +	3 5	4 2	2 7	14	
Nov 22, 1954			1 1	+ + +	3 3	4 1	3 6	19	79
Dec 6, 1954	12 6		3 6	+ + +	3 1	4 2	3 3	13	
Dec 20 1954	11 8		0 8	+ + +	3 3	5 3	3 0	13	
Jan 10, 1955	10 3	5000	1 5	+ + +	3 4	1 7	3 1	17	
Jan 20, 1955			0 6	+ + +	3 3	3 0	2 7	13	76
Jan 24 1955	10 2								
Feb 8, 1955			0 9	+ + +	3 8	2 9	2·5	18	
March 16 1955			0 2	+ + +	3 7	3 1	2 4	14	
April 20 1955			0 3	+ + +	3 7	3 3	2 7	18	

before admission she had had thrombophlebitis—in her right leg and arm respectively

The present illness began when, after a severe attack of migraine, she noted that her urine had become dark and "frothy" Five days later she began to have jaundice She had no pain but was anorexic

Two weeks after the onset she was admitted to a hospital elsewhere At this time she had "tightness" and discomfort in the epigastrium and under the right costal margin, aggravated by food and eased by belching She also noticed for the first time "red blotches" (spider nævi) on the skin of her face and chest In hospital her condition persisted unchanged with moderate jaundice, dark urine, and pale fæces She did not respond to conservative therapy with a high protein diet and added vitamins A short course of corticotrophin (A C T H) was given for one week with some symptomatic relief, but was then discontinued because of severe upper abdominal discomfort After six weeks she was transferred to the Royal Melbourne Hospital for further investigation She had now lost 2 st in weight

She knew of no contact with a jaundiced person, but viral hepatitis was epidemic in the suburb where she lived for some months before the onset of her symptoms She had worked in a munition factory with cordite, but on close questioning it appeared unlikely that her symptoms were due to such a poison

On admission her temperature was 99°F, her pulse rate 76 per min, her respiration rate 16 per min., and her blood pressure 120/80 mm Hg The liver edge was palpable 4 cm. below the right costal margin The spleen was not palpable No ascites was detected Numerous spider nævi could be seen on her face, neck, and chest

The diagnosis made was active chronic viral hepatitis, and this was consistent with the results of the laboratory investigations (table I)

Investigations

Hæmoglobin 13 0 g per 100 ml , white blood cells 7000 per c mm with a normal differential count, Wassermann reaction negative, serum bilirubin 1 5 mg per 100 ml , cephalin flocculation test strongly positive, serum-albumin 3 7 g , serum globulin 5 1 g., serum gamma globulin 2 8 g , per 100 ml , serum alkaline phosphatase 16 King-Armstrong units Plain X ray films of chest and liver area showed no abnormality (apart from enlargement of the barium meal

Liver biopsy by the technique of showed the typical picture of an active with considerable polygonal-cell abnormality, tion with lymphocytes and plasma-cells, activity producing disruption of the architecture

Course in Hospital

After liver biopsy she developed a responded to penicillin Three weeks af spleen became palpable Since her conditi with bed rest and dietetic therapy, a cou ('Achromycin') was begun, but after a fe drowsy and fœtor hepaticus was detected. discontinued, her protein intake was redu acid was given by mouth, and there general condition.

Seven weeks after admission her clinical condition was substantially the same as this time, however, she began to complain of ness, and aches and pains in the muscles, she had joint pains severe enough to These were unrelieved by salicylates or further investigation was undertaken.

Liver-function tests still showed the chronic viral hepatitis, but the gamma-glob 3 1 g per 100 ml., Hæmoglobin was 10 3 white blood cells 5000 per c.mm., with a relative lymphocytosis, erythrocyte-sedi (Westergren), 62 mm in one hour, Ros Coombs test negative Examination by the and Winkle (1952) showed fairly numerous L.E. Jan 10, 1955, and again on Jan 24 (table I).

For this reason oral cortisone was given, of 200 mg daily, from Jan 11 This pro improvement in her arthralgia, and an of well being The dose was then reduced to recurred when a dose of less than 50 mg da She was discharged on Feb 10, on a 50 mg daily

She has been reviewed in the outpatient monthly intervals On April 20 there was no

TABLE II—SALIENT CLINICAL AND LABORATORY FINDINGS IN SEVEN PATIENTS WITH ACTIVE CHRONIC

Case no	Age	Sex	Length of history (mos)	E.S.R. (mm in 1 hour)	Serum bilirubin (mg per 100 ml)	Cephalin flocculation	Serum-albumin (g per 100 ml)	Serum globulin (g per 100 ml)	Serum γ globulin (g per 100 ml)	Serum alkaline phosphatase (K A units)	Hb	White cells (per c mm.)	L.E. cells	Erythrophagocytosis
1	21	F	6	102	3 0	+ + +	2 4	4 6	3 8	32	13 0	9000	Yes	Yes
2	36	M	53		0 9	+ +	2 4	8 7	2 2	22	11 5	3000	No	No
3	16	M	16	84	1 6	+ + +	3 1	4 6	4 2	23	11 0	4000	No	Moderate and tart cells
4	45	M	16	4	25 3	+ + +	3 3	3 5	2 2	35	13 9	20,000	No	Yes marked
5	31	M	41		0 1	+ +	3 4	3 3	1 7	10	13 2		No	No
6	16	M	24		2 0	+ + +	3 0	4 9	3 6	25	11 5		Tart cells only	No
7	46	F	27	15	2 8	+	2 9	3 5	2 4	22	10 0	8000	No	No

was palpable 2 cm below the right costal
spleen was not palpable; the spider nævi
anged Laboratory findings are shown in
ly 20 the physical findings were unchanged

Further Investigation

ic search was made for L.E cells in seven
observation or treatment for active chronic
. In all of them this diagnosis was sup
pidemiological clinical biochemical and
evidence None provided any clinical
arthralgia or the other common mani
D.L.E Brief details of these cases and the
e relevant laboratory investigations are
e II

orthy that L.E cells were demonstrated in
atients and erythrophagocytosis in three of
ay recall that Leoni (1954) found L.E cells
from a patient with hepatic cirrhosis

Discussion

hree possible explanations of these findings
of the patients were suffering from both
hepatitis and D.L.E (2) that the primary
m was D.L.E with predominant hepatic
and (3) that the L.E cell phenomenon
shion a result of a primary chronic hepatitis
patients had two independent diseases is
unlikely for two reasons. Neither D.L.E
ral hepatitis are common diseases and there
e positive evidence—epidemiological clin
ratory—for the diagnosis of chronic viral
showing in all respects the characteristic
's disease (Saint et al 1953)

the second possibility though abnormal
tion tests, especially positive flocculation
perglobulinæmia, are frequent in D.L.E
ubbe 1955) these arise not from primary
e but from a more fundamental disturbance
tabolism in D.L.E In our experience liver
cases of D.L.E have not shown the gross
ved in active chronic viral hepatitis Nor
reviews of D.L.E lay stress on hepatic
s sequelæ as part of the clinical picture of
and Cadman 1953 Dubois 1953 Gold and
Soffer et al. 1954)

hink that the primary lesion in these cases
hronic viral hepatitis and that the L.E
s in some way a result of this disease
chronic viral hepatitis the characteristic
inding is a hyperglobulinæmia affecting
mma globulin (antibody) fraction Studies
lly labelled protein show this hyperglobulin
ue largely to increased globulin production
creased protein destruction (Havens et al
our present thesis that the L.E. cells and
me hæmatological phenomena are a by
this excess gamma globulin (antibody)
The evidence suggesting that the L.E cell
upon an anti leucocyte antibody has been

or reported findings are relevant to this
frequency of Coombs-positive acquired
æmia in D.L.E has been emphasised by
rs (Dubois 1952 De Gruchy 1954 Josko
955) and it is significant that antibodies to
ytes and leucocytes are not infrequent in
erse diseases having in common only the
ypergamma globulinæmia and/or affection
e process of the antibody producing cells.
tic anæmia in viral hepatitis has been
enuemann et al (1952) and also observed
ries (Saint and Josko 1955) Hæmolytic
s occasionally in lymphatic leukæmia but
eloid leukæmia (Rosenthal et al 1955)

Dausset has demonstrated leucagglutinins in chronic lymphatic (but not myeloid) leukæmia, D.L.E., and other granulopenic states (Dausset 1954, Dausset et al 1954) Hæmolytic anæmia has also been observed in multiple myelomatosis, in which hyperglobulinæmia is frequent (Whitby and Britton 1950) and may complicate infectious mononucleosis (Berté 1951, Mermann 1952)

For these reasons we suggest that the L.E.-cell phenomenon, while characteristically occurring in D.L.E has a *more general significance in indicating the presence of* auto antibodies to leucocytes In terms of the hypothesis of Burnet and Fenner (1949) it is evidence of a failure of the antibody producing mechanism to ' recognise white-cell elements as self-constituents thus allowing the production of antibody which can react with them The phenomenon would have a similar significance to a positive Coombs test which detects circulating antibodies to the patient's red cells The L.E cell, erythrophagocytosis, and a positive Coombs test may therefore all occur in diseases of or affecting the antibody producing cells or characterised by greatly increased production of gamma globulin and the reports cited show they do A further consequence of this hypothesis is that D.L.E (and acquired hæmolytic anæmia) must be regarded not as a disease entity but as a syndrome The diagnosis of D.L.E is but the first step in the understanding of a patient and should be followed by further investigation to attempt to define the ætiology of the syndrome The necessity for this is already recognised in acquired hæmolytic anæmia.

On this hypothesis we suggest that the L.E cell and related phenomena might be based either

(1) on an abnormality of the antibody producing mechanism resulting from diseases such as multiple myeloma, lymphatic leukæmia and infectious mononucleosis or
(2) on changes in red or white cells or their constituents by infective or chemical agents which modify their characteristic self markers ' (Burnet and Fenner 1949) as in active chronic viral hepatitis or the L.E syndrome occurring during hydralazine therapy

Summary

A patient with active chronic viral hepatitis developed the lupus-erythematosus syndrome L.E cells were demonstrated in this patient and in one other who had active chronic viral hepatitis but no clinical manifestations of D.L.E

It is suggested that the L.E cell phenomenon may result either from primary disease of the antibody producing mechanism or from changes in white cells or their constituents which modify their characteristic self markers

Our thanks are due to Sir Macfarlane Burnet and Dr Ian Wood for their advice during the preparation of this paper, and to our colleagues for their help in the laboratory investigations.

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FIBROUS DYSPLASIA OF THE SKULL

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In 1937 Albright and his associates described a condition "characterised by osteitis fibrosa disseminata, areas of pigmentation and endocrine dysfunction, with precocious puberty in females" The osseous lesions now known as fibrous dysplasia have since been observed and reported by many workers

Not infrequently the skull bones are involved, and occasionally the cranial lesion is the only manifestation of the disease The involvement of the skull may give rise to signs and symptoms of a slowly growing intracranial space-occupying lesion, and, when the other manifestations of fibrous dysplasia are absent, many interesting problems arise for the neurosurgeon in diagnosis and treatment of these patients

In this paper three cases are described In two of them the skull was the only area involved and only one bone was affected (monostotic type) The third case was of the polyostotic variety

Case-records

FIRST CASE

A girl, aged 12, was referred to me by Dr Patvakanian Three years before admission she began complaining of slight attacks of headache at irregular intervals At least 12 months before admission her parents noticed that her left eye was more prominent than her right, this gradually became more so 6 months later the patient realised that she was blind in her left eye Recently the attacks of headaches had become more severe and more frequent

Examination

She was alert and coöperative, with no disturbance of speech There was no sign or history of sexual precocity, and no abnormal pigmentation No bruit was audible on the surface of the skull The left eye protruded considerably and could not be completely covered by the lids The exophthalmos was directly forward, with no tilting of the eyeball There was no visible pulsation There was no perception of light by the left eye The left fundus showed primary optic atrophy, and the right fundus marked papillœdema (Foster Kennedy syndrome) There was no defect in the field of vision of the right eye On the left side the external ocular movements were grossly limited in all directions There was no abnormality in the other cranial nerves and the extremities

The blood cells and erythrocyte sedimentation rate were normal The Wassermann reaction of the blood was negative Casoni's test for hydatid was positive

Radiography of the skull showed a circular linear calcification in the left temporal region as in case 2 There was no evidence of bone destruction Angiography of the left side of the brain showed considerable upward displacement of the sylvian group of arteries As hydatid disease is common in Iran, the preoperative diagnosis was a hydatid cyst in the left temporal lobe

Operation

A vertical incision was made in the left temporal region, as for subtemporal decompression After removal of the bone a greyish mass was seen extend apparently growing from the bone in the The mass was not very hard and was could be separated from the under surface piece was removed for biopsy (fig 1).

Further operation was refused and left the country, no follow up has been pos

SECOND CASE

A boy, aged 15, referred to me by Dr Sah to the neurosurgical department of Pahl April, 1951 For 18 months he had been headache and giddiness About a year before right side of his face became paralysed the and his parents thought that he had had a same time he had diplopia, but this cleared weeks Headache, occasional attacks of facial paralysis continued Twenty days be patient gradually developed a tremor and left arm and hand Recently he had noticed vision in his right eye

Examination

His fundi showed severe bilateral papilloed no field defect to confrontation There was motor neurone paralysis of the right side of was totally deaf on the right side The stant, regular, uniform tremor of the left hand able from the tremor seen in parkinson the left arm was much increased and The left leg was weaker than the right reflexes were brisker on the left side than The abdominal reflexes were all present, reflexes were flexor There was no sensory d

Analysis of the urine and blood showed

A Casoni test was negative

Radiography of the skull showed a circular tion in the right posterior temporal region, irregular decalcification in the bone suggest (fig 2) The petrous portion of the bone destruction

Operation

Under local anæsthesia (1% procaine adrenaline) a large bone flap was turned d temporal region The squamous part of the was very thin in places, and its inner surface ridges A large hard greyish mass protruded f surface of the dura When the mass was rem many small cystic cavities containing yellow found Although the tumour was in parts most of it was hard and gritty At the periphery small thin flakes of bone were found separate dura Where these pieces of bone were adhered to the dura The petrous bone was small cavities Although the upper and medial tumour were well defined, the under surface occupied the cavities in the petrous bone. all the visible tumour tissue and curetting of the petrous bone the wound was closed

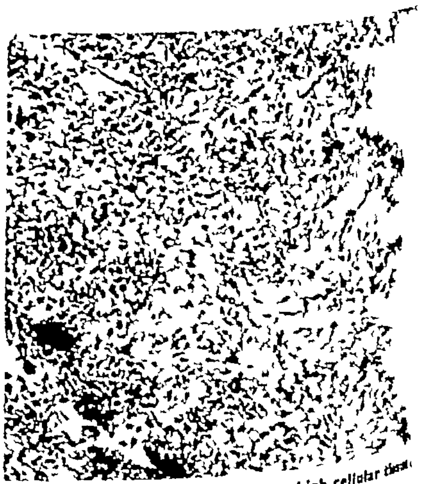

Fig 1—Fibrous dysplasia showing high cellular many blood-vessels.

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showing areas of rarefaction and ridges in temporal bone and thin line of calcification marking upper limit of tumou

osa was found (fig 3)

of the hand ceased soon after the operation ness of the left arm also cleared up There has go in the facial paralysis and deafness The ven two years after the operation with no sign of the lesion.

THIRD CASE

l 18 was referred to me by Dr Armin. Since ie had noticed a swelling on the left side of his is had gradually but very slowly increased. 10 the mass ceased to grow but at 13–14 it tting larger and at the same time his left ft mandible gradually became more prominent s 16 the mass stopped growing and had not e The boy said that the mass on the forehead ft but had become hard He said he also had n the left side of his chest There was no history isual disturbance or sexual precocity

bony masses on the left side of the face affecting naxilla, and mandible (fig 4) the right side being normal The swellings were uniformly hard and not tender There was moderate left exophthalmos. External ocular movements were normal No abnormality was found in the central nervous system. A mass as big as a golf ball was growing from the sixth rib on the left side.

showing two distinct histological areas: (1) many ounding fairly large blood-vessels; and (2) bone and

Radiography of the affected bones showed calcified masses varying in density in different areas There were no cysts.

Histology

In 1948 during an active phase of the lesion a piece removed for biopsy showed osteitis fibrosa

Discussion

Fibrous dysplasia of bone is one of many conditions which were in the past diagnosed as osteitis fibrosa Thanks to the work of Albright et al (1937) Lichtenstein and Jaffe (1942) and others it can now be regarded as an independent clinical entity

Fibrous dysplasia is a disease of early life and its course is often arrested at the completion of skeletal growth but occasionally a quiescent growth may show signs of activity after some years (case 3)

Albright et al (1937) suggest that either a neurological disturbance or an embryological defect is responsible Unilateral lesions in the polyostotic type (case 3) support a neurological basis.

Trauma humoral disturbance and neurofibromatosis have been suggested as the cause by different workers but so far no convincing hypothesis explains this interesting condition

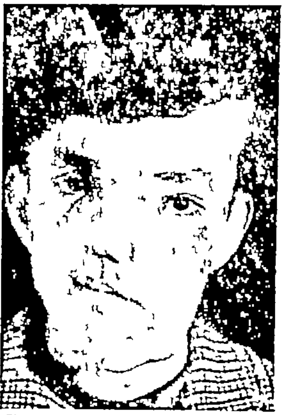

Fig 4—Case 3 showing unilateral lesions.

Pathology

The tumour appears as a yellow or greyish white mass It is usually firm and occasionally has areas of cystic degeneration containing yellow or brownish fluid Separating the tumour from the dura, flakes of bone are often seen which are probably the remnants of the original bone expanded by the growth of the tumour In the monostotic variety the bone which is the site of the lesion may not show any change externally except a slight smooth bulge (cases 1 and 2); but in the polyostotic variety gross disfigurement may result (case 3) Internally the bone is eroded with irregular depressions and cavities

Histologically the mass is composed of fibrous connective tissue (fig 4) which is either cellular or densely collagenous Throughout the mass trabeculæ of immature bone or rarely cartilage are seen This new bone is most abundant at the periphery of the mass The transition from the lesion to the normal skeletal tissue is abrupt Multiple small cysts are occasionally seen in the tumour mass The lesion is moderately vascular

Clinical Aspects

The polyostotic variety of fibrous dysplasia has been fully described by Albright et al (1937), Warrick (1949), and others Lichtenstein and Jaffe (1942) collected published reports of 90 cases, only 20 of these, all in females, showed signs of precocious puberty In 15 cases only one bone was affected Schlumberger (1946) collected 67 published cases of the monostotic variety, in 14 of them bones of the skull were the site of the lesion calvarium 5, maxilla 7, and mandible 2 Of the bones of the calvarium the frontal, parietal, temporal, and occipital bones have all been involved The maxilla is most often involved Falconer et al (1942) suggested that some cases reported as leontiasis ossea are really examples of fibrous dysplasia (as in case 3)

The patients, usually adolescent, present with either signs of a slowly growing intracranial lesion or a mass growing externally from the bones of the skull For this reason fibrous dysplasia of skull is often mistaken for a meningioma Other symptoms and signs depend on the site of the lesion in case 1 unilateral exophthalmos and blindness were the leading manifestations of the condition, in case 2 facial paralysis, deafness, and unilateral parkinsonism on the opposite side, and in case 3 unilateral facial disfigurement

Ocular lesions have been reported by many workers Davidoff (1951) found proptosis in 3 of his 5 patients with fibrous dysplasia The tremor of the hand in case 2 is an unusual manifestation of an intracranial space occupying lesion Loss of hearing and facial pain were noted by Davidoff in 1 of his cases

Radiology

The radiological appearances depend on the site of the lesion In cases 1 and 2 shell-like calcification round the tumour mass was most striking, and in case 3 irregular destruction of bone and new bone formation in adjacent areas can be seen throughout the affected areas

Radiologically the most important points can be summarised as irregular destruction of bone in some areas and calcification in others, thinning and expansion of the bone in some affected bones, and shell-like calcifications marking the limit of the tumour mass

Differential Diagnosis

Monostotic fibrous dysplasia of the skull is often mistaken for a meningioma Clinically the most important point is the patient's age, meningiomata, unlike fibrous dysplasia of the skull, are rarely seen before puberty Angiography is very helpful in differential diagnosis between these two lesions In meningioma vascularity of the tumour is striking, whereas fibrous dysplasia shows an avascular area At operation the site of the tumour, which is always extradural, clarifies the situation

In countries where hydatid disease is common, the linear calcification suggests hydatid cyst of the brain The Casoni test and Weinberg reaction are not always conclusive In cerebral hydatid cyst once the symptoms appear they progress very rapidly, but in fibrous dysplasia the tumour always grows very slowly

Treatment

It is always advisable to operate if there is any interference with functions of the central nervous system

Although it is often impossible to remove all the tumour tissues, in the monostotic variety operation may bring about permanent relief, because the lesion ceases to grow at puberty

There is no known treatment for the polyostotic variety or for the endocrine dysfunction if present

Summary

Three cases of fibrous dysplasia affecting the bones of the skull are reported Two were monostotic with signs and symptoms of an intracranial space-occupying lesion

In one case the mass was removed It
the lesions were examined histologically

My thanks are due to Dr L M Davidoff f
my attention to this condition and for med
tion, and Dr Armin and Dr Rahman
examinations

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ORAL IRON COMPOUN

A THERAPEUTIC COMPARI

D J O'Sullivan
M B N U I, M R C P
REGISTRAR

P G Higgins
M B Lond
SENIOR HOUSE-OFFICER

John F Wilkinson
M D , M Sc , Ph D Manc, F R C P, I
CONSULTANT PHYSICIAN AND DIR

DEPARTMENT OF HÆMATOLOGY, MANCH
INFIRMARY

Since Blaud showed, in 1832, that his
iron, in adequate dosage was an effec
chlorosis in young women, many other p
been tried in the treatment of hypoch
In general it has been thought that the b
are those containing iron in the divalent
but ferric preparations such as ferri c
have had their advocates Again some
insisted on high dosage of iron, while ot
satisfied with much smaller amounts

In the past few years organic iron prepa
salts of organic acids and chelate ir
introduced and strongly recommended
ment of iron deficiency anæmias, and it se
that their advantages should be tested b
parison of their effects with those of the
salts For the purposes of such a test
to make use of our previous records but
series of comparable cases

A review of medical and commercial
clear that certain criteria and limitation
for any fair assessment Many doctor
have been made about the relative value
preparations, usually after trials in mildly
anæmic pregnant women, but their
much diminished by the fact that many
improve spontaneously and rapidly at
The severe hypochromic microcytic a
would give more impressive results h
used in previous studies In our own tr
following criteria

(1) A hypochromic microcytic anæ
with hæmoglobin values less than 60% (
mean corpuscular hæmoglobin concentratio
than 30%, and the hæmatogram and marr
with a diagnosis of iron deficiency

(2) Freedom from complications such as
and other conditions which may interfere wi

(3) All iron preparations used were g
standard dose in terms of milligrammes of

(4) Comparable groups of patients as r
and hæmoglobin level were taken, anæ
being excluded

(5) The duration of therapy was fixed
defined limits (see below)

TRIBUTION OF CASES ACCORDING TO INITIAL LEVEL AND OCCURRENCE OF KNOWN BLOOD LOSS

erric droxide	Ferrous gluconate	Ferrous succinate	Ferrous sulphate
+ (1)	1 + (1)	1 + (1)	1 + (1)
+ (1)	2 + (1)	2 + (1)	2 + (1)
+ (1)	4 + (1)	4 + (1)	4 + (1)
+ (1)	5 + (1)	5 + (1)	5 + (1)
+ (1)	3 + (1)	3 + (1)	3 + (1)
) = 20	15 + (5) = 20	15 + (5) = 0	15 + (5) = 20

vith known blood loss outside parentheses.
vithout known blood loss in parentheses
= 14 8 g per 100 ml

Methods of Study

unds were compared—two inorganic :e and ferric hydroxide) and two organic te and ferrous gluconate) The compounds ted that each patient received 210 mg . daily in three divided doses of 70 mg form taken after meals No ascorbic vitamin supplements were given there . evidence of vitamin deficiency in any died

nts with hypochromic anæmia who res d iron without severe side effects (see died Of these sixty were known to have l while in twenty no such loss had been most of the sixty *the loss was menstrual*, ounting to moderate menorrhagia In was due to slight bleeding from a hiatus another to slight but long standing bleed rrhoids The cases of apparently equal) distributed equally between the four with the iron compounds but it was it assessment of blood loss could at best timate. The patients were divided into ups—those with blood loss and those thout it—and these were subdivided e initial hæmoglobin level (table I)

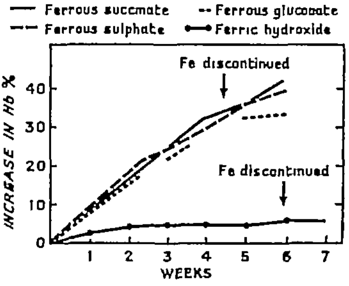
atients gastric acidity was investigated astric analysis or by using the quininium way and Meikle 1953) Although many or that anacidity has little or no effect ion of iron in therapeutic doses (Fowler 7) and that the addition of hydrochloric eutic doses does not affect absorption, loric acid was given to all achlorhydric o minimise any possible differences

atient the hæmoglobin red-cell count and M C H C were estimated and the el was determined by the thiocyanate lstrup 1948) The patient was given the on compound and seen at intervals of r a fortnight, the hæmoglobin and number eing estimated at each visit The test s continued for 42 days unless the hæmo- d to more than 90% (13 3 g per 100 ml) week after therapy had been discontinued in, red cells, colour index, M C H C and l were estimated again Every precaution see that the patients took their tablets hat no tonics or other medicines that might ere taken 7 patients did not respond to d iron preparations under trial these are r but have been omitted from the com s Any patient who did not respond to one ut subsequently responded to another is included

Results

› in hæmoglobin is shown as a graph (see ch the average weekly increase from the obtained in all the patients on each treatment is plotted against the number of weeks during which the treatment was given and in table II which shows the average daily increase in hæmoglobin calculated from the first day of treatment to the day of the maximum increase

The graph method is probably the more accurate and informative method of assessing the therapeutic value of a compound because the influence of the duration of treatment on the result can be better appreciated but in the present investigation the average durations of treatment for each effective compound turned out to be so close together (33 days for ferrous gluconate 31 for ferrous succinate and 30 5 for ferrous sulphate) that for purposes of simplicity an average period of 31 5 days is given on the graph As can be seen from the graph, the curves of ferrous succinate and ferrous sulphate run very close together, the former achieving a maximal increase of 40% (5 9 g per 100 ml) hæmoglobin in 42 days whereas ferrous sulphate brought about an increase of 37 5% (5 5 g per 100 ml) in the same time With ferrous gluconate the curve was only a little less satisfactory the average weekly increase being always a little less than that achieved with the other two compounds and the maximum increase being 31 15% (4 56 g per 100 ml) in 42 days Table II shows that here a comparable result is obtained—the daily increase



Weekly increases in Hb during treatment with four oral iron compounds.

in hæmoglobin with ferrous succinate being 1 25% with ferrous sulphate 1 22% and with ferrous gluconate 1 12% All three compounds in this dosage may be regarded as effective in that they will bring about an increase in hæmoglobin of more than 1% per day The graph (see figure) shows that at no time was the average total increase in hæmoglobin greater than 4% when ferric hydroxide was used in this dosage though it was continued for 42 days in all cases. The table shows that the mean daily hæmoglobin increase was only 0 12%

The coefficients of utilisation (based on the fact that 25 mg of elemental iron absorbed represents an

TABLE II—AVERAGE RESULTS WITH DIFFERENT IRON COMPOUNDS

Iron compound	Average duration of treatment (days)	Mean daily rise of Hb %	Utilisation coefficient	Mean initial M C H C	Mean final M C H C	Mean rise in M C H C	Mean initial serum Fe	Mean final serum Fe	rise in serum Fe
Ferric hydroxide	42·0	0 12	1 23	[illegible] 05	26 3	0 23	51 3	5[illegible] 2	1 17
Ferrous gluconate	33 0	1 12	11 36	26 87	30 1	3 [illegible]	43·8	73 3	67 [illegible]
Ferrous sulphate	30 5	1 2	11 40	27·0	30 53	3 34	48 0	5[illegible] 0	[illegible]0 0
Ferrous succinate	31·0	1 25	15 38	26 5	30 8	4 4	47	69 0	44 05

increase of 1% in hæmoglobin) were 15 38 for ferrous succinate, 14 40 for ferrous sulphate, 11 36 for ferrous gluconate, and 1 23 for ferric hydroxide (table II), the figures naturally corresponding to the increases in hæmoglobin shown in the graph The mean increases in M C H C of 4 4 for ferrous succinate, 3 5 for ferrous sulphate, 3 27 for ferrous gluconate, and 0 25 for ferric hydroxide also correspond to the figures obtained from the increase in hæmoglobin, and it is only when the serum iron levels are studied that a difference in the "order of merit" is seen Here it will be noted that the percentage rise in serum iron level was highest (67 35%) with ferrous gluconate, the figures for ferrous sulphate, ferrous succinate and ferric hydroxide being 50%, 44 6% and 1 17% respectively We have found, however, that both in this review and in a much larger series of patients not included here, the M C H C is a much more reliable (and much simpler) method of assessing both degree of iron deficiency and response to therapy than is the serum iron level

Patients Intolerant and Refractory to Oral Iron

Intolerance of one or other compound was observed in five patients, but in none was the patient intolerant of all three effective compounds Thus three patients out of twenty-three (13%) were intolerant of ferrous sulphate but each of these tolerated ferrous gluconate well One patient out of twenty-five (4%) was intolerant of ferrous gluconate but tolerated ferrous succinate similarly one patient out of twenty-five (4%) was intolerant of ferrous succinate but tolerated ferrous gluconate No patient was intolerant of ferric hydroxide in the dosage used In all cases intolerance took the form of nausea and vomiting, in no case was diarrhœa or constipation of sufficient severity to warrant withdrawing therapy Of eighty nine cases originally included seven (8%) were completely refractory to oral iron In each of these seven patients every effort was made to exclude organic disease which might impair absorption or utilisation of iron, and they responded very well to intravenous iron In these seven patients refractory to ferrous succinate, ferrous gluconate, or ferrous sulphate the other compounds were tried, and in no case did the patient respond to one compound and not to another

Discussion

At first sight the most striking feature about the results is the almost complete lack of response to ferric hydroxide When it is remembered however, that the normal therapeutic dose of this preparation contains 1200–2400 mg of elemental iron per day, whereas we were using only 210 mg of iron, the lack of response to such comparatively small doses is not surprising

Tables I and II and the figure show that there is little difference in the effectiveness of the three compounds which proved satisfactory—i e , ferrous succinate, ferrous sulphate, and ferrous gluconate Whatever slight differences there are favour ferrous succinate and ferrous sulphate rather than ferrous gluconate The result is surprising in view of Haler's (1952) paper and the vast amount of trade literature that has accumulated on the subject but shows how different may be the results in different therapeutic comparisons of the same substance, depending on the methods employed Haler used a somewhat similar dose of ferrous sulphate and a much smaller dose of ferrous gluconate, with the result that the utilisation coefficient of the latter tended to gain Also the ferrous gluconate preparation used by Haler contained, among other supplements, ascorbic acid, which increases appreciably the absorption of iron (Moore 1956), whereas in the sulphate group vitamin supplements were given only " where vitamin deficiency [illegible] likely "

Much of the commercial literature, wh notable differences between the organic iro and ferrous sulphate, bases these cla convincing statistics In one series repor daily increase in hæmoglobin of 1 43 for ferrous succinate, and 0·85% for fe the utilisation coefficients being 41·06 an tively Closer analysis of the figures that in the case of ferrous succinate 105 iron was given daily for 24 days (a tot whereas in the case of ferrous sulphate 1 able iron was given daily for 42 days (a to The basic unsoundness of comparing dosages given for such different lengths apparent, and the uselessness of comp obtained is evident

Gatenby and Lillie (1955) compare the two series of pregnant women—one seri sulphate, and the other ferrous gluco that the response in those who tolerate t is not appreciably different Here again, th mistake is made of saying that the dosa whereas in fact what is meant is that t tablets taken is the same

Gillhespy (1955), who investigated the treatment of hypochromic anæmias with in doses of 105 mg of elemental iron d average hæmoglobin increase of 12 figure closely approximating to the resul investigation It seems probable that ferrous gluconate and ferrous succinate almost equally effective, but there is (Reznikoff 1940) that the same arg be used for ferrous sulphate (We hav investigation, attempted using smaller d sulphate)

Since there seems to be little differen ness between the organic iron compoun sulphate, it remains to be considered wh there are in using the newer organic pr is unlikely that they will be effective in refractory to ferrous sulphate, but it may be in the diminished incidence of intolerance which attends their use Th is not large, we have found from wider t the figure of 13% is a fair one in asses of cases intolerant to ferrous sulphate i used The figure is considerably lower th recent assessments suggest

Gatenby and Lillie (1955) found that only women could tolerate ferrous sulphate wi Theobald (1952) also noted a high incidence ferrous sulphate in pregnancy hypochrom (1953) stated that ferrous sulphate is tole relatively small proportion of the patients prescribed and other workers estimate th intolerant cases at about a third (*Lancet* 195

It should be remembered in the first ph ance of oral iron is much more comm than at any other time, and that most o used very much larger doses of ferro we do, and there is little doubt that of intolerance varies directly with the respect, since ferrous sulphate in dose elemental iron daily brings about a hæmatological response, with only a of patients showing intolerance, and failed to show that patients who do no dosage will respond to any other oral iron, we feel that there is much to be the routine use of ferrous sulphate the dosage we used—i e , 210 mg of the daily, corresponding roughly to 0 6 g daily

of larger doses of ferrous sulphate—e g
f ferrous sulphate or 720 mg of elemental
as recommended by Whitby and Britton
s from the time when iron by mouth was the
l means apart from transfusion of treating
anæmia However since the introduction
Slack and Wilkinson 1950) of a stable
ly non toxic intravenous preparation and
bsequent development of a reliable intra
eparation of iron the treatment of cases
oral iron has few difficulties either in hos
neral practice It seems that smaller doses
phate with a smaller incidence of intolerant
uld be effective The relatively small pro
atients who are intolerant to these smaller
then be tried on one or other of the organic
tions and if they are still intolerant of
ral therapy should be substituted
he lower incidence of intolerance in patients
o organic iron preparations is an advantage
he variations in cost and the greater expense
hese preparations make their routine pre
resent a matter for thought It is therefore
consider this aspect of cost
pharmacist Mr J B Lloyd has kindly
r us the approximate cost of these prepara
rescribed on E C 10 at the current rates
ures given above the treatment of patients
ciency hypochromic anæmia with 210 mg
iron daily for 30 days costs with ferrous
d with ferrous gluconate 7*s* 6*d* and with
ate 11*s* 6*d* Since there is practically no
the efficacy of these three preparations
alent dosage, it is clear that some further
in cost will be necessary to justify the
o latter preparations except in very few
little doubt that because of their relatively
properties however they do represent
in the therapeutics of hypochromic anæmia

Summary

e trial was made of four commonly used
rations—ferric hydroxide ferrous sulphate
ate and ferrous gluconate—in doses of
mental iron given daily to eighty patients
le in the small daily dose given was unsatis
the three other preparations produced
nd satisfactory hæmatological responses
factory to one oral preparation were
ll but responded to parenteral iron
was observed after ferrous sulphate in
r ferrous succinate and gluconate in 4%

hate is effective in smaller doses (210 mg
in general use at present
costs of treating hypochromic anæmias
rous salts in equivalent dosage are com
sulphate is much cheaper than the others
cacious. It maintains its position as a
rapeutic agent

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RUPTURE OF THE STOMACH COMPLICATING GASTRIC HÆMORRHAGE

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M.B Brist F R C.S
SURGICAL REGISTRAR

W B Hennessy
M B Sydney M.R C P
HOUSE PHYSICIAN

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A CONSIDERABLE number of cases of spontaneous rupture of the stomach has been reported Majone (1948) collected 64 cases, but none of these was associated with intragastric hæmorrhage In most recorded cases the rupture has been due to gross gaseous distension often though not always following an excessive meal (Hillemand et al 1947 Leger and Maës 1947, Chipail et al. 1949, Ladkin and Davies 1948)

In none of the cases reported has any local lesion been found which would account for the actual tear or slit in the stomach wall but in some there was associated disease elsewhere in the stomach or duodenum

Rejthar (1952) reported spontaneous rupture of the stomach in a woman of 67 who survived She had pyloric stenosis due to a chronic gastric ulcer and had had persistent almost unproductive vomiting for two days At operation there was a 1 inch slit near the cardia fairly close to the lesser curvature

Greene and Gose (1953) reported perforation of the stomach in a 13-day-old male infant who had associated atresia of the duodenum.

So far as we are aware, rupture of the stomach complicating gastric hæmorrhage has not hitherto been described

Case records

Case 1—Mrs. A, aged 66 was admitted to hospital on Dec 8 1954 with a history of anorexia, occasional vomiting and loss of weight for a year and of pain in the back for a month For three weeks she had been in bed because of extreme weakness and for three days she had had melæna. Apart from pallor there were no abnormal physical signs and her hæmoglobin was 6·9 g per 100 ml (17%)

After blood transfusion (3 pints) she continued to pass tarry stools. On Dec 14 transfusion was resumed and laparotomy with probable gastrectomy was decided upon. When the patient was being moved to the theatre she suddenly collapsed and had a considerable hæmatemesis—her first Operation was postponed and transfusion continued At this time she complained of mild abdominal pain and gradually increasing abdominal distension was noted

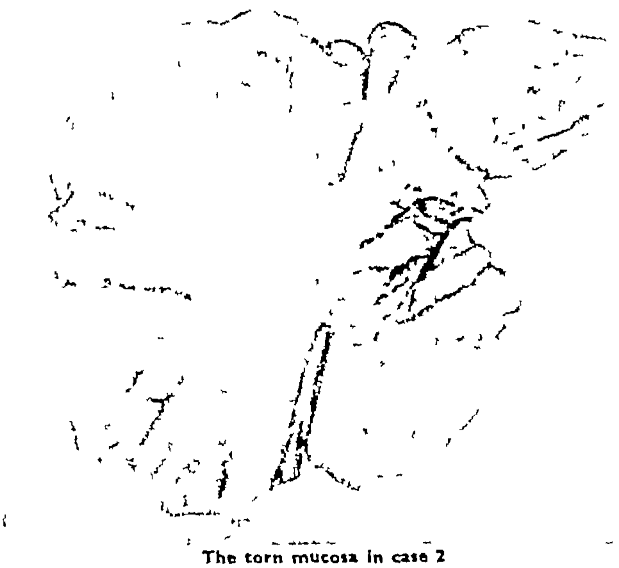
When a total of 7 pints of blood had been given *laparotomy* was undertaken. Under a bilateral intercostal and splanchnic block the abdomen was opened through an upper midline incision The peritoneal cavity contained much liquid and clotted blood (some dark some bright red) Exploration showed a large rent in the anterior wall of the stomach, through which a very large posterior gastric ulcer could be felt Despite continued transfusion the patient s general state did not permit any further surgical procedure and the abdomen was closed. She died shortly after return to the ward.

At necropsy thirty-six hours after death the rent in the stomach was found to be quite separate from the ulcer It measured $1\frac{1}{2} \times 2\frac{1}{2}$ in. and was situated in the anterior wall a little to the left of the incisura and rather nearer the greater than the lesser curvature There was a very large simple posterior gastric ulcer measuring $1 \times 1\frac{1}{2}$ in. its base being formed by the body of the pancreas with erosion of the splenic artery

Case 2—Mrs. B a widow aged 74 was admitted to hospital on Dec. 19 1954 following a small hæmatemesis and the passage of several tarry stools in the preceding twenty four hours A gastric ulcer had been treated medically ten years previously and she had since had slight bouts of epigastric discomfort at long intervals For three weeks before admission she had suffered from persistent epigastric pain

She was rather frail and moderately pale Her blood pressure was 130/75 mm Hg and her hæmoglobin 9 1 g per 100 ml (61%)

Early on Dec 20 her condition suddenly deteriorated, and over the next twelve hours she was given 3 pints of blood There was temporary improvement, but on Dec 21 she again collapsed the blood pressure being unrecordable In the next four hours she received 5 pints of blood but her condition never improved enough to allow laparotomy Her abdomen gradually became very distended and she began violent retching in an effort to empty her stomach At 3 35 P M on Dec 21 she vomited 2 oz of bright red blood, and at 4 0 P M she had a sudden massive hæmatemesis and died



The torn mucosa in case 2

Necropsy was carried out eighteen hours after death The stomach was grossly distended by red blood clot There were three shallow non indurated oval ulcers near the lesser curve, one of which showed a prominent bleeding point in the base A series of tears was noted in the mucosa of the cardia, roughly parallel and converging on the œsophagus (see figure)

Comment

In many of the cases in the literature, the rupture was a linear split, close to the cardia, and commonly this has been associated with several further tears in the adjacent mucosa, resembling those seen in case 2

In both the cases we have described there was massive gastric hæmorrhage, and at necropsy large quantities of blood clot were still present in the stomach As both patients had vomited repeatedly, it seems probable that the gastric rupture (case 1) and mucosal splitting (case 2) were induced by violent muscle contraction endeavouring to expel this clot Possibly, indeed, this complication is attributable in part to liberal blood transfusion, since without rapid replacement of blood a patient would hardly survive loss of a quantity of blood sufficient to precipitate rupture of the stomach

The risk of rupture is increased by gastric distension, and in cases of hæmatemesis where massive transfusion is undertaken, a special watch should be kept for clinical evidence of such distension, which, if it develops, must be regarded as a further urgent indication for surgical intervention

Our thanks are due to Dr N F Coghill Dr R P K Coe, and Mr W J Ferguson for permission to publish these cases, and to Dr A. C Counsell for his help in elucidating the pathology

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UNILATERAL DIGITAL-ART THROMBOSIS

AN INDUSTRIAL ACCIDENT

STEWART H HARRISON
F R C S E, L D S

CONSULTANT PLASTIC SURGEON, MOUNT VER PLASTIC SURGERY AND THE WINDSOR GROU

THROMBOSIS of a digital artery from incurred by occupation, is either very rar unrecognised, for I have found no speci record It is an industrial accident, and medicolegal implications I should be inte of other cases

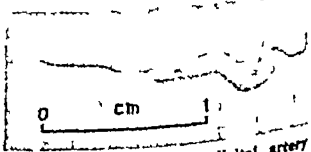
A man aged 53 was given the job of bin material half an inch wide This material by hand and drawn taut during the proces in this procedure the patient used the radial ring finger as the maximum pressure point 11 days, working 9 hours a day, there symptoms, but on the 12th day he had finger radiating proximally, and noticed the had become white with loss of sensation were precipitated by cold and minor trauma necessary for him to discontinue working initial symptoms he noticed a small lump on was tender on pressure

He was referred to the hand clinic at the Centre in Slough A small nodule was pal skin on the radial side of the left ring finger the neurovascular bundle and opposite the phalangeal joint Pressure on this nodule radiated proximally Sensation was normal no colour changes in the finger There was local injury and the hand appeared otherwis diagnosis of glomus tumour was made.

A month after his first symptoms, the surface of the finger was turned back as a digital artery was exposed It was found trophied lumen over a distance of 1 5 cm in the centre segment (see figure) The excised and it was observed that the digital After this operation his symptoms disappeared

That a digital artery subjected to period, will thrombose is interesting, thrombosis will give rise to radiating spasm of the opposite artery, sufficient Raynaud's type of syndrome, induces sp nerve supply of digital arteries and the linkage in the finger

The hypertrophied lumen of the artery of intermittent trauma preceding the and this might cause spasm and tem from cold, proceeding to complete occlu with a thrombus due to intimal damage strongly suggest neurovascular dysfunctio or proximal origin The presence in the tumour which was painful on pressure tion of the symptoms to one finger, cause arising proximally, such as Rayn vascular occlusion Of the local causes, tumour and partial division of a dig give rise to these symptoms, but there of local injury to suggest that the nerve damaged At no time, before operation artery regarded as the only structure these symptoms



The portion of the digital artery remov central thrombus

Summary

gital artery thrombosis is described, caused
ional trauma This is a painful condition
d the patient from earning his living
o affected segment of the artery effected a
as able to return to full work

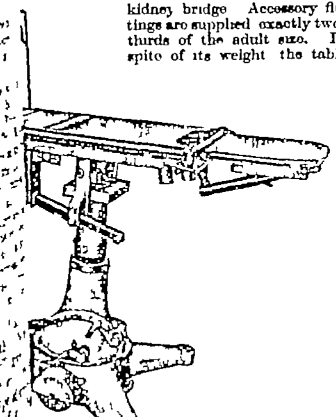
are due to Dr A. Austin Eagger medical
Industrial Health Service Slough, for referring
to Mr P J Fisk of the Canadian Red Cross
ital photographic department for the photo-

New Inventions

ILD-SIZE OPERATING TABLE

ospitals in this country an adult-size
is used for operations upon children
satisfactory for children over 10 years of
r the younger ones It is more especially
n adult-size table which makes extensive
small infants a back breaking task.

F Thackray of Leeds have made to my
hild size table The base is of the usual size
can be adjusted from 34 to 44 inches The
ches and the length 4 ft this can be further
ving the head and foot flaps both 1 ft. long
ed with a lateral tilt movement and built-in
kidney bridge Accessory fit
tings are supplied exactly two
thirds of the adult size. In
spite of its weight the table



ily to make room for the adult size table
hildren

w years I have used these tables both
Children s Hospital and at the Royal
en s Hospital and have found that they
on small children much less tiring for
his assistant. The restricted field of
s directly under control, and operating
n is facilitated The table is particularly
fants ; but children up to about 6 years
ted upon without difficulty ; for work
position children up to 10 or 12 are
ated It is very convenient for plastic
es, such as operations for hare-lip or
satisfactory for all types of endoscopic
well as thoracic and urological surgery
cted beautifully finished and easy to
t has stood up well to very heavy use

P P RICKHAM

s Hospital
12

M.S. Lond F.R C.S., D C H.
Pædiatric Surgeon

Reviews of Books

Man's Mastery of Malaria

PAUL F RUSSELL, M.D M.P.H division of medicine and public health Rockefeller Foundation London: Oxford University Press. 1955 Pp 308 25s

THE Heath Clark bequest of the University of London has secured many distinguished lecturers and Dr Russell s contribution in 1953 was a notable one Its subject is very much his own his experience of malaria dates back many years, through his early and pioneer work of control by house-spray with the pyrethrum preparations in India, to his later advisory work which has taken him to most parts of the world where the disease prevails. The book is necessarily historical, its five sections dealing with the discoveries which have led to our understanding of the ætiology of malaria, its treatment and prophylaxis, some of its international aspects, and malaria and society especially in relation to population pressure and malaria control It is, of course a stimulating story and though it has been told before it has never been told quite so well. The range of the author's research into the history of the subject matches the range of his practical experience both have been easily assimilated by his capacious mind and clothed in language which invites the reader He ends on a robust note. It is too early as yet to assess fully the prospects of malaria control, but the indications are that it can be achieved ; and Russell s view is that nothing should be allowed to stand in the way—certainly not vague fears of an increase in population pressure

Medical Care for Tomorrow

MICHAEL M DAVIS PH D New York : Harper London Hamish Hamilton 1955 Pp 497 52s

SOME indication of the changes wrought by post-war legislation in this country is given by this book for in Britain many of the matters discussed in it would come under the heading of medical care for yesterday The dust-cover describes it as a definitive statement of the present status and future prospects of public and private medical services for the American people and Dr Davis, formerly a hospital administrator approaches his subject from the point of view of those who receive and pay for medical care—i e , the public His chapter on the American Medical Association helps to explain why he has made no attempt to define or use the term socialised medicine " ; for the arts of controversy have driven into this term invidious political connotations which cannot at present be removed by intellectual processes. '

The first of the four parts of the book deals with the elements of medical services and especially with need demand and quality of service Some remarkable facts emerge : thus, a little over a third of the 101 000 active doctors in the United States in 1949 (i.e before Korea) were working full time for various organisations ; and 40% of all the active medical graduates in the New York City area are said to be on full time salary It is also made clear that America s health business is big business, for more than 2·5% of the total labour force makes its living within this field He notes that the active assistance given by national nursing organisations to the efforts of Negro nurses to establish themselves professionally has had no parallel in medicine "

Part II discusses the evolution of organisations beginning with the A.M.A. and continuing with hospitals group practice and public health services. The public-health movement Dr Davis says, has missed a major opportunity during the past twenty years in failing to cultivate the understanding and coöperation of organised labour especially in industrial hygiene While it is pleasant to see the history of public responsibility for medical care in the United States traced back to Colonial times—indeed to the Elizabethan statute of 1601—it is nevertheless surprising to learn that samples of Elizabethan concepts can still be found rendering tax supported medical care casual and emergent This part of the book brings out well the problem created by medical care for veterans, who constitute an eighth of the people (or a quarter if dependants are included) The statement that the Veterans Administration has the largest hospital system under one management in the world might however be challenged by our own—though the answer will depend on what one means by management

Part III is concerned with "evolution in economics," including health insurance, Blue Cross and Blue Shield, State medical society bureaux, and industrial plans, such as those of the steel and mine workers Special mention is also made of the Health Insurance Plan of Greater New York, and of student health services During the past twenty five years more than half the U S population has come within some form of health insurance, and over 87 million people have some hospital insurance The spectacular growth of voluntary health insurance has been a long step in changing the habits of the people from fee per service payments for medical care to group payment A chapter on legislation and politics, 1911–52, discusses in detail the changing reactions of the medical profession, and others closely interested, to the trend towards State and national organisation of medical care Dr Davis was himself in the forefront of this battle His description of the campaign methods of the A M A is startling, but he believes that the massive efforts used to kill "socialised medicine" may in the end focus the attention of the American people on the need for medical care services

In part IV he analyses the effects of the main currents of opinion over the past fifty years After condemning fee-for-service as undesirable, he discusses State medicine and concludes that this possibility need not be taken seriously into consideration the way of national health insurance, proceeding by stages, is a more favourable path of progress

This is a well-written book with a refreshing economy of words For those interested in the American scene in general, and the organisation of medical care in particular, it comes into the category of necessary reading

Biology of Bile Pigments

A Review of Chemistry and a Discussion of Analytical Methods TORBEN K WITH, M D, specialist in internal medicine and clinical chemistry, Rigshospitalet, Copenhagen Denmark Copenhagen Arne Frost Hansen 1954 Pp 523 Kr 50

THIS exhaustive monograph on the bile pigments reviews published work on their chemical structure, methods for their determination, and their occurrence and importance in a number of animal species, including man Much of the book deals with alterations in bile-pigment levels in body-fluids in diseases of the liver and of other systems of the body While it is not recommended for general medical readers, the amount of information and the large number of references make it exceedingly useful as a reference work for chemical pathologists

The English is very good and there are only a few instances of unusual phrasing But the book is peculiarly assembled, being bound in thin cardboard and apparently cyclostyled, sometimes indistinctly on one side of foolscap size sheets of poor quality paper As might be expected with such a format, the diagrams do not come out well

Fluoroscopy in Diagnostic Roentgenology

OTTO DEUTSCHBERGER, M D, assistant clinical professor of radiology, New York Medical College Philadelphia and London W B Saunders 1955 Pp 771 154s

Dr Deutschberger has attempted to collect in one book all the essential knowledge about medical fluoroscopy Had he written solely for radiologists, the result could have been very valuable, but he has tried also to provide a handbook for clinicians practising fluoroscopy Parts of it are thus rather elementary and overloaded with information better set out in textbooks of radiology Though he clearly states that bone diseases are the province of radiography, he uses fluoroscopy extensively for conditions in which radiography is essential, without explaining what gain is to be expected In a work of this nature it seems a waste of 12 pages to describe the normal and abnormal fluoroscopic appearances of the cerebral ventricles this section will tell radiologists nothing that they should not know, but might encourage clinicians to use fluoroscopy without adequate film control Other sections suffer from the same defect, and help to make the book bulky The bibliography is extensive and often very valuable in quoting original sources, but it contains, for example no reference to the British work on flocculation of barium sulphate by freshly secreted mucus, or on the use of
morphine in the examination of the
stress is laid on the dangers of fluoros
an impression that the author's aim
himself or the patient—which seems
of dosage that should never be approac
stress is laid, on the other hand, on th
which may never be clinically detectab
or operator Mention of these weakn
however, obscure the fact that the aut
had great experience of fluoroscopy,
every reader will learn something from

Stratégie et tactique en chirurg d'urgence

CHARLES CLAVEL, chirurgien des
Paris Masson 1955 Pp 580 Fr

Professor Clavel has written the
attractive book in the form of a letter
to his pupil and "interne." He begins
tion that difficult tasks are nowadays
men—war supersonic flying, command
acute abdominal emergencies, and
charming touches, which could only com
pen, are to be found throughout An
the principles underlying the surgery
abdomen displays the traditional and
logic If the tone is somewhat did
offend, for it is obviously Professor Cla
approach his subject in a personal
all the results to which he refers are tak
cases The monograph abounds with
matic footnotes in heavy type appear
many pages to provide guiding princip
Some references are given, and almost
papers

Practical Medical Mycology

EDMUND L KEENEY, M D F.A.C.P.,
of the mycological laboratory, and
and dispensary physician (allergy)
Hospital, Baltimore Springfield
Thomas Oxford Blackwell
1955 Pp 145 32s 6d

THIS little book, by an author whose
to medical mycologists, is a model of
description In its small compass th
human mycoses is surveyed and no
is omitted In addition to diseases
infections, two chapters have been inc
fungus spores as allergens and on th
relation to toxicology The subject is
clinical viewpoint, with emphasis on sym
and treatment, which includes the mo
in the chemotherapy of the disease
epidemiology of the mycoses are dealt
and their pathology and mycology
affect diagnostic examinations A nor
graphic summary appended to each c
of drawings illustrating points of impo
geographical distribution of the disease
of lesions in the body, and the chief ite
diagnosis

The book, which is in the series of Am
Internal Medicine, should prove usef
general medicine as well as to practition

Lectures on the Scientific Basis of
London The Athlone Press, Univer
Pp 398 35s)—The rich basic medical
British universities have been tapped to
volume of lectures under the auspices of
graduate Medical Federation Technical
specialists are often of little interest to oth
these lectures, being much more fundam
criticism If the reader is an intelligent
biology he cannot fail to find ideas of in
on biochemical genetics (J B S Hal
(G R Cameron), hemispherectomy (
pituitary growth hormone (F G Youn
(G M Bull), and reactions to bacterial
to mention only a few topics in a stimulat
in the basic sciences. Every lecture
by an active investigator

THE LANCET

ON SATURDAY SEPT 3 1955

Bronchiectasis

irst account of bronchiectasis Laennec[1] ong his cases that of a 62 year old woman d repeated hæmoptyses and had coughed t sputum for almost fifty years But this exceptional and until recently it was elieved that the prognosis of bronchiectasis dically was extremely bad Thus Perry [2] found that almost half of a series of reated patients died within five years of of symptoms while Bradshaw et al[3] t the average duration of life after diagnosis n two years Such figures collected in the of bronchography with iodised oil when rosser cases were likely to be recognised belief that surgical resection should be in every case of bronchiectasis where it cally feasible not only for the relief of bility but also as insurance for the future improvements in surgical and anæsthetic better physiotherapy and the control of antibiotics have greatly reduced the risks n, and in 1947 Meade et al[4] reported patients submitted to lobectomy only 1 Perhaps the experience of Lindskog and is more representative in 165 resections ectomies the operative-mortality rate was the case fatality rate 2·9%

he low mortality and the brilliant results al cases, operation should not be under ly, for even in the best hands compli ust be reckoned with Lindskog and how that before the introduction of anti l at an earlier stage of surgical and anæs- nique) two thirds of their cases sustained operative complication The proportion een reduced by half and pneumonia ural fistula, empyema hæmorrhage, and tuberculosis arise much less often than On the other hand pulmonary collapse—probably the result of retained bronchial secretions—remains a formidable problem, and not infrequently leads to fresh bronchiectasis. Pulmonary collapse is liable to follow any type of lung resection, but its incidence is greatest after operations on the lower lobe when the apical segment is conserved in an effort to avoid removing excessive amounts of lung Pulmonary collapse follows this type of operation so often that some workers have abandoned it[6 7] But Hoffman[8] claims that the late results of such collapse are not as bad as might be expected, and that in some cases energetic and prolonged medical treatment will lead to ultimate re-expansion and the reversal of any bronchiectasis that may have developed. A good deal more experience will be needed to substantiate this claim

The rather high incidence of early postoperative complications would matter less if the late results were always good, but even the most enthusiastic reports, such as that of Lindskog and Hubbell, do not record great improvement in more than two thirds of those operated on A surgeon's estimate of his own results is liable to be unconsciously influenced not only by his own enthusiasm but also by the natural wish of many patients to gratify one who has made strenuous and dramatic efforts to relieve them When the results are assessed by a third party the picture is sometimes rather different Paterson[9] investigated the results of resection for bronchiectasis in a group of Canadian ex Servicemen, and found that only half of them were satisfied with the results of their operation. Of the remainder some were not relieved of all their symptoms, others had persistent chest pain or dyspnœa, and several were subject to recurrent attacks of bronchitis although their bronchograms were normal This last point is probably important The new interest in chronic bronchitis may lead to a clearer distinction between cases in which symptoms are due to localised bronchiectasis and cases in which disability is predominantly due to concomitant bronchitis There is no virtue in producing a normal bronchographic appearance if the patient continues to have cough sputum, and bronchospasm Chesterman[10] claims that repeated bronchoscopy is helpful in coming to a decision

A further problem whose importance is increasing as chest surgery becomes bolder and bilateral operations are more commonly undertaken is the consequent breathlessness It is significant that in a small series of patients with bilateral resections studied by Mannix et al[11] none was regarded as fit enough to have a final postoperative bronchogram Those who were relieved of cough or toxæmia paid the price in increased dyspnœa, due to the reduction in lung tissue and the pleural complications of lung resection and possibly also to overexpansion of the remaining lung

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T H A Treatise on the Diseases of the Chest d by J Forbes London, 1834, p 80
I A King D S, *Amer Rev Tuberc* 1940 41 531
H H Putney F J Clerf, L H *J Amer med* 116 2561
Jun Kay E B Hughes F A jun *J thorac Surg* 16
G E Hubbell D S *Surg Gynec Obstet* 1955

[6] Kergin, F G *J thorac Surg* 1950 19 257
[7] Mathey J Toussaint J *Acta chir belg* 1950 49 74
[8] Hoffman, E *Thorax* 1955 10 137
[9] Paterson, J F *Canad med Ass J* 1952 66 433
[10] Chesterman, J T, *Brit J Tuberc Dis Chest* 1955 49 174
[11] Mannix E P Gerbasi F O'Brien, C E Adler, R H McAlpine W A, Kerr H *J thorac Surg* 1953 26 140

Before the days of antibiotics most deaths in bronchiectasis were the result of infection Such deaths are now uncommon, and the few bronchiectatics who do not succumb to intercurrent illnesses die of pulmonary heart-disease, respiratory insufficiency, or asthma The effect of lung resection on the late incidence of such complications has not yet been assessed

At present surgery (preserving the equivalent of a whole lung) is probably the treatment of choice for those with reasonably localised disease, much cough and sputum, and repeated attacks of pneumonia or hæmoptysis The most suitable patients are older children and young adults it is usually unwise to operate on patients under 10 or over 40 years of age It is always difficult to select the right patients from those whose disease is either insufficient or too extensive to make operation worth while But patients for whom operation needs to be considered are in a minority Recent studies have shown that most of those with bronchiectasis are little disabled by their symptoms, and not uncommonly the anatomical change proves reversible Thus MORLE and ROBERTSON[12] showed that temporary bronchiectasis affected more than half of a series of 300 consecutive cases of benign aspiration pneumonia, but threatened to become permanent in only 5% Furthermore WYNN WILLIAMS[13] found that 20% of patients attending a Bedford chest clinic for bronchiectasis were symptom free, and the cases in this valuable study probably represent very fairly the general run of bronchiectasis as it is seen in the chest clinics of this country Almost all led a normal life at home and did a job or went to school Little deterioration was observed in the five years of the survey, and there were only 6 deaths—not all of which could be attributed to the disease Pneumonia was the commonest complication, but the response to chemotherapy was uniformly satisfactory and the only death from this cause was of a patient who did not receive penicillin

Evidence is accumulating that in the great majority of cases modern medical treatment, with its emphasis on postural drainage and the use of antibiotics, greatly limits the disability from this disease The cases most in need of surgery are usually the least likely to benefit from it, on account of the extent of the disease or poor general condition Despite the excellent results of many operations, there are good grounds for a conservative approach to the treatment of bronchiectasis

Hodgkin's Disease

FOR over fifty years the ætiology of Hodgkin's disease has been the subject of theorising The tuberculosis hypothesis has a long and respectable history, but now no one believes in it, though active tuberculosis and Hodgkin's disease can exist together JACKSON and PARKER[14] found co-existent active tuberculosis in 15–25% of their patients with Hodgkin's disease, but a survey at Boston City Hospital of post-mortem findings in 2000 cases of tuberculosis showed that Hodgkin's disease was found in only 0 3% From time to time the disease has been ascribed to other bacterial infections, but investigation has supported none of these claims In 1932–33 M H GORDON described his classical efforts to prove that Hodgkin's disease was a virus infection, but later work showed that the "specific" reactions on which he relied were, in fact non-specific The virus hypothesis was resuscitated in 1950 by LOFGREN and LUNDBACK,[15] who had isolated and cultured a virus from ground-up lymph glands but nothing more has transpired GENDEL et al.[16] who noted an apparent association between Hodgkin's disease and cryptococcosis or torulosis, suggested that the cause might be a fungus infection, and there have been other reports on these lines At present Hodgkin's disease is usually grouped with the reticuloses, and ROBB SMITH terms it "fibro-myeloid medullary reticulosis" The reticuloses are placed in the dim borderland between granuloma, which may be due to infection, and true neoplasm Hodgkin's disease itself has never been classified as a malignant disease, although rarely the disease terminates in a sarcoma-like stage—the so-called Hodgkin's sarcoma

THOMSON,[17] working at the Middlesex Hospital now suggests that Hodgkin's disease is a form of tumour of the thymus gland He points out that the developing thymus has a cervical portion which can give rise to ectopic thymus tissue in the neck The cells present include lymphocytes and eosinophil polymorphs The stages of differentiation of the Hassall's corpuscles are important The first stage is a rearrangement into clumps of medullary epithelial cells, which increase in size and become large mononuclear cells with a vesicular nucleus and a prominent nucleolus, the next stage is the "owl's eye" appearance and formation of a "mirror-image" type of giant cell, further development gives the fully formed multinucleate Hassall's corpuscle Thus the cells that are the main elements of Hodgkin's tissue—the mononuclear vesicular cells, the mirror-image giant-cells, the lymphocytes, and the eosinophils, are all present in the normal developing thymus Study of the lymphatic drainage of the thymus shows that lymph can pass upwards into the neck on both sides, and also into the chest wall and s area, and so downwards into the internal m chain and the liver, it can also drain into the tracheo-bronchial glands THOMSON divides cases of Hodgkin's disease into three groups, according to the histological changes in affected tissue In grade 1 there is a mass of lymphocytes in which a variable number of "mirror-image" or "owl's eye" giant-cells are buried, there may be a few eosinophils This grade corresponds to the "Hodgkin's paragranuloma" of JACKSON and PARKER[14] and to HARRISON's[18] "benign Hodgkin's disease" Grade 2 is the classical Hodgkin's disease with mononuclear vesicular cells, mirror-image giant cells, and Dorothy Reed cells in a fibrous stroma in which there are eosinophils, neutrophils, and lymphocytes Grade 3 corresponds to the frankly malignant stage—the Hodgkin's sarcoma—with actively proliferating mononuclear cells and aggregations of these forming giant-cells

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[12] Morle, K D F Robertson P W *Brit med J* 1953 1, 130

[13] Wynn Williams N *Ibid* p 1194

[14] on H , Parker, F Hodgkin's Disease and Allied Disorders ork, 1947

[15] Löfgren, S , Lundbäck, H *Acta med scand* 1950, 138, 71

[16] Gendel B R , Ende M Norman, S L *Amer J Med* 1 9 343

[17] Thomson A D *Brit J Cancer* 1955 9 37

[18] Harrison C V *J Path Bact* 1952, 64 513

uggests that the microscopic appearances
Hodgkin's disease are identical with those
pe of mixed thymoma described by
rt and Brown[19], but these workers did
tion to differences of detail between the
two diseases Grade 2 Hodgkin's disease
egards as ' a mixed tumour of the thymus
he pathological 'half way house' of the
nic tumour group ", it is a "neoplastic
corporating all the elements of thymic
d in a fibrous stroma of variable density,
nd cellularity ' This picture Thomson
bles that of the less differentiated type
tumour For clinical evidence Thomson
he records of 275 patients with Hodgkin's
n at the Middlesex Hospital. The patients
nce of a mass in the thymic region when
r within a year afterwards numbered 112,
olvement of the mediastinum at some stage
ase, but not a thymic mass, in only 43
no record of mediastinal lesions, and in
hese the chest was not examined radio
Further analysis showed that the first
n a thymic mass) was the youngest group,
ponderance of females, and had the best
The second group (with mediastinal
t) may have had thymic masses which
gone sclerosis, this change is known to
ymomas even without radiation.
Thomson's important hypothesis can be
onfirmatory evidence from fields other than
rbid anatomy will be needed The clinical
t 43% of his patients had thymic tumours
vincing, but Jackson and Parker do not
on the thymus gland in their index of organs
If we allow that others have listed thymic
nt along with mediastinal involvement, a
0% for combined thymic and mediastinal
surely very high, Jackson and Parker
n involvement in only some 40%—and
necropsy reports There is no evidence
thenia is unusually common in Hodgkin's

esponse to treatment, Hodgkin's disease
the reticuloses much more closely than the
tumours Hodgkin's disease and the retic
ike malignant disease[20]) respond favourably
n mustards[21] Wilkinson[22] has obtained
s of nitrogen mustards regression of
nopathy in 83% of 80 cases of Hodgkin's
and Windeyer agrees that chemotherapy
especially when the disease is generalised[23]
hemotherapeutic substance that has been
Hodgkin's disease is phenylbutazone
et al,[24] who used this drug in 35 cases,
that it was useful mainly in controlling
over, any action on the Hodgkin's masses
stant, but they illustrate shrinkage of a
al mass after nine months treatment
n's disease is known sometimes to undergo
us regression, and Johnston[25] reported
5 examples not long ago, but so also do some malignant tumours,[26] so Thomson's suggestion that Hodgkin's disease is truly malignant is not negatived on this ground We hope that he and his clinical colleagues will seek further evidence to support his hypothesis, and meanwhile physicians can help by having radiographs, including a lateral view, taken of the chest in all cases of Hodgkin's disease—even those with apparently localised tumours

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aupt L. Brown R. *Cancer* 1951 4 1103
y W D *New Engl J Med* 1955 252 40
et 1955 1 440
on J F *Proc R Soc Med* 1955 48 366
er B *Ibid* p 371
A Joffe A Hoffmann, G *Arch Intern Med* 1951
n A. W *Brit med J* 1954 ii 916

Annotations

SHIGELLA SYSTEMATICS

Intestinal bacteria now take up more of the time of the clinical bacteriologist than they have ever done and the question may well be asked ' Are intestinal infections commoner or are we more conscious of them ? It seems that the answer to both parts of this question is in the affirmative, but a not unrelated consideration is the enormous volume of work being done on these organisms Almost every issue of *Acta pathologica scandinavica* contains a description of new salmonella serotypes or has papers on the classification of some subgroup of the enteric bacteria, and consequently there is now less need for clinical pathologists to use vague terms such as paracolon bacillus or atypical coliform With more and more study there are fewer and smaller lacunæ in our knowledge of the intestinal pathogens

The shigella group has had particular interest for those working in semitropical areas and names such as Boyd Bensted Large and Sachs, to mention only a few of our own countrymen indicate how the Serviceman abroad has easily fallen a prey to dysentery All these men as officers of the Royal Army Medical Corps met dysentery in India and in the Middle East and each made a contribution to our knowledge of the dysentery bacilli, and particularly to their classification Work in more temperate climates has also produced advances but there is some divergence of view between the temperate climate worker and the Army pathologist To the pathologist a shigella is a bacterium capable of causing dysentery in man—and consequently Sonne's bacillus is regarded by him as a shigella To the systematist on the other hand a shigella is a bacterium with certain well-defined cultural and antigenic characters which should exclude Sonne's bacillus and this organism should not have been allowed to remain within the shigella group Similarly evidence from the bedside makes dysentery due to Shiga's bacillus stand out as a disease with a difference—a difference which the clinical bacteriologist would extend to the laboratory classification of the causative organism To the systematist however Shiga's bacillus is but one of many non mannitol fermenting shigellas, and he regards it merely as a serotype of one species, albeit a serotype of which many strains are potentially highly toxigenic This difference of viewpoint was evident in the report of the International Enterobacteriaceæ Subcommittee to its parent body[27] two members of which were unable to accept the recommendation of the majority of the Shigella Commission

Agreement on an international level is desirable because dysentery is a disease that respects neither persons nor boundaries The difficulties are not insuperable but they will hardly be overcome unless the holders of the opposing views are prepared to compromise. Knowledge increases rapidly and as more atypical representatives of the biochemical subgroups are found, the experts may suggest a drastic revision of the shigella group by which it would have only a single species, *Shigella dysenteriæ* divided into several serotypes There is no dispute as to facts, and any differences should not be seen out of perspective disagreement among the experts mainly centres on a problem of classification and the resultant nomenclature But experience has unfortunately shown that nomenclature engenders heat in even the coolest minds

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[26] Dunphy J E. *New Engl J Med* 1950 242 167
[27] *Int. Bull. Bact Nomencl. Taxon* 1954 4 47

CLASSIFICATION AND SITE OF LUNG CANCER

THE cell type of a bronchial carcinoma has an important bearing on its behaviour [1] Unfortunately many different classifications have been used, and even when different workers use the same classification it is by no means certain that they place similar tumours in the same category

Lung cancers are often divided into three groups—oat cell carcinoma, squamous cell carcinoma, and adenocarcinoma Oat cell tumours have small cells with scanty cytoplasm and round or oat shaped nuclei, but, whereas Kirklin et al [2] state that the cells are never arranged in an organoid pattern, Walter and Pryce [3] tell us that in almost half of their oat cell neoplasms there was rosette or tubule formation, the appearances sometimes resembling those of adenocarcinoma This feature had previously been noted by Barnard,[4 5] and Walter and Pryce suggest that the true nature of the growth is indicated by the oat shape of the cells and by the absence of mucus, which they found was almost invariably present in adenocarcinoma Squamous metaplasia is common in lung cancer, especially in adenocarcinoma,[3 6] and is a source of confusion, because by masking the significant cell type it may lead to an erroneous diagnosis of squamous cell carcinoma Walter and Pryce recognise two further classes of lung cancer—a polygonal cell class in which they include anaplastic squamous and adenocarcinomas, and a class comprising invasive and metastasising adenomas While admitting that different cell types may be present in one tumour, they believe that it is generally easy to classify tumours if the misleading factors are borne in mind But clearly reports should include a precise definition of the histological features on which classification has been based Is it too much to hope that some influential body will formulate criteria to which pathologists can refer so that observations from different centres may be comparable ?

Walter and Pryce [7] also examined a series of bronchial carcinomas removed surgically to determine in what part of the bronchial tree the tumours had originated They concluded that half of them arose in bronchioles or in bronchi too minute to be discerned by unaided vision This finding tends to confirm the work of Raeburn [8] and Raeburn and Spencer [9] which casts doubt on the widely accepted view that the majority of lung cancers arise in the larger, more central bronchi [10–15] A tumour in a central bronchus will, while still quite small, block the lumen, and symptoms arising from the consequent extensive atelectasis may lead to diagnosis at an early stage , a tumour arising in a small peripheral branch, on the other hand, may grow to a large size before producing effects that call attention to its pre Hence, centrally placed tumours are on the whole likely to be amenable to surgery when first dete and it is fortunate that the majority of squam cell growths (the type with the best prognosis "curative" resection) are so situated , adenocarcin are almost invariably peripheral , while the de oat-cell neoplasms do not seem to favour any partic part of the bronchial tree [7] Walter and Pryce sugg that the frequency with which tumours are periphera located is an important cause of the low operabi rate and poor prognosis in lung cancer , but a mo fundamental reason is the early spread of the m malignant types

TRAINING NURSES AT A UNIVERSITY

A WEAKNESS of pioneers is to rest—even to recline put their feet up—on their laurels The new nurse teaching unit to be established at Edinburgh Univers is being set up with the willing coöperation of the Ro College of Nursing, and with the aid of a five year gra from the Rockefeller Foundation The foundatio offered this grant, we are told, because they had ob that in Britain there was available no preparation nurses "within an institution of higher learning In fact the status we give to nurse training nowadays, to others, as unduly low We believe, course (and surely rightly), that the job of a nurse nurse patients—not to become some kind of aes technician who leaves the actual nursing to grades But if we are to hold to this principle we more nurse teachers who are not merely of lively but very well trained, able to distinguish wheat chaff in the nursing curriculum, able both to choose essentials and to teach them to non academic student also able to impart their keen spirit to youngsters lively minded as themselves—the sort who at p are often lost to nursing because they fear intell stagnation As one senior nurse puts it "Our problem is how to conserve our sense of v our devotion to patients, and our nursing while utilising the advances in nursing e and administration which other countries, parti America (but not only America), have made." S undertaking might be thought worthy of a uni department of nursing, rather than a nurse te unit , but the appropriate affiliations of nursing with the faculty of medicine, and there were a tive difficulties about starting a new department this faculty The unit, however, is to have its own and advisory board, and will plan post certificate c and undertake research

The Royal College of Nursing has long p courses of training for State registered nurses wish to take the certificate for sister tutors offered London University, and has also collaborated Edinburgh University in providing the course certificate offered there Hull and Leeds Univ also offer courses and certificates for this qu which is now widely accepted as necessary for seeking senior positions But all these are courses beginners in teaching they are not advanced c The course offered at the new unit will be on such courses, but with a revised curr for which the university will be fully re A course at a similar high level, but specialising in administrative aspects, will probably be estal as soon as possible The unit, it is hoped, will also for senior nurses (Fulbright scholars, for in At the other end of the academic scale it may extramural courses for ward sisters and others Rockefeller Foundation provides for three r fellowships, spread over the five years covered by grant Subjects for research are yet to be but it is much to be hoped that these will includ

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1 See *Lancet*, 1955 i 954
2 Kirklin J W , McDonald, J R, Clagett, O T , Moersch, H J , Gage R. P *Surg Gynec Obstet* 1955 100 429
3 Walter, J B , Pryce D M *Thorax*, 1955, 10, 107
4 Barnard, W G *J Path Bact* 1926, 29, 241
5 Barnard, W G *Acta Un int Cancr* 1938 3 213
6 Phillips F J Basinger C E , Adams, W E *J thorac Surg* 1950, 19, 680
7 Walter J B , Pryce, D M *Thorax*, 1955, 10, 117
8 Raeburn C *Lancet*, 1951 ii, 474
9 Raeburn, C , Spencer, H *Thorax*, 1953 8 1
10 Fried, B M *Acta Un int Cancr* 1938, 3 153
11 Willis R A Pathology of Tumours London 1948 , p 366
12 Boyd W The Pathology of Internal Diseases London, 1950 , p 234
13 Bryson C C Spencer, H *Quart J Med* 1951, 20, 173
14 Davidson M., Smithers D W , Tubbs O S The Diagnosis and Treatment of Intrathoracic New Growths London, 1951 , p 79
15 S[illegible] C., Simpson J A *Thorax*, 1953 8 11

ects of nursing the need for a thorough nursing methods was put forward in a recent o *Nursing Times*[1]

o first unit of the kind to be set up and it omise well. The aim is not to prepare sub even super nurses, but to enable some nurses, make the fullest possible use of the talents, d expert knowledge which they possess, and their experience and insight in the favourable of a university

OUS COOLING AND REWARMING

d Ross[2] have recently described some of their of hypothermia in 20 patients having thoracic At first they tried arteriovenous cooling disadvantages of cannulating an artery in a ne apparent they turned to venous cooling[3] drawn through a catheter in the superior pumped through a cooling coil and returned ior vena cava via the saphenous vein Their as now been further simplified The decision othermia is delayed until the chest is opened gnosis confirmed, so that the patient is not ly subjected to the increased risks of the Two catheters are then passed via the right he heart one into the superior vena cava and into the inferior vena cava The blood can fairly quickly, and if rewarming is started chest is closed, the period of hypothermia be brief. This is important because experi dence suggests that the proportion of deaths after rewarming increases when animals are ow temperature for a long time

lar fibrillation can be effectively treated by defibrillation during hypothermia, once myo ne has been restored by massage and the s of the ventricles have become coarse and If this complication arises during the produc- ypothermia cooling is stopped and cardiac tarted there need be no delay when this technique of cooling is used When fibrillation temperature low enough to allow the circula interrupted, or during the actual cardiotomy, d since it prevents air embolism and produces ve operation site The operation on the heart ompleted before applying massage and sub defibrillation The induction of ventricular as a means of preventing air embolism has een described,[4] and more recently Melrose and ues[5] have recorded experimental work on the production of cardiac arrest for this purpose o produce a motionless heart

cular fibrillation is to be prevented an adequate flow of oxygenated blood is essential Berne[6] n that the dangerous stage is between 30°C when the fall in flow is steepest and Brock and e often noticed arrhythmias in this temperature Ross[7] originally demonstrated in dogs that, ypothermia, perfusion of the arterial tree with lood by a simple veno arterial pump circuit the heart's action by increasing coronary and reduced the incidence of fibrillation d Ross have now used this method in man addition of an oxygenated blood drip to increase en content of the venous blood entering the tree They also point to the danger of an increasing heart rate which reduces coronary blood flow, and they report favourably on the value of a noradrenaline drip to increase the perfusion pressure while slowing the heart-rate

One of the most interesting observations concerns venous rewarming which Brock and Ross have used in man When the cardiac part of the operation is complete, they put fresh catheters through the right atrium into the venæ cavæ and pump blood through the coil now immersed in warm water at 40°C They have found that the temperature of the body can be raised to about 32 C in 20–30 minutes This seems to be an effective method which can be used without disadvantage until the chest is almost closed

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. M \ursing Times May *0 1955 p 560
R., Ross D N *Guy's Hosp Rep* 1955 104 99
N *Lancet* 1954 i 1108
A *Acta chir scand* 105* suppl. no 171
D G Dreyer B Bentall H H. Baker J B E
1955 ii 21
R. M. *Circulation Research*, 1954 2 236
N *Guy's Hosp Rep* 1954 103 97

BONE SALT

THE nature of bone salt has intrigued investigators for many years McLean and Urist[1] have lately given a very useful account of the present position, partly based on the critical and lucid review by Neuman and Neuman[2] The mineral portion of bone is in the form of crystals Each crystal is a minute tablet, only 25–50 Å thick approximately 400 Å long, and nearly as wide. Because of their thin shape the total surface of the crystals is enormous, and must amount to more than 100 acres in an adult man.[2] They lie on a protein network of collagen like fibres—the bone matrix In the tissue fluid bathing the salt and matrix there is a high concentration of an amorphous acid mucopolysaccharide related to chondroitin sulphuric acid

Crystals are made up of units in which the atoms have a particular arrangement characteristic of the crystal. From the way in which the crystals of bone salt diffract X rays it can be deduced that they have the structure of apatites salts of calcium and phosphate which crystallise in simple forms of the hexagonal system The mineral prototype is fluorapatite 3 $Ca_3(PO_4)_2$ CaF_2 The [illegible] of bone crystal may be a hydroxyapatite[3] and it has been suggested that the atoms of bone salt are arranged in a lattice of hexagonal columns with a calcium atom at each angle of the hexagon a tunnel of phosphate ions within the column and hydroxyl ions at the [illegible] of it But in fact the arrangement of the atoms may be even more complex than that. It is hard [illegible] the arrangement precisely because a large proportion of the units are at the surface of the crystal [illegible] adsorption and exchange of other [illegible] sodium magnesium carbonate, and [illegible] hexagons are 9 4 Å wide along [illegible] 6 9 Å wide along the other (c axis) [illegible] axis is the long dimension of the [illegible] approximately parallel to the [illegible] decalcified leaving the [illegible] allowed to recalcify under [illegible] crystals of apatite are [illegible] parallel to the fibres of collagen.[4] [illegible] organic fraction of bone may [illegible] bone salt But the collagen of [illegible] collagen of connective tissue [illegible] to proceed within [illegible] in the bone collagen itself [illegible] mucopolysaccharide associated with [illegible]

Sir [illegible] the Queen [illegible] consulting [illegible] Hospital, died [illegible] home [illegible] at the age of [illegible]

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1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

Special Articles

TRENDS IN THE PRISONS

RECEPTIONS to prisons in 1953 numbered 2700 less than in the previous year, thus easing the overcrowding in local prisons[1] The average population in prisons and borstals had fallen a little in 1953 and fell again in 1954 During the early months of the current year it was almost stationary at 21,300

Borstal Training

A fall in numbers has its perplexing, as well as its bright side Borstal boys' institutions, with a population of only 2832 at the end of 1954 (fewer by more than 500 than in 1952), have found it possible to give more individual training to the boys, but have also found difficulty in completing some of the work commitments they had undertaken

The borstal correction centre at the old Reading Gaol seems to be working out not too badly It receives those boys who for serious lapses, must lose the privileges of a training borstal for a while During 1954, Reading received 326 boys for absconding 61 for lapses on home leave, and 126 for other reasons Tempo is strict, privileges few (e g , there is no smoking allowed at Reading) and normally after about 3 4 months a boy is returned to a training borstal, not cowed or bitter but healthily convinced that it will pay him to go straight and work for his discharge "

Borstal training itself is changing in many ways the boys and young men are increasingly becoming a part of the community of the neighbourhood which surrounds them Some are able to join local music, arts, and film societies others enter for local drama competitions, while some belong to their own fishing club, visiting the river under the guidance of a training instructor who is also a keen angler A borstal table tennis club cycles over to play " away " matches with outside teams in a league Members of borstal staffs are more specialised than they would have been thirty years ago education is in the hands of professional teachers, instructors in the shops are specialists in their trade, trained physical education instructors visit, and the psychologist, and the psychiatrist in the offing, is nowadays believed to be a useful person to have about Yet as the Prison Commissioners rightly say, the fundamental influence in borstal training is that of the personality of a man or woman on a boy " The borstal housemaster or officer remains the keystone of the work " The influence of such men and women is shown in the sustained improvement in figures for re convictions

Preventive Detention

By the end of 1954, 1375 men, sentenced under Criminal Justice Act of 1948, had been received by prison service, and of these 668 were serving the second stage of their sentence at Parkhurst and 80 at Nottingham The advisory board at Parkhurst considered 110 men for promotion to the third stage, and decided to promote 13 of them The final stage is spent in a hostel attached to Bristol Prison, from which they go out to work

As soon as they arrive they are given 10s and told to go down the road and buy themselves shaving things, note, and any other small items they need This, it seems like a tonic on people who have always been more or under supervision , and on the whole they respond They greatly appreciate the hostel, and uphold its tradition The Governor of Bristol Prison reports that a weeks after beginning work many pass through a " period ' in which their energies and interest flag, but they have been steered through it they develop a interest in their work, especially as they become fit to do it He suggests that recidivists may experience such a danger period, and that this might detected by noting when the average recidivist, after discharge leaves his first job Some extra help over the difficult might help him to settle down again and make good

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[1] Report of the Commissioners of Prisons for the Year 1954 London H M Stationery Office Pp 196 6s

The Wider World

BRITISH NORTH GREENLAND EXPEDITION 1952-54

Medical and Physiological Aspects

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SURGEON LIEUTENANT, R N V R

Greenland is one of the largest islands in the world Really it is a subcontinent, extending from the North Pole to well below the Arctic Circle (fig 1)

Except for a narrow coastal belt, the country is covered by a huge ice sheet, rising to a height of some 10,000 ft at its centre At the periphery, the inland ice flows out in a network of glaciers to the sea

The population of Eskimos and Greenlanders is about 20,000, mainly living on the West Coast in settlements Formerly their main occupation was hunting, and the families were therefore scattered , but now, as a result of progressive Danish administration, fishing has been developed, and this has brought the communities together Mining and sheep farming are other important developments Economy education, and public health have all benefited by concentration of the population in fewer and bigger settlements (Christensen 1954) There has also been great political advancement, and Greenland now has the status of a county of Denmark, two members to the Danish parliament

Although conditions on the West Coast are comparatively comfortable, the North East coast is bleak almost uninhabited Indeed a large area, the Dronning Louise Land, about 700 miles from the Pole, had not been explored

The British North Greenland Expedition, of which Queen became patron and Sir Winston Churchill patron, was jointly sponsored by the Services, the Society, the Royal Geographical Society, and the Research Council In addition, there was support private individuals and firms who felt sympathetic great new British venture to the Arctic—even they might not be interested in its primary objects We must make it clear that the expedition although handsomely supported by the Services, secret or strategic aim

The plan of the exploration was as follows geologists, surveyors, and glaciologists were to travel dog sledge over Dronning Louise Land, which is 4000 sq miles (fig 2) At the same time parties of physicists would make a traverse of the ice sheet investigating its nature and foundations, using seismic gravity measuring techniques They were to use driven " weasels " or snow tractors

A weather and radio research station was to be established on the centre of the ice sheet and its reports go to the main laboratory where the other meteorological station would transmit all the information International Weather Network

Physiological investigation was to be conducted the men at the main base, and on parties returned the field (During two years the expedition members) One of us was responsible for medical

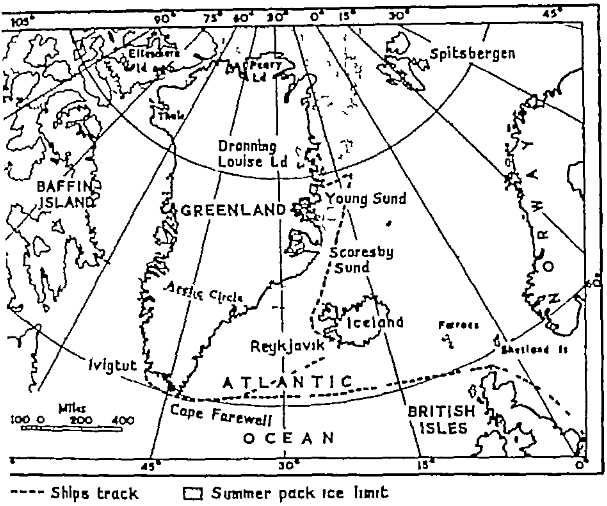

Fig 1—Greenland

the other for medical treatment but we early ed into a complete partnership which was highly rding Not only were our duties shared but the nt of our work was increased and made all the more esting Also the other members were probably quite ed to have the choice of *two* doctors for their com its instead of the one official medical officer

Journey

ring its passage through the North Atlantic in , 1952 our ship the Norwegian sealer *Tottan* of 000 tons, was severely buffeted and most of us were ck We were grateful for the er waters of the Arctic in; but here there were the rds of the pack ice

uring winter the sea freezes d the North East Greenland t, and in the summer the loosens the sea ice, which s east and south, gradually ting With the advent of ther winter, the coastal waters ze again

he summer pack ice, which be 20–100 miles wide has ys to be navigated by ships ing to reach this part of the nland coast We were stuck he pack ice for a day but nately a lead developed in ice and we reached the coast out further trouble Anchor in Young Sund on a sunny t we began to off load the hundred tons of stores and pment and our dog teams h had come from West nland Having been cramped often miserably sick during three weeks at sea—which d have been avoided if we travelled by air—we were ly in the best condition for stevedoring but after a day or two we were able to handle with more confidence the heavy drums of fuel the parts of the prefabricated hut and the generators.

During this period we were up against two difficulties First there were no mechanical aids and everything had to be "humped" Secondly we had to work at great pressure, since the success of the expedition depended on establishing the base before the imminent freeze up The concentrated physical work made us very tired and we were most anxious not to become prone to accidents Fortunately the only accident was a finger laceration caused by a rusty nail

In a few days Sunderland flying boats of the Royal Air Force arrived to take us and our stores 200 miles further north to an inland fresh water lake in Dronning Louise Land where the base was to be built But before we left, we had a chance to look at the surrounding country which is very beautiful at this time of the year Young Sund is a long fjord in which occasional icebergs drift with the tides and wind On a calm day one can see the reflection of mountains with streaks of snow remaining from the previous winter The air is so clear that distances seem much shorter than they are For example, we estimated that the Sund was about a mile across but in fact it was over 5 miles This phenomenon could, under some conditions, be a source of hazard to travellers

The vegetation does not grow higher than 9 in It is brilliantly coloured by the yellow Arctic poppies, red saxifrage, and masses of bobbing white bog-cotton Hares and foxes, and herds of musk oxen, roamed the valleys

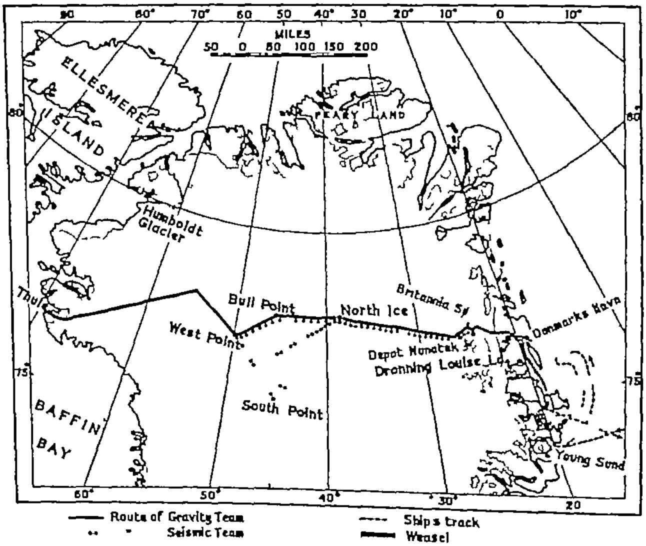

Fig. 2—Routes travelled in North Greenland.

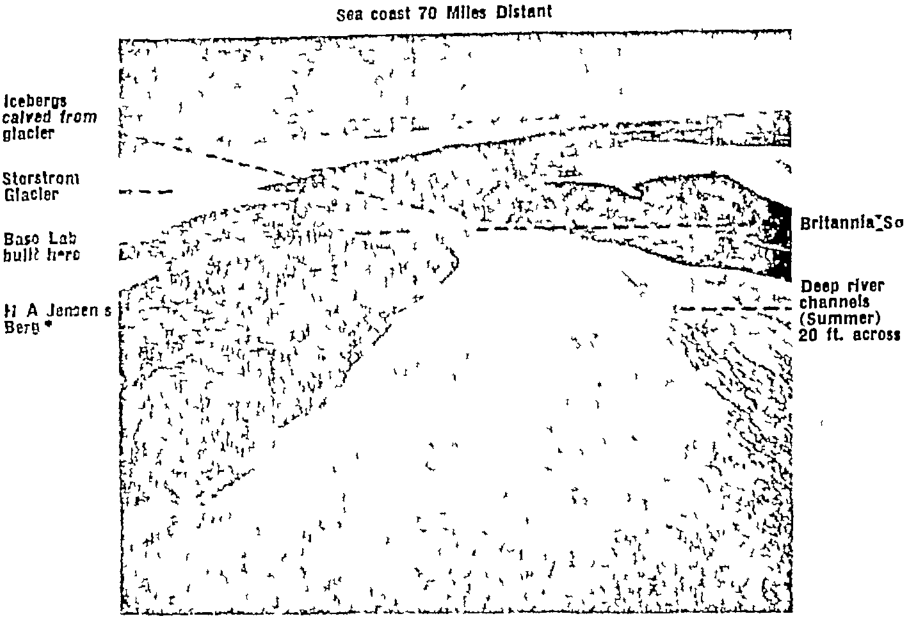
Sea coast 70 Miles Distant
Icebergs calved from glacier
Storstrom Glacier
Base Lab built here
H A Jensen s Berg *
Britannia So
Deep river channels (Summer) 20 ft. across
Britannia Glacier

Fig 3—Position of Britannia Lake (aerial photograph)

* H A Jensen s Berg was named after Captain Hans Jensen the Danish surveyor with the expedition who was killed in April 1953

and lower slopes, and on the ice floes polar bear, walrus, and seal might occasionally be seen, in summer there is thriving fishing for Arctic char But the creature that intrigued us most of all was the mosquito, which though non-malarial had great nuisance value Our preconception of the Arctic was disturbed also by the warmth, the temperature rising to 13°C (55°F), so that on a sunny day we worked stripped to the waist However, great banks of sea fog were often blown into the sound by sharp winds which made us scurry for our windproofs

The first party to fly north established a shelter on the shores of the lake which we temporarily named Britannia So (fig 3), and the aircraft were unloaded as they came in A powered boat was dropped, but the parachutes failed to open, and the boat was totally wrecked One of our outboard motors was also lost These accidents meant that the loaded pontoons had to be hauled more than 150 yards from the aircraft to the shore by a "chain gang" pulling on a long rope The remainder of the expedition party was soon flown to Britannia So, and the work of loading the planes was continued by the R A F and an Army working party at Young Sund

Towards the end of this period, we were getting anxious, because large icebergs were drifting into the Sound, making it very hard for the flying-boats to take off Indeed if the operation had not been speeded up, there would have been no medical research programme, for Young Sund was completely iced up a few hours after the last load left for the north—and all our equipment was in this load Eventually, by working round the clock, we enabled the last plane to get safely away on its flight back to Britain, us alone at Britannia So

Our medical sisted of 13 boxes large oxygen cyl these had to be stored tarpaulins (fig 4) un when the labora ready to take them. job was to com living hut to give us

Before this work finished, however, a left Britannia So, about 250 miles to the of the northern part of sheet to establish the station Hastings aircraft been standing by at a base on the North of Greenland, and, in to signals from the party, they flew in, to chute the prefabricated tions of the hut, suppl equipment for this station Unfortunately of the planes crashed kersy 1953) and some crew were injured We, base, were in radio with "Northice," as weather station was called, and were able to give medical advice, while the expedition members helped to make the crashed plane as comfortable possible for them all until they were flown out by American Arctic air rescue team

As soon as "Northice" was completed—at the of October—the support party sledged back, leaving planned, three expedition men at the station for winter The return journey took about fourteen and the party got back to Britannia So in the half of late autumn

Living Arrangements

THE HUT

The prefabricated parts of the hut weighed 24 crated, and many pieces required 6 men to handle

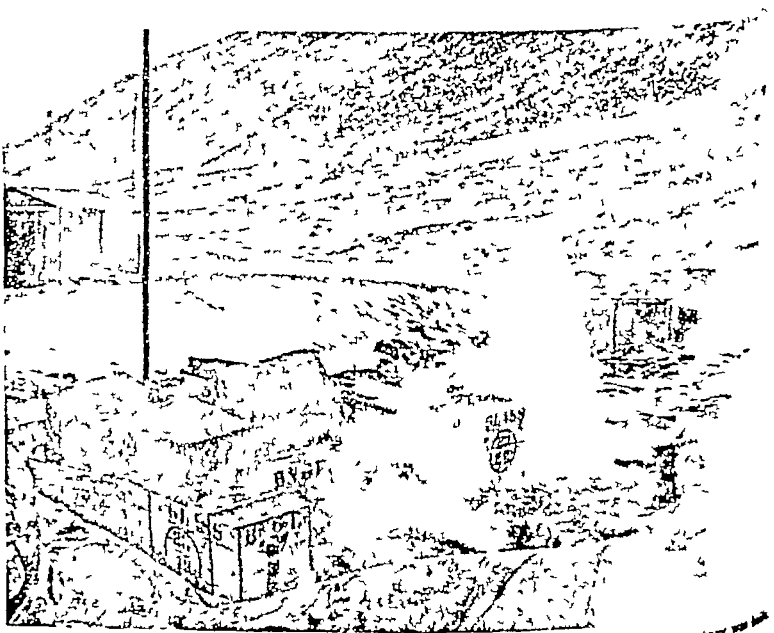

Fig 4—The physiological equipment, stored under tarpaulins until the laboratory was

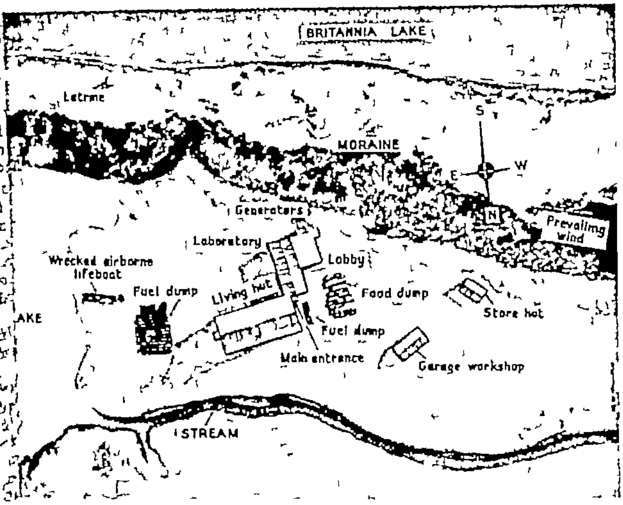

Fig 5—The main base at Britannia Lake.

\e levelled a raised spit of ground on which the ndation beams were laid On these we erected the r and wall panels. These panels were made of water ofed 5 ply wood with a prefabricated internal insula of glass wool and soft board A layer of aluminium as a reflective insulator and vapour barrier was ed, and a final facing of hard board completed the de finish

he job went smoothly though on average there were 6–8 men continuously engaged—others being away support parties or reconnaissances In just over a night the huts were weather proofed and only indoor struction remained

he main base (fig 5) comprised the living hut, the ratory and at a little distance a garage and a store- n An uninsulated passage separated the living room n the laboratory so that in the event of fire either could be isolated by breaking this down This lobby unheated and contained the lavatories; it also pro d shelter for apparatus normally used in the cold example some cameras were kept there to avoid the sture which would condense on them if they were ught into a heated and humid part of the hut

t one end of the living hut we assembled a slow bustion stove which weighed 2 tons round it we partitioned off the kitchen in which we also installed a stainless-steel sink and the water butts—two empty petrol drums cement washed on the inside to prevent rust In addition there was a small larder which was particularly convenient because food taken directly from outside required a few days to thaw before becoming usable

The living room was about 25 ft square adequately heated by a diesel oil stove (fig 6) A corner was partitioned off as the sick room, and most of the physiological work was done there The dormitory led off from the living room and had about the same floor space It likewise had one oil stove and contained 6 cubicles with 2 double-tier bunks in each

All windows were of triple glass and the entrances had two doors. Unfortunately the doors were too flimsy, letting in drift and, not being strongly hung they tended to break away from the hinges when closed against packed snow When the temperature fell below —10°C (12°F) it was dangerous to touch the round brass door knobs with the ungloved hand for the skin froze to the metal and would blister This discomfort was readily avoided by binding the door knobs with sticking plaster which gave a better and safe grip Handles of the kind used for car doors would have given easier leverage.

Ventilation of the huts came from adjustable openings over each window During the winter, with its sudden wind changes, the huts were often too hot or too cold owing to inefficient regulation of the stoves and ventilation There was a great temperature gradient from roof to floor and a constant feeling of stuffiness, and, although the heating equipment was adequate, it would have been an advantage to have some means of circulating the warm air—e g a fan

In small huts and vehicles in the Arctic the danger of carbon monoxide and petrol fumes is always present because one tends to keep ventilation to a minimum We had no satisfactory means of detecting these gases Now, however several carbon monoxide and petrol fume detectors are on the market [1]

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[1] The best and simplest seems to be made by a German firm Dräger of Lubeck. Siebe Gorman and Mine Safety Appliances Company Ltd in Britain both manufacture good detectors

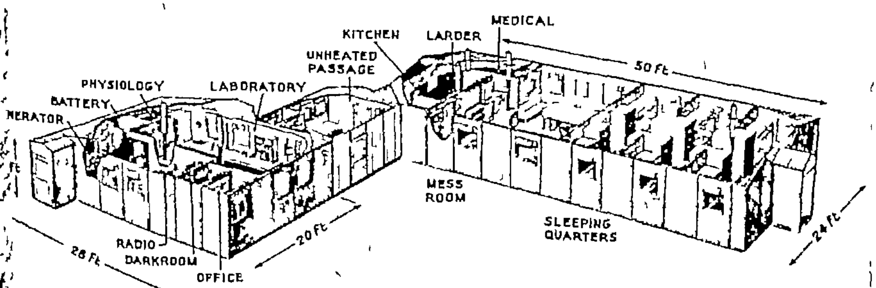


Fig 6—The main base hut. Note the space allocated to physiology and medical work.

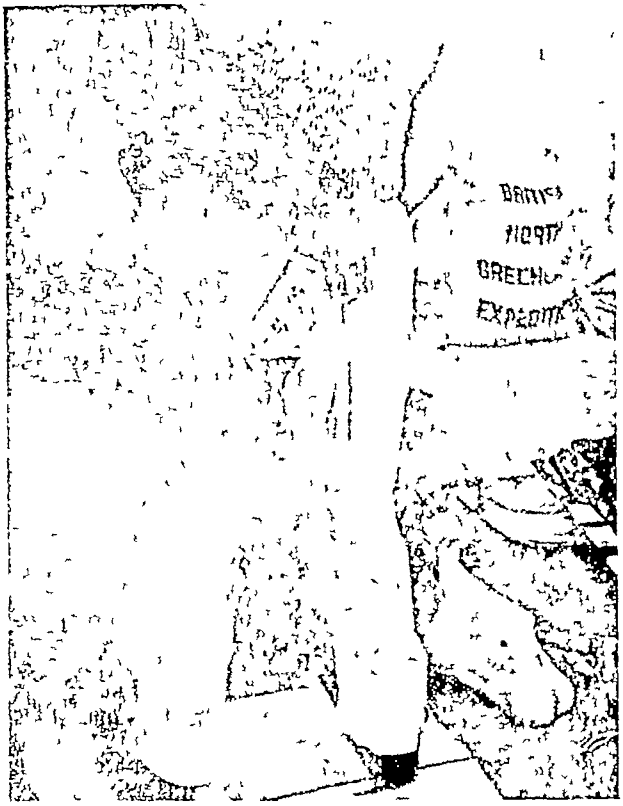


Fig. 7—The string vest and pyjama type drawers The latter are loosely fitting, and therefore warmer than the usual "reach me-downs" The vent permits defæcation without unnecessary exposure

Fire is one of the most dreaded disasters in the Arctic Though there is plenty of snow and ice, there is no water At convenient places in the hut, there were various fire fighting appliances such as axes, pails of sand, carbon dioxide, and trichlorethylene extinguishers, and during the winter there was a rota for nightly fire watch

CLOTHING

The effectiveness of clothing depends on a few simple principles Insulation is achieved by trapping layers of warm air, but the fabric must be freely permeable to water-vapour If perspiration cannot pass through the various layers it will condense on the inside and freeze, accumulating all the time and progressively filling the garment with frozen sweat Since the thermal conductivity of sweat is much greater than that of air, the body heat is then rapidly dissipated to the cold atmosphere and the person has little chance of keeping warm

These principles are fulfilled in fur garments, the leather base of which is permeable to perspiration and is also windproof The thickness of the fur traps innumerable pockets of insulating air But fur is expensive and not easily available in large quantities

Provided one keeps to the above principle it makes no difference what fabrics are used, and certain types have been evolved from experience in cold climates, and particularly as a result of intelligent field research by the Army

The expedition left Britain with a mixed bag of clothing and also of advice (Walker 1953) We took traditional Polar wear—windproof trousers and anorak—but we soon realised that the alternative outfits, supplied by the Army, represented a great improvement Certain techniques were learnt to keep the clothes dry With hard muscular activity it is necessary to prevent overheating, because this increases sweating, and one that before hard work, one should remove putting it on again when the job is over

To meet these requirements, the Army cloth logists evolved an outfit designed in layers

(*a*) The *string vest* traps a large layer of air next to the skin It also separates the the skin and so prevents it becoming clammy

Long underpants, like pyjama trousers are warmer than the usual "winter woollies" are loose round the leg In addition they are back, to permit defæcation without having to (fig 7)

(*b*) A *flannel shirt* is worn, and *fleecy* when the cold is extreme

(*c*) Windproof *combat jacket* and windproof Both these items were excellently tailored, with useful pockets 'Zipp' fasteners permitted so as to avoid overheating during activities.

(*d*) The *parka* was worn as the outer garment greatly appreciated by the members It was and had a wool pile lining There were driftproof and a large cowled hood which could be adjusted best protection against the wind by bending the malleable wire rim It had a generous "tail," one could sit, and a flap which could be brought the legs, buttoning in front, to protect the Zipp fasteners permitted ventilation of the as desired

(*e*) The hands were protected by three or four *gloves*, the outer two being mittens

(*f*) On the feet one wore two or three pairs of *socks*, a *duffle sock*, and *leather* boots in which a thick plastic insole Perspiration would freeze insole, but at night one could easily take the boot remove the insole and shake it free of rime.

When the temperature fell to –12°C (10°F) froze nearer the skin than was comfortable, and members wore *canvas mukluks* instead of the leather The canvas offers less resistance to the egress of tion, which has a better chance of passing away the skin before it freezes

Fig 8—In bad blizzard conditions, the face may become
spite of protective clothing

Fig 9—Breadmaking in the expedition kitchen.

The head and face were protected by a *hood* ched to the combat jacket, and also by the *cowl* of parka. *Woollen ear warmers* were a useful addition

the first year most of the men grew beards; but in second year only 6 grew them and the rest kept a t stubble. The advantages of a beard are doubtful ve -12°C (10°F) it protects the skin from frostbite, at lower temperatures it rapidly ices up from facial iting from trapping the moisture of exhaled air and lly from the nasal secretions which flow profusely in eme cold (fig 8) The iced up beard prevents move ts of the neck and jaw and makes it difficult to ess. More serious probably, is the fact that the nes freeze to the beard and lose their warming erty since they are now bound to the skin by ice ad of being separated by a layer of warm air

ne total weight of the Army type clothing assembly about 23 lb—one third heavier than the Everest ing (Pugh 1954)

r-glasses

e were issued with two types of *snow-glasses* The was a goggle containing red glass men who wore tacles used them in a modified frame The second was a polaroid spectacle which proved unsatisfac- in that the plastic lenses were easily scratched; over the whole article was so shoddily made that rames broke and the lenses fell out before they had worn a week Both these kinds of glasses were also tisfactory because there was no satisfactory provision ventilation around the rims and the goggles steamed nickly during exercise It is annoying to realise that a much better frame had been evolved as a result of Army research and could have been provided

Very little experimental work has been reported on the optics of sun glasses. One of the few papers is by Peckham and Harvey (1951) who conclude that the important requirement is to eliminate 80-90% of the visible rays the remaining small proportion of light reaching the eye being quite adequate for visual acuity Apparently it does not matter what sort of filter is used, and they found that cheap spectacles, even with minor flaws were quite as satisfactory, over a summer season as specially ground lenses costing twenty times as much

Sleeping-bags

We were issued with a variety of down filled sleeping bags and in extremely cold weather we used two—one inside the other They were excellent for temperatures down to -20°C (-13°F), but were inadequate below this The main disadvantages were

1 *Tightness* which can be eliminated by a roomier bag, combined with a slippery nylon liner, so that a man can turn over inside the bag rather than with the bag (Pugh 1954)

2 *Lack of insulation on the under surface*, which was caused by compression of the down One usually carried a sheepskin mat, but this also became flattened Canadian workers have suggested the use of a safari type couch with down insulation on the under-surface of the canvas sling In this position, the insulation is not compressed by the weight of the body and it has the additional advantage that the sleeper and his covering are suspended, and not in close contact with the snow (Hildes 1955)

FOOD

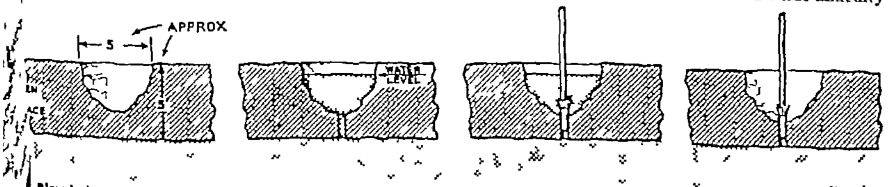
The subject of food will be dealt with fully in another publication The food supplied all brought from Britain consisted of tinned meats, vegetables, fruit and many varieties of dried foods such as cabbage, potatoes carrots, and onions Some shortages developed, particularly of milk and sugar We very much lacked tinned meats of good quality

It was found that many desirable products, such as whole potatoes and other root vegetables eggs, bacon sides salted meat, cheeses, and sausages of Scandinavian type would have kept perfectly in the cold During the cold months Greenland is just like a gigantic deep freeze and at the height of summer these foods could have been stored in ice if necessary They cost no more than tinned foods

Frozen potatoes and other root vegetables cook admirably so long as they are cooked as soon as they are brought in from outside Solid frozen potatoes are quite different from the useless frosted ones often seen in Britain (The reason why frosted potatoes are inedible is that they have been thawed slowly and the fluid has left the cellular portion in the process)

Bottled products must be kept indoors, for most of them freeze and crack in the cold.

Alcoholic drinks were mostly in the form of spirits Tinned or bottled beer would have been a more general favourite but because of its bulk was not included Concentrates of beer would have overcome this difficulty



Blow hole with explosives.

Bore hole at base of cavity with ice drill (water-pressure causes hole to fill)

To close, place stick with cloth plug in hole.

Water baled out leaving hole in readiness for future use

Fig 10—Method of obtaining water from frozen lake.

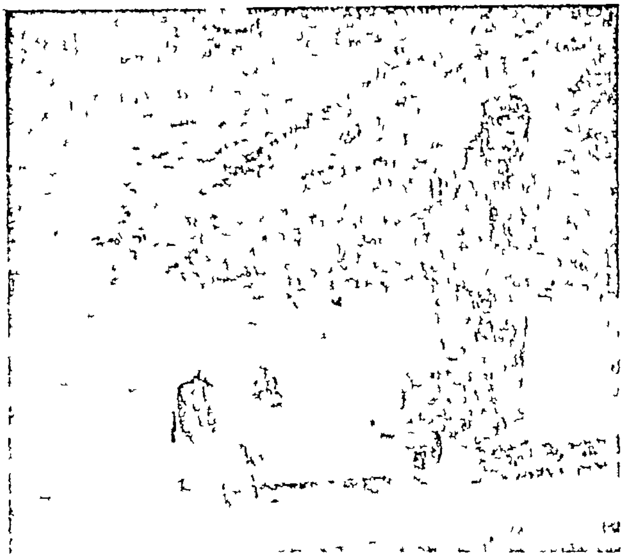


Fig 11—The toilet bucket being carried away from the hut. Note the interest shown by the puppy

Cooking

The slow combustion stove was too small for cooking and heating water for 20 men Everyone took turns at cooking (fig 9), and the best system found was 3 men cooking for four days for 20 people Cooking could be a time consuming chore yet it was a change Some people felt that it took up valuable time which could otherwise be spent doing scientific work Two schools of thought developed on the subject, one was in favour of a professional cook and the other supported the existing system We ourselves differ on this point, though we agree that in the absence of a cook everyone should explicitly be warned beforehand that cooking duties are essentially part of his job

Sledging Ration

While travelling by dog sledge we carried with us a standard sledging ration giving just over 4000 calories per day in a weight of 27 oz It consisted mainly of pemmican (a combination of fat and meat powder), butter in large quantities, chocolate, dried milk, biscuits, and sugar This diet was adequate but boring it could have been improved with more variety and made more attractive with colourful wrappings and modern packing

Water

The water supply during winter was difficult When the lake ice was at its thickest, two metres of it had to be cut through to get at the water Explosives and drills were tried with varying degrees of success The best method we found was to dig a trough in the ice about 0 5 m deep and 0 75 m in diameter and then bore a hole from the bottom of this to water level (fig 10) The water gushed up into the trough and from it we filled buckets During the summer—from early June until mid September—water was procured from a little stream running beside the hut We had to ensure that, during summer or winter, the drainage area of this stream was not contaminated by dog excreta Water was used for all domestic purposes at the surprisingly low rate of $1^1/_2$–2 gallons (just under 10 litres) per day for each man

TOILET FACILITIES

The toilet facilities left a great deal to be desired We had no small space or cubicle set aside for washing This would have been most useful, with, say, two wash basins and a simple shower As little as 3 gallons of warm water gives a satisfactory shower As it was, one had to wash in the kitchen or living space

There was a single latrine in the unheated joining portion of the hut The excreta were held in a 45 gallon petrol drum cut in half This closet was very in high winds exceedingly draughty A more compartment would have been appreciated The froze in the drum, which had to be emptied appr every third day This meant going out into the hauling the drum on a little sledge to a place yards from the hut where the contents were (fig 11) It was a nasty job, as it took some loosen the frozen material from the drum, and of its unpopularity a rota had to be established. times the drum was not emptied until after it over full, and on these occasions, visits to the toilet far from pleasant Often the seat was contaminated frozen urine To make the job of emptying less a disposable waxed cardboard carton of similar a half petrol drum might be used Though more sive, these would store easily if they could be into each other Some 200 would suffice for 20 two years

From about mid April until late September there a latrine in the open about 50 yards from the hut This was a good arrangement, and the dogs were natural scavengers since they are coprophagous though we have evidence that there is no extra fat able in the fæces (Masterton, Lewis, and W 1955)

While sledging, the techniques of defæcation tion were somewhat modified However, neither was difficult or liable to cause frostbite While one stood with one's back to the wind, and the itself was partly protected by the hand When one squatted with back to the wind A slit in the of the underpants allowed us to defæcate without them, and they gave some protection to the b

Many sledgers found that the gastrocolic reflex soon after breakfast while they were breaking was convenient, for they were able to defæcat shelter of the tent before striking it

(To be concluded)

Fig 12—Coprophagia in husky dogs. In the summer the was placed in the open Note the aluminium guard stick used to deter over-enthusiastic dogs.

In England Now

Running Commentary by Peripatetic Correspondents

HE instinct whereby birds migrate across continents eels swim thousands of miles to the Sargasso Sea, is ly in *Homo sapiens* But somewhere in the heart of ey stands a small hospital which has that effect on ever may once have dangled a stethoscope within its s. By tradition no member of the medical staff es without a farewell celebration to which residents consultants, past and present, migrate mysteriously with unerring instinct. And since tenures of office continually drawing to a close, each new ceremony s to become bigger and better than the last he way these gatherings come about is a matter for Some say that it is the ceremonial hot punch of which is handed down from generation to of resident anaesthetist—which calls the clan But then, this strange instinct has been felt ngland's northern border and it seems hardly hat Sassenach smells can be detected in the of whisky

t remains that several times a year, peripatetic ns are irresistibly drawn to the verdant beauty Before nightfall I find myself passing through ll beloved gates, where a familiar ditch traps the and the porter is always asleep; past the flag pole ly adorned with some object carefully selected to the secretary's spleen up the central ramp serves as the main corridor and can in practice modate a pre-war Austin 7 in the direction of t gramophone music and the occasional strains of ly played violin to the medical officers' mess where rited party is already in full swing eing so many old friends in a familiar setting produces the strange feeling that nothing has changed and time has stood still But the illusion is always en by someone who has a new job, car or wife or proudly shows photographs of three offspring ad of two or who has at last passed the Member- only to find himself deprived of his premier pastime he past ten years.

* * *

general surgeon's instruments have many domestic Spencer Wells forceps, scalpels, and cutting needles do things in the home which would otherwise be ssible. The crocodile forceps which accompany my oidoscope have recovered a wedding ring from the tory and fallen bolts and washers from inaccessible s of my car I have even visualised a golden ster in my cystoscope through a small hole in a ing board and thereby been able to plan intelligent dons which resulted in its being restored to its tearful er No home indeed is properly equipped unless it ains a surgical bag

have, however always entertained a certain feeling periority towards gynaecologists and their tools and comfortable sensation has lately received remarkable rmation in the domestic sphere, under the following mstances. My wife and I recently moved house ing unearthed during the upheaval a curved Reverdin le which had been bequeathed to me by a gynaeco- t relative I thought it would be useful for some ring of a stair-carpet. It proved a most handy on for this purpose, and when the real man from Harraples came for the fitted carpet in the m I proudly told him of my discovery and handed Reverdin needle to inspect He looked at it, itically and then with cold anger What! Stick that bloody great thing through a good rpet? I've more respect for this nice Wilton you'll keep that for what it was meant for the rebuke that I forgave the terminal l I apologised to him with the courtesy of pest convictions have been vindicated

* * *

ey from Chicago to Cleveland I was joined ar by a citizen of Oklahoma [illegible] Inquiring, ation he began to cross-examine me on not visited for more than [illegible] d that I was merely a visitor to the United States, and this brought forth a further inquiry as to what I thought of the country I expressed the statutory admiration for its development and growth which elicited a further question on the existence or otherwise of certain business premises on —— Street in Cleveland I was now "caught," and had to confess that I had only arrived in the United States a little more than a week previously This drew forth exclamations of wonderment and congratulation from my companion, who said, "Allow me to congratulate you on having learned to speak English in one week." To my embarrassment he called along the steward to join in the congratulations with the remark that "This gentleman has been in our country for one week, and you listen to him speaking English"

* * *

Admittedly we National Service M.O.s tend to grumble about anything and everything, but when the part of the Arab Legion which came over for our Tattoo had an over 50% going sick rate I think for once we were justified

The orderly said "There's a bus load of Arabs just arrived, Sir I thought he was using a figure of speech but there, outside the hospital was a hired charabanc with every seat occupied and some standing We watched amazed as an N.C.O marshalled them into a considerable squad and marched it to the M.I room. Only one of them spoke English, and his tutors had obviously been soldiers. Swear words which made even the orderly shudder were used in a charmingly polite manner, as adjectives of emphasis. Their complaints were not numerous, mostly foot rot, and rather exotic abdominal symptoms, but therapy was difficult. A universal lack of confidence was expressed in white medicines and tablets. Castellani's paint had its firm adherents among one group while others preferred gentian violet or brilliant-green to be applied to the affected part One rather likeable little private with dancing laughing eyes and a hallux valgus held the view that brown stuff given with a needle (pointing to the mist expect. bottle) would cure him

On the ward we had no interpreter until a patient admitted that he knew a little Arabic. As he was confined to bed ward rounds were made by the M.O and sister followed by two orderlies pushing the interpreter's bed along to each Arab's bedside There was a minor calamity when a wheel came off his bed and the leg ploughed a furrow in the floor brilliantly polished ready for the C.O's inspection Later when our interpreter had left hospital we were faced with serious communication difficulties. We wanted to tell the one remaining Arab that he could go back to his unit. We tried Go, Scram, Scarper, Allez-oop, to no avail, when a previously silent Pioneer in the next bed, in best military language said, Go on ——off! The effect was immediate The Arab leaped out of bed, gave us a crashing salute bowed three times, offered cigarettes all round dressed, and disappeared Some words are international.

* * *

It is just a hundred years since Thomas Addison published his monograph On the constitutional and local effects of disease of the suprarenal capsules,' thereby establishing himself, among other things, as a leader of the supra men in their perennial struggle with the ad men.

Today many people would picture a conflict between ad men and supra men as an ugly scene with no holds barred, between commercial television tycoons and B.B.C producers; but Addison and his opponents were of course merely concerned with the position and nomenclature of the endocrine glands situated near (or above) the kidneys. Seeing that Addison's own name began with ad and that he was writing so long before the Birmingham revision of the Basle *Nomina Anatomica*, it is perhaps surprising that he should have elected to be a supra man, but in this he is followed by all anatomists and many surgeons. On the other hand nearly all other doctors are ad men They steadfastly continue to speak and write of the "adrenal glands,' and scorn such [illegible]ctions as "suprarenaline, or even, as the Americans have it, epinephrine The debate continues—*supra caput, ad infinitum*

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Fig 11—The toilet bucket being carried away from the hut. Note the interest shown by the puppy

Cooking

The slow combustion stove was too small for cooking and heating water for 20 men Everyone took turns at cooking (fig 9), and the best system found was 3 men cooking for four days for 20 people Cooking could be a time consuming chore, yet it was a change Some people felt that it took up valuable time which could otherwise be spent doing scientific work Two schools of thought developed on the subject, one was in favour of a professional cook and the other supported the existing system We ourselves differ on this point, though we agree that in the absence of a cook everyone should explicitly be warned beforehand that cooking duties are essentially part of his job

Sledging Ration

While travelling by dog sledge we carried with us a standard sledging ration giving just over 4000 calories per day in a weight of 27 oz It consisted mainly of pemmican (a combination of fat and meat powder), butter in large quantities, chocolate, dried milk, biscuits, and sugar This diet was adequate but boring, it could have been improved with more variety and made more attractive with colourful wrappings and modern packing

Water

The water supply during winter was difficult When the lake ice was at its thickest, two metres of it had to be cut through to get at the water Explosives and drills were tried with varying degrees of success The best method we found was to dig a trough in the ice about 0 5 m deep and 0 75 m in diameter and then bore a hole from the bottom of this to water level (fig 10) The water gushed up into the trough and from it we filled buckets During the summer—from early June until mid-September—water was procured from a little stream running beside the hut We had to ensure that, during summer or winter, the drainage area of this stream was not contaminated by dog excreta Water was used for all domestic purposes at the surprisingly low rate of $1^1/_2$–2 gallons (just under 10 litres) per day for each man

TOILET FACILITIES

The toilet facilities left a great deal to be desired We had no small space or cubicle set aside for washing This would have been most useful, with, say, two wash-basins and a simple shower As little as 3 gallons of warm water gives a satisfactory shower As it was, one had to wash in the kitchen or living space

There was a single latrine in the unheated joining portion of the hut The excreta were held in a 45 gallon petrol drum cut in half This closet was very cold in high winds exceedingly draughty A more comfor compartment would have been appreciated The ur froze in the drum, which had to be emptied approxim every third day This meant going out into the col hauling the drum on a little sledge to a place abo yards from the hut where the contents were du (fig 11) It was a nasty job, as it took some tim loosen the frozen material from the drum, and bec of its unpopularity a rota had to be established So times the drum was not emptied until after it bec over-full, and on these occasions, visits to the toilet far from pleasant Often the seat was contaminated frozen urine To make the job of emptying less a disposable waxed cardboard carton of similar s a half petrol drum might be used Though more exp sive, these would store easily if they could be n into each other Some 200 would suffice for 20 m two years

From about mid-April until late September ther a latrine in the open about 50 yards from the hut (fi This was a good arrangement, and the dogs were e natural scavengers since they are coprophagous though we have evidence that there is no extra fat a able in the fæces (Masterton, Lewis, and Wild 1955)

While sledging, the techniques of defæcation and tion were somewhat modified However, neither was difficult or liable to cause frostbite While one stood with one's back to the wind, and the itself was partly protected by the hand When def one squatted with back to the wind A slit in the of the underpants allowed us to defæcate without k them, and they gave some protection to the butt

Many sledgers found that the gastrocolic reflex w soon after breakfast while they were breaking camp was convenient, for they were able to defæcate i shelter of the tent before striking it

(To be concluded)

Fig 12—Coprophagia in husky dogs. In the summer the l was placed in the open. Note the aluminium guard and stick used to deter over-enthusiastic dogs.

In England Now

Running Commentary by Peripatetic Correspondents

HE instinct whereby birds migrate across continents eels swim thousands of miles to the Sargasso Sea is in *Homo sapiens* But somewhere in the heart of rey stands a small hospital which has that effect on ever may once have dangled a stethoscope within its ls. By tradition no member of the medical staff es without a farewell celebration to which residents consultants, past and present, migrate mysteriously with unerring instinct. And since tenures of office continually drawing to a close each new ceremony ds to become bigger and better than the last.

he way these gatherings come about is a matter for jecture. Some say that it is the ceremonial hot punch he secret of which is handed down from generation to eration of resident anæsthetist—which calls the clan ther But then this strange instinct has been felt ond England's northern border, and it seems hardly lible that Sassenach smells can be detected in the eland of whisky

he fact remains that, several times a year peripatetic inations are irresistibly drawn to the verdant beauty urrey Before nightfall, I find myself passing through o well beloved gates, where a familiar ditch traps the ary and the porter is always asleep , past the flag pole larly adorned with some object carefully selected to se the secretary's spleen; up the central ramp ch serves as the main corridor and can in practice, mmodate a pre-war Austin 7 in the direction of ant gramophone music and the occasional strains of lly played violin, to the medical officers' mess where rited party is already in full swing

eeing so many old friends in a familiar setting produces the strange feeling that nothing has changed and time has stood still But the illusion is always en by someone who has a new job, car, or wife or proudly shows photographs of three offspring ead of two , or who has at last passed the Member , only to find himself deprived of his premier pastime the past ten years

* * *

he general surgeon's instruments have many domestic Spencer Wells forceps, scalpels, and cutting needles do things in the home which would otherwise be ossible The crocodile forceps which accompany my oidoscope have recovered a wedding ring from the tory and fallen bolts and washers from inaccessible s of my car I have even visualised ' a golden ster in my cystoscope, through a small hole in a ting board, and thereby been able to plan intelligent sions which resulted in its being restored to its tearful er No home indeed is properly equipped unless it tains a surgical bag

have, however always entertained a certain feeling uperiority towards *gynæcologists* and their tools, and comfortable sensation has lately received remarkable rmation in the domestic sphere under the following umstances. My wife and I recently moved house ing unearthed during the upheaval a curved Reverdin lle which had been bequeathed to me by a gynæcot relative I thought it would be useful for some ring of a stair-carpet. It proved a most handy non for this purpose, and when the real man from rs. Harraples came for the fitted carpet in the oom I proudly told him of my discovery and handed the Reverdin needle to inspect He looked at it, rst critically and then with cold anger 'What!' aid, 'Stick that bloody great thing through a good of carpet? I've more respect for this nice Wilton, I hope you'll keep that for what it was meant for' ust was the rebuke that I forgave the terminal osition and I apologised to him with the courtesy of whose deepest convictions have been vindicated

* * *

n my journey from Chicago to Cleveland I was joined he dining-car by a citizen of Oklaho[illegible] Inquiring t my destination he began to cross-examine me on ty which he had not visited for more than 25 [illegible] ntually I confessed that I was merely a visitor to the United States, and this brought forth a further inquiry as to what I thought of the country I expressed the statutory admiration for its development and growth which elicited a further question on the existence or otherwise of certain business premises on —— Street in Cleveland I was now "caught" and had to confess that I had only arrived in the United States a little more than a week previously This drew forth exclamations of wonderment and congratulation from my companion, who said, 'Allow me to congratulate you on having learned to speak English in one week To my embarrassment he called along the steward to join in the congratulations with the remark that "This gentleman has been in our country for one week and you listen to him speaking English'

* * *

Admittedly we National Service M.O.s tend to grumble about anything and everything but when the part of the Arab Legion which came over for our Tattoo had an over 50% "going sick" rate, I think for once we were justified

The orderly said "There's a bus load of Arabs just arrived, Sir' I thought he was using a figure of speech but there, outside the hospital, was a hired charabanc with every seat occupied and some standing We watched amazed as an N.C.O. marshalled them into a considerable squad and marched it to the M.I. room. Only one of them spoke English and his tutors had obviously been soldiers. Swear words which made even the orderly shudder were used in a charmingly polite manner, as adjectives of emphasis Their complaints were not numerous mostly foot-rot, and rather exotic abdominal symptoms, but therapy was difficult. A universal lack of confidence was expressed in white medicines and tablets Castellani's paint had its firm adherents among one group while others preferred gentian violet or brilliant-green to be applied to the affected part. One rather likeable little private with dancing laughing eyes and a hallux valgus held the view that 'brown stuff given with a needle' (pointing to the mist. expect. bottle) would cure him

On the ward, we had no interpreter until a patient admitted that he knew a little Arabic As he was confined to bed, ward rounds were made by the M.O. and sister followed by two orderlies pushing the interpreter's bed along to each Arab's bedside There was a minor calamity when a wheel came off his bed and the leg ploughed a furrow in the floor brilliantly polished ready for the C.O.'s inspection Later when our interpreter had left hospital, we were faced with serious communication difficulties We wanted to tell the one remaining Arab that he could go back to his unit. We tried 'Go' Scram,' Scarper,' Allez-oop,' to no avail, when a previously silent Pioneer in the next bed, in best military language said, 'Go on,——off!' The effect was immediate The Arab leaped out of bed, gave us a crashing salute, bowed three times, offered cigarettes all round, dressed, and disappeared. Some words are international.

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The debate continues—*supra caput, ad infinitum*

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Letters to the Editor

BREAD

SIR,—In their cautious report, issued by the Medical Research Council, Dr Widdowson and Professor McCance stressed repeatedly that the results of their investigation on German school children applied only to the conditions under which the investigation was carried out, but Professor McCance in his recent Sanderson Wells lecture went a long way towards explaining the background for people's preference for white or brown bread However, as you point out in your leading article of July 30, a panel, under the chairmanship of Sir Henry Cohen, has now been set up by the Government to advise on the whole question of the extraction-rate of flour It will be in possession of all the facts and it will arrive at the truth

With these considerations in mind it is difficult to understand that part of your article which now suggests that the 70% flour in the Widdowson-McCance investigation was not a 70% flour at all but one approximating to an 80% Presumably the Medical Research Council will in due course publish a spirited reply refuting such a suggestion, but meanwhile, as the person responsible for the preparation of the different flours used in the investigation, I would only point out that this portion of your article appears to have been written with very little knowledge of the effects of extraction-rate on the composition of flour To say the 70% flour was comparable to National flour is incorrect and, therefore, misleading

Cereals Research Station,
St Albans

T MORAN

⁂ Clearly we must give more fully the grounds for our statement

The 70% extraction flour used during the preliminary period in one orphanage, and during the first half of the preliminary period in the other, had a thiamine content ranging from 1 4 to 2 3 μg per g (These were the figures obtained under the direction of Dr Moran the corresponding figures obtained under the direction of Dr Holman, of the M R C team, were 1 6 to 2 3) The first consignment of 70%-extraction flour used in the experimental period (which was a mixture of 35% English and 65% Manitoba) contained 1 4 μg of thiamine, and 19 μg of nicotinic acid, per 100 g (Holman, Moran's thiamine figure was 1 1), the second consignment contained 1 6 μg of thiamine and 19 μg of nicotinic acid (Holman) In the recent book by Dr Moran and his colleagues, to which we referred, the average figure for thiamine in 73% extraction flour is given as 0 90, and 70%-extraction flour will of course contain less Indeed 70% extraction flour made from a mixture of 35% English and 65% Manitoba (at a moisture content of 15%) should have a thiamine content of 0 72 μg per 100 g if one uses the analyses given by Moran, McCance, et al. (*Biochem J* 1945, 39, 213) quoted in the book, or of 0 75 μg if one uses the figures given by McCance et al. in the M R C tables (War Memorandum no 14, 1945) From this we conclude that the 70% extraction flour used in Germany had a thiamine content somewhere about twice that given by McCance and Moran for 70% extraction flour used in this country

In thiamine content the 70% extraction flour used in Germany did not quite reach, on the average, the figure of 1 9 μg derived from Moran, McCance et al (1945) for 80% extraction flour, but in nicotinic acid it surpassed typical 80% extraction flour The figure for each of the two batches in Germany (Holman) was 19 μg per g, which may be compared with those derived from analyses given by Moran, McCance, et al (1945)—namely, 8 1 μg for 70%-extraction, 10 3 μg for 80%, and 12 3 μg for 85% Elsewhere Dr Moran and his colleagues at St Albans gave 16 5 μg per g as the nicotinic acid content of 80%-extraction flour (*Nature, Lond* 1945, 155, 717)

Similarly, the iron content of the 70% extraction flour used in Germany was high—in fact, the same as that of typical 80% extraction flour The figure for the flour used in Germany was 1 7 mg per 100 g, whereas typi extraction flour, as used before the war, has been sh contain about 1 0 mg (cf McCance and Widdowson, *Res Coun spec Rep Ser* no 235, 3rd imp 194 the figure given is 0 92 mg for 70 to 72% extra Typical 80% extraction flour contains 1 6 mg, accor both McCance et al in the M R C tables (1945) and et al (*Nature, Lond* 1945, 155, 717)

These facts seem to justify our statement of that the 70%-extraction flour supplied to McCance and his associates for their nutritional t Germany was comparable to 80% extraction flour used in this country We await with interest opposing evidence on which Dr Moran so confid relies —ED L

WHOLEMEAL BREAD

SIR,—In your leading article of July 30 you the question to be decided by the scientific panel re appointed by the Government is whether it is bet keep to high extraction (that is, National flour) or to flour from which a number of nutrients have removed and to which three have been restored.

I should like to support your opinion that when a question of altering what has been a staple food a very long time, the onus of proving advantage lies those who wish to make the alteration and not on who are opposing it

From the public-health point of view, I think members of the public who desire to have who bread should be sure of being able to buy a loaf of kind when they ask for it From correspondence I have had with the Ministry of Food I have ascer that there is no statutory definition of "w for the purposes of the Food and Drugs Act In a of practice drawn up for the guidance of the meaning given to "wholemeal" bread is bread preparation of which the whole of the flour used is extraction-rate of not less than 95% from clean A baker who sells as "wholemeal" a bread cont of a lower extraction-rate than 95% could be prose under section 3 of the Food and Drugs Act, (Incidentally, I have not heard of a pro Although it should be possible for a baker to "National brown flour" of 95% extraction there is no guarantee that if a customer asks for a meal loaf he will be supplied with one made of f 95% extraction Under the Flour Order, 1943 (no. "National brown flour" means flour complying following conditions

(1) It shall contain the maximum quantity of wheat which, having regard to the type of milling, can be m in such flour

(2) It shall consist of wheat flour and shall eith an extraction rate higher than 80% or shall be of sub the same nature and composition as such a flour

In other words, "National brown flour" need any higher than 80% extraction

It will be admitted also that when a wholemeal is asked for, the average shop assistant will brown loaf which more than likely is not mad wholemeal flour

The present position is that if a customer w wholemeal loaf, he must ask for a loaf made from the proprietary brands of flour "to which has been added and from which nothing has removed"

It is worthy of comment also that the National loaf is subsidised but not the wholemeal loaf

I trust this point will be taken into consider the panel recently appointed

C M SMITH
County Medical Officer of

Northampton

BREAD AND MILK

—Our grandmothers knew the answer—give the bread and milk and he will soon pull out of ouble! The old dears never realised that bread ssor McCance and Dr Widdowson, July 30) and milk (Professor Brock and others Aug 20) would ually form opening original articles in *The Lancet* emistry has already given some of the reasons for ma s intelligent guess By adding these foods ier the sum total of the amino acids is about as t a physiological combination as is possible. The and cons are interesting whole wheat contains a good all round protein mixture, but perhaps icant rather low lysine (2 7%) Milk is up on casemogen contains 8 3% lactalbumin 8 4% oglobulin 11·4% The lysine content of partitions man plasma are serum albumin 11 4% γ globulin fibrin 10 1%

heat protein has a high content of glutamic acid at glutelin containing 25 7% and wheat gliadin 6) Milk proteins are lower in glutamic acid lbumin 12 9% caseinogen 22 0%) Wheat flour milk therefore make a first-class amino acid team lling tryptophane (and by adding some yeast the content is further augmented) One of the most icant remarks of McCance and Widdowson is per If diets such as the ones we were using, consisting y of cereals and vegetables can be made so tious that they cannot be improved by a milk ement, this should greatly simplify the problem of interested in nutrition in parts of the world where meat and other sources of animal protein are lt to obtain The dietary therapeutic trial in hiorkor by Brock and his colleagues, and their vations that a synthetic formula of 'vitamin free" is so effective in raising the serum albumin and heir amino acid formula C$_2$ gave similar favourable al signs of "initiation of cure," suggests that ly wheat flour itself may not be far off the mark ilar manner Wheat flour contains about 10% in, which of course includes glutin and gliadin and in, all of which have a wide spectrum in their -acid composition

wheat-flour worth serious consideration in this for initiation of cure and in the eventual solidation cure" ? Brock et al note the trouble- diarrhœa of kwashiorkor as it occurs in Cape Town na, and Durban and that gastro-intestinal intol e of experimental diets is an important problem t flour as an added cereal to milk, has sometimes icant effects in checking diarrhœa in infants and children Quite often liquid fermenting acid will soon become formed non fœtid and neutral ghtly alkaline Gluten the noxious substance in disease, appears to have an important physio adjuvant function in the gut of the normal œliac) person Hippocrates noted when the s are irregular and the stools acid a thick decoction eat should be given and Celsus (aphorism 38) there is more nourishment in bread than any other

No wonder Wellington s soldiers were, according wles [1] noted for their stamina and good looks—they daily pound of wheat grain which they more often not chewed and ate on the march

lo something in milk protein will no doubt strong answer to the kwashiorkor problem it may that wheat flour will be a very practical main ce remedy If as has been shown possible the plant protein content can be increased 2% by a etic urea fertiliser [2] there would be millions of tons tein added to the world s crop Prophylaxis may e possible on the scale required

I hope Brock and his colleagues will devise as part of their research programme now that they have something of a basic test of "initiation of cure" some dietary experiments with wheat-flour It may yet be as McCance and Widdowson record that Plato was right when he pictured, in the ideal State, men living into healthy old age on wholemeal bread

Department of Child Health
University of Bristol

A V NEALE

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[1] Bowles G *Lancet* 1954 1 5*
[2] Match R. *Reader's Digest* March 1955 p 107

PERSONAL HEALTH SERVICES IN LONDON

SIR —In April of this year the London Local Medical Committee considered proposals to transfer certain health services from the London County Council to the Metropolitan Borough Councils After careful deliberation the committee was unanimous that the transfer proposals were not in the best interests of the population of London This view which was also adopted by the London Executive Council was transmitted to the London County Council Nevertheless, the London County Council has now decided to proceed with these proposals and to seek the necessary legislation If this is obtained, the county council will transfer maternity and child welfare vaccination and immunisation, day nurseries and the regulation of child minders to the borough councils whilst health visitors and home helps are to be shared between the county council and the borough councils.

This committee has experience of the personal health services as conducted before 1948 by the 28 Metropolitan borough councils and since 1948 by the London County Council with its 9 divisional health committees and the large number of members coöpted from the borough councils bringing knowledge of local conditions

Whilst there are several parts of the health service it is of the utmost importance that there should be full coördination between them Despite the tireless efforts of the borough medical officers of health the service provided before 1948 was of a very varied degree The population of London is entitled to expect and receive the best possible health service. It is difficult to see how the fragmentation of the services conducted so successfully by the London County Council will help to secure this end

The Local Medical Committee is gravely perturbed that, in face of this evidence the London County Council is proceeding with its proposals.

F GRAY
Secretary, Local Medical Committee
for the County of London.

London, W C.1

*** This subject was discussed in our issue of July 16 (p 139)—ED L

PREVENTION OF TUBERCULOSIS

SIR,—In his letter placed on the Widdicombe File in your issue of Aug 13 Dr Brewer says 'I assume that the general practitioner's first responsibility is to detect cases early and refer them for proper treatment' But he feels he is fighting with one hand tied behind his back because he has not an X ray department within easy reach

Poor Dr Brewer! Could he not strengthen his remaining hand—even if the other cannot yet be untied—by sending sputum specimens to be examined? The outfits are supplied free of charge the patient himself takes ' the specimen and nearly always pays the few pence postage he is saved (at any rate at first) a tedious journey to the nearest town and the result is likely to be received more quickly than an X ray report Dr Brewer should try it some time it is one contribution he could make which is not mentioned in his otherwise inclusive letter

Public Health Department
County Hall Lewes

F LANGFORD

HOMOSEXUALITY

SIR,—I cannot share Dr Learoyd's surprise at your printing an anonymous article on Male Homosexuality Surely a matter which merits the attention of a committee authorised by the Home Office is of sufficient importance to justify the widest public discussion

I have long held that adult sexual behaviour is the business of the individual concerned, providing always that there is adequate protection from corruption of children and adolescents There must be revision of the law which allows female homosexuality to go unpunished but which can still prescribe heavy penalties for male homosexuality The present position of the law opens wide the door to blackmail of the homosexuals by unscrupulous persons It should not be beyond the ingenuity of Parliament to provide a civil equivalent of Sec 40 K R 's & A C I (Conduct Prejudicial to Good Order and Discipline)

Homosexuality has been present in every community through the ages, and, though it can be regarded as an arrest of psychosexual development, it is remarkable how many homosexuals have a high standard of intelligence and artistic creative ability (cf Emperor Hadrian and Tschaikowski)

Surely the time has come for some understanding and tolerance of these people so that it would be no longer possible for a learned judge to say that in cases involving abnormal sexual behaviour you never get a true verdict from a jury—because half of them cannot believe such things happen and the other half indulge in such practices

London, S E 17 E K PRITCHARD

SIR,—I read with dismay Dr Learoyd's letter of Aug 13, in which he criticises what seemed to me to be an honest sensible, and instructive paper from a self confessed homosexual Dr Learoyd refers to "the author's dreary case history," and his sixteen years of treatment by psycho analysts "who conveniently put the blame on the parents and early environment" But surely a case history, if true and accurate, is an essentially personal record of the development of a person's suffering, *and as such is all important* It may be monotonous, but it can only be dreary to some one who has lost interest in his patients and is therefore no longer fulfilling the rôle of doctor

By his reference to the psycho analysts "conveniently" putting the blame on the author's parents and early environment, it is obvious that Dr Learoyd hardly believes this to be a true explanation of the author's condition Unless he has himself followed the author's development and treatment, by what right does he make such a criticism? Furthermore, his criticisms are unconstructive He makes light of the sixteen years' psycho analysis, but what is his alternative treatment? It should be remembered that there are three people a homosexual can go to for help—another homosexual, a priest, and a doctor The first is undesirable and the second will send him to the third What would Dr Learoyd himself do if a patient came along to him with a tragic confession of his own homosexual problems? Would he kick him out, or would he try to help him?

He goes on to suggest that legalisation of homosexuality would be disastrous Whether legalisation would be right or wrong, it is doubtful if it would make a lot of difference, for apart from the usual argument that female homosexuality is not illegal and does no apparent harm (sociologically) it remains a fact that homosexuality is repugnant to most people, and would always carry a social stigma, and accordingly would never be pursued in any way openly And assuming the law is left unchanged, what good is it doing? I should imagine that homosexuals are as likely to be deterred by the knowledge that what they are doing is wrong, as prostitutes are likely to be converted by being made to pay their ridiculous forty-shilling subscriptions Wh be realised is that, in crime and vice, sexual falls into a special category This is because fundamental in human behaviour, and like any human function it can be utilised properly, exce or abnormally Whatever we like to think we are to "purify" our way of life, sexual abnorma indulgence will persist because our modern way of civilisation, as it is called—is in reality It imposes a strain, and the strain appears in a of ways, including abnormal sexualism Do we sexual abnormality or neurosis in animals, excep man induces it?

How can Dr Learoyd disapprove of the sixteen years of psycho analytical treatment w *remembers that the only practical* alternative treatment is prison? Does he honestly think psycho analysis is of meagre help, prison will b greater help? When brothels were closed in were we to believe that all the inmates promptly ferred to biscuit factories? Remember too that was some sort of medical inspection in brothels free lancing prostitutes will doubtfully be control venereal disease I do not wish to give the imp that I sympathise with indulgence, I am mere to show that modern legal remedies are probably One of your correspondents, writing on the death spoke of "legality before justice", here it is before common sense

The homosexual problem is obviously both a logical and a medical one At present it would that of all the attributes needed in its approach, is the most valuable

Stockport Cheshire JOHN F

SIR,—Dr Learoyd objects to the appearance article while the Home Secretary's committee But Lord Winterton is reported to have said in the of Lords on May 19, 1954, that he thought it m this committee if discussion took place in Parliam press, and elsewhere Dr Learoyd's views are known I do not see why he should wish to de a hearing

He also dislikes my use of the Kinsey figures I ask that anyone interested should read the portions of the Kinsey report, read exactly what and see whether they can detect the "naive just which he complains

Since Dr Learoyd and I start from quite premises, it is not surprising that we arrive at conclusions He seems to start from the assumpt homosexuals are a negligible *minority* of irre persons, interested only in their own selfish grati and he brushes aside any evidence or opinion contrary I start from the assumption that the of homosexuals are responsible and useful citiz regard it as just as unreasonable to legislate homosexuals were irresponsible and amoral, as it be to do the same in the case of heterosexuals

In fact I doubt very much whether the attitude or the present law *do* lessen homo I suspect that the position is in some ways analo prohibition and alcoholism Homosexuality is vented but driven underground, so that its mos able forms are apt to flourish The Scandinavian are obviously not the sinks of iniquity that th be according to Dr Learoyd's arguments, but it interesting to know how their incidence of het prostitution and homosexual seduction of chil young persons compares with ours

May I try to explain, for the benefit of the the imagination to see, something of the h point of view—what is liable to be the effect on h usual public attitude to these matters? I have that the feeling of being unwanted and exc family is important in the genesis of all homo ility One motive in the homosexual's make-up is his own way rebel against the family and perhaps punish it for its treatment of him Another is to omeone or a group of people with whom he does not nwanted and excluded In so far as society repeats reinforces a feeling of ostracism and exclusion it to confirm the homosexual in his perverse and ious ways and to encourage him to seek associates roups with whom he does not feel unwanted If we *wished to lessen homosexuality, we should attempt* habilitate responsible homosexuals into society, ing punishment or segregation for the irresponsible ity who may be a danger to children and young ns

THE AUTHOR OF THE PERSONAL PAPER

SEQUELS TO ANÆSTHESIA

—May I briefly restate my views? There are three e *factors* possibly operative during operations general anæsthesia'—namely (1) cerebral circu failure (2) the drugs used and (3) cerebral olic disturbances Now these three factors in r or less degree are common to an extremely number of patients undergoing operations under l anæsthesia the vast majority of whom are ly unharmed Further quite apart from surgery eneral anæsthesia, massive blood loss has produced ne dementia but has done so in only a small rtion of patients suffering severe hæmorrhage gain, the 'shock state' due to cardiac infarction een sometimes in pneumonia has produced the cerebral catastrophe and yet has done so in only small proportion of cases. Why? I believe that xplanation lies in an individual susceptibility or ncrasy to one or other of the three factors I have oned but, since this idiosyncrasy cannot be ed beforehand it is of paramount importance to or correct with urgency any of the causes within ree factors As you Sir put it—the patient's t is at stake.

mo time did I incriminate nitrous oxide *itself* lthough there is a theoretical possibility of idio ay to this or indeed to any other, agent there is mical or *experimental evidence* to support it zzopardi charges me with views I do not hold the adverse effect of anoxia on the brain is a oven beyond argument And unfortunately nitrous "anæsthesia'—particularly in unskilled hands o often nitrous oxide asphyxia as Dr Azzopardi d points out. My statement that nitrous oxide widely used is in fact synonymous with 'asphyx anæsthesia is still widely practised —and this orrespondents know full well Dr Bourne needs fence but in simple justice I would point out Dr Cartwright entirely misrepresents his friend he attributes to him the view that these mishaps ue to nitrous oxide per se.'

an I wrote it is not enough to quote *survivals*, e patient's mental state is also a matter of grave at I had in mind the fact that the minor ties following operations under *general* anæsthesia almost certainly be diagnosed as neurosis or lity' It was for this reason that I limited my les to cases *of dementia*, about which there can be opinions. Dr Cartwright—and I fear too many —dismisses too lightly as hysteria the mental ances which have *followed* asphyxia inflicted the guise of anæsthesia Doubtless they would ly have dismissed Courville's cases had these not ply come *to necropsy!*

Bromage is to be congratulated on his mental lity to self induced hypotension but this does urprise me What is indeed surprising is his uation from this fact By analogy with my own cases the risk of his suffering extreme dementia thereby is very small. However he himself has shown previously that there is in fact a risk and that induced hypotension may be accompanied by evidence of cerebral damage It matters little from a practical point of of view whether this is due to the hypotension itself or to the consequent anoxia I agree that controlled hypotension is *a great convenience to the surgeon* So is exsanguination and other debatable measures. But the justification for their employment clearly depends on the care with which the risk of applying them is weighed against the risks of withholding them And here again I would emphasise that it is not enough to assess the risk to life alone—the patient's reason is of equal importance Although the majority of patients come through these manœuvres unharmed a few die, a few may suffer catastrophic mental impair ment and an unknown number may sustain minor cerebral damage *and* would subsequently be labelled neurotic, hysterical," or 'senile" Having seen such cases I freely admit to the 'prejudice' of which Dr Bromage accuses me. But not, I think without cause His inference that I withheld facts concerning case 2 is, I assure him, quite without foundation nothing sinister lurks on my side of this iron curtain he has conjured up His complaint that I too summarily dismiss the factors of fat-embolism *positioning in anæsthesia*, &c., is a matter of opinion but I feel is largely unwar ranted as a careful reading of my paper will show Much has *already* been published, and much remains to be written, on the rôle of positioning in anæsthesia—with particular reference to spinal pressor reflexes, the *influence* of the leg down position on blood pressure the enhancement of effect on blood pressure of leg and trunk position in spinal anæsthesia (often used in prostatectomy), and the enhanced effect of posture movement and transport in oligæmic and other shock states and in controlled hypotension—but a *detailed* discussion on this subject was beyond the scope of my paper and would come better from those whose particular interest it is *Seneca's authority* for the view that old people do not bleed like the young is scarcely acceptable in the light of more recent observa tions. Shakespeare *(1600)* states yet who would have thought the old man to have had so much blood in him (*Macbeth*, Act V Sc 1) In this case the operator *was* troubled by much bleeding

I find much to agree with in Dr Massey Dawkins's letter, but again a discussion on regional anæsthesia was beyond the scope of my paper

Cowley Road Hospital
Oxford

P D BEDFORD

STAFFING THE TRANSFUSION SERVICE

SIR,—However unpleasant Dr Bowley may think it, it *remains a fact* that the primary duty of a transfusion centre is to provide blood as and when required and if, as your *annotation* of July 16 stated a regional centre can provide blood only for 'urgent" cases then it is failing in its *primary* duty The national figures for unused blood are not pertinent but although the new pilot bottles have increased the work of my regional centre, they have *allowed* us to reduce our returns to 2% or less, in spite of a 12% return *from* the wards If this level is grossly exceeded then I submit that the regional transfusion director might tactfully lighten the darkness of those who waste *blood*

I cannot *agree* that there is little relation between routine antenatal testing and cross matching of blood for transfusion The *ABO and Rh* testing techniques are identical, whilst the tests for antibodies are identical with the *cross-matching* procedures generally used. The only difference is that antenatal testing can always be done at leisure, checked and rechecked—which is rarely possible in cross-matching; for this reason antenatal testing is an admirable training for work in blood transfusion Although in my laboratory we cross match about 350 bottles a month, we also study about 200 new antenatal blood samples, screen 30 or 40 sera for antibodies, titrate out 5–10 sera, and do a varying number of direct Coombs tests certainly without this solid block of work my technical staff and I would be far less confident in our reagents and our techniques —and this would affect not only our transfusion work but also our diagnostic work in, for example, suspected hæmolytic anæmias I should like to hand over to the regional centre all sera in which antibodies have been demonstrated, or in which, on clinical grounds, antibodies are expected but cannot be demonstrated This would ensure that the transfusion centre would acquire the sera it needs

Centralisation of antenatal testing is administratively elegant, but, as Dr Bowley (Aug 6) is now finding, not always convenient In a large city such as Sheffield there are several hospitals and a transfusion centre competing with each other and with industry for suitable technical staff. The transfusion centre is the most highly specialised of all these—and few intelligent young men are likely to enter a field in which promotion is slow and from which transfer is likely to be difficult because of this specialisation And if, by some mischance, such a man does enter that field, he will leave it as soon as he realises his error

In smaller centres, where there may be but one hospital laboratory, a pathologist who establishes contact with the local secondary schools should, in a few years' time, have built up an excellent technical staff [1] Reasonably frequent broadsheets from the centre or one day revision courses should then maintain a high standard of work, so that in spite of some increase in the use of sera and of man-power, the regional centre and the hospital laboratory could balance their demands more evenly

Central Middlesex Hospital,
London, N W 10
GEORGE DISCOMBE

INCOMPLETE PITUITARY INSUFFICIENCY

SIR,—May I comment on the interesting letter from Dr Wilson and his colleagues (Aug 13) ?

The writers have now established that their case 6 [2] suffered from primary hypothyroidism and, in addition, some degree of pituitary insufficiency They conclude that a pituitary lesion might have aggravated a pre existing thyroid deficiency It must appear equally possible to anyone, and to me more probable, that a pre existing hypothyroidism conditioned a pituitary inadequacy, with an increased liability to postpartum hæmorrhage, and finally a minor degree of postpartum necrosis In a male cretin, aged 26, under my care (case 6 [3]) thyroid therapy increased his output of follicle-stimulating hormone (F S H) from 0 to 18 mouse units per 24 hours D'Angelo and his co workers have demonstrated that thyroid-stimulating hormone may actually disappear in hypothyroidism only to reappear when the hypothyroidism is cured What hypothyroidism may do to the functions of the pituitary is the subject of recent and, as yet, scanty consideration

The further investigation of their case 7 has now established that both thyroid and adrenocortical failure can occur in hypopituitarism in the absence of sexual failure This is an important observation, and to complete the record may we have the result of the F S H assay in this patient ? This is an exception to the usual sequence of pituitary failure, but these exceptions may have more importance than the general rule when we understand the formation of the pituitary hormones The usual human sequence has recently been demonstrated to occur also in dogs by Ganong and (Boston) by progressive ablation of the hypoph in them sex, thyroid, and adrenocortical failure in this order In a patient of mine (case craniopharyngioma this sequence was not ob both sex and adrenocortical failure were but no evidence of thyroid failure could be obtain

In congratulating Dr Wilson and his coll the conclusion of their investigations, may I p how admirable was the conduct of this scientific The experts had criticised the conclusions of the authors, who rejoined courteously and were the given facilities for the further investigation of cases, to the enlargement of our understanding of in the pituitary

Derby
DOUGLAS H

THE DEATH PENALTY

SIR,—With the greatest respect to some of correspondents, I think that they are making th too complicated Ethical problems may inde been occupying the minds of men of genius f two thousand years, yet it is a strange fact th great ethical advances, such as the abolition of have not, I think, arisen out of brilliant, log lucid expositions of the philosophers One of the failings of our generation is the deification of the yet as Christians—and we are a Christian we know that wisdom is granted to quite simple unversed in the language of philosophy, where of right and wrong are concerned

This may be dubbed as mere emotional but many of us believe that the death penalty is neither effective in its object nor in line interpretation of the Christian way of life simpler folk this is sufficient answer to the pr

Leicester
PAUL HICKIN

SIR,—Sir Francis Walshe (Aug 13) asks for the argument against capital punishment May I it, *sans m'engager* ?

The object of the death penalty is primarily potential murderers In some countries and countries the penalty has been abolished or temp suspended In these circumstances neither the the trend of the rate of murder has been sig changed

If these propositions are correct, then capital ment fails in its main object, and, unless there arguments for maintaining it, it should be abolish

Oxford
C W M WE

SIR,—I am what James Thurber would desc man with big brown eyes and a tiny mind, discussion on ethics, Aristotle, and philosophi above my head

In theory I may support abolition of capital ment, but, as a father of small children, in the of their murder I should naturally desire Hatred is as natural a feeling as love

The important point that has so far bee is that the final responsibility for the contin the death penalty rests upon the electorate If the want murderers to be hanged, they will be desire the penalty to be changed, they mus their representatives accordingly

Dr Day's letter of Aug 13 calls for contro suggests severe penalties for the unauthorised of lethal weapons But how many murders are by lethal weapons (and I take it Dr Day m knives, and coshes) ? Surely the common murder are hammers, axes, carving knives but by no means least, a pair of hands Are day articles to be outlawed ?

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[1] Gray, J D A *Lancet* 1948 ii 939
[2] Wilson, L A, Auld, W H R Bowman W *Ibid*, 1954 ii, 715
[3] Hubble D *Ibid* 1955 i 1

the morning that Ruth Ellis died I realised she paying the penalty for a cold blooded murder ot when I looked at my watch at 9 15 A M I felt o sick But not as sick as the day the Rosenbergs electrocuted

aging may be right or wrong, I just don't know rom a practical point of view, it is the public that decide to retain the rope, or find another method ing with this particular crime.

worth F E D GRIFFITHS

—Sir Francis Walshe asks for a 'lucid and logical ent' in support of the case against capital ment. I wonder whether he regards this as a statement 'to take deliberately somebody's today regarded as the most abominable crime an commit. (I do not know whether there are any al reasons for this general conviction or whether purely emotional attitude) How then can spite of our severe condemnation of deliberate empower and pay a person to do just this?

ow society allows—and may even order—men to self protection, but only in cases of utter ency A handcuffed prisoner does not confront h such an emergency The potential danger which y still represent can effectively be dealt with it anybody having to commit the crime which ody professes most deeply to abhor May this ence be founded on a logical or psychological the abolition of the death penalty must be the consequence of this generally professed abhorrence.

awrence's Hospital
terham, Surrey LISE GELLNER

—Sir Francis Walshe says that it is a pity that of your correspondents make a 'lucid and logical ent' against capital punishment. But surely least of all a doctor needs to find elaborate s to save a life On the contrary the onus lies se who wish to see *their fellow humans put to* to find a *very* good reason why it should be done.

n. W NORMAN TAYLOR

ACUTE CHOREO-ATHETOSIS DURING RESERPINE THERAPY

—In view of the attention recently drawn to eurological complications of reserpine therapy larly the observations of Barsa and Kline[1] emann and Pflugfelder[2] and Stead and Wing,[3] development of extrapyramidal symptoms during ministration of this drug the following case may nterest.

usewife, aged 54 had had no ill health in spite of ten full egnancies, until the age of 50 She then had frontal head giddiness dyspnoea on exertion, and palpitations was admitted to this hospital with early hypertensive failure in 1952 Her blood pressure averaged 220/130 her stay in hospital. Retinal changes were slight and s free from albuminuria. X ray examination showed al enlarged hypertensive heart with pulmonary con The electrocardiogram showed left heart strain and ar fibrillation. She did well on digitalis, mercurial s aminophylline and sedatives

was readmitted in June 1955 with a recurrence of ma, and in addition nocturnal paroxysmal dyspnoea moptysis. Her condition on admission was substantially to that on her previous admission, but bilateral dema with extensive retinal hæmorrhages and exudates ow present Her œdema was more massive she was d and congested and heavy albuminuria was present but cleared later Her blood pressure was 240/145 ission.

lt-free fluid restricted diet, in digitalis, full dosage ial diuretics, and intravenous aminophylline were prescribed and for the first time anti hypertensive drugs were administered 1 5 mg daily (in divided doses) of reserpine ('Serpasil') was given and oral pentolinium tartrate in increasing doses, until she was taking 150 mg daily On this régime the blood pressure fell to 162/90 and her cardiac failure improved greatly

Two days after the first dose of reserpine some twitching of her right hand was noted and she complained of severe epigastric pain and vomiting The following day the muscular twitching had progressed to a typical choreiform movement now extending to her face right leg and thorax Next day there was emotional instability alternate weeping and giggling and great restlessness. A severe generalised chorea with wild uncontrollable movements was now present. Writhing athetoid movements particularly of the right hand were associated with the typical athetoid position of the fingers and hand for long periods Her epigastric pain was severe and vomiting was frequent Apart from these involuntary movements no abnormal neurological signs were ever detected in her central nervous system

Reserpine was stopped on the third day of therapy and all other drugs continued as before The involuntary movements gradually subsided and had completely disappeared in fourteen days. Her emotional instability disappeared in a few days and her abdominal pain and vomiting within ten days. She made a good recovery from her cardiac failure in spite of this alarming upset and has remained in reasonable health in the last few months as an outpatient

This case is instructive because of the small quantity of reserpine given before the onset of symptoms and the very real severity of the extrapyramidal symptoms.

A coincidental Sydenham's chorea was rejected as a cause for obvious reasons—the age of the patient and the absence of previous or concomitant rheumatism. A vascular cause is more difficult to reject but the rapid disappearance of symptoms following the withdrawal of reserpine pointed strongly to its guilt

Law Hospital,
Carluke Lanarkshire A MUIR

CALCIFICATION WITHIN THE LIVER

SIR,—I have read with great interest the article by Dr Smallwood and his colleagues (Aug 20) describing a case of intrahepatic calcification of probable syphilitic origin Since January, 1953, I have had under my care a young man in whom the healing of multiple hepatic gummata following treatment has been accompanied by the development of progressive calcification as seen in serial radiographs A full report of this case will, I hope be published in the near future.

Liverpool 1 C D ALERGANT

CONTINUOUS NARCOSIS

SIR,—It is reported in your issue of Aug 13 that at a recent inquest Prof J M Webster speaking of continuous narcosis said 'I think it is a very dangerous treatment You pour barbiturates into a body You do[illegible] know what happens to them, and you are living [illegible] dangerously when you employ massive doses of barbiturates.

I have been using this treatment exten[illegible] for [illegible] twenty years In the earlier years [illegible] I agree there were from time to time [illegible] complications Since 1947 amylobarbitone [illegible] employed at this hospital, and [illegible] have been treated annually without [illegible] tions. The dose varies between [illegible]

Reputable textbooks in [illegible] the dangers of this treatment. [illegible] experiences of early [illegible] ence on small numbers [illegible] quately trained. [illegible] the physician [illegible] may do than [illegible] or even [illegible]

St Lawrence [illegible]
[illegible]

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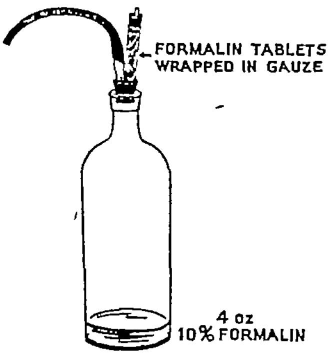
[1] J A. Kline, N S J Amer med Ass. 1955 158 110

[2] temann, K. Pflugfelder G Schweiz med. Wschr 1955 637

[3] J S Wing J K. Lancet 1955 i 8 3

PSEUDOMONAS INFECTION IN A UROLOGICAL WARD

SIR,—The article by Mr Pyrah and his colleagues (Aug 13) is timely in that it draws attention to the ease with which a *Pseudomonas pyocyanea* infection can spread through a urological ward, and the methods which may be necessary to eliminate it In their drainage bottle, however, the air outlet may also act as an inlet for organisms I would draw attention to a simple form of drainage bottle which I have used for more than three years (see accompanying figure)[1] Formalin vapour from the liquid formalin fills the tubing and the air inlet is guarded by a filter containing solid formalin It is used for drainage in all cases after prostatectomy or whenever an indwelling catheter is required, and it has done much to reduce all forms of infection



I am not in the habit of using "long continued urethral catheterisation as a preoperative measure," but the same bottle can be used with a suprapubic catheter

London, W 1 E W RICHES

THE ÆTIOLOGY OF RHEUMATIC FEVER

SIR,—Many will regret with Dr Schlesinger, whose remarks at the Royal Society of Medicine you reported on June 11, that no new light has been thrown on the pathogenesis of rheumatic fever since the streptococcus was inculpated some 20 years ago

To me it has seemed a pity that the door has been shut to further inquiry by a misguided belief in single causes for diseases, which has caused the streptococcal theory to be universally accepted almost without question Even in such an undoubtedly infectious disease as tuberculosis there are factors more important than infection by the bacillus which determine the incidence of the disease

Those who see the streptococcus as an essential cause of rheumatism admit that there are other more important factors, but they argue that since this is the only one we know it is the only one worth talking about[2] It is admitted also that 35 to 45% of first attacks of rheumatic fever are not preceded by any recognisable infection[3-5], but these cases, it is argued, are so like the streptococcal ones that they must have had the same cause Furthermore, the streptococcus is so ubiquitous that it is capable of getting through some portal of entry without being noticed

Let us imagine that the same line of reasoning were applied to fractures of the tibial condyle So many of these occur in pedestrians struck by cars that a keen student might well say that the ætiology of this fracture is a blow from a bumper bar He might justifiably forget such other factors as condition of the patient's bones, his posture at the moment of impact, and the speed of the car But he might become confused when he sees a patient who has fallen into his own cellar and sustained a fractured tibial condyle He would have to agree that the ætiological factor was not a bumper bar but a certain kind of violence, of which [illegible] bumper bar happens to be the commonest [illegible]

It is true that rheumatic fever often follows infections in children—because that is the [illegible] infection which occurs in children But [illegible] series of 115 first attacks followed sprains a[illegible] non penetrating injuries[6] In 60% of adults [illegible] disease follows injuries, operations, or infections [illegible] by organisms other than the streptococcus [illegible] Libyan campaign sandfly fever, malaria, and [illegible] were the commonest causes[10] In the tropics [illegible] injections play their part[11]

The ætiological factor, it seems to me, is [illegible] tissues, of which streptococcal infection is the [illegible] example in children We should remember [illegible] some 40% of cases in children and adults start [illegible] visible cause The process which frequently [illegible] infection or injury to set it off is capable of [illegible] without any help

Melbourne MICHAEL K

MENTAL EFFECTS OF RESERPINE

SIR,—The letter on this subject by Dr M[illegible] and Dr Isaacs (Aug 13), and your leading [illegible] the same issue, emphasise the hazards in the preparations containing *Rauwolfia serpentina* [illegible] extracts therefrom) McGregor and Segal[12] [illegible] these findings

Yet I see that one of the reputable Sunday papers, (and others, for all I know) advertises a [illegible] tion ('Tranquilex') containing as its active [illegible] rauwolfia, for those who are "worried, irritable, tense," and who "sleep poorly"

The results of the public having open access to [illegible] tially dangerous drugs were seen in the case of pentynol Are we not likely to see other tragedies [illegible] rauwolfia preparations are to be bought freely [illegible] their known undesirable side effects?

London, N 22 R W W

THE CURRICULUM

SIR,—Your leader last week suggested the outbreak of hysteria among final year students [illegible] do more than anything else to promote reform [illegible] curriculum You may be interested to know [illegible] in a survey of the behaviour of my class,[13] I [illegible] this remained good until the fifth year when [illegible] began to behave during lectures in the childish [illegible] characteristic of 15 year olds On ques[illegible] students out of 74 gave the following reasons [illegible] decline in behaviour (*a*) the course lasts to[illegible] (*b*) the quality of lecturing is poor Although [illegible] reasons were offered I believe these were the [illegible] ones

I should hesitate to say that a state of hysteria [illegible] in the class, but I would say that there was in [illegible] considerable friction between teacher and student [illegible] resulted in loss of valuable time It appears [illegible] limit of tolerance was reached not, as suggested [illegible] editorial, in the final year, but by the end of the [illegible] year Any steadying effect apparent in the [illegible] is probably due to the student's hope that, by [illegible] work, he may free himself from undergraduate [illegible]

As regards the reforms to be made, it may [illegible] present the problem as seen through a student's

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1 Riches E W *Practitioner* 1952, 169, 388
2 Swift, H F *Amer J Med* 1947, 2 168
3 Eggleston C *Ibid*, p 278
4 Stollerman, G H *Ibid*, 1955, 17, 757
5 Catanzaro, F J, Stetson C A Morris A J, Chamovitz R Rammelkamp C H jun Stolzer B L Perry, W D *Ibid* p, 749
6 Glazebrook, A J Thompson S *Edinb med J* 19[illegible]
7 Manchester, R C *Arch intern Med* 1946 77 31[illegible]
8 Rosenblatt, W H *Kentucky med J* 1946, 44 [illegible]
9 Kersley, G D *Brit J phys Med* 1946, 9, [illegible]
10 Copeman W S C *Ann rheum Dis* 1944, 4 1[illegible]
11 Morgan J, Comroe, B L *Ann intern Med* 19[illegible]
12 McGregor M Segal, N *Brit Heart J* 1955, 17, [illegible]
13 A report has been submitted to a student's journal

, I believe that time is often wasted on recapitulation -petition Secondly the 2nd M B subjects should be -lered as physiology only r both anatomy and logy are subdivisions of physiology Similarly nical subjects should be considered as a unit no medicine and public health could be discarded bjects and taught in their relation to the other ts.

ally, I would suggest that nobody should become cher until he has had adequate training in the ods of instruction

ALBERT JACOB
5th year medical student.

REDUCTION OF OVERDRAFTS

—Everyone knows that the banks have been ted to get tough ' with their customers over and they appear to be already on the warpath having unexpected effects in the field of preventive ne Already I am being called in to deal with ms arising from indiscriminate action by local managers and if this action continues unsuper I anticipate a rise in the suicide rate I wonder r of your readers have had similar experiences

T D BLOTT
on Essex. Medical Officer of Health

ISONIAZID AND CLINICAL TRIALS

—In your leader of Aug 13 you refer critically limitations of the conclusions drawn by Dr e Fox and Dr Ian Sutherland in their report to the l Research Council's Tuberculosis Chemotherapy Committee on the clinical significance of isoniazid nce and you suggest that this problem can only red by carefully planned and controlled investiga It might not be apparent from these remarks major part of the report was, indeed devoted to ussion of the difficulties of solving this problem ively Moreover the design of an ethical investi that could give a clear answer presents formidable lties.

also state that the Medical Research Council's l trials in the chemotherapy of tuberculosis have liscontinued. While it is true that the intake was rarily interrupted the observations and analyses accumulating data have been published in a number ent reports. Moreover several fresh coöperative designed to answer pressing questions have been d One of these, on the incidence of primary esistant tuberculous infections is in progress and r, on long term chemotherapy of chronic sputum ve cases of pulmonary tuberculosis is due to hortly

dical Research
ll Laboratories,
ndon, N W 3.

P D'ARCY HART
Secretary, Medical Research
Council's Tuberculosis
Chemotherapy Trials Committee

UNICEF

—In her article of July 23 entitled If I Were or General of UNICEF Dr Cicely Williams raised estion of how the resources of the United Nations n's Fund can best be used to advance child welfare nomically underdeveloped areas She suggested NICEF puts too much emphasis on the provision pplies for mass campaigns against disease and l should concentrate more on assessment of needs aining of skilled personnel so as to develop health mmes of lasting value

Unicef Policy is Made

problem is not only the best use of limited inter al money but also how this money can stimulate d countries to use their own resources to develop mmes for child care which they can eventually n themselves.

Projects are first worked out in the country requesting assistance in this W H O or F.A O personnel play a significant part The recommendations are then passed on by the Executive Director, who in turn asks for the allocation of funds by UNICEF's Executive Board, comprising the representatives of 26 governments All health programmes must have the technical approval of W H O, usually given by the W H O Regional Office concerned

The Executive Board has established criteria for projects which it can aid, and continually seeks the advice of the UNICEF/W H O Joint Committee on Health Policy (a committee representing the Executive Boards of both bodies) as well as of the Director General of W H O and his staff Each proposal is scrutinised to ensure that it represents a good use of money and that the government requesting the programme is able to provide its own share of funds, facilities, services, and personnel

Use of Unicef Funds

Apart from emergency aid which is already a separate category as Dr Williams recommends the Fund's aid has been mainly directed towards campaigns against such mass diseases as malaria tuberculosis yaws trachoma, and leprosy to the extension of elementary maternal and child welfare services to rural areas and to child feeding and milk-conservation programmes

Dr Williams took the view that mass health campaigns claimed too high a proportion of UNICEF's funds as opposed to programmes with far reaching effects Excluding operational and administrative costs the breakdown of allocations since 1950 (the year when our terms of reference were changed from post war relief to emphasis on long range programmes in the economically underdeveloped areas) is as follows

Allocations by Unicef Board 1951 to March 1955

Emergency aid	$12,351 000
Maternal and child welfare	11,554 000
Mass health	16,235 000
Long range feeding	3 041 000
Milk conservation	5,840 000
Freight	8 700 000

Long range Feeding

The figure for long range feeding understates the importance of this type of aid, for $3 670 000 of the freight charges have been for the transport overseas of skim milk powder obtained either free or at nominal price 96,000 tons for long range feeding and 97 000 tons for emergency relief

Milk for long range feeding is being given over a period of years to help countries start permanent school lunch programmes and to reach infants pre school children and nursing and pregnant mothers The milk is the basis of nutritional education leading to better planned diets and wiser use of locally available foods The expenditure on milk conservation has helped countries carry on such programmes by equipping milk drying and pasteurising plants (120 plants are already in operation) the bulk of the output being used for child feeding programmes.

There are, however many parts of the world particularly in the tropics where there is no prospect of providing an adequate milk supply and UNICEF is examining with F.A O other means of providing protein rich foods such as fish flour and ground nut or cottonseed flour There is already under construction in Indonesia a plant which will produce milk ' from the soya bean

The Mass Health Campaigns

In the health field the Fund has tried to direct its aid mainly to rural areas not wishing to add to what is in many cases already a wide disparity between the standards of metropolitan and rural services. Further it has worked on the broad principle that its limited resources could generally be better used for preventive than for curative work , in this way, even with modest sums, large numbers could benefit substantially and major health problems could be solved and reduced to proportions controllable by the health services

In the preventive field UNICEF has helped the economically underdeveloped countries apply on a large scale the insecticides and antibiotics which became available in the industrialised countries after the second world war, and which offer a means of revolutionising rural health conditions More than half of the $16,000,000 listed above for " mass health " has gone for the control of malaria through the use of residual insecticides, and the control of yaws, bejel, and venereal diseases through penicillin About one quarter has been allocated for B C G anti-tuberculosis vaccination The scale of the projects assisted, illustrated by the number of people reached during 1954 with material supplied by UNICEF is

Malaria campaigns people protected	14,500,000
Yaws, bejel, V D campaigns	
People examined	16,000,000
People treated	3,000 000
B C G vaccination	
Children tested	37,000,000
Children vaccinated	13,000,000

In many countries assistance for such projects has had priority in time (though not in final importance) over assistance for the establishment of permanent rural health services This has been done on professional advice, because it was necessary to clear away major endemic diseases before permanent health services could function effectively

> In Haiti, for example, the first substantial UNICEF assistance was for a campaign against yaws, the incidence of which is indicated by the fact that during the mass campaign phase 1950–54, 38% of the population was treated as cases The incidence of actual cases now varies between 0 and 0 8% The remaining problem has been passed over to a system of surveillance, and the government was able to divert finance and personnel to another major problem, that of malaria eradication, which is now planned to be accomplished over the next five or six years At the same time Haiti has begun on a preliminary scale to train personnel for rural health services The main effort to extend these will be made after the malaria problem has been solved That UNICEF is willing to assist through these three phases is the way we understand " far reaching effects "

Mass health campaigns frequently offer possibilities in countries very short of professional personnel The techniques can be taught as a drill, and auxiliary personnel can accomplish a great deal under professional supervision A higher proportion of fully trained people is needed for permanent health services, and much can be done by the mass health campaign during the years required to train substantial numbers to man fixed health services

I believe there will be general agreement with Dr Williams that better health education, better understanding, and better care of children by their parents are the fundamental objectives Nevertheless it is almost impossible for individual effort to deal with endemic diseases, and, on the other hand, effective modern drugs and insecticides can be made available In fact, there is a good deal of evidence that one of the best ways to arouse individual interest and initiative is cooperation in a specific disease control project, the objectives of which can be readily understood In Thailand, as well as in some parts of Africa, successful yaws control has opened the way for a much more cooperative relation between the population and its health services—and the consequent extension of permanent health services

Moreover it has been demonstrated that, when malaria or yaws is eliminated, the available health personnel will be in a position to devote time and attention to fundamental objectives instead of being swamped by problems of these diseases and their consequences in [illegible] children

" Mass impact," which Dr Williams considers [illegible] objective, has not been sought on its own [illegible] for substantive reasons

> We have considered it important, from the long [illegible] of view, that a project should be capable of being [illegible] over the country as a whole, and have been chary [illegible] projects which were so costly, in personnel or money, [illegible] were likely to be restricted to a few favoured dis[illegible] have tried to help countries solve major health [illegible] systematically so that the way would then be ope[illegible] tackling of other ills In most of the " mass heal[illegible] grammes, complete coverage is a technical require[illegible] effective prevention—only in this way is the reservo[illegible] tion reduced sufficiently Malaria eradication require[illegible] houses be sprayed, over a large area Yaws will [illegible] unless substantially all clinical cases, latent cases, and [illegible] are treated

All the diseases for which control projects ha[illegible] aided have some specially significant relation wi[illegible] hood Malaria is a more important cause of [illegible] child mortality than of adult mortality Yaws i[illegible] contracted in childhood Where general B C G v[illegible] tion is desirable, it should be given in early [illegible] Many of the control projects also benefit the re[illegible] population The Children's Fund is more in[illegible] helping them when they are well planned and [illegible] cient scale to have the objective of preserving [illegible] generations of children from a particular infect[illegible]

> Over the next five to ten years great interest will [illegible] the efforts to eradicate malaria which are now bei[illegible] on the American continent and elsewhere in some [illegible] countries, with prospects for expanding into regions [illegible] The Executive Board of the Fund at its last se[illegible] March agreed to expand its aid to malaria projects [illegible] purpose

Aid for Maternal and Child Welfare Services

The $11,554,000 assistance so far allocated to [illegible] and child welfare in 74 countries and territories [illegible] tutes the second chapter of UNICEF aid to [illegible] The first field of assistance was the im[illegible] midwifery at the village level Mostly this means [illegible] country offers some simple practical training f[illegible] tional midwives, while UNICEF supplies training [illegible] an elementary midwifery kit for successful tr[illegible] 24,000 kits have so far been supplied The hope [illegible] midwifery, being a private service, could be im[illegible] advance of the inevitably slow extension of p[illegible] health services, which would add child care [illegible] health services In most countries, however, [illegible] training auxiliary midwives has been made only [illegible] to which the health organisation was extended

UNICEF helps the extension of permanent rura[illegible] services first of all by aids for training, partic[illegible] midwifery and public health nursing, for bo[illegible] trained and auxiliary personnel Assistance has [illegible] the form of equipment for training schools, ass[illegible] setting up rural practice fields, and to a sma[illegible] stipends for trainees In Asia 13,000 midw[illegible] nurses are enrolled in 1955 for full time training [illegible] aided by UNICEF, and 11,000 indigenous midw[illegible] receiving short-term courses Training of [illegible] personnel at a higher level for planning and [illegible] is aided through W H O 's fellowship programmes [illegible] UNICEF through some contribution to the equ[illegible] training hospitals

The technical equipment of rural health [illegible] aided by simple sets of equipment for villa[illegible] and child health centres, which by the end of [illegible] had reached 4700 , and by the supply of dru[illegible] supplements over a period of years which at the [illegible] date was reaching 5300 centres The distr[illegible] UNICEF milk through these centres encourage[illegible] and offers opportunities for instructing mothers [illegible] on habits. Aid is now being expanded to cover the nal and child health aspect of the work at the s levels—village, supervisory health centre, and t headquarters—of a rural health unit or any form of integrated health organisation Maternal hild welfare services should in time absorb more an mass health campaigns

ill be seen therefore that UNICEF's function of aid ld welfare projects has been broadly considered, at the forms of aid are related both among them and to aid particularly in the field of technical

cal Advice

ke Dr Williams's second main argument to be ore resources should go for personnel and less for s. But the contributing governments have d that it is the function of UNICEF to give material nce, and of Specialised Agencies to give technical They have further decided that each agency be responsible for the financing of the functions hich it is entrusted. As far as UNICEF collaboration V H O is concerned, this decision was reaffirmed rified by decision of the UNICEF Board last March e World Health Assembly last May UNICEF in a similar way with the experts of F.A O This n of function is no basis for the thesis that not assistance is being given for personnel.

the object is to aid child welfare projects by g what has to come from outside the country in ses the supplies will naturally cost more than the No conclusions can be drawn just from com he budgets of W H O and F.A O with that of Moreover Dr Williams speaks only of the budgets and leaves out of account the budget of N Technical Assistance programme, which has augmented the financial capacity of the Special encies to provide expert advice. In 1954 for , W H O incurred $8,135 000 of obligations on lar funds, and $3 755 000 on Technical Assistance *W.H O Official Records* no 62) Both sources of ave since been increased

tance for child welfare projects broadly considered ieve they should be comes from many sections of in addition to the specialist section on maternal ild health—which I with Dr Williams, would ly like to see enlarged She has pointed out the ties in the way of recruiting large numbers of tional advisers with the experience and outlook ould make them effective helpers in underdevel ountries The number of people with this experi increasing and we would like to see any means of ating the process encouraged

York.

E J R. HEYWARD
Deputy Executive Director UNICEF

MEMOIR OF LORD HORDER

—The members of our family have been very touched and pleased by the obituary notice which cently published in honour of my father, the late Horder, and we should like to express our thanks

ant in course of time to put together a short r of my father's sayings and doings as his friends ber them believing that he would have preferred a more formal full length biography It would y helpful to me if doctors or nurses or others who any detailed memories of him, at work or play find time to jot them down date them and send to me I am particularly interested in the first ears of his life down to 1020 Any interesting will be copied and returned.

shford Chace
field Hampshire.

HORDER.

Public Health

Poliomyelitis

UNCORRECTED notifications of poliomyelitis in England and Wales during the week ended Aug 20 amounted to 348 (358) comprising paralytic 198 (104) and non paralytic 150 (104) *Figures for the previous week are in parentheses* Total uncorrected notifications this year up to Aug 20 the end of the 33rd week, numbered 2226, compared with following totals for the corresponding periods of each of the years from 1947 to 1954 2044, 900 1753, 3530, 1031, 2100, 2845, 1252

Food-poisoning in Derbyshire

An outbreak of food poisoning at Belper, in which 20 people were taken ill, was traced to meat pies.[1] Staphylococcal contamination was thought to be responsible. Unsold pies were confiscated. Several hundred had been sold, but it was believed that only half a dozen were infected.

School Camp Closed

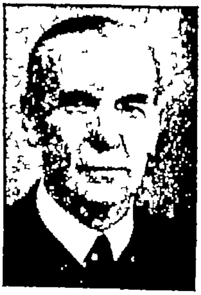
A school holiday camp near Ilkley has been closed because the only available water-supply—a stream and a spring—became contaminated after the drought.[2] In the first place, the water was chlorinated as a precaution, but despite this a few children got diarrhœa.

Obituary

ANDREW TOPPING

O.M.G., T.D , M.A., M.D Aberd. F R.C.P F R.S.E. D.P H.

THE news of Dr Topping's death will bring a sense of loss to many people in many countries with whom, and for whom, he worked He was a man who stimulated and enlivened; and if his liking for something fresh prevented his using his talents as fully as might have been possible, it gave him an interesting life with a variety of considerable achievements—and a great many friends.



[Elliott & Fry

The son of Robert Topping, of the Scottish Education Department, and Robina Bayne, he was born on Dec. 20, 1890, and educated in Aberdeen at Robert Gordon's College and the university Qualifying in 1914 he served with the R.A.M C in France, Gallipoli, and Mesopotamia, was mentioned in despatches, and reached the rank of major (In the Territorials he afterwards commanded the 5th London General Hospital) He then spent some years as senior medical officer with the Anglo-Persian Oil Company at Abadan before returning to England to take up public health. Junior appointments at Woolwich and in Lancashire were followed by his brief but memorable tenure of the post of M.O.H. for the county borough of Rochdale in 1930–32 Here, in what became known as the Rochdale Experiment, he used what was then a largely novel approach to a medical problem, displaying his powers as a coördinator by organising a joint attack on maternal mortality by the family doctor the consultant, his own team of public health workers, and the appropriate members of the public. Faced with an average maternal mortality rate of over 8 per 1000 live births during the previous five years, he sought the help of a group of local doctors in ascertaining the avoidable factors leading to each maternal death. He set out to convince the public of the value of antenatal supervision, he advocated conservative treatment in confinements, with avoidance of instrumental intervention he persuaded his council to provide better clinical and hospital

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1. *Manchester Guardian* Aug 23 1955
2. *Ibid* Aug 25, 1955

facilities such as a new maternity wing and new children's wards, and he succeeded in getting the cooperation of all concerned. All this energetic action was reflected in reduction of the maternal-mortality rate to 3.5 during the three years 1932–34. (This was, of course, in pre-sulphonamide days.) It was no surprise when an expert report declared that the "experience of Rochdale provides an impressive and valuable sample of an area which by deliberate effort has achieved a reduction in its maternal death rate by a method capable of being applied with success in other centres." In his approach to public opinion over venereal diseases he was equally bold; again he brought together all those interested, inviting representatives of the clergy and other key persons in the community to spread the gospel of preventive medicine.

To the officers of the London County Council it came as a surprise that the M.O.H. for Rochdale should apply for the position of medical superintendent of the Southern Fever Hospital, Dartford, which, though large, was mainly used as a standby hospital for the biennial outbreaks of measles and for convalescents. But, having entered the council's service, he was soon able, in September, 1933, to join its central staff as senior medical officer in the special hospitals branch which covered the whole immense range of fever hospitals, tuberculosis sanatoria and hospitals, children's hospitals, and the L.C.C. Laboratory Service. His outstanding ability in what are now called "human relations" was of particular value in a large service like that of the L.C.C., where the people working in the individual hospitals are apt to be overawed by the power wielded centrally and the remoteness of those who have to make major decisions. He was assiduous in visiting the hospitals and cultivating the friendship of the staff. He had a horror of red tape, rules, and regulations, and was never afraid of creating a precedent to meet some personal problem which had been brought to his notice. In the preparations that had to be made in case of war he played a big part, and in 1940 he was appointed deputy to Sir Allen Daley, the county medical officer of health. He threw himself with great energy into the difficult task of maintaining the L.C.C. health and hospital services throughout the war, including the time when bombs rained down every night and every L.C.C. hospital in London was eventually hit. He lived in a cellar at County Hall. His imperturbability, and even nonchalance, in the face of danger were an inspiration to all. When a land-mine fell on the terrace of County Hall causing many casualties, some fatal, he was first on the scene of the disaster and did yeoman service in attending to the injured. In the London Ambulance Service, expanded during the war by thousands of recruits, including many volunteers, he took a special interest, and he was given the title of director of the service.

Another piece of work which he found congenial and performed most ably was his survey, with Sir Archibald Gray, of the hospitals of Greater London. Usually accompanied by J. E. Pater of the Ministry of Health, they visited all the hospitals, and their report published in 1944 became a minor classic. On the other hand, when the worst experiences of the war were over, Topping, like so many other people, was sometimes irked by his routine duties—by having to appear before the finance committee and be cross-examined about the reasons for proposed expenditure. In 1944 an unexpected offer of the post of European director of UNRRA faced him with a major choice. Was he to remain with the L.C.C., with the probable reversion in due course of the chief's post, or resign and undertake international work which would possibly leave him without an appointment when it came to an end? For his decision to abandon security, one reason was no doubt the attraction of a new, less formal, task. But there was also another, at least as strong—his sense of duty. At the L.C.C. his quips and stories, which enlivened even the most serious meetings, are still recalled long years after his departure. But some of his colleagues became aware that under the light-heartedness ran a deep current of serious intent and a determination to do always, so far as he could, what was needed by his country. His strength was seen in the stoicism with which he met the tragic loss of a promising son.

If the L.C.C., at such a time, could ill spare an administrator, the gain to UNRRA was p important. Although Topping lacked prev national experience, his good fellowship and cap get on with all his subordinates was an imme trying to get the best out of an ill assorted st 1000, of more than thirty different nationalities, very wide range in quality. The confidence he his non-medical colleagues can be judged by motion in 1945 to the post of assistant director of services at UNRRA's European regional office widened his field to include welfare in addition to In both capacities his duties took him to ma the world, including Egypt, Greece, Italy, and G Wherever he went, relations improved and the w on more smoothly. His Aberdonian origin fully told Scottish stories certainly helped to d faint mistrust felt by some Americans for their English colleagues. Before he left UNRRA, he to take a hand at the birth of the new era in inter health work at the meeting, in 1946, of the Preparatory Committee, out of which W.H.O. emerged—a meeting at which he aptly compared to a mule, "a useful animal but with no pride nor hope of posterity." The work achieved leadership is described in his excellent paper European Health Problems: UNRRA's Part in Them.[1] In the same year he was elected F.R.C.P.

After five months spent at the Ministry of helping to form the regional hospital boards, was in November, 1947, appointed first preventive and social medicine in Manchester previously lectured in public health at G Hospital, and examined at the Universities of Aberdeen, Durham, and Belfast, as well as for joint Board; but when he became professor no D.P.H. course in Manchester, and, knowledge of hospital administration was put by his belonging to the board of governors of chester teaching hospitals and presiding over institutions, he did not settle quite happily into In March, 1950, he came south again to be whole-time dean of the London School of Medicine, and in this post he again displayed in getting different kinds of people to work. Here, as so often before, his buoyant nature with Scottish wit enabled him to cope with problems without causing ill-will. He showed interest in the students at the school and also touch with former students, forming a very students' association, to whose reunions he was collect people from a wide area. His colleagues school will long miss his cheery company, and student will long remember the trouble he took into their individual difficulties, and the sage he gave them. He was also much concerned to the world-wide associations of the school, whose tance he appreciated. Having previously visited Africa he last year went to the East African at the request of the Colonial Office. He was a of the Colonial Medical Advisory Committee and University of London's Committee on Higher E in the Colonies. His services in these ways Commonwealth were recognised in 1954 by his ment as C.M.G.

In 1952 his former colleagues made him the Society of Medical Officers of Health, and he a characteristically provocative address. In medicine he played his part as a member of the Health Advisory Committee. And in the Health Service he was chairman of the Archway Hospital Management Committee.

"Andrew—the Christian name came naturally to acquaintance—was seen at his best by those und astonishing memory for names and faces, his loyalty to his subordinates, the zest with which he some old acquaintance who turned up unheralded office, combined—until the motor smash in W the last few tragic months—to give the impression younger man. Had he lacked courage to express at times with a frankness that shocked had he as restless and more settled the mark he has left on ive medicine and the public health might have been —it could hardly have been more wide. But then he not have been the Andrew Topping we knew and loved.

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[1] J. R. sanit. Inst. 1946, 46, 91.

Topping married Freda Wood, who survives him son and a daughter

ERNEST WILLIAM AINLEY WALKER

M A D.M., D.Sc Oxfd

Ainley Walker was one of those happy few who ed the Oxford medical school carrying on the tandards set by Henry Acland and Burdon son From early days he was marked for distinc ducated first at Kingswood and Rydal, he went to Church as a scholar proved his ability as a aatician, and took a brilliant first in physiology After a period as assistant demonstrator of ogy, he secured the Price entrance scholarship at idon Hospital and having qualified in 1899, held ppointments there. For a couple of years he was abroad as Radcliffe travelling fellow, and it was in Zürich in 1900 that he began the investigations, especially on immunity and inflammation that established his scientific reputation In 1902 he was appointed Gordon lecturer in experimental pathology and director of the pathological department at Guy s Hospital, and in 1905 he continued his pathological studies as Gillson scholar of the Society of Apothecaries of London Meanwhile, in 1904 he had become a tutorial fellow of University College Oxford and the possibilities of the thology department there appealed to him so nat soon he settled permanently at Oxford, where stance was of great value to James Ritchie the ford professor of pathology When Ritchie went iburgh in 1907, Ainley Walker might well have s successor but the lot fell on Georges Dreyer of agen At a time when Ainley Walker might have lisappointment or have sought a professorial chair re he not only welcomed the new professor e ungrudging help in initiating him into Oxford d customs continuing to be his warm supporter aborated with Dreyer in many of his researches— n agglutinins, on the estimation of blood volume, daptation to diminished oxygen tension—and duced some thirty papers together Moreover r frequently acknowledged he was a tower of in the work of the department. When Dreyer was s country for several years during the first world ley Walker took charge of the department, as he n, with the title of deputy professor in the um between Dreyer s death in 1934 and Sir Florey's occupation of the chair He was thus in all but name for nearly five years.

le Oxford he was known as an examiner in y in the universities of Cambridge, Sheffield ls. A Yorkshireman on both sides of his family— born at Doncaster on Jan 27, 1871 the son of W H Walker—it was a source of great satis o him to serve as external examiner in both the re universities. As a very youthful professor I J S I could not have had a better mentor e, friendly, and considerate examiner, most just ecisions and never rattled, he treated the candi s fellow scientists—almost. I was not surprised lace he held in the regard of his pupils.

xpansion of the Oxford medical school after the rld war made it necessary to have a medical dean, this office Ainley Walker was appointed The al work must have been a serious burden for still held his post in the pathology department tutorial fellowship But he did not allow these o prevent him from maintaining contact with recent Oxford students doing their clinical work in London, he organised monthly informal dinners for them at a Soho restaurant and made a point of coming up to London for the evening to hear how each was faring This is an example of the great interest he always showed in those who had passed through his hands. His kindness and thoughtfulness for others were outstanding, and countless Oxonians thought of him with affection

A D G writes

My first real contact with Dr Ainley Walker was in 1904 when as a law student at University College Oxford I sought urgent advice from the medical fellow of the college whether it would be possible for me to start the premedical course the following autumn after having taken my law schools, and whether I could complete the premedical and preclinical courses in three years. His reactions showed me at once the kind of man he was obvious pleasure at gaining a recruit for medicine from the law; keen interest in the personality of a future pupil, sympathy and tact in inquiring about the intellectual and economic potentialities of my project and the rapid and resourceful production of a close-packed programme through which he would be most happy to help me provided that I was ready to work like a nigger He felt no dismay at my confession that I had done no science at school and in the event he coached me most lucidly in elementary chemistry easing my early struggles with atomic weights or parallelograms of force, and redirecting my slight acquaintance with the laws of Man towards the more exciting study of the laws of Nature From that first interview I came away with the kind of exaltation that I imagine a man feels when he unexpectedly comes into a fortune; my programme was possible and I had found a friend and helper of the first order

On my return to Oxford in 1915 to run a military-supply laboratory under Professor Dreyer I had the opportunity of collaborating with Ainley Walker in many bacteriological researches mostly on enteric fever and I received great benefit from his guidance, for his scientific work was not only painstaking and meticulous but also highly original It has indeed always been my belief that if he had been more ambitious and circumstances more favourable the mark he made would have been much greater As it was he made a massive aggregate of first rate contributions to physiological and bacteriological pathology and he was thoroughly contented with his full life of teaching honours physiology to his Univ pupils and of lecturing and demonstrating in the University Department of Pathology He did all these things extremely well, and I am sure that all his old pupils will feel saddened by the loss of a most gifted and respected friend

One such pupil R. J B , recalls a day early in 1917 when he was sitting for an entrance scholarship at University College

The friendly little man who came and spoke to me was then in uniform, and I remember wondering how an Army officer could be such an unmilitary and informal person.

Friendliness and informality were perhaps Dr Ainley Walker s most striking characteristics to those who were privileged to be his pupils—and indeed to others, for he had a wide undergraduate acquaintance

The tutorial an hour after hall once a week during term was something of a revelation The fresher perhaps expecting a stern attitude at once found that here was a don [illegible] disarmingly put him at his ease and this happy relationship was maintained on all occasions. The student was [illegible] at in the way described by Stephen Leacock [illegible] Walker s smoking consisted not of a pipe but of an [illegible] continuous series of crudely rolled cigarettes [illegible] was speaking; one s attention was often [illegible] cigarette at crucial moments in its [illegible] into two or would it go out ? In the [illegible] in the first war a burning night [illegible] Ainley s room during his tutorial [illegible]

It was uncommon for a tutorial [illegible] to shop Sooner or later [illegible] current topic which he felt [illegible] pupil; for he was interested [illegible] and the student s interest was [illegible]

Another tribute [illegible]

It seems to be [illegible] A W [illegible] medical man [illegible] to which [illegible] influenced by his early teachers, but by this time memory has become mercifully selective and the focus is sharp only upon those few personalities from the past who for one reason or another earned our devotion It is inconceivable, however, that a single member of that large band of one time pupils of the late Dr Ainley-Walker will at this moment find any difficulty in recalling a vivid picture of that kindly little man with the twinkling eyes who was tutor to so many Oxford medical students and friend to them all

Viewed with the eyes of extreme youth, Ainley Walker even in the '20s seemed elderly, but how false was this impression One did not have to know him long to realise the perpetual struggle he had to restrain the boyish spirit which lay within Sometimes this got the better of him, and what a revelation it was after a college "bump" supper to encounter one's revered tutor with a gleam of sheer delight in his eye, organising the defence of the college gate against marauders from a neighbouring college

His academic career was distinguished, and his contribution to pathology considerable, but the impression he leaves upon a succession of Oxford medical students, and in particular upon those from his own college, is likely to be that of a man who had found contentment both as a family man and in the serene and tranquil life of a don, who genuinely enjoyed the society of young men, and whose simplicity and sincerity represented the best kind of influence on undergraduate life

As a tutor Ainley Walker never badgered his pupils, but even the hardest sinners were liable to find themselves working to please him If in later life success of any kind came their way, this did not escape the eagle eye of their old tutor, indeed to many it seemed uncanny that he should be so well informed of their careers No, he never forgot us, nor are we likely to forget him.

In London Ainley-Walker had a long and honourable association with the Society of Apothecaries, whose licence he had taken on being appointed their Gillson scholar in 1905 He became in turn yeoman, liveryman, member of his court of assistants, and in 1940 junior warden But unhappily, before reaching the master's chair, he had to resign, in 1943, because of illness

Bad health had already obliged him to give up his Oxford work, and he had gone to live at Upavon in Wiltshire But though, in succeeding years, his physical condition inexorably deteriorated, his attitude was philosophical, his mind was clear, and the visitor found the same twinkle in his eye "What a grand man he was, to be sure," writes one Another friend, A S MacN, looking back over the achievements of this long life, sums them up in the words "He was a great man, but often stood aside to let others reap the harvest he had sown The debt that Oxford medicine owes him is incalculable"

Dr Ainley-Walker's first wife, who died in 1917, was the daughter of Sir Edward Poulton, F.R.S In 1919 he married Inez Elizabeth, daughter of Canon J H Skrine, D.D, and she survives him with their son and two daughters, two of whom are members of our profession He died at Upavon on Aug 15

FREDERICK ALEXANDER ETHELBERT SILCOCK
M D Belf, D.P.H.

Dr Silcock died on Aug 2 in the Leicester Royal Infirmary, which he had served for many years

Born in 1892, the son of the late Colonel A. Silcock, I.M.S, he was educated in this country Ill health in youth and early manhood turned him from an Army career, and in 1915 he graduated M B at Queen's University, Belfast After holding resident posts in Northern Ireland and in Norfolk, he was appointed medical superintendent at the Leicester Isolation Hospital. In 1925 he took his M.D degree, and soon afterwards he began to specialise in dermatology In 1934 he was appointed to the honorary staff of the Leicester Royal Infirmary, and later he became dermatologist to the City General Hospital.

Essentially a practical man, he had a wide knowledge of many industrial processes, and he was keenly interested in occupational dermatitis He was a member of the panel for industrial dermatitis, under the Ministry of Labour, during the late war He was also one of the first British dermatologists to investigate the properties and value of water-miscible bases, and this special
knowledge gained him a place on one of the
of the British Pharmacopœia Commission. F
years he was a regular and welcome visitor to t
Hospital for Diseases of the Skin in London
a time he sat on the council When in 1950, f
failing sight, he retired from his hospital wit
appointed emeritus physician (dermatology) to the
Royal Infirmary, in recognition of his services.

J O writes "Dr Silcock's ultimate bl
a heavy blow, for his work and hobbies
demanded the power of sight He will long be
by friends for his puckish humour, his kindl
warm hospitality His nursing staff recall wit
his cheeriness, assiduity, and sympathetic
standing His associates miss an unobtrusive
but firm, loyal colleague"

Dr Silcock leaves a widow

JAMES BONNELL HOWELL
M R.C.S, D.P.H

Dr Howell, who died on Aug 10 at the
trained at University College, Cardiff, and
College Hospital, London, and qualified in 1
undergraduate successes included the award of the
gold medal in surgery and the gold medal in
He took the D P H in 1911 and became medi
of health of Hammersmith in 1914, occupying th
with distinction until his retirement in 19
belonged to the generation of public-health
saw the final consolidation of environmental
and the firm establishment of the personal h
Under his guidance the maternity and chi
services of the borough were built up to a h
and the tuberculosis service was placed on
tion When the latter was rendered homeless
of enemy action, it was largely through Howell
and persistence that it was rehoused, by the
County Council at Hammersmith Hospital, wh
continued to flourish in the new era For
he lectured in public health at the West London
and with the late Dr H R D Spitta shared the
in that subject at St George's Hospital
School. Throughout his career he was
attender at meetings of the Society of Medical
of Health.

Quietly genial and quietly gregarious,
liveryman of the Society of Apothecaries
Proud of his nationality, he also played his
various Welsh societies in London He
late in life and leaves a widow and a son
both of whom are studying medicine.

THE LATE LORD HORDER

S C L writes

It cannot be more than four weeks ago
figure, briskly jumping out of his car, waved
we approached within reasonable distance, I
Horder Did his sight or memory ever fail,
forget a patient or doctor? His diagnosis was
of pathology reports, his reassurance often
psychotherapy Unique among consultants
he would frequently phone to ask about the
patient he had seen.

Sagacious, confident, and erudite, he held
strongly and could be scathing, outspoken, and
unorthodox, as when he scolded for seeking
confirmation of a diagnosis of ulcerative
presence of an amazed and bewildered patient
week, he could take your arm at a great
think he enjoyed these functions) at the
partition wall to the Cocktail Lounge parted,
revealing the vast banqueting hall beyond,
"The Walls of Jericho!"

For the last five years, he was president of the
the Study and Treatment of Delinquency, at
group he presided regularly and meticulously
more "important" and distinguished gather
claimed his time

It used to be said of him that no eminent pers
to die before Horder had been called in to
Can one hope that before he joined his celest
Archangel graciously acceded to him this last

Notes and News

MPAIGN AGAINST CAPITAL PUNISHMENT

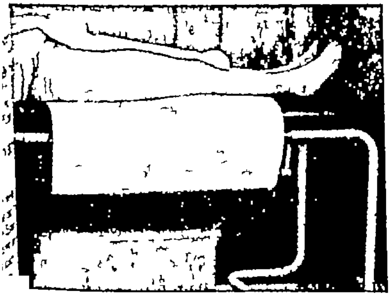
tional Campaign for the Abolition of Capital Punish s been launched by an executive committee consisting r Gollancz (chairman) Canon L. John Collins Gerald , Q.C., Ruth Gollancz, Christopher Hollis, Arthur Frank Owen, Reginald Paget Q.C. M.P., and gy Duff (secretary and treasurer) tial statement explains that the campaign will employ hods. The first of these will be educational Books, ts, and shorter statements will be issued; public will be organised and personal contact will be ed with all who wish for information on the issues But the campaign will also be concerned to give embers of the public who are already opposed to punishment an opportunity for expressing their e in this matter

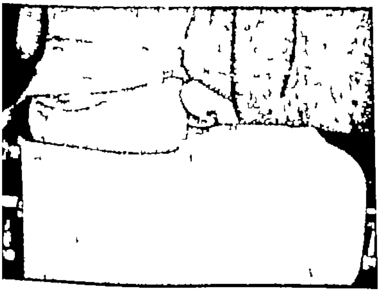
> hall suggest for instance that abolitionists may think fit from attending any place of entertainment or any party ening preceding an execution and may further think fit during the night preceding an execution, a place of or assembly (and we shall arrange for such places to be the purpose) Shopkeepers and owners of businesses who ed to the death penalty may wish to shut their premises ur or so during the day preceding an execution (where inconvenience would be caused) and to display a notice their reason for doing so Other projects are under tion."

uptive or sensational action, such as demonstrations orisons, will be rigorously discountenanced ommittee appeals to all who are in sympathy with to send a contribution, however small (but as large le) to the treasurer Mrs. Peggy Duff at its London 14, Henrietta Street, W.C.2 Sympathisers who are o contribute are asked to send a *postcard* to Mrs Duff, on it nothing but the word ' abolitionist, and the d address of the sender in block capitals.

IC ATTACHMENT FOR OUTPATIENT COUCH

B Fitzgerald M.R.C.O.G writes: It is obviously to maintain the highest possible hygienic standard y outpatient department, though the sterility of an theatre is neither possible nor necessary The accompanying figures show an arrangement which provides a clean fresh surface for each patient by the use of a 4 foot wide paper roll which is wound across the surface of the examination couch on to a spool on the other side of the couch in the same way as a roll film in a camera. The illustrations show a gynæcological patient in position for examination and turning to descend from the couch. The unavoidably close contact between the couch and the ano genital region emphasises the necessity for a fresh surface for each patient. The cost of the rolls of paper used is considerably less than that of a change of linen for each patient and in spite of the initial capital outlay, this arrangement has, therefore economic advantages also





The attachment shown has been in use at the Ashton under Lyne General Hospital for some time with satisfactory results. The manufacturers are Messrs C F Thackray Ltd

TROPICAL HYGIENE

PREVENTION of disease in the tropics to which the Ross Institute is dedicated, must once have appeared an impossibly vast assignment yet even in the past few decades it has shrunk to dimensions which are almost manageable This change has been wrought largely by the development of the synthetic residual insecticides especially D.D.T. (dicophane) Gamma B.H.C.' (gamma benzene hexachloride) and 'Dieldrin,' which have proved highly destructive to the vectors of malaria, filariasis, yellow fever sand fly fever kala-azar Chagas's disease relapsing fever typhus, scrub typhus, trypanosomiasis, and others—including the host of disorders which the common house-fly is suspected or known to carry around on its feet. One self imposed task of the Ross Institute is to keep those interested informed of the most recent methods of disposing of these and other pests, and to describe in detail how they should be used

The first *Bulletin* of the industrial advisory committee of the Institute, published in 1949 took residual insecticides as its subject It was totally revised in 1952, but weapons against insect vectors develop almost as rapidly as weapons for greater wars, and the committee have found a fresh account to be necessary Written by Mr G Davidson, B.SC.[1] himself responsible for much work on these insecticides It is a model of exposition dealing with the practical application of the insecticides their various forms, the vulnerable insects, and the ways these can best be controlled. Though written for medical readers, the pamphlet is also being distributed to non medical readers; for, as Prof George Macdonald, director of the Institute points out in a foreword, malaria control is very largely and properly carried out by non medical people who need a good understanding of the range of available insecticides and their properties.

A companion piece to this but written for laymen, is a *Bulletin* on clean water-supplies, by Dr R Ford Tredre.[2] Roughly speaking water is only dangerous when contaminated either directly or indirectly by human excreta, the main diseases transmitted in this way being cholera, the typhoid group of fevers, and the dysenteries. Organisms derived from the excretions of animals do not usually cause disease in man, but there are exceptions such as leptospirosis, transmitted in the urine of rats. In some tropical countries, moreover water-supplies contain the eggs or larvæ of parasites —such as bilharzia and guineaworm—which infest man. Surface waters are polluted everywhere and this well written and well illustrated pamphlet deals mainly with methods of obtaining good subsoil water by properly constructed wells, methods of filtration, storage, and chlorination. Dr Tredre notes that in villages in the tropics and subtropics infection and reinfection with diseases transmitted by water are so usual that these are virtually diseases of childhood, and people become relatively immune to them. They are still, however, susceptible to a superinfection such as may come from sudden gross contamination of the water-supply Relatively straightforward and inexpensive methods against such risks will get rid of explosive epidemics of these diseases. In the circumstances, he says, the attainment of a degree of purity of water expected in temperate climates is unnecessary and uneconomical." The advance towards cleaner water in fact, can only be made in step with advances in agriculture education and personal hygiene.

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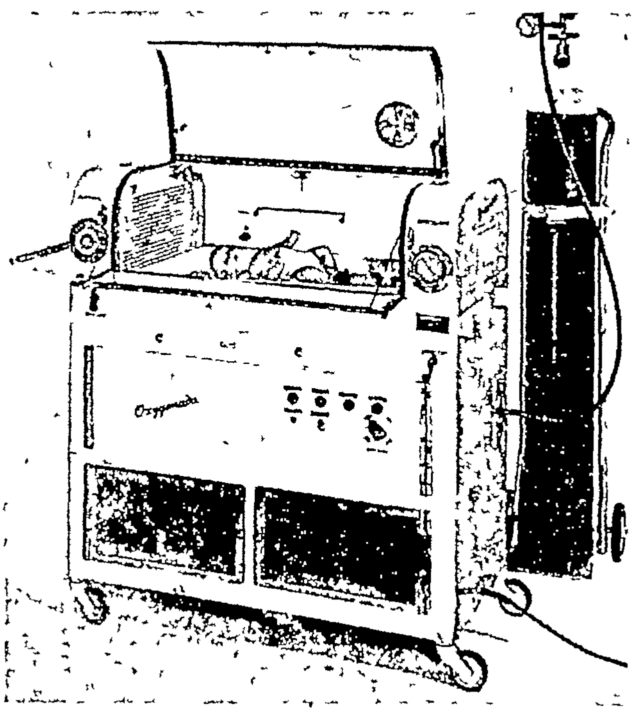
[1] Residual Insecticides Industrial Advisory Committee of the Ross Institute Bulletin no 1 London School of Hygiene and Tropical Medicine Keppel Street London, W.C.1. Pp 31 Supplied on application to the Secretary of the Ross Institute

[2] Water Bulletin no. 10 Pp 31 Supplied on application the Secretary of the Ross Institute

MODIFICATION OF AN INFANTS' INCUBATOR

Dr Hugh Jolly writes "The illustration shows a standard 'Oxygenaire' incubator in which the front panel has been altered so that it is no longer fixed but can be opened outwards This alteration gives easier access to the child and was particularly planned for use during exchange transfusion, in which babies so easily lose heat Once the umbilical catheter is in position, the lid can be closed, and any attention necessary can be given through the side opening The baby may still be placed on a 'crucifix' if desired, and if this is done the tray should be removed to allow of more room" In making this modification Dr Jolly has had the help of Mr A E Maynard, of the Exeter Oxygenaire Depot



University of London

The title of professor emeritus of pathology has been conferred on Dr J H. Dible, professor of pathology at the Postgraduate Medical School of London Mr G W Taylor has been appointed to the readership in surgery, tenable at St Bartholomew's Hospital Medical College

University of Louisville, Kentucky

Dr Frank Falkner has been appointed assistant professor of child health in this university, from January, 1956

Dr Falkner is at present lecturer in child health at the Institute of Child Health, The Hospital for Sick Children, Great Ormond Street London and research assistant to that hospital He is also coördination officer to the Centre Internationale de l'Enfance, Paris for their coördinated growth studies These studies taking place in different countries have as yet no North American member of the "group" Dr Falkner is to set up such a coöperative growth study in Kentucky, and he will keep his appointment in Paris

Royal Society of Health

The following meetings have been arranged

Thursday, Oct 13, at 10 A M, at the Municipal Technical College, Bury —Mr C B Roberts Treatment of Gaseous and Liquid Effluents from Manufacture of Regenerated Cellulose Film Dr K K Wood Promotion of Health

Monday, Oct 17 at 2 30 P.M at the Caxton Hall Westminster, S W 1 —Sir Hugh Beaver, Dr J A Scott The Clean Air Bill

Wednesday Nov 16 at 10 30 A M at the society's headquarters, 90, Buckingham Palace Road, London, S W 1 —Discussion on the Design of Health Buildings

Wednesday, Dec 14, at 2 30 P M at the society's headquarters —Sir Weldon Dalrymple-Champneys Vaccination against Poliomyelitis

Army Appointment

Dr R F Tredgold has been appointed honorary consultant in psychiatry to the Army at home in succession to Dr J R Rees, who has relinquished the post on reaching retiring age

International Congress of Internal Medicine

This congress will be held in Madrid from Sep
next year under the presidency of Prof C Jim
The principal subjects chosen for discussion are
the adrenals in the pathogenesis and evolution
diseases, and bronchial asthma and emphysema
information may be had from Dr J C de Oya,
Madrid

International Society of Plastic Surgeons

This society was formed at the First Internat
of Plastic Surgery, held in Stockholm and Uppsala
The following officers were elected

Hon. president, Sir Harold Gillies general secretary
(Sweden), treasurer Karl Erik Hogeman (Sweden);
committee, Truman Blocker, jun. (U S.A), Franck
slovakia), Mario González Ulloa (Mexico), Sir Archib
Daniel Morel-Fatio (France), Gustavo Sanvenero-Ro
Karl Schuchardt (Germany)

International College of Surgeons

Meetings of the college have been arranged in P
(Sept 12–15), *Belo Horizonte, Brazil* (*Oct* 12-1
(Oct 22–23), Mendoza, Argentina (2nd Panamerican
Oct 22–26), Tokyo (Oct 30), and Amsterdam (N

Awards in Radiological Research

On behalf of the James Picker Foundation, th
Academy of Sciences National Research Council
that funds in support of radiological research are
Awards are not limited to citizens of the U S.A
for the fiscal year 1956–57 must be submitted
Further details and application forms may be ob
the Division of Medical Sciences, National
Sciences National Research Council, 2101,
Avenue, N W, Washington 25, D C

Inquiry into Faulty Poliomyelitis Vaccine

Last April six lots of poliomyelitis vaccine
by the Cutter Laboratories were found to contam
(see *Lancet*, 1955, i, 956) The United States Pub
Service has ascribed this mishap to failure of its
(*New York Times*, Aug 26, 1955) The report
the Cutter Laboratories, nor does it recommend
of the concern's licence It states that the exac
the presence of "ineffective amounts" of virus
vaccine could not be found, *that* nothing point
tamination in the plant, and that the data
"inadequacy of virus inactivation" and "failure
tests" Dr Leonard A. Scheele, the surgeon gener
out that the incident had led to revision of t
requirements

Serotonin (5 hydroxytryptamine, enteramine) is
commercially in the form of its sulphate double salt wit
from Messrs May & Baker Ltd, Dagenham, Essex,
physiological and pharmacological research

Appointments

Dawson Leslie M B Manc registrar in diseases
Bristol Chest Clinic and associated hospitals
Gatherer, Alexander, M B Aberd senior asst
deputy principal school M O, Warrington.
Hodgson, J H, M.B Sydney surgical registrar, Bath
hospitals
Howell, F R, M B Lpool asst M O H, Liverpool

Appointed Factory Doctors

Alexander, Harry, M B Edin. D P.H Tooting
Humphreys, R C, M D Edin., D OBST Crickhowell,
Phillips, H G, M R.C.S Farningham, Kent
Posner, Joshua, L R C.P I Dewsbury, Yorks.

Colonial Appointments

Clearkin, P M, M B Belf M O, Kenya
Coello, A J, M.D, D P H M O, grade A, physician
Cox J H M.B M.O Uganda
Doyle V T B, M D Dubl, M R C P I M O North
Nigeria
Freeman, Leonard, L.M.S.S.A D.M.R.E senior
Trinidad
Gosling R H, M.B Edin M.R.C.P E M O grade A
Trinidad
Hurly, M G D, M B resident M O (intern), Kenya
Joanes R F, M B M O Aden.
Koblenzer, P J, M.B Lond M O, North Borneo
McDonald, K A, M B Glasg D OBST M O, North
McNeice, Graham, M.B Belf rural M O, North
Nigeria
Parsons R S, M B Durh pathologist Federation
Shillingford D C, M B Aberd district M.O.
Windward Islands
Smith D M W, M B M O, Uganda

EARLY AMBULATION

WITH SPECIAL REFERENCE TO RNIORRHAPHY AS AN OUTPATIENT PROCEDURE *

ERIC L FARQUHARSON
M.D F.R C.S E. F.R.C.S
SURGEON ROYAL INFIRMARY OF EDINBURGH

ATED by Emil Rois of Chicago before the end entury (Reis 1899) early ambulation has gained re of acceptance in that the period of bed rest eration has been progressively shortened The g has been especially evident in recent years, onger ago than during the late war an Army ecreed that after inguinal herniorrhaphy all must be kept in bed for 21 days

y ' ambulation is a relative term and open to terpretations, but those who support the method rmly insist that to obtain full benefits the patient ambulant—i e. *walking*—not 5 or 6 days after ration but if possible within 24 hours and within 3 days (Palumbo et al 1952 1953) on the results of such after treatment suggest hing but benefit accrues. Most surgeons, how ile accepting in principle the undoubted benefits ambulation feel that it is safer, or kinder to the to pursue a middle course they keep the in bed for 5 or 6 days after operation, to see complications develop, and then if he does not ned to get up he is given a day or two longer

Wound Healing

Hunter described rest as the most powerful aid he surgeon can bring to disordered tissue, and)wen Thomas stated that such rest must be uninterrupted and prolonged It is certainly question however whether the healing of an n wound really does require such rest complete nterrupted Even those who do not believe in mbulation allow their laparotomy patients to bout freely in bed and are careful to prescribe eathing and leg exercises, which in themselves fairly intense activity of the abdominal muscles r the patient to rise with *assistance from his bed* walk across the ward, imposes no greater strain wound indeed it is probable that the most strains of all are caused by trying to cough ly while in bed and by the use of the bedpan r less distressing—even a few hours after an n—to cough in the standing position and to the toilet.

ever the patient may fear, wounds do not disrupt result of early ambulation When a wound does the patient with rare exceptions, is lying in d has usually been confined to bed *since operation* o 10 days (Jenkins 1937) The incidence of ma formation, wound sepsis and incisional hernia ot seem to be increased by early ambulation there is evidence that wound healing is actually ded by a reasonable degree of activity (Blodgett attie 1946 Burch and Bradley 1947) The same ll apply to the *healing of incisions* and anastomoses nt Early ambulation imposes no discernible strain ntestinal suture line or anastomosis By far the strain which such a suture line has to withstand caused by distension of the gut, and early ambu by promoting the return of normal gastro al motility is the best method of preventing this ation

The Vital Functions

Those complications which constitute the morbidity and mortality after operation are usually remote from the actual wound They affect rather the muscular structures involved in respiration, circulation, and digestion Normal functioning of these *systems is of* course reflexly depressed not only by surgical trauma but also by the concomitant factors of fear and pain In favourable cases, and provided that Nature is allowed to have her way, such depression is comparatively short lived An animal which is injured or which has been operated on, moves about actively as soon as—even with discomfort—it is able to do so So also do patients of primitive races—as many surgeons discovered to their surprise during the late war, when their duties took them to the far places of the Earth These patients, who were uninhibited by fear of possible consequences and whose language we fortunately did not understand sufficiently to instil such fear into them usually arose from their beds within a few hours of operation By contrast the patient who *is the product of modern civilisation* tends to remain inactive in bed because of the traditional fears instilled into him by nurses and surgeons

As long as the patient is confined to bed, respiration remains shallow and the vital capacity *is reduced* Coughing is difficult, so that mucus may collect and atelectasis ensue Churchill and McNeil (1927) showed that when patients are confined to bed after upper abdominal operations, the vital capacity falls progressively until the 4th or 5th day and that return to normal is delayed for 15 days or longer If however the patient becomes ambulant within 24 hours, lowering of the diaphragm and muscular activity combine to promote *full aeration* of the lungs the fall in vital capacity is immediately arrested and a return to the preoperative level can be expected by about the 5th day As a result, the incidence of respiratory complications is greatly reduced

Rest in bed which causes considerable slowing of the venous blood flow favours the onset *of thrombosis* or embolism in the pulmonary circulation—a complication which in spite of all the recent advances in postoperative care, remains the most frequent and unpredictable cause of death Stasis cannot, of course be the only factor in the production of thrombosis, but it is certainly one of the most important.

Most authorities hold that infarction of the lungs is secondary to thrombosis of the veins of the lower limbs or areas drained by the inferior vena cava. By injecting radioactive isotopes Wright (1951) has shown that, in *patients* confined *continuously to bed* the venous flow in arms and legs becomes progressively slower until the 15th day whereas in ambulant patients *it actually increases* reaching a maximum 10 to 12 days after operation

The evidence that infarction of the lungs *is usually* secondary to thrombosis in the leg veins, is. however by no means conclusive About 40% of cases of lung *infarction show* no clinical evidence of thrombosis elsewhere, and none may be found at autopsy Dew (1953) has suggested *that* quite as often intravascular clotting in the lungs occurs as a primary phenomenon, although it may be associated with thrombosis elsewhere *He points* out that the clot is often found at autopsy to fill almost all the radicles of the pulmonary *artery* and that no embolus could be preformed so perfectly as to occlude all these vessels in this way In normal *people the circulation in* the pulmonary tree has a very low pressure—30–40 mm Hg After an abdominal operation *it has* a still lower pressure, and may be very sluggish indeed, especially if the patient remains inactive in bed with shallow breathing *and a quiet* raised diaphragm

Since we must believe that the circulation throughout the body is improved by early ambulation it is disconcerting that many reports from clinics where this has been employed as routine during the past decade fail to show any significant decrease in the incidence of thrombosis (de Bakey 1954) But this can be explained, in part at least, by the different interpretations of the term "early" Palumbo et al (1952, 1953) have shown that the incidence of thrombosis is indeed considerably reduced by early ambulation—but only if this is put into effect within 48 hours of operation If we accept their evidence, we must suppose that the changes in the blood or in the vessel walls which initiate thrombosis appear within this time some form of prethrombotic state may be established, to await the action of a second factor (also unknown) in determining the actual occurrence of thrombosis That really *early* ambulation may prevent thrombosis has been borne out by my own experience of inguinal herniorrhaphy performed as an outpatient procedure, for in 485 patients so treated there have been no thrombotic complications

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* Honyman Gillespie lecture entitled Early Ambu n *and its* Contribution to Surgery delivered in the ersity of Edinburgh on May 5 1953

Patient's Morale

The effect of early ambulation on the patient's morale is incalculable When told on the evening of operation, or on the following day, that he can get up, he is surprised and often incredulous—but he is pleasurably surprised From being fearful of the consequences of operation, he at once becomes confident, and realises that he is no longer an invalid He is happy to take over the management of his own personal hygiene—not to suffer the indignity and discomfort of being catheterised, or of using a bedpan He quickly regains his strength, because he has had so little time in which to lose it

Discharge from Hospital

Many of those who are most enthusiastic about early ambulation insist, however, that it should not be made a pretext for too early discharge of the patient from hospital The reason for this advice is not clear, but it may be ascribed to the fact that tradition dies hard It has been stated in an editorial in the *British Medical Journal* (1948) that any surgeon who allows a patient to leave hospital within 14 days of an abdominal operation would be in a difficult position should complications develop Are we to admit then, rather shamefacedly, that our main reason for keeping our ambulant patients in hospital is to protect ourselves against possible litigation, and, in the light of our long waiting lists, is this attitude defensible ?

If the patient can move about the ward free from pain, if his temperature and pulse chart are normal, if his bowels have moved naturally, if there are no special dietary restrictions, and if his wound does not require to be looked at for several days—is there then any real reason why, if his home conditions are suitable, he should not be allowed to leave hospital ? Fear that early activity will delay wound healing or promote complications appears, on the evidence, to be quite unfounded Should such complications develop, it should be possible to maintain that they were in no way due to, or aggravated by, the patient's discharge from hospital, and to reject in good faith any accusations of negligence

There are several strong arguments in favour of early discharge from hospital of the ambulant patient, for even the best equipped of our modern hospitals make little provision for his needs (Goodall 1951) There are no comfortable armchairs or similar amenities, and washing facilities are often sadly limited Patients who are theoretically ambulant, but who all too often are deprived of their clothes, tend to spend most of their time in bed, finding this the most comfortable place, and the one where they are least in the way of the busy ward staff How much more comfortable they might be, and how much more speedy their recovery if, their home conditions being suitable, they were at their own firesides

Most of the evidence which has been adduced in favour of early ambulation has been concerned only with its effect on the individual patient, but possibly important are the benefits which it can confer community as a whole If it is combined discharge of the patient from hospital—and think, should be a corollary of early ambu leaves beds free for those who are awaiting

The argument that early ambulation measure of cruelty to the patient is surely than a last ditch defence of its opponents. of Leithauser (1946), who has done so much the method during recent years, *The Lancet* that "not merely did he push patients out soon as they were conscious, he pushed them hospital as soon as they could totter !" Agree do, with much of Leithauser's teaching, I feel manifestly unjust It is true that the patient unwilling, or even mildly rebellious, when he out of bed on the evening of the day of operat on the next day he is usually anxious himself for he appreciates the privileges which he can As soon as he realises that he can walk wit comfort he is anxious to continue and to activities If, after a further few days, we him go home, usually with his stitches still may look at first incredulous, but his face lights pleasure and he accepts with alacrity It is think, that he does not accuse us of cruelty, would have no possible justification for doing not urged or requested to leave hospital, he allowed to do so if this is his own wish, and—an proviso—if we consider his home conditions suitable

If, however, we are to be accused of cruelty charging our ambulant patients from hospital nothing to the cruelty of our long waiting lists waiting lists throughout the country now frightening proportions In December, 195 date for which such figures are available), there England and Wales 447,000 people (nearly half awaiting admission to hospital, and for them only 76,000 beds had been allocated In the Eastern region of Scotland alone, there were at of last year over 13,000 persons awaiting admission , for the available total of less than surgical beds there was a waiting list of over Owing to the shortage of hospital accommodation nursing staff, there is no discernible solution problem If, however, by early ambulation and charging our patients home on the 5th or 6th day of the 15th or 16th day we can increase the bed we are at least helping to improve on present

Inguinal Herniorrhaphy as an Outpatient

Rightly and properly we give precedence waiting lists to those whose diseases are endanger life The unfortunate man with hernia can plead no such cause, and his name remain indefinitely on the list, because there others whose claims seem to be more urgent of these hernia patients—usually young men to support, working under difficulties or pre vented by their disability from working socially and economically more urgent old people with their advanced carcinomata often, when the final count is made, we are cure

Some 5 years ago, prompted by these by reports in the literature (Blodgett and 1947, Burch and Bradley 1947) that the after inguinal herniorrhaphy is in no way early ambulation, I began to operate on inguinal hernia as an outpatient procedure

485 patients suffering from inguinal hernia been treated in this way Had all been hospital for the customary 10 days, they

a 28 bedded ward continuously for nearly 6 months.
total period of hospitalisation would have amounted
60 bed days which at the Royal Infirmary of
urgh would have cost the National Health Service
ximately £7500—more than this, I understand
ny English hospitals We cannot, of course, claim
ve have saved that sum for the service, for the beds
been filled by other patients but at least many
so other patients owe the fact of their admission
method of outpatient herniorrhaphy which has
o beds free. Also we have kept our hernia patients
g only a few days or a few weeks for their operation
l of many months.

operation has been carried out in all cases under
sthesia for if we had had to keep beds vacant
its to recover from a general anæsthetic many
sential advantages of the method would have
In our experience local anæsthesia has proved
atisfactory—even in the youngest patients of
(which includes 2 boys aged 12) In the early
had an anæsthetist standing by but soon gave
s unnecessary for in none of our 485 cases did
to have recourse to a general anæsthetic

le the patient is little disturbed by the operation
s down from the operating table, walks out of
re dresses in his lounge suit, and then walks
e ambulance in which he is taken home Our
get him back to his own bed while the local
ic is still effective In this, I am afraid, we are
ys entirely successful but we have had no
ts of serious discomfort It has had to be
l upon the ambulance drivers, however that
the patient may have walked into the ambu
should as a rule (unless he himself wishes to
carried out, since by that time the effect of the
esthetic may have worn off He is told that he
ably want to have 3 or 4 days in bed but that
ld get up for toilet purposes. He is asked to
o hospital (and usually does so without benefit
nbulance service) in 8 or 9 days for removal of his

neral, patients are selected for this method of
nt according to their home conditions rather than
g to the size or duration of the hernia It is
that patients who are in lodgings, or who live
ir family in a single room should not be treated
way nor should those whose herniæ are very
irreducible At first we chose only younger men
lique herniæ which seemed to need no recon
e repair, as we have become more confident
r we have operated on all kinds of inguinal hernia
ect direct and recurrent—by this method Local
esia has been found adequate for any type of
ructive repair which we chose to undertake
iscomfort which the patients may experience is
dragging on the peritoneum while the neck of the
eing cleared

ages of our patients have ranged from 12 to 83
Advanced age itself is no bar to the outpatient
on indeed I think that it is a strong indication
ld people are especially subject to the compli
induced by confinement to bed and are more
y departures from their normal routine The old
an who is returned to his own bed after operation
o can walk to his own lavatory seldom develops
on of urine This complication has not occurred
our series although 16 of our patients were over
3 over 80 years of age

ng ascertained that home conditions are suitable
ain to the patient just what the operation entails,
isfy ourselves of his willingness to be treated in
y We write to his family doctor and ask him to
ate in the treatment by visiting the patient for
2 or 3 days after operation We in turn promise
that we will admit the patient to hospital immediately should any complications arise

When the patient leaves by ambulance immediately after operation, we give him another letter to his doctor with instructions that it must be delivered that day As a reminder of his promise to coöperate by visiting the patient we suggest to the doctor that the patient will probably appreciate a sedative for the first 2 nights we renew our undertaking to admit him at once if there are any anxieties about his progress

We are most grateful to the doctors—the vast majority of those approached—who have coöperated with us and continue to send us cases for the same treatment None of them has complained about night calls or of any other pressing demands made by these patients

The number of patients whom we have had to admit to hospital because of complications has been surprisingly small—only 11 in the total number of 485 Most of these admissions were necessitated by oozing from the wound or hæmatoma formation—complications which we have I think, learnt to avoid by more careful attention to hæmostasis, for in the last 200 cases only 1 such admission has been required

Insufficient time has as yet elapsed for us to assess the long term results of this method of outpatient herniorrhaphy We have of course had some recurrences but, if one accepts the generally held view that herniæ which are going to recur usually do so within a year our results seem to be at least as good as many of those claimed for cases treated by orthodox methods It has been gratifying to find that most of the patients with recurrence instead of attributing such to this new form of treatment, have specifically asked to be operated on again in the same way Indeed the most interesting feature of the method has been its acceptance by the patients themselves They do not as one might think submit themselves to it rather unwillingly, simply as a means of avoiding the long delay on the waiting list for admission they seem actually to prefer it A few patients, who understandably disliked the feelings of apprehension associated with an operation under local anæsthesia, would rather have been ' put to sleep but nearly all sincerely appreciated the privilege of being allowed to return to their own homes immediately after the operation

Conclusions

Early ambulation has no deleterious effects on wound healing It reduces the incidence of complications uplifts the patient s morale, and in every way accelerates his recovery When combined in suitable cases, with early discharge of the patient from hospital, it leaves beds free for others who are awaiting admission

Reference has been made to inguinal herniorrhaphy carried out as an outpatient procedure This treatment has been employed in 485 patients whose home conditions were suitable, and whose family doctors coöperated by supervising convalescence The immediate results have been most satisfactory the method has been found to involve no undue hardship and the majority of patients have been sincerely appreciative. It is intended to present a follow up report on these cases at a later date.

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ILIO-INGUINAL BLOCK DISSECTION
WITH PRIMARY HEALING

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Block lymph node dissection of the axilla and of the neck have long ago become standard and accepted operations, but inguinal dissection still remains something of a bugbear, vexatious to the surgeon and a sore affliction to the patient

The textbook radical operation of today (Shaw 1954, Te Linde 1953) is based on that of Basset (1912) and is haunted by the complications of skin necrosis and lymph fistula, with healing by granulation delayed over many weeks The more thorough the operation the more troublesome is healing likely to be, and the patient is all too often left with more or less severe lymphœdema, which may be crippling

Way (1951), who has a very large experience of groin dissections for carcinoma of the vulva, considers that lymphœdema occurs "in almost all cases" Believing that sepsis and delayed healing were inevitable, he for a time advocated packing the inguinal wounds without suture Later, however, he found that by excising devitalised skin he could get half the wounds to heal by first intention. Most surgeons, regrettably, and unlike Way, have lowered their sights, restricting the operation for the sake of quick healing Te Linde (1953), for example, describes and illustrates a dissection made through a three inch incision and deferred until two weeks after ablation of the primary tumour

The chief cause of delayed healing is sloughing of the skin on the femoral side of the wound because it has to be very thinly dissected from the underlying fat and nodes A contributory cause is the "tenting" of the wound over the hollow groin, leaving a cavity which fills with lymph This clots, adding to the resultant fibrosis A drain in the groin is, too, a dirty affair, and, if sepsis is introduced, the density of the ultimate scar is likely to be even greater The relation of fibrosis to lymphœdema is important All surgeons agree that, after radical mastectomy, serous collections and wound infections, leading to delayed healing, are powerful factors in producing a swollen arm, and it is reasonable to suppose that, if these same factors can be avoided in dissection of the groin, the risk of œdema of the leg will be reduced

Such considerations have led me to the development, during the past two years or so, of an operation which largely overcomes these difficulties Though fully radical, it leads to primary healing without œdema in the great majority of cases Its cardinal points are

(1) Excision of the devitalised femoral skin

(2) Primary closure, without tension, by mobilising an abdominal flap

(3) "Pin down" stitch and pressure dressings to ensure close adherence of flaps

(4) Avoidance of all drains

The operation, though a little tedious, has proved so satisfactory that I have thought it worth publishing, even though it has so far been performed only ten or twelve times

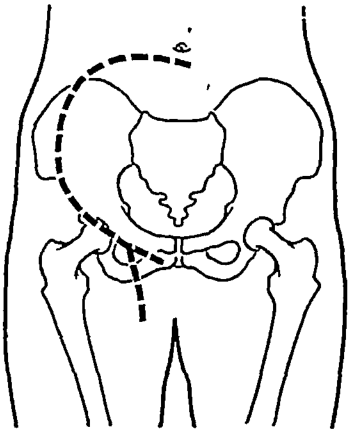


Fig 1—Skin incision Vertical femoral limb divides skin only, remainder is carried down to muscle

The Operation

Incision

The incision is C shaped (fig 1) and may be first with a skin pencil It begins at or just below the and extends in a uniform curve out into the flank across the anterior superior iliac spine, thence just below the inguinal ligament and up again to tubercle It should not be skimped, because the incision, the easier the final wound closure will modification may be needed if nodes are adherent to Only the inguinal part of the incision need be ma stage

Inguinal Dissection

The inguinal portion of the incision is made th only, and is supplemented by a short vertical e long over the line of the femoral blood vessels.

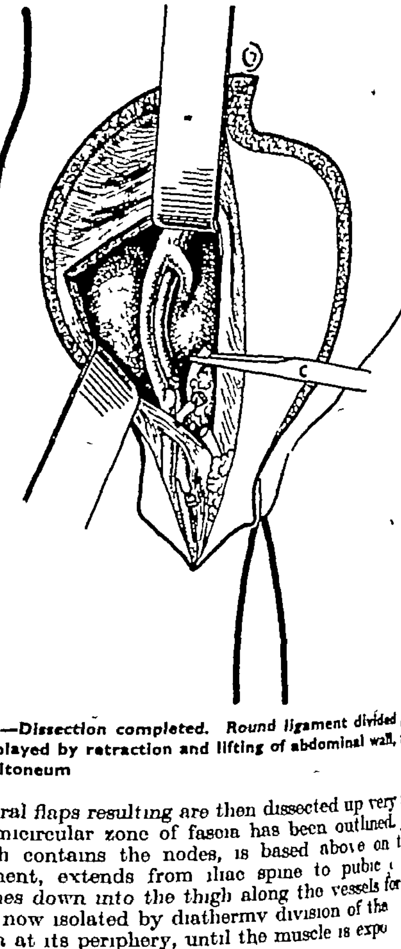


Fig 2—Dissection completed. Round ligament divided, displayed by retraction and lifting of abdominal wall, and peritoneum

femoral flaps resulting are then dissected up very th a semicircular zone of fascia has been outlined, which contains the nodes, is based above on the ligament, extends from iliac spine to pubic reaches down into the thigh along the vessels for It is now isolated by diathermy division of the fascia at its periphery, until the muscle is expo Below, the iliacus, psoas, and pectineus above, the aponeurosis of the external along the line of the inguinal canal. At the dissection the saphenous vein is identified, tied.

The fatty block thus isolated and including is now dissected up off the muscles, con towards the femoral canal and the femoral tissue and nodes are withdrawn from the fem the dissection is continued until the specimen only to the femoral vein by the termination of vein, which is now tied and divided, the removed The wide exposure of the muscles in of fascia, helps to ensure rapid adherence of the is hoped, opening up of new lymph pathways

Abdominal Flap

The femoral wound is now covered with a and the outlined incision completed, being the abdominal muscles The C shaped flap is the midline, gauze dissection being used to se from the muscles, until the irregular line of the forating vessels is reached, usually about 3-5 c

These branches of the superior epigastric arcade form the main supply to the flap and should be ed The flap is now rolled back on to oosite side of the abdomen and covered arm towels, leaving the muscles and roses of the abdominal wall cleanly d.

section

external oblique muscle and its apo s are split about 2–3 cm. above, and with the inguinal ligament The split above the pubic tubercle, opens up the l canal, and extends out beyond the l ligament over the iliac crest to a ngth of 15–20 cm. according to the s build. The internal oblique and rsus muscles are divided in the line incision ; bleeding is much reduced if done with the diathermy The sperm rd is freed, and may conveniently be ide with a rubber tube slipped round he extraperitoneal tissues are now l and by tearing the transversalis hey may be stripped up a little from psoas muscle Next the deep epigastric vessels are ed, and divided close to the parent trunks.

his stage it may sometimes be helpful to open the eum and explore with the finger the state of the iliac long the brim of the pelvis. The finger inserted in this so helps to strip the fatty tissues off the peritoneum s a hernial sac is cleaned. Once the plane has been the peritoneum can be closed.

anterior abdominal wall is now lifted and retracted s by an assistant. The peritoneum is pushed further ther up off the iliac vessels and is taken and lifted s with the assistant s retractor The common iliac tion is identified, and the exposure may if desired be even above this level (fig 2) My practice however top at this point unless the external iliac nodes are ly malignant

fatty mass surrounding the vessels—often very scanty asionally bulky—is now stripped downwards towards inal ligament Large nodes may need individual and dissection from the vein with curved scissors. A search is made in the upper end of the femoral canal, he region of the obturator canal, where nodes are often Removal of this tissue completes the clearance

bdominal wall is sutured in layers. The inguinal canal repaired as for hernia, or if desired, obliterated The canal is closed from above with a thread mattress- or darn.

re of the skin wound begins with the excision of any l skin of doubtful viability By this time it will be delimited by its colour from healthy skin A crescentic results, convex downwards (fig 3) The abdominal flap brought into position and rotated gently and evenly downwards to close this gap It is held in position and any slight tension is distributed by strategically placed interrupted sutures (fig 4) To eliminate tenting a single mattress suture of nylon is now carefully placed at right-angles to the wound edge and 5 cm. or so above it picking up the external-oblique aponeurosis. The site of this important " pin down ' stitch is chosen by noting the point at which the flap may be held down most effectively The stitch is tied over a sliver of corrugated rubber just tightly enough to obliterate dead space Very rarely two such stitches are needed (fig 5), but care must be taken not to impair the blood-supply to the skin edge Sometimes, in addition it is advantageous to pick up underlying muscle in one or two of the stitches apposing the skin edges.

As the suturing proceeds, some puckering of the upper and outer margin of the wound becomes noticeable Its degree depends on the diameter of the flap is less in women than in men and is least in big patients with a long and broad abdomen. If the puckering is not too great it may be distributed by judicious placing of the stitches otherwise the outer margin of the wound may be mobilised up over the costal margin and a spur taken out as required (fig 6) to improve the cosmetic effect I have never yet had to use a Thiersch graft in this area but in an exceptional case it might, of course prove necessary *No drainage tube is used*

Dressing

A strip of folded gauze is first laid all along the wound edge Next a vertical ' faggot bundle of soft rolls of gauze five or six in number and 10–15 cm wide is placed across the hollow of the groin, in the long axis of the limb and held in place under firm pressure by a strip of Elastoplast stretched from the medial aspect of the thigh outwards and upwards, parallel with the groin to the patient s flank This arrange

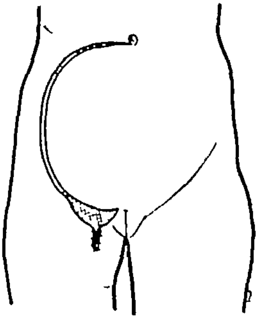


Fig 3—Crescentic defect, variable in extent, remaining after excision of devitalised femoral skin.

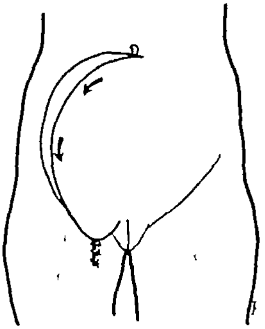
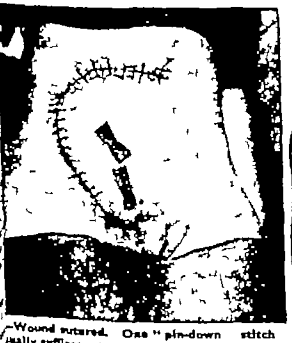


Fig 4—Closure of crescentic defect, without tension by downward displacement of abdominal flap.



—Wound sutured. One " pin-down stitch ually suffices ; two are rarely necessary

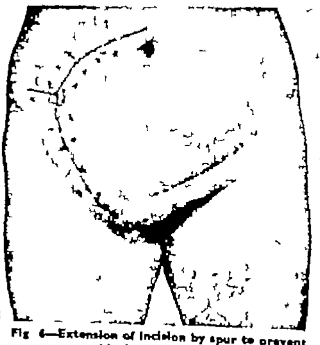


Fig 6—Extension of incision by spur to prevent skin from puckering

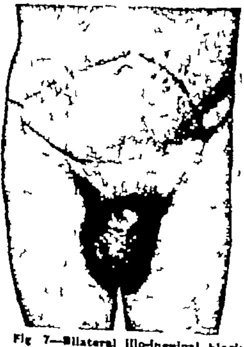


Fig 7—Bilateral ilio-inguinal block dissection.

ment is now covered by more gauze and wool, and finally fixed either with elastoplast or a spica of crêpe bandages In any case the dressing should be sealed off completely from the vulva and perineum with elastoplast The dressing is left undisturbed for ten days, unless there is evidence of serious wound infection Throughout this period penicillin and streptomycin are given

Variants

Reverse flap —Abdominal scars may sometimes cause difficulty

If they are old and well healed, they may be disregarded Alternatively the flap may be cut in the reverse sense, with the open ends of the C towards the flank, and its back to the midline Usually the flap based on the midline gives the easiest suturing without tension Moreover the lymph from the dissected groin appears to drain to the opposite groin rather than to the ipsilateral axilla, and the reversed flap would interfere with this drainage This question of lymph drainage is being investigated by tracer technique

Bilateral dissection, in theory, presents no difficulties My cases have mostly been of leg tumours (melanomas), and bilateral dissection has been done in only one case, by one of my colleagues A fortnight was allowed between the two sides, and healing was entirely satisfactory (fig 7)

The *iliac dissection* may, of course, be omitted, and it would be out of place here to discuss its pros and cons Division of the inguinal ligament is unnecessary It certainly gives the theoretically ideal "monoblock" dissection, but its reconstruction is difficult and unsatisfactory, especially as the introduction of much foreign suture material into this particular wound is obviously undesirable

Results

This operation has now been performed on eleven patients, by myself or my Westminster Hospital colleagues The cases have included malignant melanoma of the leg or of the buttock, carcinoma of the penis, and carcinoma of the vulva In addition, the skin-flap procedure has been used in two cases of radionecrosis of the groin skin due to heavy irradiation many years previously In one of these healing was somewhat delayed at the pubic end of the wound, owing to insufficient removal of damaged tissue It is now perfect, however, and the patient is at full work without any trace of œdema (nine months) In one case of melanoma the iliac dissection was incomplete, and, though healing was perfect, this patient subsequently developed massive œdema due to tumour, in spite of postoperative radiotherapy There have been one or two other minor imperfections of healing, but they have been really negligible in their effects The sound supple linear scar which results is shown in the accompanying photographs

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'It is also certain that the culture of Europe will continue to be extroverted It will always seek for the causes of its discomfort in the outer environment, and assume that the questions about the point in living have not yet been answered because knowledge is as yet inadequate, and that with an increase in knowledge the answer will be found It will continue to be ignorant of the fact that its way of living is only one possible way, and it will go on believing that all other cultures are trying to do what it is trying to do, only doing it less successfully Thus its attempt to solve all problems will always be by making more determined attacks on man's outer environment, by bringing refrigerators to hot countries and central heating to cold The two variations of European culture, Russian communism and American individualism, are in complete agreement on all these points'
—PETER NATHAN, *Retreat from Reason*, London, 1955

ERGOMETRINE WITH HYALURO

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ADMINISTRATION of ergometrine maleate by muscular injection, with hyaluronidase to absorption, was suggested by Kimbell (1954), w that in preventing postpartum hæmorrhage it was as effective as intravenous ergometrine I injection has the advantage that it can be perfor a midwife

In studying a small series of puerperal patients been able to demonstrate the adjuvant effect of ronidase by measuring tonic contractions of th induced by intramuscular ergometrine with and the aid of the enzyme

The women selected had had perfectly normal pr and labours, and their uterine contractions were re the second and third days after delivery The ergometrine was recorded with an external abdomi graph, applied to the abdomen thirty minutes be injection The recordings were assessed in terms of t period between the injection and the onset of a ton contraction, and of the maximum tension developed contraction The excursion of the tocograph was c by comparison with the excursion produced by a weight

In about half the recordings, uterine contractions before or with the injection of the drug This was as an emotional response, and due allowance was m in assessing the tracings.

Half the patients were given an injection of alone on the second day after delivery, and re same dose with hyaluronidase ('Hyalase') on the The remainder of the series received the doses in th order Two doses of ergometrine maleate were used, and 1 0 mg The dose of hyaluronidase was 1000 (one ampoule) The volume of each injection, wi or without hyaluronidase, was 0 5 ml, which ne preparation of a stronger solution of ergometrine (2 mg per ml) than is on the market

The nature and object of the investigation was to the patients, and also the possible therapeutic reducing after pains—an effect in fact observed in in which these pains had been severe

It will be seen from the table that with 0 25 mg, the latent period between injection traction is almost halved with hyaluronidase, average height of contraction is increased by 30 doses of 1 0 mg the addition of hyaluronidase little difference to the average latency, but incre average maximum contraction by 53% An in dose alone decreased the latency but increase the maximum height of contraction both dose levels addition of hyaluronidase to improved its action on the uterus as regards both and maximum contraction Kimbell (1954) show where ergometrine maleate was given intra with hyaluronidase, 0 5 mg was more effecti 0 25 mg in reducing postpartum hæmorrhage

RESULTS OF INVESTIGATION

—	0 25 mg		1·0
	Ergo metrine	+ Hyalu ronidase	Ergo-metrine
No of patients	6 0	9 0	3 0
Average latency (minutes)	9 9	5 4	4·0
Average tension (grammes)	38 0	50 0	39 0

ht that 1·0 mg might prove still more effective, all seven patients receiving this dose had asant symptoms, including nausea lassitude ldn t face the next meal " and general malaise lasting onger than three hours after the injection These gs suggested that, intramuscularly or intravenously idely used dose of 0 5 mg of ergometrine is in fact otimum My own observations support Kimbell s view he action of hyaluronidase should enable the midwife intramuscular injections, to get results almost as as those obtained by the doctor with intravenous ions

ish to thank Prof W C W Nixon for permission to s work in the obstetric department of University College tal, and for his advice and criticism, and Dr R. O Schild, nty reader in pharmacology at University College for vice and interest

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CHEOTOMY IN ACUTE RESPIRATORY EMBARRASSMENT

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NY textbooks, in describing the indications for otomy mention conditions which give rise to geal obstruction—e.g., diphtheria foreign bodies of the glottis syphilitic tuberculous, and nant disease of the larynx , œdema of the glottis arcinoma of the thyroid.

ently tracheotomy has also been advocated to ome the obstructed airway in poliomyelitis. It epted that the operation should not be too long l, and that the earlier it is done the less will be k of such complications as mediastinitis, hæmor due to congestion and surgical emphysema yn Thomas 1952)

ases of head injury and after neurosurgical opera- tracheotomy may be necessary to provide an ate airway for in these cases there may be shed consciousness for many days, with resultant to cough up bronchial secretions. Tracheotomy en used too in tetanus (Herzon et al 1950) and rbiturate poisoning with respiratory depression urpose here is to suggest that it should be tried in other conditions both medical and surgical

y patients dying from severe *myocardial infarction* anosed and unconscious, with hanging jaw, ster bubbly respirations, cold sweating skin, and eptible pulse We think that part of this clinical e is caused by hypercapnia, and that tracheotomy n and intratracheal oxygen would be beneficial

cheotomy may also be of value in selected cases *arachnoid hæmorrhage* and also in *eclampsia* in the immediate cause of death may sometimes be noxæmia and hypercapnia which result from atory inefficiency

ny patients with *emphysema and bronchitis* have ent pulmonary ventilation to maintain adequate atory exchange when they are otherwise reason healthy ; but any condition necessitating surgery as repair of a perforated duodenal ulcer places her burden on their respiratory reserve. Diminution aphragmatic movements by pain or by excessive nts of morphine may cause congestion and collapse lung bases shortly after operation leading the patient to relapse into coma and die from broncho pneumonia or an inadequate respiratory reserve. Tracheotomy might be useful in some of these cases if the sputum could be aspirated the dead space reduced and better oxygenation provided

An adequate airway is essential of course in all phases of any illness, whether accompanied by coma or not Indeed an adequate airway may prevent the onset of coma by overcoming anoxæmia and hypercapnia

Mushin (1955) says that the treatment of an unconscious patient resolves itself into ensuring adequate oxygenation through a clear airway and he explains fully the advantages and reasons for tracheotomy positive-pressure ventilation, and frequent suction

Previously Echols et al (1950) described tracheotomy as superior to any other method of maintaining efficient aeration of the lungs in unconscious patients It should be done promptly and unhesitantly in every patient unconscious from a head injury if it seems likely that the coma will persist for more than twenty four hours and if non surgical methods of maintaining an adequate airway appear to be inefficient.

Westlake (1954) concluded that ' acute respiratory failure with increasing anoxæmia hypercapnia and acidæmia is responsible for the distinctive clinical picture observed during exacerbation of infection in the chronic bronchitic and emphysematous subject ' He explains that the physiological response of patients with chronic bronchitis and emphysema is often abnormal in that they cannot increase ventilation enough to prevent a rise in arterial carbon dioxide and hydrogen ion concentration.

Donald (1953) has shown that in patients with damaged lungs the carbon-dioxide level rises considerably as anoxæmia develops—which suggests anoxic central respiratory failure Westlake (1954) emphasises that this respiratory failure is often fatal before the causal pulmonary disease can be cured

Tracheotomy in Acute Pulmonary Infection

The treatment of acute pulmonary infection in patients with chronic bronchitis and emphysema is usually based on the administration of antibiotics and oxygen and the relief of respiratory obstruction Conventionally the respiratory obstruction is treated with antispasmodics, by postural and percussion drainage, and by encouraging the patient to cough But it is well known that many such patients are too exhausted to cough up their sputum spontaneously, or else so drowsy or comatose that coughing and postural drainage are impossible Simpson (1954) describing the clinical picture on admission to hospital mentions such complications as drowsiness confusion irrationality and coma In patients with persistent hypercapnia these symptoms are commonly exaggerated by oxygen therapy

In dealing with such cases is not the relief of the respiratory obstruction of paramount importance ? By all means let antibiotics be given but let them be given to a patient with an adequate airway who is not handicapped by anoxæmia and hypercapnia Antibiotics will do little good unless the patient remains alive to benefit from their action

The signs which suggest insufficient respiratory exchange are dyspnœa overaction of the accessory muscles of respiration, diminished chest movement profuse sweating confusion and drowsiness or coma Cyanosis may be present but if oxygen is being administered absence of cyanosis does not mean absence of hypercapnia

As soon as it becomes evident that a patient is not clearing his trachea and bronchi tracheotomy should be performed retained secretions can then be sucked out and oxygen given through the tracheotomy tube In some patients relief from the hypercapnia may have to be hastened by hyperventilation with oxygen and the use of a carbon-dioxide absorber or with an air-oxygen mixture at a flow of about 20 litres a minute without the use of an absorber The earlier tracheotomy is performed the less likely is the patient to suffer from the effects of carbon dioxide narcosis and anoxæmia, and the less likely is the onset of cardiac failure Furthermore, patients who are drowsy or comatose will regain consciousness

The operation must be a planned one and should not be left as a last resort Oxygen should be given by face mask throughout the operation, which is done under either local or general anæsthesia

Before tracheotomy is performed one must have a powerful suction apparatus, in working order, at the bedside During the operation hæmostasis should be secured before the trachea is opened When the tracheotomy has been effected, secretions should be aspirated before the patient is hyperventilated If a carbon-dioxide absorber is used, the soda lime should be damped to prevent insufflation of the lime dust into the respiratory tract Oxygen given through the tracheotomy tube should be humidified to reduce irritation of the trachea One should be prepared to give artificial respiration to overcome the apnœa which may follow the tracheotomy This apnœa is due to lowering of the carbon-dioxide level, because a respiratory centre which is accustomed to a high concentration of carbon dioxide may cease to function when the level falls

In hyperpyrexial patients hyperventilation may cause a considerable fall in blood-pressure If this fall is detected it may be treated by stopping the hyperventilation or with a noradrenaline drip

Recent experience in surgical and medical cases suggests that the above reasoning may be correct The following is an illustrative case report

Case 1 —A man, aged 41, on admission at 7 20 P M was too dyspnœic to give much history He had had chronic bronchitis and emphysema for fourteen years and had become ill with dyspnœa, a productive cough, and right-sided pleurisy four days before admission

Examination showed a very ill man, sweating and cyanosed Temperature 101 4°F There were signs of consolidation at the base of the right lung and a pleural rub was heard in the right axilla

Treatment and Progress —Penicillin and oxygen were given, but the patient became increasingly drowsy, at 12 30 A M he was semicomatose Next morning he was deeply comatose, and cyanosed The cyanosis was relieved by oxygen, but in other respects the deterioration progressed. It was realised that his coma might be due to carbon dioxide narcosis, but oxygen therapy was continued (Simpson 1954)

At this point accumulation of bronchial secretions was diagnosed and a tracheotomy performed. Thick green sputum was aspirated Next day there was a definite improvement and the patient responded to shouted commands. Suction was applied every quarter of an hour and oxygen given continuously through the tracheotomy tube

On the following day he was conscious and taking fluids The tracheotomy tube was removed on the fourth day because he was coughing well He continued to improve steadily and a month after admission he was ambulant At the height of his illness he showed signs of cardiac failure—e g , sacral and peripheral œdema—but these have now disappeared

Postoperative Tracheotomy

Tracheotomy may also play an important part in postoperative management particularly of patients with chronic bronchitis and emphysema and after thoracic operations Such cases often demonstrate the importance of recognising moderate depression of respiration The condition is insidious and therefore often unrecognised It leads to inefficient lung ventilation and allows the accumulation of carbon dioxide in the tissues During the immediate postoperative period respiratory movement is often limited by pain, exhaustion, or anxiety Coughing is weak and allows bronchial secretions to accumulate The provision of an adequate airway at this stage is essential, and, when conventional methods fail, tracheotomy is indicated, as in the following case

Case 2 —A man, aged 27, had had
for ten years Radiography showed disease of the
he was considered suitable for surgery, and
lobectomy, apical lower segmental resection, and
thoracoplasty were performed

After operation he was dyspnœic and cyanosed
oped a bronchopleural fistula His respirations
and shallow, and his sputum was copious, frothy,
stained On the eleventh postoperative day he was
and stuporous for short intervals His cough was

His condition remained more or less unchanged
he became comatose in the fifth postoperative week.
ness returned on hyperventilation with 20 litres
flow for eight minutes Two hours later he relapsed
which was relieved by hyperventilation after twelve
Three hours later he was comatose again and
brought round by hyperventilation. He was
sweating profusely His pulse rate was 130, pulse
of poor volume, and blood pressure 90/60 mm.
respirations were shallow and rapid, there were
both lung bases, and a loud presystolic triple
audible over the apex of the heart Sacral œ
His condition rapidly became desperate, his tongue
his lower jaw sagged, and a strong tracheal tug was
His pupils were widely dilated and his pulse imperc

Tracheotomy was performed, a large quantity of
bloodstained sputum was aspirated, and oxygen
per min was given through the tracheotomy tube.
patient recovered consciousness at once, his pulse
and sweating ceased Next morning he was
rational, with blood-pressure 130/90 His general
improved steadily after this, the sacral and
œdema disappearing slowly His bronchi were
hourly through the tracheotomy tube, which was
removed on the twenty first day

Coma did not return, and his heart sounds were
Seven weeks after the tracheotomy he had been
for a fortnight

Electrocardiography soon after recovery of
from the first coma showed ST raised in lead II with
TII and TIII, and on the day after tracheotomy ST
leads II, III, V_2, V_3, and V_4 TII was positive and
The conclusion was that the ischæmic changes had
whereas the current of injury was still present. A
ST was still raised in leads II and V_2–V_4, but T was
in V_1–V_4 Later electrocardiography showed
deviation with no current of injury

The electrocardiograph changes in this
are very interesting and were attributed on
grounds to acidosis Whether the current of
could have been prevented by earlier relief of the
capnia is debatable Altschule and Sulzbach
describe reversible RS T interval changes in
carbon dioxide acidosis They found that the
tion of a mixture of 5% carbon dioxide and
to a man was associated with electrocardi
changes indicating myocardial injury These
were rapidly reversible after cessation of each
ment MacDonald and Simonson (1953)
electrocardiographic changes during and after
inhalation of 30% carbon dioxide for 38 sec
They found abnormal rhythms, low voltage,
P waves, and increased T waves They conclu
the changes found in a very brief form of carbon
acidosis could furnish only tentative suggestions
the possibility of changes in cardiac function
respiratory acidosis found in pulmonary
during surgical anæsthesia Nevertheless
that the possibility should be considered
carbon-dioxide retention

In the cases described above, and in several
seen, little doubt was felt, by those who
that the tracheotomy saved the patient's life

Primary Advantages of Tracheotomy

Tracheotomy provides an unobstructed
the mechanical obstruction of the relaxed
by passed

ostruction due to mucus is relieved because the 'on catheter can easily be applied to the trachea bronchi

nd space air is reduced. If the tidal volume is .cm and the dead space air is 120 c cm , the effective volume is 380 c cm If however, the tidal volume 0 c.cm. the effective tidal volume is only 30 c cm acheotomy which reduces the dead space air from to 60 c cm., will thus treble the effective tidal ne and considerably reduce tachypnœa It is ous that before tracheotomy the tachypnœa s no useful purpose, because although asphyxia be delayed it will not be prevented Reduction of dead space by tracheotomy may increase the tidal ne sufficiently to prevent asphyxia.

the relief of dyspnœa the patient becomes less tened and less agitated and usually passes imme ly into a restful sleep As a result, the oxygen umption and the metabolic rate are reduced

Other Benefits of Tracheotomy

ygen consumption is also decreased because the sory muscles of respiration need not be used any r and less violent and less frequent respiratory sions of the thoracic wall are required

e tachypnœa is reduced, and the heart is given more to fill and to discharge its contents

vestigations, such as examination by portable apparatus may be made without distressing the nt to the same extent as when he is severely ioic

raing is easier with a coöperative conscious patient with one who is irrational or unconscious

Disadvantages of Tracheotomy

e patient loses the power to cough This, however easily be overcome when he is stronger by occlud e hole in the tracheotomy tube

eech is lost." The fact that this loss is only tem y should be explained to the patient, if he is ious, before tracheotomy is performed or as soon ssible when he emerges from coma Proof that he ot ' lost his voice " may be provided by occluding ole in the tracheotomy tube

ny think that tracheotomy is a mutilating operation sually the wound heals very quickly after a few days. oximation of the skin by sutures is not as a rule red even though mucus may leak through the skin ng for some days after removal of the tube. The fter the operation is slight

lvantages of Other Methods of Maintaining an Adequate Airway

ermittent bronchoscopic aspiration with a desper ill patient is distressing if it has to be repeated often endotracheal tube is uncomfortable tends to ne kinked, and may cause œdema of the glottis ng its replacement difficult or impossible.

Conclusions

acute respiratory embarrassment whether in medical stoperative cases the provision of an adequate y is essential

e conventional methods of dealing with respiratory rassment are often inadequate and in such cases eotomy, with aspiration of retained tracheobronchial ions, adequate oxygenation and elimination of n dioxide can be life-saving

are greatly indebted to Dr J R Esplen for his advice elpful criticism in preparing this paper We also wish ank Dr N Bennett-Jones, Dr O F Thomas, and K. B Waddington for permission to publish details ir cases.

References at foot of next column

THE USE OF MORPHINE AND PROPANTHELINE IN INTRAVENOUS CHOLECYSTOGRAPHY

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SINCE the introduction of 'Biligrafin' ('Cholografin' in U S.A) by Frommhold in 1953 several reports have been published which confirm its value in the investigation of the biliary tract in cases where oral cholecystography does not display the gall bladder or the common bile duct, or after cholecystectomy Maximum visualisation of the bile passages is obtained 30-45 minutes after slow intravenous injection of 40 ml of biligrafin (Sénoque et al 1954) But the shadows are sometimes disappointingly faint (Berk et al. 1954) Absence of or poor, visualisation of the main biliary ducts may be due either to disease in the liver parenchyma in which case the dye is eliminated chiefly by the kidneys and the density of the resultant pyelogram then serves in some measure as a test of hepatic function (Gershon Cohen et al 1954) or to very rapid passage of the dye into the duodenum

Nemours Auguste and Barag (1954) report that after injection of morphine the sphincter of Oddi closes within five minutes and that visualisation of the hepatic ducts is thereby improved. Walters et al (1937) showed that this spasm lasted two hours with a hypodermic injection of morphine but much less when the drug was given intravenously This action of *morphine is of* value not only in preventing the exodus of dye to the duodenum but also in providing information about the integrity of the sphincter

On the basis of these reports, and of Lubert and Krause's (1953) use of a fluoroscopic spot-film device with graded compression for cholecystography a technique has been evolved which has now been used in 60 cases at this hospital. It has reduced the number of radiographs required and the time spent by the patient in the X ray department

Technique

After the usual preparation biligrafin 40 ml. is given by *slow intravenous injection* Thirty minutes later morphine gr $^1/_4$ is given intravenously After another thirty minutes a 12 × 10 in film of the gall bladder region is taken The average exposure factors used are 60 kV peak 100 mA-sec 40 inches F F D This film which is examined as soon as possible shows the landmarks for subsequent fluoroscopy; it also shows whether the sphincter of Oddi is intact or not degree of visualisation of the gall bladder and the density of renal excretion of the dye In the light of this *information* the patient is screened and four views are obtained on 15 × 6 in film using the fluoroscopic spot-film device with graded compression In the average case this may suffice

Illustrative Case report

Case 1 —A man aged 47 was admitted on April 9 with jaundice following an attack of acute epigastric pain a few days previously He had had in 1952 an attack of jaundice which had lasted a few weeks.

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On admission there was no gross physical abnormality, and the chemical findings were bile pigments present in urine, serum diastase 294 units per 100 ml, serum bilirubin 2 2 mg per 100 ml, direct van den Bergh reaction positive, cephalin cholesterol flocculation strongly positive blood urea 44 mg per 100 ml, erythrocyte sedimentation reaction 49 mm in one hour (Westergren), and Wassermann reaction negative

April 21 the serum diastase level had fallen to 178 units per 100 ml, and next day cholecystography was done using 'Telepaque' There was no visualisation of the gall bladder Later that day the patient had epigastric pain, and the serum diastase level rose to 320 units per 100 ml

May 10 the patient's general condition was very much improved, and the serum diastase level had again fallen Cholecystography was done by the technique described above The film at sixty minutes showed dilated intrahepatic ducts, a small shrunken gall bladder, considerable narrowing of the terminal few centimetres of the common bile duct, and dye in the duodenum The films obtained with compression confirmed these details Fibrosis of the common bile duct and stenosis of the sphincter of Oddi, with associated recurrent pancreatitis, were diagnosed, and the diagnosis was confirmed at operation on May 13

Possible Complications

Two possible complications of the use of intravenous morphine in cholecystography are (1) pain may be produced by the spasm of the sphincter of Oddi, and (2) pancreatitis may be caused by reflux into the pancreatic duct In the present 66 cases no reactions were observed with intravenous biligrafin No nausea or vomiting was reported, but 2 patients complained of pain during the investigation This pain was fairly severe, and serial radiographs showed that it lasted throughout the period of retention of dye in the common bile duct and was relieved as the dye started to drain into the duodenum

On the assumption that this pain was due to spasm of the sphincter of Oddi it was decided to try to relieve it by administering propantheline bromide, which, in doses well below toxic limits, has well-marked anticholinergic activity both at parasympathetic effector sites and at the ganglia Laboratory tests show is much more active than atropine, and side-effects been slight or absent in clinical trials The obtained are illustrated in the following case.

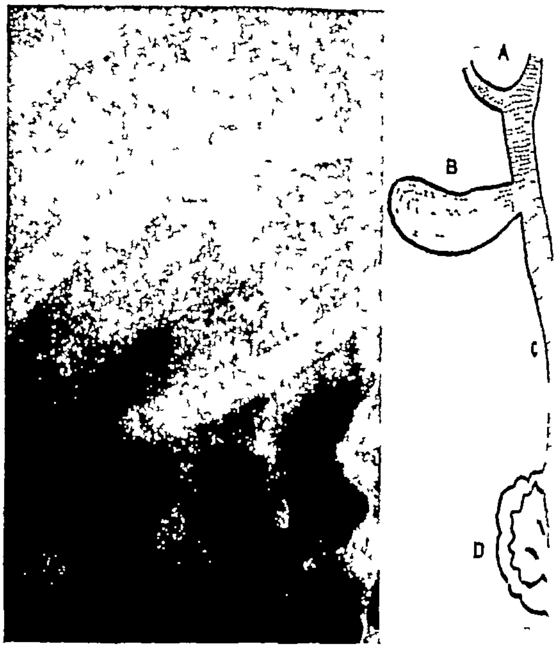

Fig 1—Cholangiogram (60-minute film) showing dye in biliary none in duodenum owing to spasm of sphincter of Oddi morphine: A, intrahepatic bile-ducts B, gall-bladder; C, bile-duct, D, duodenum

Case 2—A woman, aged 63, was admitted recurrent biliary colic Cholecystography was carried the technique described The sixty minute film intrahepatic ducts, a small gall bladder, and a common bile duct filled with dye There was no dye duodenum, which is seen outlined by gas (fig 1). P 30 mg was then given intravenously, and minutes there was a rush of dye into the (fig 2) There was no pain during the and no side effects were observed

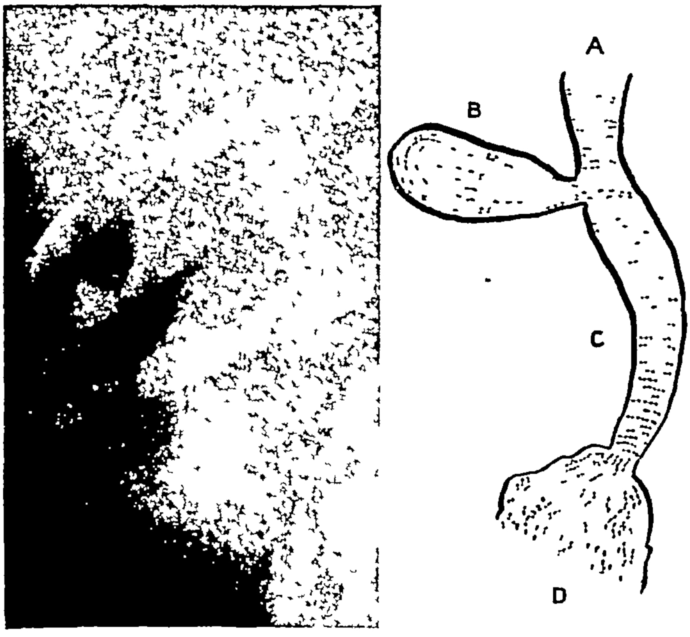

Fig 2—Cholangiogram 3 minutes later than fig 1, showing sphincter of Oddi relaxed by intravenous propantheline, and duodenum flooded with dye: A–D as in fig 1

The rapid relaxation of the sphincter that propantheline might be of value was felt 2 other patients who had had severe pain during cholecystography were reinvestigated in the same way, and propantheline again rapidly abolished the of the sphincter, released a flood of dye duodenum, and relieved the pain

Summary and Conclusions

The technique used in this hospital for venous cholecystography with biligrafin intravenous morphine is described

Morphine is used to induce spasm sphincter of Oddi and thus facilitate of the biliary tract Information integrity of the sphincter is also thereby

Propantheline bromide can be used to colic, whether due to spasm of the associated with biliary reflux and

These findings justify a wider application or a similar technique, such as that of (1955), who makes use of a preliminary and intravenous pethidine

I am grateful to Dr J Ronald for his and to Messrs G D Searle & Co for propantheline bromide ('Pro Banthine').

References at foot of next column

LTIPLE MYELOMATOSIS WITH LARGE MYELOMA CELLS AND NORMAL PLASMA-PROTEINS

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LTIPLE myelomatosis can no longer be termed rare spital admissions over a five year period Adams (1949) found an incidence similar to that of kin's disease.

ically, multiple myelomatosis is characterised by and tenderness in the bones wasting and anæmia the bone-marrow contains cells of the myeloma varying from larger and more primitive cells with cytoplasm to smaller plasma cells with typical 'wheel' nuclei It is usually accepted that the most teristic feature is the increase of a highly homogeneo erum globulin which is normally present in only amounts in the family of normal proteins (Putnam ldin 1953)

co electrophoresis was introduced by Tiselius to facilitate the splitting of serum globulin into nt components, many cases investigated by this d have been published Gutman et al (1941) ied sera from patients with multiple myelomatosis ee types

ra with increased γ-globulin fraction.
ra with increased β-globulin fraction or a fraction g between β and γ (M.M fraction)
ra with apparently normal patterns, this group being bly smaller than the other two groups.

recently less time-consuming techniques using per have been described (Martin and Franglen urrum 1950) but results with these methods are variable depending on the technique used

Case records

following cases are reported to draw the attention cians to difficulties in diagnosis where the labora- dings are atypical

1.—A woman, aged 76 had six weeks history of cough rulent sputum followed by pains in the chest and back n movement and coughing She felt weak and had ight Two years previously she had had tuberculous necessitating rest in bed for three months.

mination she had generalised muscular wasting and l areas of tenderness over the ribs and lumbar verte- here were signs of a right basal pneumonia which later ed satisfactorily to penicillin.

ination of the blood showed hæmoglobin 11 7 g per ; red cells 3 820 000 per c.mm., white cells 7800 per polymorphs 57% lymphocytes 40% monocytes 3%) erythrocyte-sedimentation rate (E.S R.) 56 mm. in one hour (Westergren) The sputum contained no tubercle bacilli on repeated examination The serum calcium level was 10·0–11 4 mg per 100 ml., serum phosphorus 3·4 mg per 100 ml and serum alkaline phosphatase 10 King Armstrong units.

Radiography of the chest showed tuberculous infiltration of the right apex with pleural thickening and fractures of the 3rd 7th and 9th ribs on the left side and radiography of the lumbar spine showed generalised osteoporosis, with collapse of the body of the 10th vertebra This suggested a secondary neoplasm but no evidence of a primary growth was found

Biopsy of the sternal marrow showed a hypocellular marrow with 10% of large pseudopodial cells showing vacuolation of cytoplasm and an undifferentiated nucleus and resembling early reticulum cells Although no typical myeloma cells were seen, myelomatosis was considered but the serum protein levels were normal (total 6 4 g per 100 ml. albumin 4 4 g globulin 2 0 g)

Urine.—No Bence Jones protein or albumin was found on repeated examinations.

Further investigations (Dr G Discombe)—The blood urea level was 48 mg per 100 ml. plasma sp gr 1 215, total serum protein level 4 9 g per 100 ml., with γ globulin virtually absent β globulin and α_1 globulin at the upper limits of normality and albumin slightly reduced. The zinc sulphate turbidity was 0 6 Kunkel unit (normal 2–10 units) Electrophoresis was done with a filter paper technique using a barbitone buffer at pH 8 6 and criteria of normality as described by Discombe et al. (1954) The zinc sulphate test has been shown to bear a high degree of correlation with the amount of γ globulin present in the serum (Discombe et al 1954)

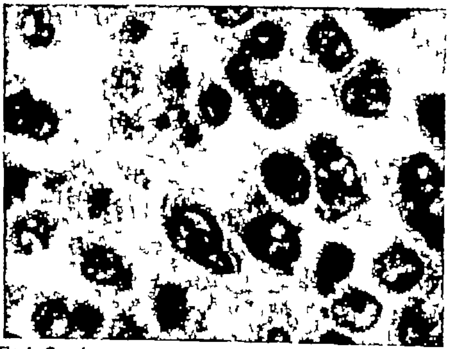

Fig 1—Case 1: post-mortem specimen from myelomatous deposit in ribs showing numerous poorly differentiated myeloma cells.

Course—There was little change in the patient's general condition she was still thought to have neoplastic metastases and further radiography after three months showed several small punched-out areas of rarefaction in the ribs and pelvis The general decalcification was more obvious Biopsy of bone marrow this time from the iliac crest showed for the first time typical myeloma cells, about 40% of the total cellular count A clear gradation could be made out between the primitive cells previously seen and the mature myeloma cells now present Repeat examination of the serum by paper electrophoresis (Dr J Green) again showed no abnormal component The serum protein levels were again normal (total 6·7 g per 100 ml.; albumin 4 5 g., globulin 2 2 g) and again no Bence Jones protein was found in the urine

The patient's general condition steadily deteriorated until she died.

Necropsy Findings (Dr C C Bryson)—Healed granulomatous tubercles were found in the lungs, and pink gelatinous deposits in the ribs (fig 1) vertebræ sternum and pelvis but not in the skull. No deposits were found elsewhere Histologically a large amount of free iron was seen in the spleen and liver and the deposits in the bone marrow showed a moderate increase in the number of myeloma cells of large type

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Case 2 —A porter, aged 69, was admitted complaining of pain in the back and loss of weight of two years' duration and cough with variable amounts of yellow sputum for the past four years necessitating his admission to a hospital on two occasions with bronchitis

On examination he was pale and wasted, with dyspnœa and œdema of his legs Generalised rhonchi and basal râles were audible in his lungs, but there was no clubbing of the fingers Acute bronchitis with emphysema was diagnosed, and he was treated with antibiotics, which produced slight improvement

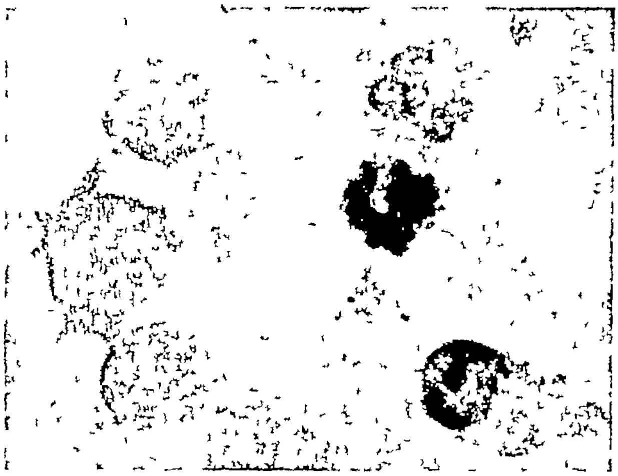
Fig 2—Case 2: sternal marrow, showing a group of three large myeloma cells

Examination of the blood showed Hb 11 1 g per 100 ml, E S R 16–20 mm in one hour (Westergren), blood urea level 136 mg per 100 ml, serum calcium 8 7 mg per 100 ml, serum phosphorus 6 3 mg per 100 ml, serum alkaline phosphatase 9 0 King Armstrong units, serum acid phosphatase 5 3 King Armstrong units, serum protein levels total 5 0 g per 100 ml (albumin 2 6 g globulin 2 4 g) on Sept 9, 1954, and total 5 0 g per 100 ml (albumin 3 4 g, globulin 1 6 g) on Sept 24, 1954, zinc sulphate test 4 0 Kunkel units, and thymol turbidity 0 8 unit

Urine —Bence Jones protein was present in moderate amounts

Electrophoresis showed no abnormal components Sternal marrow was hypoplastic, and large numbers of myeloma cells (fig 2) of primitive type, with especially fragile cytoplasm and nucleoli, were seen

Radiography of pelvis, femora, skull, and ribs showed numerous punched-out areas typical of myelomatosis

Course —The patient's condition deteriorated, and he died in uræmia on Oct 8, 1954, with a blood urea level of 276 mg per 100 ml.

Necropsy Findings (Dr C S Treip) —Bilateral basal bronchiectasis was found with small abscesses containing pus and surrounding fibrosis The kidneys showed poor cortical demarcation, and nothing abnormal was seen in the prostate gland. Hyperplastic marrow, which was gelatinous and plum coloured in parts, was found in the sternum, ribs, and lumbar vertebræ Histological examination confirmed the diagnosis of multiple myelomatosis The kidney sections showed nephrosclerosis and myelomatous nephropathy

Discussion

These cases illustrate two points

(1) When multiple myelomatosis is considered it cannot be excluded on a single biopsy of sternal marrow, further specimens of marrow should be obtained from any other accessible bone

(2) Though abnormal serum protein levels are usual in multiple myelomatosis, normal levels and the absence of an increased globulin component on electrophoresis do not exclude multiple myelomatosis

Another unusual feature, present in case 1, was the almost entire absence of γ globulin Griffiths and Brews (1953) described 20 cases of multiple myelomatosis, in 4 of which an increase in a globulin fraction between the albumin and β fractions was The serum albumin level was lowered and the absent in some of their cases In the present abnormal component was seen, the α and β being within normal limits

This raises the question of where the abnormal originates in multiple myelomatosis Bing (194 a correlation between an increase of plasma high serum-globulin levels in both man and animals, and thought that plasma cells produ globulin Waldenstrom (1944) thought that globulinæmia was the primary condition in myelomatosis, and that plasma cells only protein (cf lipoidoses)

Aas (1949) reported a case, with a low serum level of 1 2–1 8 g per 100 ml in which 50% of the contained normally differentiated myeloma therefore concluded that in his patient there quantitative relation between plasma cells and globulin Lichtenstein and Jaffe (1947) found tion in 4 of 8 cases with predominantly in post mortem histological sections and high globulin levels ranging from 3 4 to 14 0 g per In neither of these two series was electro done

However, Olhagen et al (1949) studied 16 cytochemical methods and found two distinct cells, which they called type A and type B cells resembled mature plasma cells and were association with an increased amount of β or γ globulin Type B cells were larger and differentiated and resembled myeloblasts, and cases there was no increase in serum globulin, but Jones protein was found in the urine Olhagen postulated that the degree of differentiation of determined whether the abnormal globulin was or of small molecular weight and hence appeared in the plasma or in the urine The cases support their findings in that in both they large cells of the myeloma series and a normal globulin level, but Bence Jones protein was from the urine in case 1

Summary

Two cases of multiple myelomatosis are desc which the abnormal cells in the bone marrow the large type and the total serum globulin not increased

No abnormal component was found in the electrophoresis, but one of the patients had Bence proteinuria

Our thanks are due to Dr C S Treip, of Central Hospital, and Dr C C Bryson and Dr J Green, West Group Laboratory for their examinations and and to Dr A H T Robb Smith, Dr G Discombe Dr J Fielding for their helpful advice.

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INOPHILIC GRANULOMA (HONEYCOMB UNG) WITH DIABETES INSIPIDUS

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association of diabetes insipidus with pulmonary of a characteristic type commonly and some oosely called honeycomb lung" has been known the reports of Weidman and Freeman (1924) erm is picturesquely descriptive but its applica any particular entity is not justifiable It was lly used in connection with the macroscopic ances in diffuse cystic conditions of the lung dectasis both congenital and acquired bronchio- s, and widespread bullous emphysema. More y it has also been used as descriptive of the radio appearances not only in these conditions but also coidosis, scleroderma tuberous sclerosis, and matosis among others.

first attempt at elucidation and systematisation clinical and pathological features of these pul y lesions was that of Oswald and Parkinson who besides reporting their own cases reviewed rature and discussed the processes involved ently Spillane (1952) reported 4 cases of honey ung associated with diabetes insipidus and l the ætiology

ngham and Parkinson (1950) separated a distinct f cases of pulmonary disease of honeycomb' which only 1 patient had pituitary involvement, gested the stages in its development and the sm of cyst formation shown by necropsy speci Oswald (1952) analysed the condition very fully asis of his own work. Nevertheless, the number of l examples of the syndrome is so small and its so ill understood as to justify the reporting following case Moreover, so far as we know, in this country has tried to determine the exact gical lesion in life by lung biopsy

Case report

n, aged 32 single who had worked on farms since of 14 was referred to the London Chest Hospital in , 1953 with a three year history of cough and sputum, ia and polyuria, and increasing breathlessness

ated the onset of his symptoms to a short period in hen he worked on a clover huller (a machine used shing clover in the open) After two weeks work on chine he developed a feverish cold and cough but he ed to use the huller for a further six weeks after e returned to other farm work. The cough persisted duced a little mucoid sputum and about this time iced excessive *thirst and frequency of micturition* octurnal and diurnal During 1951 he gradually breathless on exertion at first on heavy lifting only er when dealing with routine farm work Cough and became more troublesome during the following and in March, 1952 miniature radiography of his during a public survey led to his being referred to ford Hospital

hest radiograph at that time showed a reticular pattern out both lungs, more definite in the right upper and er zones; in places the reticular pattern was very lving the appearance of multiple small cysts The hila d normal Repeated examinations of the sputum no tubercle bacilli but a heavy growth of penicillin e *Staphylococcus aureus* and a few yeasts A course cillin was given with no effect on the cough or on the dyspnœa which continued to trouble him, though he was able to remain at work Thirst and polyuria remained unchanged throughout this period, but his respiratory symptoms increased and were the most distressing features of his illness In August 1953 he had a small hæmoptysis and in November he was admitted to the London Chest Hospital

No relevant past or family history was obtained He was a moderate smoker of cigarettes.

Examination

He was well built and muscular with a smooth skin and a florid complexion, said to be familial He had scanty facial hair and a moderate amount of pubic hair His external genitalia were normal He had no cyanosis orthopnœa or clubbing and no enlarged lymph glands Clinically there was slight pulmonary emphysema and occasional sibilant rhonchi were heard. His blood pressure was *120/70 mm. Hg* and his heart and peripheral vessels were normal Nothing abnormal was found in his abdomen and central nervous system

Investigations

Blood examination showed Hb 70% white cells 10,000 per c mm (polymorphs 80% eosinophils 5%, 950 per c.mm) and erythrocyte sedimentation rate (E.S.R) 34 mm in one hour (Westergren)

Serum chemistry—The blood urea level was 20 mg per 100 ml blood-sodium 320 mg., blood potassium 17 mg blood calcium 11 2 mg A Kahn test was negative The plasma protein level was 6 7 g per 100 ml (albumin 4 2 g globulin 2 5 g) The blood-cholesterol level was 150 mg per 100 ml Thymol turbidity 2 Alkaline phosphatase 17 King Armstrong units Fasting blood *sugar 100 mg per 100 ml* half an hour after glucose 110 mg one hour after glucose 90 mg

Sternal marrow—No abnormal cells were found

Sputum—Culture produced *Hæmophilus influenzæ strepto coccus viridans* and *Neisseria catarrhalis* Monilia was obtained from several specimens, but deliberate cultural methods for fungi failed. No acid fast bacilli were found in the sputum which was streaked with blood on numerous occasions.

Urine.—Daily output 350–430 oz. A morning specimen of urine contained no protein casts, or cells. 17 ketosteroids 15 1 mg per twenty four hours (estimated on twenty four hour collection of urine after the administration of Pitressin)

Fluid-deprivation test—114 oz. of urine was passed during seventeen hours abstention from drinking The specific *gravity of the final specimen was 1 000*

Nicotine test—Diuresis was not inhibited by intravenous injection of nicotine base 1 5 mg

Radiography—In the *chest radiograph* (fig 1) the reticular pattern was coarser and more defined than in the 1952 film, and the cyst formation in the right upper lobe more manifest. Obvious cysts were now present in the left upper lobe *Tomograms* showed cystic changes throughout both lungs, some cysts being as much as 3 5 cm in diameter Numerous smaller cysts were also present, especially in the right lower lobe, where they appeared smaller; around them the tissue

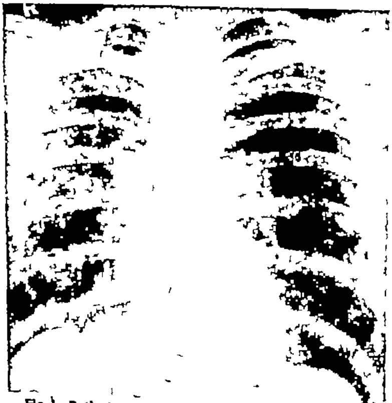

Fig 1—Reticular pattern and cysts in lungs on admission.

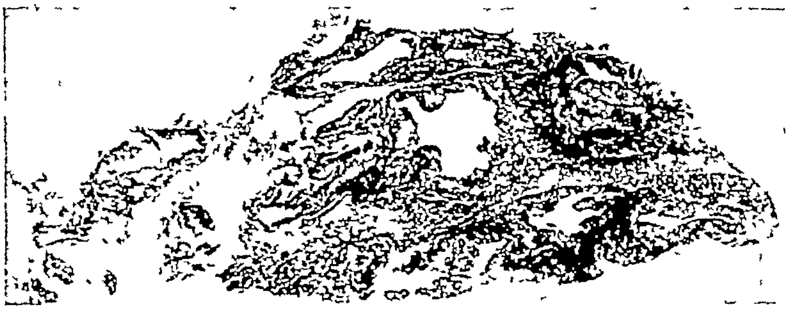

Fig 2—Whole of biopsy specimen of lung, showing thickened interlobular septum, cysts, and granuloma (× 3½)

appeared consolidated *Bronchography* of the right lung showed a normal bronchial pattern and no evidence of bronchiectasis In the left lung the peripheral bronchi were incompletely filled, otherwise the bronchial pattern was normal Radiography of the *skull* showed normal bony structure and normal sella, and of the *long bones* no evidence of cysts

Vital capacity 2600 c cm

Mantoux negative to 1 in 10

Biopsy

Left scalene lymph node biopsy on Nov 6, 1953, showed normal architecture and no abnormal deposits

Right lung biopsy (Mr Peter Jones) on Nov 25, 1953, was done through a short lateral thoracotomy, the 5th intercostal space being entered Pleura appeared perfectly normal Exposed lung was remarkably free from pigmentation, and no emphysematous blebs or bulbæ were noted on the surface Numerous nodules were palpable in the exposed areas of upper, middle, and lower lobes It was impossible, through the small incision, to ascertain the state of the lymphatic nodes A 2 inch piece was taken off the right lower lobe, and adequate closure effected

On this specimen Dr K W F Hinson reported "The pleura is normal but there is some fibrous thickening of an interlobar septum, many groups of alveoli are also normal, but there are cystic spaces lined by granulomatous tissue (figs 2 and 3) This has developed in relation to bronchioles, and, indeed, their epithelium forms a small part of the lining of some spaces, the granulomatous tissue is heavily and diffusely infiltrated by eosinophils (fig 4) There is no necrosis or giant-cell formation, and foam cells are not present However, occasional lymph follicles do persist The appearances are not those of sarcoidosis but are most suggestive of an eosinophilic granulomatous lesion in an early stage leading to cyst formation"

Progress and Treatment

Nov 29, 1953 —Left spontaneous pneumothorax, treated by continuous suction, with complete re-expansion

Patient discharged at own request for Christmas

Jan 13, 1954 —Treatment with pitressin 10 units (0 5 ml) b d was begun, intake and output reduced, 122–180 oz of urine was passed in twenty four hours

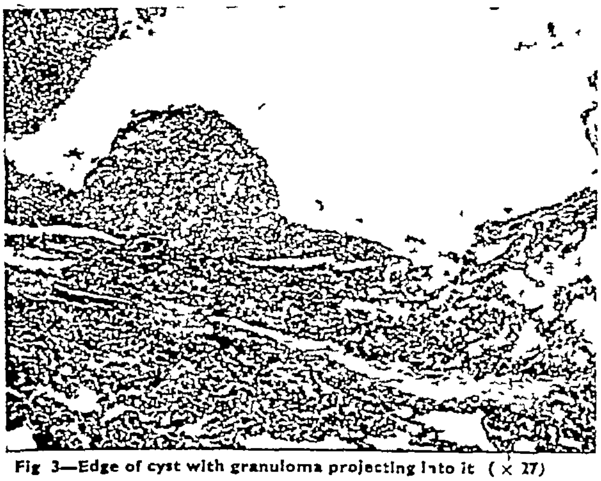

Fig 3—Edge of cyst with granuloma projecting into it (× 27)

Jan 23 —Pitressin discontinu and output immediately reverted high levels

Jan 26 —Corticotrophin treatm 25 units six hourly Initial f intake and output (200–280 oz passed daily)

Feb 5 —Recurrence of thirst, with high intake and output as bef 10 mm in one hour (Westergr increased from 10 st 8 lb to 11 s

Definite subjective improvem this time Exertional dyspnœa rem but no convincing radiological im or change in vital capacity amounts of sputum, often bl brought up with ease, esp posturing

Feb 26 —Corticotrophin reduced to 30 units b

March 5 —Corticotrophin discontinued.

March 6 —Treatment with 'Pituitrin' snuff beg and output fell (140–230 oz urine passed daily).

March 13 —Weight on discharge 11 st 3½ lb. home on pituitrin snuff, and told to attend as an every three months At last attendance, on Dec. claimed that he was much better and consid dyspnœic Clinically and radiologically there h deterioration

Discussion

Honeycomb lung, as described by Oswald and (1949) is characterised by "thin walled cysts, uniformly throughout the substance of b varying in size up to a maximum of one cent diameter," The diagnosis is radiological and tentatively made from a straight postero- but it needs confirmation by tomography Th are particularly well seen after a spontaneous thorax, which is a common complication Bronc are normal, presumably the small size of the communications prevents iodised oil from ente cysts, as histological examination shows th of them, at any rate, are in communication w bronchi

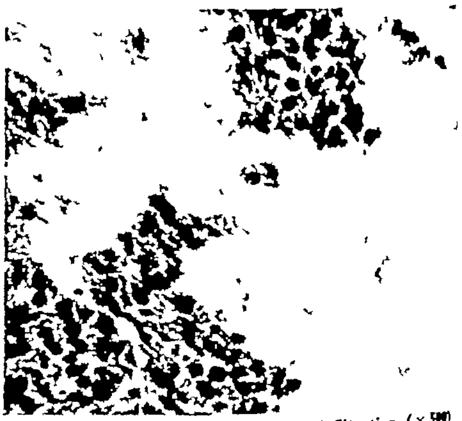

Fig 4—Profuse eosinophil infiltration (× 500)

The presence of polyuria and polydipsia justify a diagnosis of diabetes insipidus without investigation It is important to exclude a fa polydipsia and to show that the symptoms are deficiency of the antidiuretic hormone resulta some lesion of the supraoptico hypophyseal The fluid deprivation test and the nicotine (Chalmers and Lewis 1951) are now regarded as steps in establishing the diagnosis

The simultaneous occurrence of both pulmo pituitary lesions should not be regarded as and a unifying pathological basis should be sought Sarcoidosis, tuberous sclerosis, xanthomatous granuloma (normocholesterol

anthomatosis), and diffuse cystic granuloma of the
have all been suggested by various workers as
gical factors producing the combined lesion

dosis

oidosis is known to be a cause of diabetes insipidus
ne 1952) though generally in association with other
, such as uveoparotitis and skin nodules. Diffuse
nary reticulation is common but Oswald (1952)
s if a true "honeycomb lung" ever occurs in this
ion

ous Sclerosis

erous sclerosis has been reported as a cause of
comb lung, but has not yet been shown convinc
to cause diabetes insipidus (Dawson 1954) The
nation of honeycomb lung and diabetes insipidus
condition has been reported in 2 cases (Ackermann
Berg and Zachrisson 1941) but as Spillane (1952)
he evidence of tuberous sclerosis in either case is

philic Xanthomatous Granuloma

mocholesterolæmic essential xanthomatosis has
elatively recently been recognised as the cause of
in single organs or in various combinations
hout the body There is considerable confusion
nenclature and distinct entities have been described
it the recognition of their common pathological
and to some extent this confusion persists today
for example, the Hand Schüller Christian syndrome
is now recognised as belonging definitely to the
matoses, was thought originally by Hand (1893)
uberculous and by Christian (1920) to be due to a
ance of pituitary function Many years later
iewed his original material and recognised the
tous nature of the lesions he had studied
44)

st attempt at pathological systematisation
Rowland (1928), whose contributions were
—an accurate description of the microscopic
the Hand-Schüller-Christian syndrome a
n that the syndrome was primarily a lesion
culo-endothelial cells, and an explanation of the
yperplasia and xanthoma formation in terms
ganism's response to an excess of circulating
l Rowland's description and his concept
pecial rôle of the reticulo-endothelial system
accepted His views on the origin of the
atous deposits, however, have been modified
work of Thannhauser and Magendantz (1938)
nhauser (1950), who have shown that the serum
l level is normal both in the Hand-Schüller-
syndrome in particular and in eosinophilic
atous granuloma in general These workers
shown that the tissue-cholesterol level is raised
anthomatous phase, being ten to twenty times
ormal tissue The exact mechanism of deposition
holesterol is not clear whether it is due to
l production of cells, decreased excretion or
sm or (as Thannhauser suggests) the result
nherent metabolic potentiality" of the xanthoma
s not been determined
istology of the bone lesions was more fully
d by Fraser (1935)—though he too regarded
olesterolæmia as an essential feature—and by
nd Lichtenstein (1940) who recognised the
matous nature of the solitary bone lesions but
associate them with the generalised type of
ranulomatosis.
r (1941), Farber and Green (1942) and Mallory
on the basis of their own pathological studies
iew of the numerous intermediate forms described
the fulminating Letterer-Siwe disease with the
ronic Hand-Schüller-Christian syndrome and the
ly benign eosinophilic granuloma of bone, suggest
t these were only variants of the same basic
process, the microscopic lesion being the same
cases an inflammatory histiocytosis The
ristic clinical syndromes were thus incidental
ot essential features, depending rather on the particular organs involved and the speed of development of the process than on any fundamental difference The factors determining the localisation, and the progression of the disease are, however unknown Indeed Lichtenstein (1953) has suggested the use of the term "histiocytosis X" for the process, to emphasise our ignorance of its fundamental pathological nature

The natural history of the lesions has been elucidated microscopically by Engelbreth Holm et al (1944) who also provided further evidence of a gradual transition from the solitary bone lesion to multiple foci with evidence of diabetes insipidus disturbances of growth and involvement of lungs. These workers divided the process into four stages:

(1) A hyperplastic proliferative phase of similar appearance to a reticulosis, with well marked histiocytic response and eosinophilic infiltration This phase was "lipoid free" and foam-cells were absent

(2) A granulomatous phase with increased vascularity and formation of fibrils. Cellular infiltration was still conspicuous, and in addition there were characteristic giant-cells and some lipoid phagocytosis

(3) The xanthoma proper with characteristic nests of xanthoma tissue and foam-cells.

(4) A healed fibrotic phase in which eosinophils were absent and evidence of the original cellular lesion might be scanty

These phases were not rigidly demarcated and all four could be found in any affected tissue at the same time It is possible, though Engelbreth Holm et al do not arrive at this conclusion that at an early stage the cellular hyperplasia and absence of foam-cells (formerly thought essential for the diagnosis) might obscure the xanthomatous nature of the lesion and similarly, in the final stage, the fibrosis might mask or even take the place of the original granuloma

In the published cases in which the diagnosis of eosinophilic xanthomatous granuloma was proved by either necropsy or biopsy, lesions were found in bone, lung, and pituitary in particular and in numerous other organs (Currens and Popp 1943 Farber and Green 1942 Thannhauser and Magendantz 1938 Thannhauser 1950 and others) The combination of pulmonary and pituitary lesions is described by Dennis and Rosahn (1951) Imler (1946) Parkinson (1949) Rowntree and Poppiti (1954) Spillane (1952 case 3) Teilum (1941) Troxler and Niemetz (1946) and in all these reports the honeycomb appearance of the lung is mentioned

Diffuse Cystic Granuloma

Diffuse cystic granuloma of the lung was suggested by Cunningham and Parkinson (1950) as a term descriptive of the pathology of their cases and "to permit of an alternative ætiology to xanthomatosis if necessary" (Oswald 1952) They recognised the essential similarity of the histological changes in their cases to those of eosinophilic xanthomatous granuloma but were reluctant to identify them in the absence of further evidence

Recently MacDonald and Shanks (1954) have reported 7 cases of honeycomb lung due to xanthomatosis in children—3 diagnosed post mortem and 4 retrospectively from the hospital records on re-examination of the histology Comparison of the microscopic lesions in the studies of Cunningham and Parkinson (1950) with those of MacDonald and Shanks (1954) and other undoubted cases of eosinophilic granuloma reveals a remarkably similar if not identical picture in all cases Possibly therefore the lesions described by Cunningham and Parkinson (1950) ought to be attributed to xanthomatosis This has been suggested as the most likely cause of honeycomb lung in childhood and it may well be true also of adults, especially if diabetes insipidus is present and sarcoid can be excluded. This hypothesis may explain cases of hitherto doubtful ætiology such as those of Oechsli and Miles (1934) Giraud et al. (1930) and others Lewis and Smart (1951) discussing a similar case (which we have had the privilege of studying recently) came to the same conclusion on clinical grounds.

Value of Biopsy

The demonstration of the therapeutic effect of corticotrophin in sarcoidosis (Sones et al, 1951, McClement, et al 1953, Israel et al 1954, Shulman et al 1952) and other granulomatous conditions (Robbins and Lyons 1953) has made it important to determine the exact pathological nature of the lesion in a case such as ours The importance of histological proof has indeed been emphasised by Scadding (1952) as "the only objective method of supporting a clinical diagnosis of sarcoidosis" The absence of enlarged superficial lymph nodes in the present case suggested that biopsy of a scalene node —a relatively simple procedure which may provide information on the condition of the mediastinal nodes without opening the chest (Daniels 1949, Shefts et al 1953, Carstensen et al 1954)—might confirm the diagnosis This, however, proved unhelpful The liver is often but not always involved in sarcoidosis (Scadding and Sherlock 1948), so we decided to obtain histological material from the lung, in which many lesions were undoubtedly present Needle biopsy was thought to be unreliable, and possibly dangerous in view of the high incidence of spontaneous pneumothorax in this disease The risks of a small thoracotomy were held to be small enough to justify open lung biopsy

The histological findings were those of an eosinophil granuloma No foam cells were seen in the specimen, but their absence does not exclude the diagnosis The striking feature was the active nature of the process This was not a burnt out lesion, there being definite evidence of histiocytosis, granuloma formation, and eosinophilia It therefore appeared feasible to arrest this condition by active therapy

Treatment

The bone lesions of eosinophilic xanthomatous granuloma are known to respond well to radiotherapy (Farber and Green 1942, Currens and Popp 1943, and others) Radiotherapy has also been applied to the pulmonary lesions, with reports of clinical improvement and radiological clearing in some cases (Weinstein et al 1947, Imler 1946) and no effect in others (Parkinson 1949) Irradiation of the pituitary gland relieved the polyuria in one case (Imler 1946) but was ineffective in others (Hilton and Eden 1941, Parkinson 1949) It seemed, however, to be somewhat hazardous to subject the lungs to a process which might induce further fibrosis as part of its intrinsic effect on the lung parenchyma That the lesions may heal spontaneously, apparently by resolution and without fibrosis has been noted by Jaffe and Lichtenstein (1944) in bone and by Lackey et al (1952) in the lung Considerable fibrosis and cyst formation were already present these lesions could obviously not be reversed, but it was reasonable to hope that treatment with corticotrophin might reduce the cellular infiltration and thus halt the progress of the disease temporarily or even permanently

It is difficult to assess the results of treatment with corticotrophin in the present case Initially the eosinophil-count fell, but after ten days the increased urinary output (presumably following a sodium diuresis) and raised eosinophil count suggested that some resistance had possibly developed to corticotrophin Using simple tests we could not find any objective evidence of improved pulmonary function, nor was there any marked radiological clearing Perhaps corticotrophin was not given for long enough and the disease when first seen by us was so far advanced as to preclude any radical change in pulmonary function The patient, however, claimed that his dyspnœa was considerably reduced and his sputum less tenacious and easier to expectorate, and further deterioration may well have been prevented—as shown by the unchanged radiological appearances over the following year and his general well being and reduced exertional dyspnœa It is also possible that corticotrophin given at an earlier stage—e g , at the onset o in 1950—might have done more good

Since treating this case we have come ac reports of the use of corticotrophin in e xanthomatous granuloma In one of the clearing of the pulmonary infiltration, but residual fibrosis, was observed (Lackey et In another an initial course of cortisone p remission in a child, aged 17 months, with L Siwe's disease, and two subsequent cours to have halted a process hitherto regarded as fatal (Cox 1953) The child is alive and well a no cortisone for two years (Moncrieff 1954) T very encouraging results suggest that cort should be tried early in this condition

Summary

A case of honeycomb lung associated with insipidus is described, and the ætiological f discussed

Lung biopsy showed that the lesion was an e granuloma

Where sarcoidosis can be excluded, many s may be examples of normocholesterolæmic

The therapeutic possibilities are discussed use of corticotrophin is suggested

We wish to thank Dr Raymond Cohen for th details and radiographs, Dr N Lloyd Rusby for to publish and help in preparing this paper, Dr Hinson for his comments and criticisms, Miss for secretarial assistance, and Mr A Clark, of th ment of pathology, St Thomas's Hospital, photo micrographs

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FFUSE INTERSTITIAL PULMONARY FIBROSIS

THE HAMMAN RICH SYNDROME

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nman and Rich (1944) recorded four examples condition previously unrecognised The domi symptom was progressive dyspnœa leading ath from respiratory or cardiac failure and sy revealed in all cases an unusual variety of interstitial pulmonary fibrosis Further examples since been published but only one in detail from this y (Heppleston 1951) The following is an additional

Case-report

an aged 37 was admitted to hospital on April 10,

6 years he had noticed increasing shortness of breath rtion: 12 months before admission he was unable k more than 100 yards without wanting to rest, and ed to give up work. He also complained of palpitations breathless, with, more recently attacks of dimness ion and light-headedness An unproductive cough d in paroxysms, and though at first it disappeared iods of many weeks, it was later persistent and very ing 7 months before admission he was rested in d for 3 weeks but remained very breathless despite ent with *digitalis and for 3 months he had been* confined to a chair There had been no swelling of the or attacks of wheezing but he had recently complained wing pain in the upper chest and had lost 10 lb ious illnesses included mild whooping-cough measles, ickenpox in early childhood and dysentery and infective is during war service in the Middle East. For 20 years upation had been largely sedentary as a tester of tele mications and he had never been exposed to harmful Both his parents suffered from bronchitis but his only r was well.

nation

was well *nourished and afebrile moderately* dyspnœic and slightly cyanosed. There was slight clubbing of the the respiration rate was increased (25–30 per min.) eath sounds were vesicular with a few scattered fine tory crepitations. The pulse was regular, rate 80 per the jugular venous pressure was not raised, and there demonstrable œdema the apex beat was impalpable ere was a forcible impulse in the precordium. A soft e murmur was audible in the mitral area and an addi sound in early systole loudest to the left of the sternum. lmonary second sound was split but not accentuated e blood pressure was 130/80 mm Hg

gations

antoux test (dilution 1/1000) was positive the blood mann reaction negative and hæmoglobin white unt and plasma protein estimations were normal. t radiograph on April 12 showed fine mottled opacities eticular background in both lung fields with doubtful ce of cardiac enlargement radiographs of the hands et were normal. An electrocardiogram showed the s of right ventricular preponderance and on April 15 sy from the lower lobe of the left lung revealed patho changes subsequently demonstrated throughout the at necropsy

[illegible]

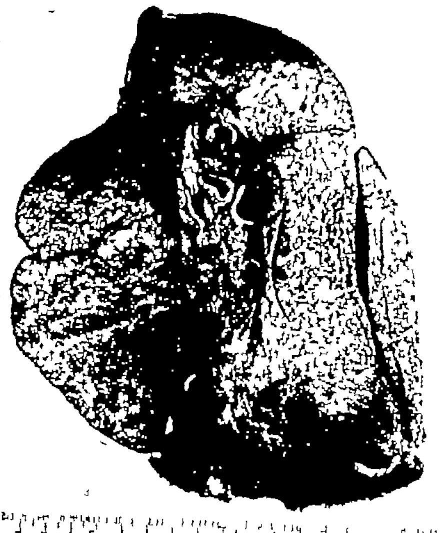
became increasingly dyspnœic and cyanosed and signs estive cardiac failure in the form of œdema, elevation lar venous pressure and hepatic enlargement appeared was no response to treatment with bed rest digitalis, and mercurial diuretics though he obtained some symptomatic relief from oxygen *Fever and purulent sputum during the* 2 weeks which followed the lung biopsy responded to treatment with penicillin but paroxysms of coughing became more frequent and prolonged and latterly often gave rise to syncopal attacks which also occurred spontaneously *He finally became* extremely distressed (respiratory rate 40 per min) with tachycardia (rate 120 per min) and he died suddenly during the 5th week of admission

Necropsy

Heart-failure Right ventricular hypertrophy Idiopathic diffuse interstitial fibrosis of lungs.

Both *lungs were shrunken* (left 19 × 11 5 × 4 cm right 20 × 14 5 × 5 cm) but of normal shape There was no scarring save for extensive fibrous and fibrinous adhesions at the site of a biopsy taken from the left lower lobe and a *small area* on the *medial surface* of the *right lower lobe* The glistening pleural surface showed a uniform dimpled or nodular pattern (fig 1) the nodules averaging 0·3 cm in diameter by less than 0 1 cm. high On section some nodules were cystic and filled with air and *some grey and solid* They also formed part of the tough leathery reddish grey spongy cut surface of the lungs. Throughout the cut surface there were irregularly distributed dilated alveoli (0·2–1 cm in diameter) both deep and peripheral in distribution and most conspicuous in the lingula and right middle lobe Areas of grey white consolidation were also irregularly distributed and were mostly small (up to 0·4 cm in diameter) although there was a larger area (1 5 × 0·9 cm in diameter) beneath the pleura of the apical segment of the right upper lobe There was no evidence of tuberculosis.

The hilar parabronchial and paratracheal *lymph-glands* were œdematous and greatly enlarged (up to 5 5 × 1 7 × 1 5 cm) their cut surface reddish grey and studded with follicles. Lymph glands elsewhere were of normal size and largely replaced by fat The *heart* was of normal weight (322 grammes) but showed moderate right ventricular hypertrophy (up to 0 6 cm. thick) There were flecks of atheroma in the *pulmonary arteries* The malpighian bodies were normally conspicuous in the cut surface of the *spleen* The femoral *red marrow* was normal.



Scale in cm.

Fig 1—Medial aspect of right lung, to show glistening dimpled pleural surface

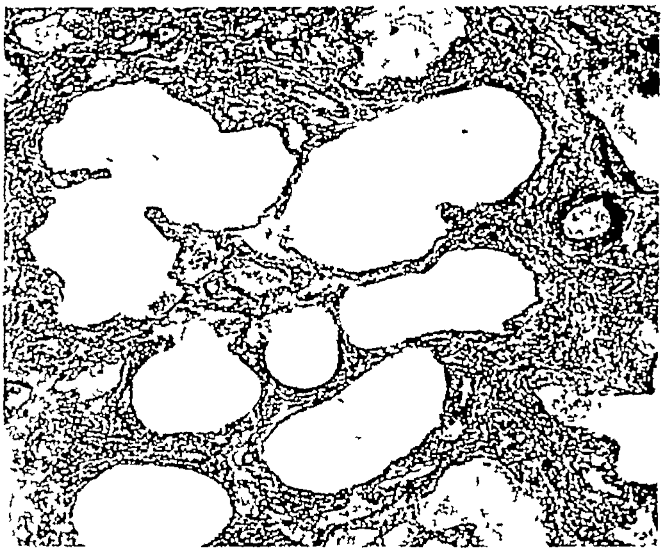


Fig 2—Upper lobe of left lung, to show dilatation of alveoli with thickening of septa. (Foot's reticulin stain × 48)

Microscopy

Numerous sections from many parts of both *lungs* showed that normal lung tissue was entirely replaced by numerous dilated alveolar spaces with thickened septa, by collapsed similar alveoli, and by condensed pulmonary tissue in which alveoli were no longer recognisable Throughout there was an excess of connective tissue, composed mostly of reticulin but in part of mature collagen The dilated alveoli (or infundibular spaces) were irregularly distributed (fig 2) They showed in their walls congested vessels, early cellular collagen tissue, focal fragmentation of the elastica, and numerous reticulin fibres Some of the alveolar spaces had no apparent cellular lining, but in many areas they were lined by cubical, columnar, or in places flattened and somewhat stratified epithelium There was conspicuous desquamation of this epithelium, while some cells showed nuclear pyknosis In the alveoli there were macrophages containing free iron (Perl's stain) and others containing sudanophil lipoid (in frozen sections taken from five different areas) Intra alveolar œdema was conspicuous, while, focally, streaks and layers of fibrin were deposited on the alveolar wall, staining purple with phosphotungstic acid hæmatoxylin, and black with Gomori's reticulin technique Many alveoli contained mucinous material which was faintly basophilic, and staining strongly with the periodic acid Schiff technique

A great part of the lung was occupied by collapsed and condensed alveoli, the pattern of which was difficult to discern There was the same moderate excess of collagenous tissue, interspersed with abundant reticulin In most areas there was diffuse infiltration by lymphocytes and plasma cells Collagen was most conspicuous focally beneath the pleura

The *bronchi* and *bronchioles* retained in general their normal mucosa and submucosal elastic fibres but many showed an excess of collagen in the submucosa, and in a few there was slight focal infiltration of the mucosa by polymorphonuclear neutrophil leucocytes Peribronchial smooth muscle fibres were conspicuous and probably excessive Some vessels were narrowed by intimal fibrosis, but most were normal There was no deposition of amyloid or fibrinoid material in the connective tissue The periodic acid Schiff, Dominici, and Ziehl Neelsen techniques did not demonstrate micro-organisms in the interstitial tissue of the lung

Discussion

An analysis of previous case reports of the Hamman-Rich syndrome shows that progressive shortness of breath, and sooner or later a cough (usually non-productive and paroxysmal), are the only constant symptoms, although chest pain and syncopal attacks are not uncommon in the later stages There is also marked tachypnœa this is to be expected in association with severe pulmonary fibrosis (Arnott 1955) In our patient paroxysms of coughing were particularly distressing and prolonged and often ended with sudden unconsciousness

Terminally there is severe dyspnœa with often clubbing of the fingers, but signs in the markably scanty, and fever is not a feature there is secondary infection in the lungs There a sinus tachycardia with evidence of cor pulm congestive failure occurs in the majority of the remainder sudden death can be due to an tion of severe respiratory insufficiency The of symptoms in our patient was 6 years, and in on record it has ranged from 31 days (Ha Rich 1944) to 7 years (Spain 1950)

Radiographic changes may at first be (Heppleston), but are usually obvious, and variously described as a hazy appearance, a or a diffuse mottling, as in our patient They seen initially in the apices of the lungs (Ed 1945) or in the bases (Beams and Harmos 1949, and Gerber 1948), but eventually become gener

This syndrome and its accompanying radi appearances are obviously not distinctive, mortem diagnosis can finally be achieved only aid of lung biopsy In the differential diagnosis ever, other more easily recognised conditions be ruled out Thus, rapidly progressive dyspnœa be due to lymphangitis carcinomatosa or miliary culosis (Eder et al 1945), and, when symptoms over a period of years, sarcoidosis, the pneum and emphysema need to be considered Rarer include the various forms of honeycomb lung and Parkinson 1949) and the collagenoses (Shuford 1953) Scadding (1952) reviewed the chronic lun which give rise to diffuse nodular or reticul graphic shadows and referred briefly to one of diffuse idiopathic pulmonary fibrosis Differe from idiopathic pulmonary hypertension is not to be difficult, for in this condition the fields are abnormally clear, although they may obscured by pleural effusions, pulmonary or low-grade inflammation (Brill and Krygier 194

The pathological changes in our case conformed with those originally enumerated by Hamman These workers stressed the presence of (1) "an type of inflammation", (2) an eosinophil inf (3) the absence from lesions of stainable bacteria diffuse and progressive interstitial fibrosis, (5) " ment of the alveolar lining epithelial cells", (6) of these and the bronchiolar epithelium, (7) and fibrin deposition in the alveolar walls the deposition of a hyaline membrane (elsewhere to as fibrinous) lining the alveoli. An analysis original four cases also reveals that emphysema alveolar destruction (10) were conspicuous and variable intimal thickening the pulmonary normal but right ventricular hypertrophy was

Now that a number of cases have been repor possible to qualify these criteria Thus cell infiltration was inconstant in the original and has rarely since been stressed Again, certain such as fibrin deposition and intra alveolar deposition are well recognised as terminal heart failure from a variety of causes (Pesbod 1951), and are therefore unlikely to be of great significance in the Hamman Rich syndrome

There are however three essential ab namely (1) "the unusual type of the this including the absence of stainable bacteria the lining of many alveoli by cubical epithe so called alveolar cell metaplasia), and (3) dif stitial fibrosis Little specificity can be alveolar cell metaplasia, for this change in is not uncommon in chronic inflammations of On the other hand, the extent of this metapl Hamman Rich syndrome may, as in our case, be able Indeed, in one instance there has been ssociated alveolar-cell carcinoma (Callahan et al.

As for the diffuse interstitial fibrosis this is the cteristic feature of the disease yet few authors defined its exact nature—i e the proportion of lin present as opposed to collagen The presence of at excess of reticulin was first noted by Heppleston from previous descriptions, particularly those in a fibroblastic proliferation has been emphasised, ms to us that a similar deposition of immature ctive tissue may have been present in the majority es. This feature clearly differentiated our case from derma and the known pneumoconioses The feature the unusual nature of the inflammation s most difficult to define Hamman and Rich ded specifically the well marked intra alveolar isation so characteristic of organising lobar pneu a, although this change was seen in some degree e of their cases Again they excluded the severe ar infiltration of interstitial bronchopneumonia and n the most detailed of the original case reports they the presence of areas of fairly intense inflammation in their second case there were small foci of terminal nonia

e important distinction appears to lie in the extent distribution of the inflammation which as in our is essentially interstitial and diffuse, is not obviously ronchial and usually involves the entire substance th lungs.

our case two additional changes were conspicuous these we would regard as important accessory rmalities. The first was the presence of emphysema ture noted in most cases of the disease In our case mphysema was particularly definite but although iscent of the 'honeycomb' lungs described by ld and Parkinson (1949) did not show a comparable e of alveolar dilatation Hamman and Rich (1944) d the emphysema to terminal bronchiolar a change we failed to demonstrate an equally explanation in our case is that the emphysema pensatory A second feature of our case was an excess of smooth muscle, and this has been the Hamman Rich syndrome in other cases own (Beams and Harmos 1949 Cox and Kohl ubin et al 1952) Curiously enough in these d probably in several others (Golden and Bronk llahan et al 1952 Potter and Gerber 1948) s did not show the diffuse pleural fibrosis noted riginal description of the disease, but shared ng degree the smooth glistening dimpled reticular urface which was so striking in our case. This may serve to differentiate a subgroup of the n Rich syndrome.

tiology of this syndrome is unknown Inflam changes are the most conspicuous feature and have e to postulate chronic pulmonary lymphœdema n et al. 1952) and others impaired resolution and Tullis 1949) following attacks of atypical eumonia

Summary

n aged 37 died after shortness of breath of 6 luration Necropsy revealed diffuse interstitial ary fibrosis of the type described by Hamman ch

e grateful to Dr Kenneth Perry and Prof Dorothy for permission to publish this case and for their advice and criticism

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TOXIC PSYCHOSIS WITH NEUROLOGICAL FEATURES DUE TO METHYLPENTYNOL

EDWARD MARLEY
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REGISTRAR THE BETHLEM ROYAL AND MAUDSLEY HOSPITALS, LONDON

METHYLPENTYNOL (Oblivon) is an unsaturated aliphatic carbinol described by Margolin et al (1951) It has been given daily by mouth in the recommended dosage of 0 1–1 5 g for as long as six months without any undesirable side-effects (Chevalley et al 1952, Margolin et al 1951), but Glatt (1955) refers briefly to the development of a confused and highly emotional state, with slurring of speech and ataxia, in alcoholics after taking up to twenty capsules (each of 250 mg) daily for two to three days Carés et al (1953) reported a death after an overdose of 4 5–6 0 g., and Lovelace and Roith (1955) report an attempted suicide with a combination of methylpentynol and Persomnia (carbromal and bromvaletone) Recovery after doses of 8 75 g and 10 0 g of methylpentynol have been noted respectively, by Lemere (1952) and Brown and Ellis (1955) Perlman and Johnson (1952) and Perlman et al (1953) have shown that methylpentynol does not accumulate in the human body

Case report

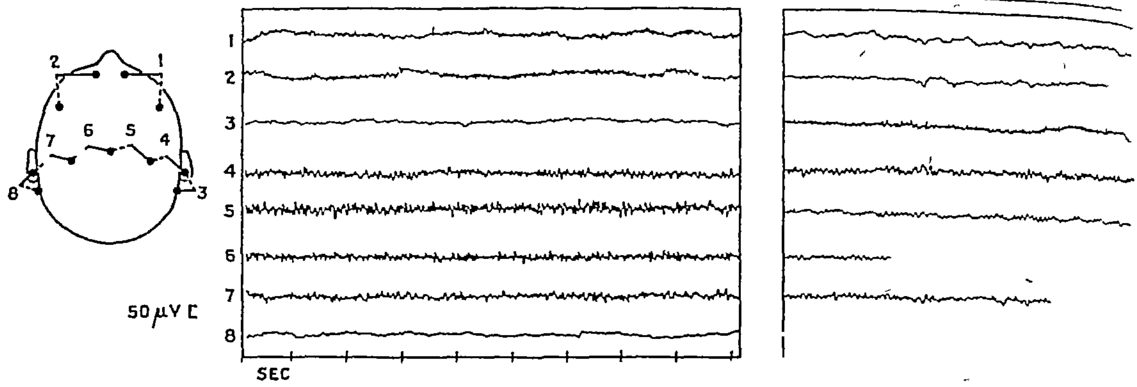
An unmarried girl aged 27 was referred from work first to her general practitioner on account of distractibility over activity and garrulity She was prescribed quinalbarbitone sodium gr 3 nocte but when seen again a week later was drowsy and behaving in an unaccountable and bizarre way At this stage she was admitted to hospital.

On admission she had dilated pupils reacting sluggishly to light rhythmic nystagmus on conjugate lateral deviation of the eyes, prominent ptosis, general poverty of facial movement and dysarthria She complained of diplopia on lateral gaze Her gait was ataxic, with a positive Romberg's sign Rapidly alternating movements were made clumsily and on the finger nose and heel toe tests there was moderate ataxia not compensated for by vision. Although the superficial reflexes were unaltered the deep reflexes were barely elicitable being accompanied by generalised hypotonia Sensation was normal.

In addition she was paraphasic and obviously had great difficulty in concentrating or attending being unable to attempt serial sevens. The digit span was five forwards and four backwards, and the patient was quite unable to offer any interpretation of simple proverbs. She was correctly oriented for time, place and person but admitted to being disturbed and restless at night through seeing shapes like faces in the air and hearing voices fairly near at hand There was no evidence however of hallucinations during the day and her mood was one of apathy

Her urine reduced Benedict's solution, and Rothera's test was strongly positive. The serum bromide level was below 25 mg. per 100 ml and the Wasserman reaction and Kahn's test were negative

Progress—Within four days of admission the patient's neurological state mental state, and urine had become entirely normal She gave a fair retrospective account of the episode but complained of being unable to recall some of the incidents She confessed to having taken about fifty capsules of methylpentynol in the two weeks before admission to



Electro-encephalogram from anterior portion and convexity of head: left-hand tracings (during intoxication) show rapid activ and central regions, right hand tracings (three weeks later) are within normal limits.

hospital, these had been purchased as "confidence pills" without a medical prescription There were no withdrawal effects after ceasing the drug

Clinical experiment—In view of the rapidly reversible action of methylpentynol, the patient volunteered to receive a daily increasing quantity of it under supervision Accordingly she was prescribed thirty five capsules (250 mg each) over the subsequent nine days, the largest daily dosage being 1 g b d This dosage led to no more than an initial euphoria succeeded by somnolence and associated with slight ataxia Methylpentynol was then withheld for two days, after which she was given 1 g t d.s , and within twelve hours of the last dose she presented the same clinical picture as on admission, including nystagmus, ptosis, dysarthria, ataxia, glycosuria, and acetonuria Once more there was impairment of attention and concentration, with reduction of the digit span, and the patient was hallucinated at night

Electro encephalography at the height of the intoxication revealed interesting abnormalities (see figure), including well marked 22–26 cycles per second activity in the frontal and central regions, but overbreathing did not give any further information, the responses to photic stimulation being regular and symmetrical Within four days of withholding methyl pentynol the entire clinical picture subsided and further electro encephalograms taken three weeks later appeared normal (see figure)

Discussion

Methylpentynol is one of the higher alcohols, and acute alcoholic intoxication sometimes presents with nystagmus on conjugate lateral gaze and with dilated pupils that react sluggishly to light (Howells 1952), together with lack of muscular control, reduced attention and retention, slowness of thinking, and distractibility (Mayer Gross et al 1954) However, one of the interesting facets of this case is the resemblance to chronic barbiturate intoxication The protean character of the latter has been emphasised by Weiss (1936), who said it could mimic such diverse conditions as disseminated sclerosis, pseudobulbar palsy, cerebrovascular accident, delirium tremens, and even tabes dorsalis (Ashworth 1928) The physical signs may include ataxia of gait and station, dysarthria, nystagmus, adiadochokinesis, hypotonia, decrease in the abdominal reflexes, and, occasionally, transient ankle clonus and extensor plantar responses (Isbell 1950)

Hassin and Wien (1920) and MacLeod (1920) have reported barbiturate intoxications presenting with features reminiscent of encephalitis lethargica Although the present patient was drowsy on admission and showed signs referable to the brain-stem, there had been a prior phase of overactivity and loquacity This might have been merely an exaggeration of the "pleasantly care free" attitude noted by Bourne (1954) after the administration of methylpentynol or, more important still, a true hypomanic disturbance of mood similar to that described by Curran (1944) in some instances of chronic barbiturate poisoning

In a discussion on the nature and non-specificity of delria Wolff and Curran (1935) pointed out that the dysfunction is characterised by being worse at during the day, that visual hallucinations common, that defects in grasp and failure in attention are prominent, and that, on recovery, usually good Our patient exhibited all these apart from a patchy amnesia for events illness, a discrepancy which may be related amnesia ascribed by Bourne (1954) to methyl Curran (1944) believed he could distinguish specific to drug intoxications, and mentioned th phasia is one of the hallmarks of bromide delirium, in the latter the hallucinations are typically distance " Reduction of digit span is another arising with drug intoxications, and in an an this defect Hoch (1906) found that the avera numerals retained was only four

Apart from the dissentient report by Glatt most workers emphasise the lack of toxic comp associated with the administration of meth Lemere (1952), however, noted that his patient a temporary phase of severe generalised ataxia recovery from an overdose of methylpentynol and barbitone sodium , but in his patient the clinical was due to a combination of drugs In the pre and in those of Glatt (1955) the clinical picture to methylpentynol alone It was interesting observe that whereas methylpentynol 1 g twice had little effect apart from drowsiness, 1 g was succeeded, within twelve hours of the last a replica of the clinical condition on admission.

Abnormality of the electro encephalogram to have been reported hitherto, for Tükel and (1952), who examined children sedated with small of methylpentynol, remarked that the electro grams showed no features attributable to pentynol Nevertheless the presence of 20-30 per-second wave activity in the frontal and, le in the parietal region has been noticed after the tration of barbiturates (Brazier and Finesinger Lennox 1946), but Cohn and Katzenelbogen suggest that this is not a specific barbiturate eff may occur also with cyclopropane anæsthesia and the early stages of deep sleep In contradi alcoholic intoxication is associated with a p decline in cortical frequencies (Hill and Parr 19 only inconsistent observation being that of Gib (1937), who reported that the first effect of alcoh increase the voltage of rhythms around the 20 second frequency

Summary

A case presenting with the features of a tox combined with neurological signs is described

This appeared to be due to the ingestion of pentynol and was reproducible by taking 1 (four capsules) t d s for one day During the electro encephalogram was abnormal.

ish to thank Dr A D Leigh for permission to publish Dr W A Kennedy for his reports on the electro phalograms

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YALURONIDASE IN THE TREATMENT EXOPHTHALMIC OPHTHALMOPLEGIA

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intense and often rapidly developing œdema of ures within the orbit explains the protrusion of obe and the oculomotor paresis in exophthalmic almoplegia (Brain and Turnbull 1938) The œdema es the eyelids and the conjunctiva throwing the into red turgid folds in the more acute examples a malady The threat to the cornea is sometimes y tarsorrhaphy and in the worst cases Naffziger s rontal orbital decompression is finally resorted to lation of the pituitary gland has been done to t the output of the thyrotrophic hormone thought the primary cause of the orbital changes. The s have been disappointing and radiotherapy has recently been applied to the orbit itself, with some raging results A Medical Research Council panel) recently reported the result of a trial of cortisone corticotrophin they often noted improvement in nctival œdema and chemosis, but there was very change in exophthalmos and ophthalmoplegia

yaluronidase is an enzyme which depolymerises uronic acid the main tissue cement of the mesen ne The viscosity of the acid is thus greatly reduced, ing fluids to flow more readily through intercellular es. Within a short period the action is reversed, hyaluronic acid regains its normal viscosity This erty of the enzyme has been widely applied—e g., in odermoclysis and in increasing the diffusion of l anæsthetics.

seemed to us that hyaluronidase might be useful reducing conjunctival and retrobulbar œdema in exophthalmic ophthalmoplegia We describe here our experience with the only patient we have had the opportunity of treating

Case report

A male bath attendant, aged 53 was admitted on April 24 1954 with thyrotoxicosis. He gave a history of loss of weight nervousness, irritability sweating and staring prominent eyes the last symptom he had noticed for only a month He had the traditional preference for cold weather and had noticed a tremor of his hands. Previously he had always been well, apart from winter attacks of bronchitis, and there was no family history of thyroid or other endocrine dysfunction.

On examination he was well built and looked healthy apart from being noticeably nervous and having staring eyes His eyes were definitely protuberant, a sign emphasised by retracted lids. His eye movements were full His palms were warm and moist and he had a fine tremor of his out stretched fingers Neither lobe of his thyroid gland was enlarged but the isthmus was palpable and firm. Radio graphy showed no retrosternal thyroid His pulse-rate was 130 with firm and regular beat, and his blood pressure was 140/90 mm Hg There was no clinical cardiac enlargement nor any murmurs. He weighed 8 stone

Treatment and Progress—He was treated by rest in bed and with methyl thiouracil 200 mg b d for a week followed by 100 mg b d with thyroid extract gr $^1/_2$ b d After three weeks in hospital he was greatly improved Apart from the staring eyes, which were unchanged his symptoms had disappeared and he had put on 10 lb He had lost his tremor and his palms, though still warm were dry His pulse-rate had dropped to 84 He was discharged on methyl thiouracil 100 mg b d with thyroid gr $^1/_2$ b.d.

Outpatient Treatment—He was seen as an outpatient at intervals of three weeks during the summer his toxic symptoms and signs remained well controlled and he continued to gain weight steadily His dose of methyl thiouracil was reduced successively to 100 mg daily and then 50 mg daily still with thyroid gr $^1/_2$ b d Meanwhile however his eyes began to give him serious trouble The exophthalmos steadily increased and œdema of the conjunctiva, first noticed in April, was considerable by July and his eyes were continuously sore and watering The upward movements of his eyes were impaired in June and in July the left external rectus movement was also impaired

Radiotherapy—At this stage the patient was referred to Dr M. H E. Hulbert at St Mary s Hospital for radiotherapy to his orbit Here he was given three doses of 100r to both orbits at weekly intervals After the third dose the condition of his conjunctiva deteriorated quite suddenly on Aug 1 1954 and precluded any further radiotherapy

Readmission—On Aug 8 he was readmitted to the King Edward Memorial Hospital in a sorry state His conjunctivæ were injected, sore and grossly œdematous bulging in all fornices and on the globe itself The pain was as much as he could bear his eyes were continuously watering, and he was quite unable to close his eyelids over the raw œdema

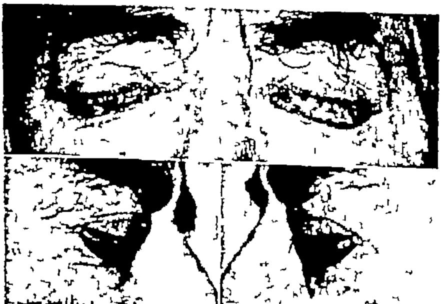

Fig 1—Condition on Aug 23 1954 after three weeks conservative treatment.

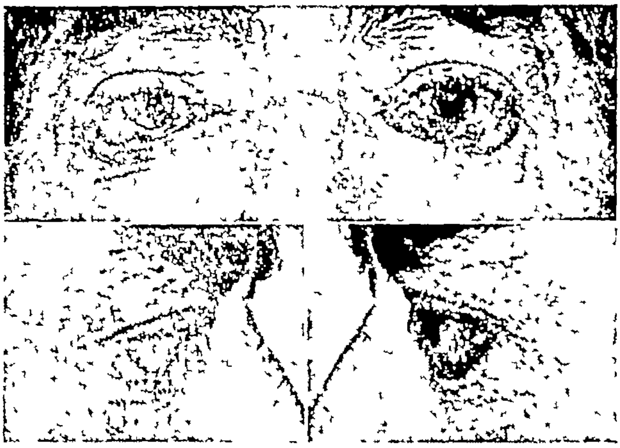

Fig 2—Condition on Sept. 14, 1954, after four injections of hyaluronidase into conjunctiva of right eye, left eye being treated with cortisone ointment.

tous masses His general physical state, as regards his thyrotoxicosis, was good

Conservative Treatment—He was treated conservatively with frequently changed cold compresses to his eyes, and in the course of the next three weeks there was a slight improvement but it was disappointingly slow His condition on Aug 23, after two weeks of this conservative treatment, is shown in fig 1

Hyaluronidase Therapy—On Sept 3 it was decided to inject hyaluronidase into the œdematous conjunctivæ For this purpose 'Hyalase' 1000 Benger units was dissolved in 0 4 ml of 1% procaine and injected directly into the conjunctiva a few minutes after 2% 'Decicaine' drops had been instilled During the next two weeks he had six such injections into the conjunctiva of the worse eye, the right, the left serving as a control

Within twenty four hours of the first injection there was a distinct lessening of the œdema, and with each subsequent injection the improvement increased His condition on Sept. 14, after four such injections, is shown in fig 2 The left eye meanwhile was being treated with cortisone ointment and was improving, but, as fig 2 shows, not so rapidly as that treated with hyalase The improvement brought to light a fact not previously obvious—namely, that the main part of the conjunctival œdema was on a shelf on the lower part of the globe, and not in the lower fornix (fig 3)

From Sept 23 to Oct 2 six injections were given into the conjunctiva of the left eye, the application of cortisone ointment being discontinued The improvement again was distinct and persistent Fig 4 shows the condition after four injections of hyalase by this time the œdema was almost entirely gone, and the residual bulging was fibrous and vascular The last two injections did not reduce this bulging materially

The next stage was the injection of hyalase into the orbit itself On Oct 8 and 16, the right and left orbits were injected with hyalase by Mr Herman Treissman There was a clinical impression of improvement in the movements of the eyes, but no actual measurement of change was possible

Discharge from Hospital—The patient was then discharged on potassium perchlorate 200 mg t d s with thyroid gland gr 1/2 b d and told to attend as an outpatient in ... for further injections into his orbit if necessary

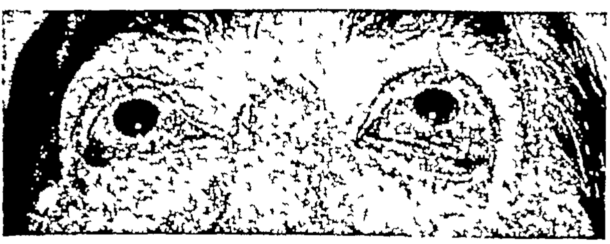

Fig 3—Distribution of œdema on a shelf on lower part of globe

Comment

Our patient was unusual in presenting him ... thyrotoxic symptoms preceding the developme... exophthalmic ophthalmoplegia We had noted fr... first, however, that he had a "moist conjunctiv... we treated him with the apprehension that he well develop serious orbital œdema We reduced the dose of methyl thiouracil as ... possible and also gave thyroid extract gr 1/2 t... as a safeguard against the pituitary stimulus th... have come from hypothyroidism

In spite of these precautions, exophthalmos and ... junctival œdema appeared and progressed steadi... the result that within three months he had pa... upward movement of both eyes and of the left ... rectus He was intensely distressed by pain and ... phobia After the failure of radiotherapy, the ... ment with hyaluronidase injections was rapid ... unequivocal, and now, eleven months later, œdema ... not recurred The left eye, kept at first as a ... also improved rapidly when it was injected

It is impossible to report the result of the retro... injections with the same confidence The ... and the ocular movements have improved ... however, and there is no longer any diplopia.

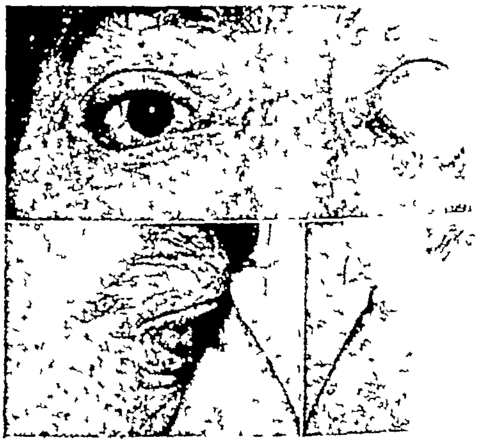

Fig 4—Condition of left eye after four injections of

Our attention has recently been drawn to a p... Lebensohn (first read in 1940 but not published ... 1950), in which he suggested that hyaluronidase ... be useful in the treatment of "thyrotropic exophth... and stated that Hopkins, following his suggestion ... used this form of treatment with immediate ... manent improvement in a severe case in which ... operation had failed Kadin (1950) reported failu... hyaluronidase in a somewhat complicated case pre... operated on for glaucoma He was discouraged, ... single injection, by a sudden increase in œdema ... volume of his injection was much greater th... he gave 1 ml into the chemosis, 1 ml retrob... and a further 1 ml into the upper lid We us... 0 4 ml at a time

We wish to thank Mr Treissman for giving the retr... injections, and the photographic department of the Middlesex Hospital for the photographs

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Reviews of Books

ciples of Animal Virology

M BURNET M D., F.R.S director Walter and Eliza Hall Institute of Medical Research Melbourne Australia New York: Academic Press 1955 Pp 486 $10 00

ROLOGY has expanded so rapidly in the last twenty that today very few can cover the whole field with ledge and authority In this work Sir Macfarlane et discusses a wide range of subjects, with few of a he has not been personally concerned Clearly he dressing those who have already read a great deal orked in this field; the style is discursive and the asis is on the growing edge rather than the estab- l body of knowledge Many will find the descriptions udies by the Melbourne workers on the intricacies rus hæmagglutination or on genetic recombination g influenza viruses too specialised for their needs; ther chapters such as those on the pathogenesis rus diseases, the significance of immunity, latent ions, and ecological aspects of virus diseases, should al to all readers

e young bacteriologist or virologist will not be able mplain of a lack of stimuli for his imagination It sy to gain the impression that as soon as he had down his pen the author would be back at the atory bench trying to discover a little more about oad ahead. This is a fascinating account of what is so far seen on his journey and what he expects e

tical Management of Disorders of the Liver, acreas and Biliary Tract

OHN RUSSELL TWISS M.D F.A.C.P and *ELLIOT* OPPENHEIM M.D F.A.C.P assistant professors of clinical edicine New York University Post Graduate Medical School. London: Henry Kimpton. 1955 Pp 653 6 10s

E title of this book might suggest that it is just er volume on diseases of the liver Although the n on these diseases is both clear and concise, the anding sections are those on the disorders of the gall ler, biliary tract, and pancreas. For many years the ors and their collaborators have made an intensive of these disorders at the combined medical and al biliary tract clinic at the Post-Graduate Hospital w York, and the text is illuminated by their vast profound clinical experience. Of exceptional quality nterest are the chapter on functional disorders of the y tract and the section by Dr William V Berger sorders of the pancreas Dysfunction of this organ he cause of such dysfunction are notoriously difficult gnose and laboratory tests are usually indispensable. Berger's discussion of these tests is of great value. omplete this excellent book is an appendix con ng adequate directions for the more important ostic procedures, and a series of diets which the ors themselves have found satisfactory The whole indeed abounds in practical details which will al to practising clinicians.

ititative Methods in Histology and Microscopic stochemistry

OLAVI ERÄNKÖ docent in microscopical anatomy University of Helsinki. Basle and New York S Karger 955 Pp. 160 Sw fr 10 75

a generation of pathologists reared on tumours the f eggs and nuts, the idea of precise measurement in logy may seem a trifle meticulous Quantitative arisons are nevertheless becoming increasingly rtant, and there is no handy compendium of theory iques, and experience with the metric problems ved Dr Eränkö s small book is a first attempt to this need.

ite rightly the introductory chapters contributed by aakko Kihlberg deal with variability and its statistical aros; and the lessons of sampling and experimental s outlined in succeeding chapters are emphasised by pt and practical example throughout. Mechanical ods of measuring size volume and light absorption of are described and the assessment of the errors due to sampling and experimental technique well discussed Tests of significance including the analysis of variance come, rather curiously at the end of the book; it might have been more logical to include this discussion in the section on experimental design.

This text should be useful to those who are already familiar with statistical ideas but who wish to apply them in histology and pathology

Differential Diagnosis

The Interpretation of Clinical Evidence A MCGEHEE HARVEY M D professor of medicine Johns Hopkins University School of Medicine, Baltimore JAMES BORDLEY III M D clinical professor of medicine Columbia University Philadelphia and London W B Saunders 1955 Pp 665 77s

THIS is not a textbook It suggests one method of approach to the diagnosis of disease—that of the clinicopathological conference—and consists for the most part of detailed and specific cases which were presented at the weekly clinicopathological meetings of the Johns Hopkins Medical School. The importance both of collecting accurate data and of analysing them correctly is emphasised Notable signs or symptoms are taken, and the possible diagnosis discussed in relation to a particular case with all the relevant findings The process by which all the many points in history physical signs, or investigations are sorted out, selected or dis carded is shown, and, with the help of a good many tables of causes, the final logical diagnosis is indicated and discussed in the light of the necropsy findings. This method of teaching though admirable in action does not very easily lend itself to the written word. Nonetheless this book makes interesting and useful reading and some of the 11 unknown cases for study given in a separate chapter provide valuable exercises in diagnostic procedures

Blutgerinnungsfaktoren

ERWIN DEUTSCH DR.MED privatdozent an der I. Medizinischen Universitätsklinik in Wien. Vienna: Franz Deuticke 1955 Pp 298 DM 42

THIS volume is the first of a new series of monographs on biochemistry It gives a reasonably complete and up-to-date account of the various factors concerned with blood clotting from which it is clear that the Vienna school has no heterodox views on this question. There is a useful table of synonyms for the various factors, and also a list of about 2000 references but the value of this list is reduced because the titles of the articles are not included For the British reader the book has no advantage over others in English which provide similar information

Kinesiology of the Human Body

Under normal and pathological conditions ARTHUR STEINDLER, M D., F.A C.S hon. F.R C.S., professor of orthopædic surgery emeritus, State University of Iowa Springfield Illinois Charles C Thomas Oxford: Blackwell Scientific Publications. 1955 Pp 691 £7 2s 6d

THE dynamics of body movement have been a lifelong study of Dr Steindler In this book he has shorn much of the mathematical argument that made some of his previous works forbiddingly complex, and has endeavoured to relate theoretical considerations to clinical problems in a practical way He makes it clear that he is fully aware of the possible fallacies in mathematical interpretation of biological events. Indeed, he refers to his basic observations as "theoretical facts." This expression must have evolved in his clinical heart—he is a great clinician—because it summarises the clinician s reaction to the suggestion that the advice he gives to a patient could be dominated by such con siderations. It is true that many gross clinical errors would be prevented by an elementary knowledge of dynamics, but the more elaborate theories and calcu lations are seldom based securely enough to regulate therapy Nevertheless the orthopædic surgeon should take note of theoretical knowledge and no-one *has* more such knowledge or is better able to impart it, than Arthur Steindler

Leonardo da Vinci

– *Das anatomische Werk* Sigrid Esche Basle Holbein-Verlag 1955 Pp 172 + 175 illustrations Sw fr 55

We are nowadays so accustomed to technical competence in medical illustration that it is refreshing and instructive to look again at the work of the first great medical artist The eighth volume of the Ars Docta series contains the anatomical drawings of Leonardo da Vinci, which are of perennial interest to artists and doctors alike The 96 plates are excellently reproduced, and there is a critical catalogue of the drawings, together with a valuable list of references The rest of the book includes, among other things, a chronological account of Leonardo's anatomical work and his influence on anatomical illustration, and his famous plan for an anatomical treatise But the plates remain in command of the book. The catalogue is arranged according to the provenance of the drawings, while the plates are grouped according to their anatomical relationships This makes it slightly awkward, starting from a given plate, to look up the relevant text, though the converse is simple Some such difficulty is inherent in the material This is a beautiful production and a desirable possession

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Bedside Diagnosis (3rd ed Edinburgh E & S Livingstone 1955 Pp 408 18*s* 6*d*) —This diagnostician's guide and friend well deserves the achievement of a third edition, and it is satisfactory to see that it has already reached the Spanish and is to reach the Portuguese reader Dr Charles Seward has not substantially changed the form and matter, but there is evidence throughout of careful revision, six sections have been recast, and there is an
chapter on Normal Values with notes on the clinical
of these biochemical data and details of such
as can be made, wholly or partly, in the wards.
noteworthy both for its logical approach to diagnosis
and for its sanity and balance The influence of the
bodily functions and on the production of symptoms
forgotten

The Pharmacological Basis of Therapeutics
New York and London Macmillan. 1955 Pp 1831
It is fashionable to declare that major works of this
be written and revised only by a platoon of special
manded by an enterprising editor This belief
exploded by Prof Louis S Goodman and Prof Alfred
whose encyclopædic knowledge of clinical pharma
remarkable industry, have enabled them to do the
themselves After fourteen years nearly every pa
"textbook of pharmacology, toxicology, and
for physicians and medical students" has needed
but the general structure has not been changed.
important additions are those on antibiotics and on
in the chemotherapy of neoplastic diseases. We have
but praise for the result

Textbook of Midwifery (16th ed. London
Black 1955 Pp 582 35*s*) —Despite their obstetr
ence, Prof R W Johnstone and Prof R J Kellar w
aback by the premature exhaustion of their last edition
had at once to embark on resuscitative measur
result does them credit and no further comment
necessary

New Inventions

AN OBSTETRIC TABLE

There are a number of obstetric bedsteads on the market so designed that the foot section slides under the head section or vice versa Some of these are cumbersome and very expensive, and some have the fault that, with the foot section extended, they are too easily tipped up when downward pressure is applied The obstetric table here illustrated overcomes these disadvantages It is of light weight and is both simple and efficient in operation, and complete stability has been obtained by extending the tubular base in a manner which still permits access to the patient when the foot section is pushed in (fig 1)

The frame of the table is made of light tubular steel of rigid construction, and the platform of sheet steel By an ingenious ramping device the foot section slides beneath the head end, and when it is extended it forms a single plane with the head section By means of an easily operated side-wheel the table can be
30° of Trendelenburg tilt (fig 2)

Cranked adjustable lithotomy poles are
These give six alternative positions for differing
of leg, and a swivelled hook for the stirrups
leg to be placed on the inner or the outer side of
at will

Near the head end two sockets, one either side
been incorporated to take a standard size of
an infusion apparatus A 'Trilene'-and air
can be clamped to the socket

The finish is of stoved aluminium with
plated attachments

The light weight of the table and its simple
have evoked the enthusiasm of the nurses

The table has been designed and made by Messr
Whitfield & Co Ltd, from suggestions submitted
senior maternity Sister and myself They call it the
Tait Obstetric Table

Stanley W W
M.R.C.O.G.

Rochester, Kent

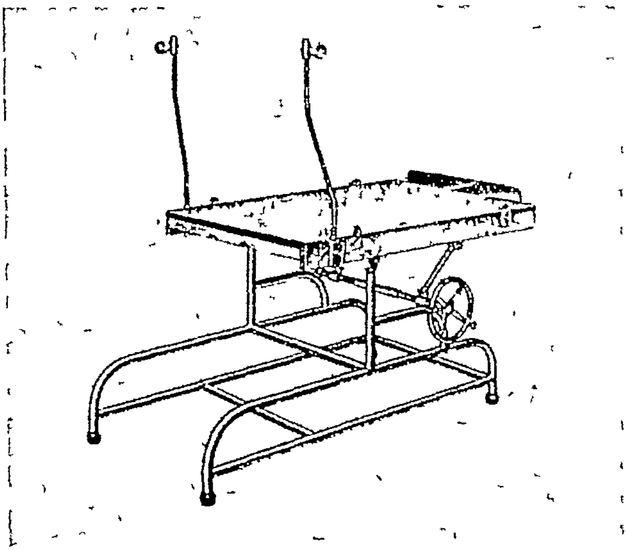

Fig 1

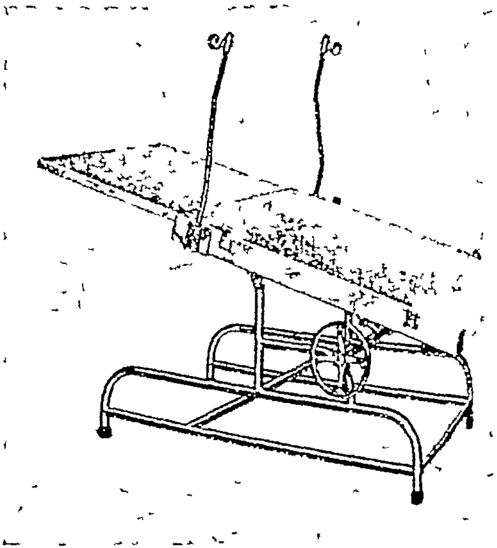

Fig. 2

THE LANCET

ONDON SATURDAY, SEPT 10, 1955

Thrombophlebitis after Infusions

WEEN a half and two thirds of all infusions er of blood, glucose, or salt solutions, are followed rombophlebitis—that is perivenous cellulitis, or without thrombosis[1–4] This troublesome ication seems to have no single cause, but the f it is increased when an infusion at one site or longer than eight hours[1–5] Bacterial infec-lays no part[2 4 6] and one group of workers[7] claim hange of pH between 4 5 and 6 does not affect cidence The most important causal factor seems the slow leaching out by the infusion fluid of unidentified irritant substance present in the ibber tubing of the giving set[6] The vein wall tes this irritant for about eight hours, but exposure causes a response whose severity ses rapidly with continued exposure This hesis is supported by several workers, who found that the use of ' Polythene ' tubing[2] or a rubber tubing made in the U S.A.[3] greatly s the incidence of thrombophlebitis But r of these ensures complete freedom from bophlebitis, in fact, one worker using latex r[1] encountered thrombophlebitis in 47 out of ransfusions, though in only 4 did this develop the first twenty four hours.

problem can be attacked by modifying the usion equipment, and by improving the trans technique Modification of equipment would e action on a national or international scale, is good to know that several practical trans-ists are members of a committee which has been d with the duty of designing a disposable giving set Let us hope that this will prove atisfactory than the international pattern giving hich was distributed in September 1954 but rawn a few weeks later In transfusion technique is plenty of scope for improvement Often, nowadays, an infusion is set up by thrusting the largest convenient needle into some superficial vein, which is thereby occluded and running in the more or less irritant solution, which fills the vein and is not diluted until it reaches a junction with another vein This infusion is then left running as long as possible—often for twenty four hours, sometimes for several days Not infrequently a cannula is tied into the saphenous vein at the ankle despite the particularly great risk at this site of thrombophlebitis,[3 4] which contributes to that major disability—chronic ulceration of the leg[9]

No infusion should be allowed to run for more than eight hours at a time Often during this period all the fluid needed in twenty four hours can be administered, thus giving the patient sixteen hours a day of freedom from needles or cannulæ, and if a more uniform intake of fluid is desired, it should be possible to change the site of infusion several times daily If neither of these methods is practicable, a polythene catheter can usually be introduced into the vena cava, so that irritants will be quickly diluted The resident responsible for maintaining transfusions will be well advised to use as small a needle as possible and to insert it into the largest convenient vein just distal to a venous junction, securing it by some means which does not occlude the vein distal to the point of insertion Thus he should try to enter large veins at the proximal end of a limb and avoid the small veins at the distal end which hitherto have been most commonly used. He should also prefer to enter a vein in the arm rather than in the leg and should particularly avoid tying a cannula into the saphenous vein This is a radical subversion of the ideas current a few years ago, and at first it might seem to place a heavy burden on the resident But if a limb is properly warmed, by surrounding it with a thermostatically controlled electric blanket, full vasodilatation will have taken place in twenty to thirty minutes, and this will ease venepuncture and, by increasing blood flow, make sure that any irritant is quickly diluted The thermostatic electric blanket, which can be kept over the infused limb for hours is in every way preferable to a hot-water bottle which is ineffective and can cause severe local injury

" Letterer-Christian " Disease

THERE has been a considerable improvement recently in our knowledge of what for the moment may be termed Letterer Christian " disease Three conditions once regarded as distinct fall under this head The first to be described was Hand Schüller Christian disease, with its triad of cranial bony defects, exophthalmos and diabetes insipidus This was a chronic disorder of uncertain prognosis which was shown by ROWLAND in 1929 to have as its most characteristic element a xanthoma cell, a histiocyte with cholesterol, THANNHAUSER in 1938 distinguished it from other general xanthomatoses by the absence of a raised blood cholesterol level. Next came Letterer-Siwe disease, described in 1933–34—an acute generalised fatal reticulosis of children, whose characteristic cell was a proliferating histiocyte with no trace of lipid And finally there was the eosinophilic granuloma of bone described in 1940 by JAFFE

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ards H J *Med J Aust* 1955 ii 7

P F *Lancet* 1954 ii 970

s, J *Ibid* 1955 i 154

ill R. *Ibid* p 514

n Carter J F *Ibid* 1951 ii 20

eb L. Kuebner B *Ibid* 1953 i 772

n Carter J F Milne E H Whittett, T D *Ibid* 1952 80

ld-Jones, R. P (Lewis H B M. *Ibid*, 1952 i, 585

[9] Anning S T *Ibid*, 1954 ii 1176

and Lichtenstein—a solitary slow-growing lesion of older children, clinically often tumour-like but cured by any local treatment or sometimes none at all Its characteristic cell was an eosinophile granulocyte, though again histiocytes were present a lesion more like inflammation than tumour

Recognition that these three conditions are one came with the description of many borderline and mixed cases [1] [2] The picture which emerges is of a continuous spectrum ranging from a solitary non-progressive bone lesion through multiple more or less progressive bone lesions to an acute disseminated lesion in which skeletal lesions, though rarely absent, do not dominate the picture Recent writers unanimously accept this unified conception, but agree on nothing else views on the nature of the disease, and on what it should be called, are exceedingly various Thannhauser would appear to regard it still as a disturbance of lipid metabolism (a local defect in the tissues concerned, not a general disorder) and proffers the names "normocholesterolæmic xanthomatosis" or "eosinophilic xanthomatous granuloma" Robb-Smith,[3] if we understand him aright, regards it as a progressive reticulosis—"reticulum-celled medullary reticulosis" Harrison [4] seems also to regard it as a reticulosis and uses the name "non-lipid histiocytosis," which properly speaking is a synonym for the Letterer-Siwe variant (So also is the word "reticulo-endotheliomatosis" used by other workers) Lichtenstein [2] frankly admits that the nature of the disease is unknown, but obviously he is especially watchful for an infectious agent Emphasising the histiocytic proliferation which is more or less prominent in all cases, and the unknown cause, he suggests the name "histiocytosis X" If generally accepted, this might suffice for lack of a better but, so far as we know, only one group [5] has accepted it even as an alternative title "Letterer-Christian" disease is a mere colloquialism, and it is most unfair to others who could claim to be co eponyms, but it is convenient and non-committal

Two recent reports deserve notice

In one Goldner and Volk [5] record, under the name "fulminant normocholesterolæmic xanthomatosis (histiocytosis X)," a case of an acute disease of the Letterer-Siwe type in a 67-year-old woman, who died only six months after the onset In the early stages she had weight loss, bone pains, and diabetes mellitus, in the last two months she had skull radiolucencies, enlarged lymph-nodes in the neck, gingivitis, and skin infiltration, the diagnosis was made on lymph-node and gum biopsies At necropsy the lymph-nodes and spleen showed a lipid-free histiocyte overgrowth, elsewhere (notably in the renal pelves and bones) the histiocytes contained substantial amounts of lipid (a cholesterol/cholesterol ester/fat mixture of "xanthoma" type) and there were foci of eosinophils and giant cells Although this patient was much older than any previously recorded, the diagnosis seems watertight The disease—especially the acute Letterer-Siwe form—is generally described in children, and it is perhaps sometimes missed through the assumption that it does not occur in adults

A report from The Hospital for Sick Children, Great Ormond Street,[6] describes 16 cases of the disease diagnosed in children there during a period of th (By way of giving an idea of the incidence, same period 18 lymphosarcomas, 17 cases of disease, and 94 neuroblastomas have been diag this hospital) The series gives an unusually view of the disease as a whole and the frequ various manifestations There were 4 cases of bone lesion, 4 cases of multiple bone lesions (3 classical Christian triad), 2 with bone and sk and 6 with widespread lymphoid and visceral tion in 2 of which there were no bone lesions mixture of histological features in different ca convincing evidence of the unity of the group solitary lesions all healed under local treatment 6 children with multiple lesions confined to bone 3 are cured and none has died Even of the 6 with acute disseminated disease, 2 are apparently This is a distinctly less gloomy picture than m would have expected, and underlines the distinguishing the Letterer-Siwe type of lesion fr of malignant reticulosis

The lipoidoses group seems to be Gaucher's disease and Niemann Pick's disease unattacked But gargoylism can no longer as a lipoid disorder, since it has been shown chemically that the abnormal material is mucopolysaccharide [7] A substantial proportion hypercholesterolæmic xanthomatoses are now to follow biliary obstruction, diabetes, or th And it is increasingly difficult to regard Schüller-Christian variant of Letterer as anything but the most secondary of

High-humidity Rooms in Chil Hospitals

It has long been recognised that high atm humidity may have a beneficial effect on infections of the respiratory tract, par children, and this knowledge is reflected in wi use of the steam-kettle But steam may raise the environmental temperature so it embarrasses the patient, especially where bined with oxygen therapy in the confined an oxygen tent or box This difficulty is by "cold" humidification at room means of a mechanical water vaporiser either independently near the patient or in a tent in conjunction with the oxygen supp practice of therapeutic humidification of sphere has been further extended at the Hospital in Vancouver, where for the past a high-humidity room has been in operat this specially constructed room, which is la to hold several children, the relative humidi at 100% and the temperature at 70–72°F five years' experience, Baker [8] concludes room has important advantages over individual humidification The sense of and restraint inevitable in a tent or disturbing and sometimes intolerable— older children are easily accommodated, tion can be maintained much longer than acceptable in a confined space, nursing and can be carried out with less disturb patient, and there is no delay in an addition high humidity applied in this way found to combat the tendency towards nts and younger children, and may even reverse degrees of dehydration, and in this room nfection has proved rare These are important ages which weigh heavily against the high cost allation

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[1] Thannhauser, S J *Arch intern Med* 1947, 80 283

[2] Lichtenstein, L *Arch path* (*Lab Med*) 1953 56, 84

[3] Robb-Smith, A H T *In* Recent Advances in Clinical Pathology London 1947

[4] Harrison, C V *In* Recent Advances in Pathology London, 1953

[5] Goldner, M G, Volk, B V *Arch intern Med* 1955, 95, 689

[6] British Empire Cancer Campaign Report for 1954 London 1955, p 188

[7] Brante, G *Scand J clin Lab Invest.* 1952, 4

[8] Baker, H *Canad med Ass J* 1955, 72, 911

ld" (as opposed to steam) humidification has specially advocated for cases of acute laryngo o-bronchitis, to prevent secretions from drying, ing tenacious, and further obstructing respira

BAKER has treated 140 such cases in the umidity room None of these patients required otomy and all recovered Yet the contribution midification to such a satisfactory result would ficult to determine The newer antibiotics have ved the prognosis in this disease, and satisfactory s have been obtained with much more limited lification, the disease itself may have become vere in the past few years and the absence of otomy may reflect views on management as as success in treatment BAKER finds that high lity is also valuable in other infections of the atory tract and in asthma That high atmo- ic humidity may terminate prolonged asthmatic ks is supported by the observations of PARLATO[10], he other hand, it may help to precipitate rbations of hay fever and sinusitis.[11] In the of the premature infant in recent years high spheric humidity has been extensively if some uncritically used Introduced as a useful adjunct e regulation of body temperature, its virtues been extended to include prevention of the at effect of high concentrations of oxygen spiratory mucous membrane, limitation of the of pulmonary hyaline membrane, and reduction sensible water loss particularly where delayed g is practised.[12] Theoretical evidence concern he effect of various degrees of atmospheric lity on the respiratory mucous membrane nty Abnormally viscid secretion, as in fibro disease of the pancreas apparently predisposes fection, but excessive mucus secretion may certain circumstances exert a similar effect [13] imental evidence on the effect of humidity cterial contamination of the atmosphere suggests something of a compromise would have to ffected in seeking to control cross infection us means Bacteria and viruses dispersed from tient in particles of saliva are likeliest to die at cal relative atmospheric humidity in the region %,[14 15] but bacteria carried on dust particles as the streptococcus and the staphylococcus) been shown to die off more rapidly at the highest re humidities.[16] Organisms such as *Escherichia* robably behave differently

therapeutic effect of high atmospheric humidity cases of the respiratory tract in children should rther examined in controlled clinical trials tals which care for children would doubtless more convinced about the need for providing humidity rooms if there were further evidence ming their value

Training the District Nurse

How long does the tyro, entering general practice, take to learn his job—to learn to look after patients without the resources of the hospital behind him, to master the pattern of municipal and voluntary services, to gain not only the full confidence of his patients but sufficient confidence in himself? A year perhaps? Not less, certainly possibly more He gets little instruction in these things while he is in hospital The nurse gets even less Yet the nurse who enters district nursing has to learn these things too and at a more fundamental level for it is one thing to call and give directions about the care of a patient, and another to carry them out in any and every kind of home, whether clean or squalid, well equipped or bare of the simplest amenities

How long a course of special training does the district nurse need to prepare her for such work? The Working Party on the Training of District Nurses,[1] have been split by this question, yet it is one to which we ought to have the answer, for the Queen's Institute of District Nurses, who have been turning out matchless district nurses for two thirds of a century, say that the minimum for a State registered nurse (S R N) without other qualifications is a course lasting six months For S.R.N.s holding the health visitor's certificate, and for State-certified midwives (S C M) they say the minimum is a four months' course The working party, however, with three dissentients, conclude that the *minimum period* of training which would equip a State registered nurse "to assume readily the duties expected of her, to carry them out with understanding and efficiency, and to maintain a high standard of district nursing" is only four months For S.R.N.s who are qualified health visitors S C M s or nurse teachers, or S.R.N.s who have already had eighteen months' experience in district nursing, they regard three months as sufficient The three dissentients are Miss E J MERRY, general superintendent of the Queen's Institute, Dr J A STRUTHERS, chairman of its training subcommittee, and Miss J E TRELEAVEN, senior superintendent of the Ranyard District Nurses Miss TRELEAVEN has signed the report, subject to a reservation to the effect that she considers a four months course to be the minimum in which to prepare adequately all categories of registered nurses for this work and that in the view of the Ranyard Nurses five months would be an advantage for the S.R.N without additional qualifications or experience Miss MERRY and Dr STRUTHERS have presented a strong minority report

Before the National Health Service Act local authorities had no power to provide a domiciliary nursing service though they could and did employ the services of local nursing associations—most of which were affiliated to the Queen's Institute The Act gave local authorities the duty of providing a

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idson, F W *Arch. Otolaryng Chicago* 1940 32 321
lato S J *J Allergy* 1937 8 560
r M. \ 1 *N Y St J Med.* 1953 53 1674
th C A. *Ibid* 1955, 55 2051
rabe A F., King H K. *Edinb med J* 1931 38 377
aklin, L. W., Puck T T *J exp Med* 1948 87 87
ter W *Ibid*, 1948 88, 361
well O M., Lowbury E. F *J Hyg., Camb* 1950 48, 21

[1] Report of the Working Party on the Training of District Nurses. H.M. Stationery Office 1955 Pp 26 1s. 3d The members of the Working Party were: Sir FREDERICK ARMER (chairman) Mr G GANTY Miss M F CARPENTER, S.R.N, Dr T M CLAYTON Dame ELIZABETH COCKAYNE, S.R.N Miss M H COOK S.R.N Dr A R CULLEY, Dr DOROTHY EGAN, Dr G MATTHEW FYFE, Miss E J MERRY S.R.N Miss M O ROBINSON R.G.N Mrs W SHUTT, Dr J A. STRUTHERS, Dr J STANLEY THOMAS, Miss J E TRELEAVEN and Dr W S WALTON with Miss J E Chapple as secretary

home nursing service, either by employing nurses directly, or by making arrangements with voluntary associations One result of this was that by the end of 1953 some 4000 district nurses in England and Wales—about half, that is of the S R N S in the home nursing service—had had no special district training They are said to be working responsibly and well, nevertheless the working party all agreed that "some measure of training" is desirable for a nurse if she is to become quickly efficient in district nursing She must learn, for instance, how to adapt her hospital techniques to nursing in the home, how to nurse illnesses she has never seen, and what social services to call upon in various situations, and—"perhaps most important"—she needs "further experience so that she may meet more confidently the responsibilities of a district nurse" The majority of the working party, however, point out that the district nurse is no longer working in isolation she is a member of the public-health team, and is in constant touch with colleagues working in parallel professions She needs, the majority hold, only an introductory course on the other public-health services She is supervised, moreover, by the local health authority, and therefore does not need a long period of supervised training, which forms part of the Queen's Institute course, nor does she require to be visited by her training body after she has qualified The General Nursing Councils for England and Wales and for Scotland have recommended that throughout the new general nursing syllabus (which became compulsory last year) social and public-health aspects of nursing should be given due weight On this recommendation the majority base a hope that future S.R N S will have "some knowledge of the social welfare services and of their place in the care of the sick" The new syllabus prescribes a minimum of 4 lectures on the social aspects of disease, and some (optional) domiciliary visits The student nurse's few academic hours, however, already cram her with so many facts that it is doubtful whether she will swallow more social welfare than you might take upon a knife's point and choke a daw withal Besides, as the minority report says, the effects, if any, of the new syllabus will not be apparent before 1957

The nature of home nursing is undergoing a change, as the special study made by Miss E A B DAVIS for the Queen's Institute (see p 556) amply demonstrates The district nurse has the care of many more elderly patients than she used, some of them acutely, some chronically ill, she nurses more patients returning early from hospital after operations, more children, and more people who have been mentally ill, and she gives many more injections For most of these things, the majority believe, her general training should prepare her Her district nursing course should be mainly practical, helping her to adapt her techniques and widen her experience Rising standards in living conditions, it is claimed, have largely relieved her of the need to improvise The theoretical side should be brief, designed to give her a basic knowledge of health, welfare, and social services, and the special needs of the aged and infirm, the long-term sick, and the family

These arguments for a shorter course of training do not seem to us to be conclusive, and the opposite view is cogently set out by the minority of the training course, they say, would red nurse's practical experience under guidance and vision, and would not give her the necessary con to carry her responsibilities She needs to see how the public-health service works—not to information at random from colleagues The that improved standards of living have destr need for improvisation certainly does not hold areas, where she must still depend on her initiative and resources (The minority quote example of living conditions in rural England populous county, alone, in which there are still than 20,000 pail closets, more than 10,000 closets, more than 8500 privy middens, more 3500 houses depending for water on springs and a further 700-odd relying on standpipes.) nurses work also in old Army huts, shacks, caravans Again, care of the elderly sick does come the way of most general-trained nurses are they given even a glimmering of under of patients recovering from mental illness. case, the essence of the district nurse's training to be distilled out of the subjects of a syllabus course must give her time to gain exper quart that can never be squeezed into a All teachers know that time is needed for new and changed techniques to become second The nurses themselves do not complain of the of the course in fact they often say they were longer The College of General Practit whose members work in close liaison with nurses, do not think it should be shorter contrary, they suggest extending it to a year

The majority, while holding that any future ments should leave the way clear for the Institute and the Ranyard Nurses to continue an important part in district nurse training that a nationally recognised standard could be by appointing a central committee to issue for the four months' and three months' co training, to hold examinations, and to adv Minister on matters relating to district nurse The great (to our mind the overriding) we such a suggestion is that mentioned by the it would at once create two grades of district —Queen's nurses, and those taking the sh syllabus of the central committee This is odd and undesirable way of attempting to a national standard of training—as a sort relation to the best

The district nurse is our most widely know widely trusted, social worker The rising age population, the lack of hospital beds for the discharge of surgical patients from hospital days after operation, the growing tendency children at home, and the earlier discharge of from mental hospitals are already making richer and more diverse—more, not less, A suggestion that she can be prepared for her responsibilities more briefly, and with les vision, is quite unrealistic the part she in the mental health service in itself policy outside practical consideration We hope that the counsel of the minority prevail

Annotations

SOME RISKS OF FATHERHOOD

E obstetrician who claimed never to have lost a r was—*judging by the experience of* Captain L Curtis[1]—luckier than he knew When making dy of 55 expectant fathers in the United States orce, Curtis found 17 (group A) who were suffering e *emotional stress* and 2 of these attempted le. 7 in *this group* were unmarried fathers—rried at any rate, to the mothers of their expected s. In a second group (B) were 14 with minor ional problems All the 31 men in these two groups referred to Curtis for a psychiatric opinion The ming 24 (group C) were controls picked out of a number of enlisted men merely because they were ctant fathers None of these had sought, or been ed for psychiatric examination yet a third of had *problems* like those of group B while a further had similar but milder problems Unfortunately s does not tell us the incidence of such problems en not expecting additions to their family If it ens to be high fatherhood can be acquitted of some e malign influence he attributes to it

does not base his opinion merely on the incidence mptoms, however for he devised the ingenious ique of asking his expectant fathers to draw an ıl and write a story about it Such a method has e advantages said to attach to a good bargain both feel they are getting the best of it By drawing a ous monster and writing a stream of nonsense the oman feels he is taking the mike out of the psychia whereas the psychiatrist knowing that such ns are fed from the wells of the unconscious, is sure last laugh On Curtis s interpretations the stories nimals produced by the men studied often revealed *anxiety* about the coming event, and the demands herhood (to which some felt quite unequal) and evidence of jealousy of the expected baby The n group C achieved on the whole, a more stable *omplete* inner image of themselves as good capable, ving fathers than those in the other groups The *B men* more often had an unconscious image of elves as a good mother or a good elder child in the *they felt* uncomfortable in the rôle of a good The group A men could not see themselves as good fathers *or good* mothers, or even good siblings l babies These interpretations in all three groups in with the *men s life histories*, and their behaviour time

the impulsive behaviour of group-A men was getting into trouble with the authorities They were given to rdination *staying* away without leave heavy drinking, o like as well as such general symptoms as anxiety ility depression, accident-proneness, *headache dizzi* hypochondriasis, and gastro intestinal troubles. In B and group C, such general symptoms preponderated ere were no cases of overt defiance though there were f heavy drinking and lower efficiency

tis points out that once the doctor realises that ant fatherhood can be so disturbing he can get ts to focus their attention on the real problem and their sexual anxieties their fears about their health or their own inadequacy and even practical lties to do with money and housing Only the difficult cases he says, need to be referred to a atrist for a physician needs no psychiatric ıg to discuss these very human problems and ations which surround the expectation of a new

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[1] *U.S Armed Forces med J* 1955 6 937

MALIGNANT MELANOMA

In the treatment of such a highly lethal tumour as malignant melanoma there is no place for indecision and those who deal with cases of this disease often express their views strongly[1]

Results are not easily assessed partly because of the uncertainty of the histological criteria What have come to be known as juvenile melanomas have an alarming microscopic appearance but they are clinically benign[2] Another difficult feature is the unpredictability of spread In most cases metastases arise within three years but the interval may be much longer particularly with melanomas that have developed in aged people from so-called lentigo malignum These may recur after local treatment but spread may be so delayed that the patient dies of another cause before dissemination is clinically apparent Spontaneous disappearance of the primary lesion of malignant melanoma has been recorded, and even secondary deposits have vanished without treatment These rare events should not influence our choice of treatment, but they do show how fallacies can occur in the analysis of results in terms of five year *or ten year survivals*

In treatment hormones, castration cytotoxic *drugs*, and radiotherapy are of little value Once the diagnosis has been made the management is essentially *surgical* The choice lies between wide, deep local *excision* alone and such excision combined with a radical *operation*—for example hindquarter amputation The *conservative* ' school includes some surgeons as well *as* some dermatologists, who declare that *no one can* know whether widespread dissemination has not occurred by the time the patient is first seen If it has not occurred the patient is spared a needlessly severe operation and if it has occurred how can one be certain *that it has* not already extended beyond the surgeon's range? The ' radical " school assert that this is academic quibbling and that it is their duty *to offer the patient* all possible surgical help except where the situation is obviously hopeless

As far as local spread to lymph glands is concerned it would seem from Raven's[3] *report that it cannot* be decided clinically that this has not taken place He found histological evidence *of spread in 50% of* nodes where there was no clinical enlargement This seems to accord with results described by *Pack et al.*,[4] whose five-year cure rate in a large series was roughly halved by delay of as little as a *month in* ' definitive surgery " after adequate local excision

But in a much smaller series Clark[5] had roughly equal results in three groups of cases treated by local excision alone or by this together with gland dissection within or after three months McCune and Letterman[6] now claim to have shown the distinct value of prophylactic excision of regional glands In 26 out of 40 cases clinical enlargement of the glands was present and in *all* but 2 of these, *metastases* were demonstrated histologically In 14 cases there was no clinical enlargement *of* the glands, but in half of this group there was microscopic evidence of dissemination. Of the patients with *histological* evidence of spread but no clinical enlargement, 29% survived for ten years whereas of those with neither *clinical* nor *histological* evidence of spread, 71% were living after ten years. (This 29% *amounts* to only 2 *cases*) Each of the 2 patients with clinical enlargement of the nodes but no microscopic evidence of metastases died within two years. Thus this *small* group does not go far to prove the value of gland dissection

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[1] Tod M. O *Lancet* 1944 ii 532 et seq
[2] Spitz, S. *Amer J Path*. 1948 24 591
[3] Raven, R. W *In* Pigment Cell Growth Edited by M. Gordon. New York 1953
[4] Pack G T Gerber D M Scharnagel, I M. *Ann Surg* 1952 136 905
[5] Clark J M. *Aust. N.Z J Surg* 1952 22 8
[6] McCune W S Letterman, G S *Ann Surg* 1955 141 901

Beerman et al[7] point out that it is impossible with present knowledge to compare the results from the "conservative" and "radical" surgical methods They recommend the establishment of a "malignant melanoma registry," possibly on an international basis, to provide a standard approach to histological diagnosis, clinical follow up, and statistical analysis This will not appeal to the old school of surgeons—"this is malignant, cut it out"—but it seems to be one way of obtaining an answer before the millennium of cancer chemotherapy

THE TUBERCULOUS DISABLED

In the dark glass of an official report, men are seen as columns of figures walking The Ministry of Labour and National Service, in the section of their annual report[8] dealing with the resettlement of the disabled, tell us that in October, 1954, there were 835,473 disabled persons on the register (a fall of 12,884 since October, 1953), that during the year over 4000 of the disabled completed courses of vocational training, that industrial rehabilitation was provided for more than 10,000 men and women, and that over 115,600 were placed in ordinary employment Follow up of 11,000 of the more difficult cases showed that some three-quarters had been satisfactorily resettled Some figures for industrial rehabilitation units confirm those of a recent study[9] of disabled people replying to follow up letters six months after completing the training course, nearly four-fifths were satisfactorily resettled Such statements give little idea of the skill, care, and personal interest which lie behind them—or, indeed, of the difficulties which individual disabled people may encounter when seeking to benefit by the services offered Dr Kenneth Marsh,[10] physician to the Camberwell Chest Clinic, draws attention to some of those which confront tuberculous people, and it is instructive to check his observations against the official figures for this group of the disabled

The tuberculous on the Disabled Persons Register in 1954 numbered 67,108, of whom 55,812 had respiratory tuberculosis The report does not state how many of the 4000 people who completed courses of vocational training were tuberculous, but it notes that a part time course in aero detail fitting for tuberculous patients was begun as an experiment in one of the London Government training centres This course gives selected applicants (all of them in a quiescent stage of the disease) an opportunity to attend for four hours' work daily (either every morning or every afternoon) for twelve months —instead of attending full-time for six months The experiment is proving a success, and the Ministry are hoping to extend it Awards made for professional training of the disabled numbered, from April, 1949, to the end of 1954, 536, and among those receiving them the tuberculous were well represented, accounting for 233 awards For those tuberculous patients who need to work under sheltered conditions, Remploy Ltd reserve seven factories, which employed 525 people in 1954 There are also five approved village or special workshops set up by voluntary bodies, three under the control of local authorities At all of these the Ministry gives financial help towards the maintenance and training of the patients, from the stage at which they can work only a few hours daily until they can manage a full working day

All this is useful and praiseworthy, yet it is clear from the numbers of tuberculous disabled on the register, and the numbers (where they are given in the report) of those helped in these various ways, that be gaps in the service, and so Dr Marsh When a patient leaves the sanatorium he may to be under his local chest clinic, and he may bed rest for part of the day His former job may longer available, or no longer suitable, it may heavy, or it may have to do with milk or food. a dust hazard Occasionally he may have dexterity If he is able to return to his old job, employer may arrange for him to work part time or he may be able to find work related to his job, but lighter The lighter trades, however are among the able-bodied too, and are often fully by those experienced in them since youth. factories, but not many, retrain men to do th jobs with the use of mechanical aids, and there are the courses of training for new emp both full-time and part time, offered by the M But, as Dr Marsh points out, many people ar adaptable, lack the interest to learn a new job unwilling to live on a training allowance Again, time courses are few and scattered, the disabled may have to travel far to get to them Some require residence in a hostel, but a patient wh already been away from home for months seldom to leave it again for a course of training If he de take a retraining course, he must compete in the labour market, but many employers are loth to the tuberculous Moreover, there may be no facil the neighbourhood for them to receive treatm pneumothorax refills after working hours

Local education authorities will provide home tion to groups of 8 people at a time, but it is to find 8 people suitable for such instruction at moment Moreover, there is no remuneration training only the teacher gets paid Home the tuberculous is equally unsatisfactory it is always piece work, and to gain a decent li patient must often work harder than he should help him with his quota the whole family often round the table and join in, and if he is an their risk of infection is great Moreover the be unsuitable from other points of view Dr mentions sweet wrapping, and the filling of salt potato crisps Home work provided by Rempl not share these drawbacks the work bears on in the main factory, in which it is expected the will in time go to work This scheme, however, very small, only 145 people in the whole country thus employed in 1954, and not all of them tuberculous Remploy factories for the tu accept sputum-positive cases, but few other and though a Ministry of Health memorandum said there is no bar to the ordinary employment patients, "provided that the placing is sub approval and medical supervision," Dr Marsh adequate supervision is quite impossible in such stances He quotes Dr Alice Stewart's study Northampton shoe industry, which suggests that high proportion of tuberculous infection arises at

The Ministry of Labour rehabilitation units take men with positive sputum, yet the patients who most need assessment, such as can be at the units Those accepted at Government centres have to be capable of full employment, is no such training centre in central London— omission Colonies for the tuberculous are no Dr Marsh believes "all the patients there abnormal life, as they are far from their nor roundings and in only a few cases do they ha families with them"

Of a total of 1990 patients on the Camberwell Ch register, there were 555 (408 men and 147 women) rking and 460 of these (344 men and 116 women) were l time jobs. A further 23 (11 men and 12 women) were ing part time, and a further 72 (53 men and 19 women) unemployed In the full time group 3 men had positive um, and 16 were in unsuitable occupations. In the time group all were sputum negative and had suitable In the unemployed group 21 men and 3 women had ive sputum. These 3 women and 5 of the men were not fit for any work but the other 16 men could well have employed in a sheltered workshop, had one been avail and most of the remaining 32 in this group would benefited from retraining

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[7] Beerman H Lane, R A G, Shaffer, B *Amer J med Sci* 1955, 229, 444, 583

[8] Annual Report of the Ministry of Labour and National Service for 1954 Cmd 9522 London H M Stationery Office Pp 162 5s

[9] *Minist Lab Gaz* 1955, 63, 121 See also *Lancet* July 2, 1955, p 27

[10] *Med Offr*, 1955, 94 31

[11] Memo 7/52

Marsh suggests that if his figures are representative e whole country we must need sheltered workshops 510 sputum positive men and retraining schemes further 3780 patients with closed tuberculosis. If re to eradicate this disease we must he thinks, t the fact that training centres can only be run at s Sputum positive patients must be kept away their fellow workers—in municipal sheltered work employing a small number of men and in more factories of the Remploy type Some adequate of family allowances would help to ensure the good tion of the tuberculous wage-earner's family and otect them from infection What are we prepared for a patient until he becomes non infectious? what will we do to maintain his welfare and ours cannot be made non infectious? These are the l questions and in Dr Marsh's view we are not nding effective answers to them

THE PAINFUL INJECTION

E increasing popularity among clinicians of the teral route for administering drugs is not matched orresponding enthusiasm among the recipients anet Travell[1] found that among professional people she questioned 99% had had one or more hypo c injections and of these only about 10% said they ot dread the next one

vell disagrees with the common opinion that some is to be expected from the mere jab of the hypo c needle: with a non irritant solution a hypodermic ion can be painless Immediate pain is due to cal irritation from the antiseptic or the parenteral on, (2) mechanical trauma from the needling or udden distension of the tissues by the rapid intro n of fluid, or (3) abnormal sensitivity either of in or the underlying muscle, at the site of injection or stimulation by pinching or slapping the skin just e needle is inserted may distract the patient s tion from the prick; but the most convenient re to eliminate skin pain is the application of cold conduction is blocked when the temperature falls out 10°C Intermittent application to the skin of e-cube for a few minutes before the injection is lone, but a refrigerant spray of ethyl chloride or f the halogenated hydrocarbons is more reliable pray need be applied only for two or three seconds ecovery of sensation is correspondingly rapid so in should be cleansed beforehand and the syringe ndy for immediate injection Travell gives three for eliminating cutaneous pain: (1) use a sharp with no barbs which has the smallest diameter tible with the viscosity of the injection solution ow a volatile antiseptic, such as alcohol to evaporate before making the injection; (3) apply a cooling to the site for two or three seconds and insert eedle directly the liquid has evaporated from the

ere subcutaneous pain is due to the needle entering alling on the fascia of the underlying muscle The ion solution should be buffered and isotonic and m or icebox temperature

Venous pain is minimised if the course of the vein and its patency are accurately determined beforehand If the injection solution is a local irritant it should be injected slowly, so that it is diluted by the blood stream slow injection also gives the patient time to warn the doctor promptly if the solution leaks outside the vein

Muscular pain results from injection into a hyper sensitive area of muscle These spots of deep hyperalgesia ('trigger areas) may be recognised by careful palpa tion which reveals deep tenderness, referred pain and hypercontractility With practice the trigger area is felt as more resistant than the surrounding normal muscle Normal muscle is practically insensitive to dry needling, but an irritant solution may cause pain, unless a local anæsthetic is incorporated in the injection fluid Travell also urges caution in using for intramuscular injection any region of the body that has been the seat of a severely painful state, such as acute bursitis with calci fication It is best to inject into the mid portions of the deltoid or gluteus maximus muscles If by chance the muscle twitches or pain is felt on insertion of the needle this should be withdrawn from the muscle but not out of the skin and redirected into a non tender area, and the solution should always be injected slowly

The attention to detail recommended by Travell would seem to be eminently worth while for both doctor and patient

HYPNOSIS FOR THE BURNED

AMONG those who treat burned patients opinion is still divided on whether the patient should be anæsthetised during local treatment In many clinics morphine anal gesia alone is used, while in others the procedure varies from simple nitrous-oxide/oxygen analgesia with the addition if need be, of ether, to administration of relaxant drugs and endotracheal intubation By means of hyp nosis Crasilneck et al[1] have successfully relieved pain in 6 out of 8 patients during initial local treatment and subsequent dressings and skin grafting and these hypnosis patients were induced to eat much more

Once the dangers of fatal oligæmia due to plasma loss and of infection have been surmounted the greatest problem in the severely burned is that of nutrition Patients with deep burns lose much protein in the exudate from the granulating areas, and this, coupled with the usually poor consumption of food, leads to severe wasting of muscle and fat In this katabolic" state skin graft ing autogenous or homogenous, seems to be less successful than when nutrition is good and the patient is in an anabolic ' state. Attempts have been made to improve the nutritional state of burned patients by intravenous feeding with amino acids, calories being provided by infusion of glucose and other sugars and fat emulsions, but intravenous feeding of this kind besides being expensive is liable to impair appetite and so reduce oral consumption of food, and the utilisation of the amino acids is uncertain Repeated infusions of plasma are dangerous and unless accompanied by non protein calories are nutritionally unsound Large amounts of calories and protein have been administered successfully by instilling homogenised food through an indwelling nasal tube into the stomach; but this method is liable to cause nausea when administration is intermittent or diarrhœa when it is continuous and some patients find it difficult to tolerate an indwelling tube for long

By hypnotic suggestion Crasilneck et al. increased the daily intake to over 7000 calories in 3 patients and maintained a large intake for twelve days. Not only was the total quantity of food increased but individual dislikes for particular foods were overcome and a selective intake of suitable food could be specifically suggested The pathetic physical and mental state to which a previously healthy young man can be reduced by the pain, partial starvation, and tissue wasting accompanying the sloughing and granulation of extensive burns presents a therapeutic problem to which there is still no certain solution Much quicker progress has resulted from earlier excision and grafting, often with donated skin, and the ensuing reduction in the extent of the granulating surface, and the account by Crasilneck et al strongly suggests that hypnosis may be a valuable further aid Against the more general clinical use of hypnosis it has been said that some patients are not amenable, that it is expensive of the psychiatrist's time, and that it can be applied only by the highly trained[2] Crasilneck et al are not impressed by these objections Of the 8 patients they treated 6 were suggestible, and only an hour and a half was required to obtain initial rapport, while the subsequent inductions took only a few minutes Suggestion was reinforced by brief daily episodes, and rapport could be transferred to the surgeon after only a few visits Further trial of this method should, if possible, be combined with controlled observations of its effects on the metabolic disturbances

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[1] Travell J J Amer med Ass 1955 158 368

[1] Crasilneck, H B Stirman J A Wilson, B J, McCranie E J, Fogelman, M J J Amer med Ass 1955 158 103

D N A AND NUCLEOPROTEIN

CYTOLOGICAL, chemical, and genetic researches all point to a close relation between the genetic functions of the cell and the desoxyribonucleoprotein contained in the cell nucleus Since the protein moiety may be as simple a structure as a protamine, the complexity necessary in the genetically active system doubtless resides in the desoxyribonucleic acid (D N A) molecule Perhaps the best known example of a genetic change initiated by D N A is in the transformation of *Pneumococcus II R* (an attenuated non encapsulated organism forming rough colonies) to *Pneumococcus III S* (an encapsulated strain forming smooth colonies) by minute amounts of extracts of the III S strain This extract had all the properties of a D N A and appeared free of other materials such as bacterial polysaccharides[3] The chemical and physical structure of the D N A macromolecule is therefore of fundamental importance It has long been known that the macromolecule is in the form of a long fibre built up of essentially simple mononucleotides, each mononucleotide consisting of a heterocyclic base (for the most part adenine, guanine, cytosine, or thymine) linked to a sugar (desoxyribofuranose) bearing a phosphoric-acid residue on its terminal hydroxyl group The macromolecule is built up by one of the free phosphoric acid groups of one mononucleotide being esterified to the free hydroxyl group in the sugar ring of another mononucleotide, and so on[4] The elucidation of the exact sequence of some 3000–30,000 mononucleotides in a macromolecule with a molecular weight[5] of the order of 10^6 to 10^7 is not likely to be achieved, but the over all picture of the molecule is becoming clearer and the structure suggested seems capable of explaining many of the physical, chemical, and biological data

As long ago as 1938 X-ray diffraction photographs of fibres of D N A were found to show evidence of crystalline form, there being proof of a regularly repeated unit in the macromolecule occurring every 3 4Å[6] But more recently it was shown that if a needle point is slowly withdrawn from a viscous gel of sodium desoxyribonucleate in water under conditions of controlled humidity, fibres are produced which give two distinct types of X-ray diagrams,[7, 8] the one highly cry (structure A) and the other paracrystalline (stru with a lower degree of regularity These two tures are normally interconvertible and differ in of stretching and of water content Crystal analysis of these diffraction patterns[7, 8] and c crystal structure of the simple constituents[9] have the suggestion that the macromolecule is a structure—two paired chains of nucleotides coil round a common axis[10] (A helical type of stru successful in explaining protein structure, ha suggested previously,[11] but the details had been criticised) The phosphoric acid residues lie on th side, and the heterocyclic bases on the inside of helix The individual nucleotides are 3·4Å apart structure repeats its coil every 34Å Each chain to its partner by hydrogen bonding between pairs of heterocyclic bases, and consideration of models shows that the only permitted pairing is be adenine and thymine, and between guanine and cy This accords with published data on the base co D N A, isolated from widely differing biological ma These analyses have shown that the molecular p tion of adenine is always equal to that of thym the molecular proportion of guanine was alwa to that of cytosine[12]

Any structure for a genetic material must be a suggest how the material can be accurately dup within the cell to account for inheritance charact Previous suggestions had rested mainly on a type of hypothesis, but the double helix imm suggested another, more likely, mechanism.[13] I intact double helix, whenever adenine occurs in chain thymine must occur in the other, and vice and similarly for guanine and cytosine Before th synthesis of D N A occurs (which, incidentally, to take place some time before cell division double chain might uncoil and then, a pool of being available, each separate strand could another chain of exactly the same configuration original partner since only the same hydrogen b permitted The proposed double helix is an ope ture, so there is ample room for a polypeptide round the same axis, and in the proposed mod phosphoric acid residues occur at intervals of distance close to the repeat of a fully extended peptide chain A possible explanation of mutations might be that one of the heterocyclic the newly formed genetic material occurred in a tautomeric form In an extension of this of the dimensions first proposed have been and further characteristics of the proposed been suggested

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The Wider World

TISH NORTH GREENLAND EXPEDITION
1952-54

Medical and Physiological Aspects

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(concluded from p 500)

Medical Arrangements

THE SICKROOM

sickroom measured 8 ft × 0 ft 8 in A bunk was ed in it and to make this suitable for examining ts it was raised on four tins A special bed would been better Blankets must be remembered since one normally has sleeping bags which are unsuit hen a man is ill We forgot to bring blankets, but ately procured some in Greenland

sickroom also contained a desk and several cup made out of boxes (fig 13) The lighting was r to that in the physiology laboratory (vide infra) ctric steriliser was found to take too much current pressure cooker was used instead A large pressure is a most useful piece of sickroom equipment one cannot always depend on suitable fittings supplied by the electrical department, the doctor see that he has a good examination torch and s an angle-poise lamp The sickroom had an ndent heating system in the form of an efficient n stove

ment and Drugs

choice of equipment and drugs is a problem ally where weight and space for transportation are The total weight of our medical supplies, ing adequate packing was 600 kg (12 cwt) Many instruments and drugs were never used and it is difficult to assess their usefulness in a possible emergency Some items, however are obviously essential and table I shows our instruments classified according to usefulness or probable usefulness. Table II is a list of the drugs we should consider necessary for an expedition

View of the sickroom. Dr Masterton doing a blood-count. Note the use of polythene bottles.

TABLE I—INSTRUMENTS

(a) Instruments Actually Used

Bunsen burner (methylated spirit)
Camel hair brushes
Catgut sutures (assorted) in sterile ampoules
Cheatle forceps
Dental instrument kit (as issued to H.M. ships)
Dental foot-operated machine
Diagnostic set
Dissecting forceps (toothed and plain)
Ear syringe
Enamel trays for instruments
Eye bath
Finger-stalls
Gallipots
Glass slab
Head lamp
Labels
Medicine-glasses (plastic)
Methylated-spirit burner
Minor-operations kit (as issued to H M. ships)
Nasal forceps (examination)
Needle-holders
Oil-stones and hone for needles &c
Orange-sticks
Palate-knife
Penicillin insufflator
Pipettes for nasal drops &c.
Polythene bowls
Pressure cooker
Probes
Safety pins
Scalpels (detachable blades)
Scissors (dressing stitch general purpose)
Scrubbing brushes
Silkworm-gut sutures (assorted) in sterile ampoules
Sinus forceps
Soap
Spencer Wells forceps
Splinter forceps
Sphygmomanometer
Stethoscope
Surgical needles (assorted)
Syringe (cartridge)
Tendon hammer
Thermometers
Tongue-depressor (steel)

(b) Instruments that Might be Used

Anæsthetic airway
Anæsthetic dropping bottle
Anæsthetic mask, open
Blood transfusion kit with dried plasma, &c
Bone cutters and nibblers
Clinitest
Eye instrument kit (as issued to H.M. ships)
Hamilton Bailey cannulæ
Horsley's bone wax
Major-operations kit (as issued to H.M ships)
Mouth-gag
Open razor
Orde's splint (one for each base or large party)
Oxygen cylinders
Plaster-shears
Rubber gloves
Rubber tubing for drainage &c
Sets of wooden splints
Stomach tube large
Syringes (2 ml 10 ml. 20 ml) made of nylon
Trilite inhaler
Urethral catheters (Foley)
Urine diagnostic set

(c) Instruments Considered Unnecessary

Chinese twist
Head mirror
Horse-hair sutures
Irrigation set
Plaited silk
Rectal speculum
Rubber drainage-tubes (see rubber tubing)
Tourniquets
Undines
Urethral bougies

(d) Suggested Additions

Malleable copper retractors (several sizes)
Polythene or silicon tubing may replace rubber for durability
Ryle's tube
Wooden tongue-depressors

THE ICE CAP STATION

A small medical kit was dropped by parachute at Northice as part of the establishment of the station This contained some instruments for minor surgery including dentistry and a collection of dressings and drugs. It also contained replacements for the first aid kits carried by the weasel teams. No serious problems arose on the ice cap and the medical kit was quite adequate except that it should have had more aspirins and laxative tablets

When one of the doctors travelled to 'Northice' he took with him some extra instruments and drugs for possible use while he was there

FIRST AID

Every individual whether sledger or weasel man carried a personal first-aid kit containing 2 Tubonic ampoules of morphine (each gr $^1/_4$) about ten assorted Elastoplast dressings, a first field dressing as used in the Services, and usually a crêpe bandage and 'pepper pot' of sulphanilamide powder and lanolin

In addition, since men travelled in groups of two or more every unit of two was provided with a first aid kit contained in a robust bag made so as to be proof against drift snow The contents of this first aid kit are shown in table III The weasel teams were also issued with splints,

Fig 14—The physiological section Dr Lewis using a photo-electric colorimeter

blankets, hot-water bottle, oxygen cylinder, chlortetracycline (aureomycin) capsules, codeine tablets, amphetamine tablets, cascara tablets, and extra bandages All teams carried vitamin capsules to take once per day

The most useful first aid items were crêpe bandages, elastoplast, lanolin, and aspirin

Physiology

THE LABORATORY

Fittings —Floor space (6 × 8 ft) in the main laboratory was allotted for physiology, and this was partitioned off as a cubicle Along the wall, four of our empty wooden boxes were arranged horizontally to make a desk which was also used for hæmatology (fig 14) , along an adjoining wall a similar arrangement provided a work-bench where solutions were made up, test tubes washed, or specimens labelled

We should like to thank the staff of the Medical Research Council laboratories, Hampstead, for their very careful and intelligent packing of equipment For example, a small tube of reagent was tied to a larger bottle, so that it would not be lost in the straw packing The carpentry of the boxes was excellent , in spite of extremely rough handling, neither the boxes nor the contents were in the slightest way damaged While the boxes served as laboratory furnishings, the lids and screws were carefully stored, and there was therefore no difficulty in repacking at the end of the expedition, when competition for any strong box was fierce Indeed, this provision illustrated the principle that one has to be completely self-supporting and even have one's own tools, screws, electrical accessories, stationery, and (most important) " odds and ends " All laboratory workers know the value of having a drawerful of miscellaneous pieces like copper wire, ' Perspex,' cellulose tape, cold solder, string, and razor blades

Water came from the same source as the domestic supply , but this lake water contained a fine suspension of glacial silt which was not readily filtered Another potential source was from nearby icebergs which had calved from the glaciers , but chipping and melting this ice was tedious Another unsatisfactory source was the local drift snow , not only did it contain a large amount of sand, but one could never be sure that it had not been contaminated by dogs or men

Distilled water, therefore, had to be used solutions and for rinsing glassware , we made an improvised still (fig 15), which at best was efficient and required continual attention A mercially made apparatus would have been since pure water was needed also for the darkroom, the batteries, and the hygrometer

Knowing that aqueous solutions freeze and that glass containers would crack, we used bottles They were supplied in sizes ranging from to 50 ml —about 500 of the latter being brought specimens We took other miscellaneous apparatus of plastic, since it was virtually unbreakable did not crack or break, the polythene was suited to our needs in the laboratory and for and spare bottles were always eagerly sought other scientists, especially for sledging trips

Power lines were led from the generator room, A C for the centrifuge and 12 volt D C for the electric colorimeter and microscope lamp lighting was either 230 volt A C from the gen 24 volt D C from batteries One of our lost overboard while being off loaded , so we had on a single machine in the first year, and

TABLE II—DRUGS AND DRESSINGS CONSIDERED NECES AN EXPEDITION

Where an alternative is recommended, the drug taken to Greenland follows in italics Drugs actually used are marked with an asterisk.

Aluminium hydroxide gel tablets (magnesium trisilicate powder*)
Amphetamine sulphate tablets
Amyl nitrite capsules
' Anthisan ' cream (*mepyramine maleate*)
' Anthisan ' tablets (*phenindamine hydrogen tartrate*)
' Anusol ' suppositories
Aspirin tablets*
' Avonine '
' Benzedrine ' inhalers*
Benzyl benzoate emulsion
Boric acid powder*
Brandy*
' Brulidine '*
Calamine lotion (*oily calamine lotion*)
Carbromal tablets (*butobarbitone*)
Carbolised resin*
Castor oil*
Cascara sagrada tablets*
Cetrimide powder*
Chloroform—because non inflammable
Chloroform capsules
*Clove oil**
Cocaine ointment ophthalmic (*cocaine lamellæ**)
Codeine co tablets*
D D T dusting powder
Digitoxin ampoules
Distilled water ampoules
Dimethyl phthalate ointment*
Ephedrine tablets*
Eserine hydrochloride tablets
Ether, anæsthetic
Ethyl chloride spray
' Everhot bags (kaolin*)
Euflavine tablets*
Filix mas
' Flaxedil '
Fluorescein tablets
Formalin lozenges
Gas gangrene antitoxin
Gentian violet tablets
Glyceryl trinitrate tablets
*Gutta percha**
Homatropine tablets
Insulin
*Iodine tincture, mitis**
Lanolin*
Liquid paraffin
Methylpentynol (phenobarbitone)
Morphine—' Tubonic ' ampoules
Morphine tablets (hypodermic tablets are used for injection and orally)
Nikethamide ampoules
' Nobecutane' (*collodium flexile**)
' Omnopon ' and ampoules (*atropine morphine tablets*)
' Paludrine ' tablets (
lets*)
Penicillin powder (
ingly)*
Penicillin (procaine)
Penicillin lozenges
Pethidine tablets
Pholcodine elixir (*codeine phosphate*)
' Pragmatar '
' Priscol ' ampoules and
Sodium bicarbonate
Sodium chloride tablets
Sterile dusting powder
' Sudol ' (' *Dettol,* ' ' *Kilkrobe* '*)
' Sulfex '*
Sulphacetamide 30% mic*
' Sulphatriad ' tab
Tannic acid jelly (*emulsion**)
Tetanus antitoxin
Tetracycline caps (*cycline* * *oxytetracycline*)
Thrombin foam (gauze)
Thiopentone
' Trafuril '
' Trilene '
Triple dye jelly*
Turpentine liniment (*cylate lin* *)
' Tyrozets '
' Vaseline '*
Vitamin capsules
White precipitate
' Xylotox ' 2% in
Zinc oxide powder*

Dressings
Bandages, adhesive (*zinc oxide b*
Bandages, crêpe* replace gauze first aid kits)
Bandages ' E' and 1 in. porous
Bandages tri
Bandages, Tu dages 3 in
First field dressing*
Gauze*
Plain paraffin gauze (paraffin gauze*)
Polythene sheeting purposes*
White lint*

Note —Have all drugs put up in plastic containers months winter night occasional power failures some inconvenience

oratory planning—We were pleasantly surprised how few snags there were in running the labora onsidering how quickly the original planning was and how difficult it was to get delivery of even rd apparatus from manufacturers at short notice re fortunate to have the active and interested help technicians of the physiology and pharmacology ments of University College London and of the l Research Council and members of the Royal Personnel Research Committee.[1]

lly there should be enough time to adopt the o technique to test the completeness of one's ations. The principle is simple before sealing xes take them to a bare room preferably a few way from one's institute, and set up the various nents Only then may one realise that the prepara are incomplete without articles like detergent wool grease pencils, test-tube racks, rubber or a burner which are all taken for granted in an hed laboratory [2]

THE RESEARCH PROGRAMME

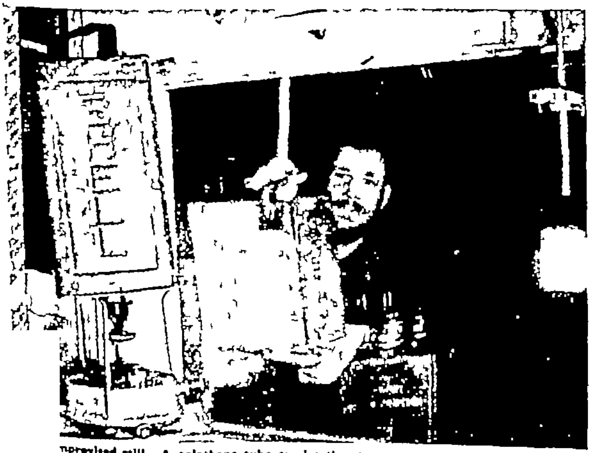
physiological findings will be published fully later following notes give an idea of their scope

rhythm—Information was gathered on small 10 cm. square which had been specially printed re distributed each month. The men recorded urs they slept in the twenty four and noted the ctivities in an appropriate column By this method e a fairly complete record of the men's sleep over years, and now that the cards are being analysed be possible to demonstrate the effect of such l phenomena as meal times, continuous summer it, and winter darkness.

al temperatures were taken two-hourly for a whole intervals of a month, using an oral clinical thermo- The investigation was carried out on the personnel ase laboratory at Northice," and, when opportu mitted, on the seismic team in the field Changes in an individual's range of body temperature over the two years may well indicate objectively that there has been some acclimatisation to the cold.

TABLE III—FIRST AID KIT (2 men for three months)

Item	Quantity	Remarks
Compressed lint	4 oz. (112 g)	Unnecessary
Compressed gauze	6 metres	
Compressed wool	4 oz. (112 g)	
Bandages 3 in.	4	Replace by 5 3 in crêpe bandages
2 in.	4	
1 in.	1	
Crêpe bandage 3 in.	1	
Triangular bandage	1	
Tourniquet	1	Unnecessary
Safety pins	6	
Elastoplast 1 in roll	1	3 would be better
3 in. roll	1	
Eye-bath	1	Made of polythene
Eyeshade	1	Unnecessary
Instrument roll	1	
Emergency sutures	3	
Scissors dressing	1	
Forceps Spencer Wells	1	
Forceps dissecting	1	
Scalpel	1	
Thermometer	1	
Monojet morphine hydrochlor gr $^{1}/_{4}$ (15 mg)	2	
Morphine sulph tablets gr $^{1}/_{4}$ (15 mg)	13	
Ophthalmic cocaine tablets gr $^{1}/_{20}$ (3 mg)	12	Replace by cocaine ointment in tube
Ophthalmic adrenaline tablets 6 mg	12	Unnecessary
Chloroform capsules	6	
Aspirin tablets	30	Unit packed
Sulphanilamide sprinkler	1	Unnecessary
Boric acid powder	1 oz (28 g)	In polythene bottle
Vaseline	1 oz (28 g)	Unnecessary
Lanolin	1 oz (28 g)	Increase to 2 oz in polythene jar
Triple dye jelly	1 oz (28 g)	In polythene jar
Iodine pencil	1	Increase to 2
Brandy	6 fl oz (180 ml)	In polythene bottle
Ung hydr ox flav	$^{1}/_{4}$ oz (7 g)	In collapsible tube
Satchel	1	
Suggested additions		
Cascara sagrada tablets	20	Unit packed
1 in. roll of waterproof adhesive	1	
Aluminium hydroxide tablets	20	Unit-packed
Codeine co tablets	20	Unit packed
Sulphatriad tablets	20	Unit packed



nprovised still. A polythene tube carries the steam to a condenser outside, beyond ass windows. The external temperature is −45 C(−50°F) The scientist collecting l water must wear gloves especially to prevent his hands sticking to the metal.

Physical efficiency—The Harvard Pack Test was performed once a fortnight

Weight—Most of the members were weighed as part of their medical examination in Britain An attempt to weigh them again was made during the voyage to Greenland but the pitching of the ship produced highly inaccurate readings ; so it was only in mid-September at Britannia So that the first reliable weighings were made in the shelter of the base hut. Subsequently the men were weighed weekly, under standard conditions. The weights changed considerably over the two years, and all the men took a keen interest in the fluctuations, some protesting at increases and others quite pleased putting them down to muscular development.

Fat thickness—Folds of skin were regularly measured with a pair of callipers, at 30 fixed points over the surface of the body Variations in these readings from time to time reflect changes in the amount of subcutaneous fat in the folds, and the figures should provide information on the pattern of fat deposition with changes of body weight. An increase of

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McArthur microscope, developed to a high degree of ciency and versatility in the last few years, is the ideal d and laboratory microscope for an expedition. It is bigger than a 35 mm. camera (McArthur 1945)

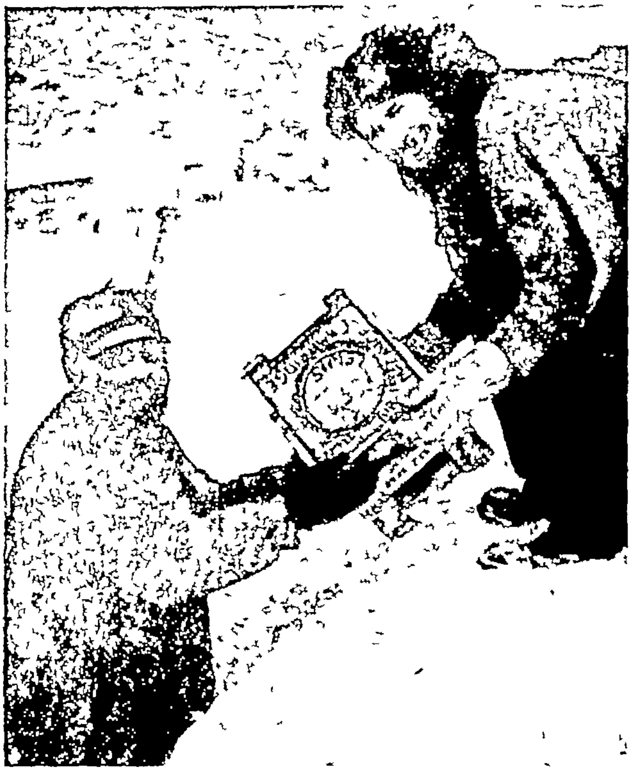

Fig 16— Burying a tin of specimens in a snowdrift during early summer

subcutaneous fat may be evidence of acclimatisation to cold

The measurements, which take about half an hour, were made once a month, and many of the men made the most of the occasion One scientist used to ask for a day's warning, so that he could have a wash and put on a change of underclothes, but the others were not as thoughtful, nor did we want them to go through this complex preliminary Some humour developed round this fat-thickness work (called the "tickle test"), one man would always say, after a rather painful pinch "Just replace that fold of skin before you continue the game"

Basal Metabolic Rate

Hæmatology—Several estimations were made on specimens of blood taken every month We were looking for evidence of seasonal changes in red-cell count, hæmatocrit, and hæmoglobin So as to be sure of our hæmoglobinometer readings, we made arrangements for a standard specimen from the Medical Research Council unit, Hammersmith, to be included in air drops about four times during the expedition

Eosinophil-counts were made, as an assessment of stress We also brought back specimens of plasma for cholinesterase estimation

Nutritional balance—The calorie value of the diet of a group of men was carefully measured while they were at base and later during sledging Specimens of total stools were brought back so that a thorough analysis of the nutritional balance could be made As with blood specimens, the stools were preserved by freezing during the winter

When the thaw came, all specimens were buried in lingering snow-drifts (fig 16), and when these finally melted the tins containing the samples were immersed in the lake water, which was at 1°C (33°F) For the journey home they were repacked into gallon 'Thermos' flasks containing ice chipped from a glacier

Water balance—Intake and output were compared during the winter and summer, and another investigation was carried out to observe differences at the base laboratory and on sledging trips, where the extremely hard physical work increased the water-loss through sweating

These physiological tests were not plea subject Some had to be made in the very others required waking a man three or four the night, and one involved uncomfortable for five minutes In the fat thickness test of the skin had to be pinched up 70–80 times subject may well have felt conscious of his and unwashed clothes, which were of necess of the expedition And, finally, blood collecti the discomfort of an intravenous procedure we were most satisfied with the members Only one man asked to be excused from and two others did not want fat thickness taken These three cooperated fully in all the

There are times when one doctor particularly moral support of the other, especially when sionally happened) some members become with the physiological programme Though we ourselves to all the investigation, we would like our appreciation of the examples set by Commander C J W Simpson, R N, and by scientist, Mr Richard Hamilton, who were for their turn, and also, of course, of the by the majority of the members whose willin to the few straggling guineapigs who needed extra encouragement

The main impression should be this we were with a group of educated men, whose scientific required a logical explanation for the medical programme Once satisfied, they coöperated would go to the trouble of giving advice or help repair or construction of medical apparatus— our blood specimens, the mechanics devised an shaker from a small motor taken from the aircraft, and arranged one of the fuel indicat cell counter

Unlike the other sciences, the physiological affected *all* the men in the party, and it was only able that they should know the whys and wher the regular assaults on their persons

Trichinosis

Because of the possibility of trichinosis infect Greenland, post mortem specimens were taken and the husky dogs The result of this small showed that most of our sledge dogs were heavily with trichinosis (Lewis, Masterton, and MacFarl

Medical and Dental Problems

Throughout November, December, Janu February the men were confined to the hut darkness For the rest of the year, and especi April until September, most of them were away on the various field surveys This routine, policy and activity in the medical sphere

When in the field the various parties could make radio contact with a doctor at base, sledges often carried a small portable could transmit and receive over a range of 25 several occasions advice was given by radio when the aircraft supplying "Northice" able to advise on the care of a man with a Another time a geologist in the field was severe toothache, and he was helped by sent to him with a sledge party

MEDICAL

The medical problems encountered fell groups (*a*) cold injury, (*b*) trauma, and (*c*)

Cold Injury

Snow blindness—We had virtually no trou snow-blindness Everyone wore glasses whe was more than 20° above the horizon This pe from mid April until mid August at a latitude north, on the high plateau of the ice cap there pheric screening of the ultraviolet rays, and the ous period was slightly longer When using instruments, one often removed one's goggles in o focus properly so on these occasions there was ce of minor damage to the eyes from the intense Only one man experienced symptoms as a result , and on subsequent examination in Britain he und to have some small retinal scotomata

drugs available for snow blindness were golden tment (mercurous oxide) and adrenaline and lamellæ Lamellæ are unsuitable on field work is suggested that ointments should replace these

bite was rare and the small number of cases we tered were not severe (figs 17 and 18) The general was due to good clothing technique and an ent appreciation of the risks involved in the cold were a few cases of desquamation of the cheeks, nost everyone had minor blistering of the fingers due to manipulating instruments with bare hands atment was necessary

e cases required attention, and the treatment was to that for burns. One man developed blistering ral toes after wetting and then freezing of his foot) This healed with rest and sterile dressings, the nail of one toe was temporarily lost and there idual paræsthesia for several months The other re rather unusual since they involved the penis. hen the penis accidentally was in contact with w during defæcation the other when a man was a blizzard at –50°C (–60°F) for over an hour In ses the pain was intense, and blisters developed condition cleared within a week

sure —There were no cases of hypothermia due sure. However, dry winds produced several cases ked lips, which cleared with the application of Colourless lipstick would have been a more ent remedy because it can be applied directly small pencil.

heavy vehicles, generators, and aircraft were njuries were always expected, but there were y none. Even when one weasel plunged 50 ft crevasse the occupants were uninjured For n spite of the constant danger from crevasses no other accident of that kind.

n fell against his sledge and broke two ribs. He to base unaided and made a complete recovery

e two years we met a long list of unexpected Among the more serious were filariasis, asthma, cardiospasm pruritus ani amblyopia, headache and petit-mal Most of these were stigated on return to Britain The filariasis and malaria occurred in two members who had previously been working in the tropics presumably the physical stresses of the expedition reactivated the infections, which had been dormant for some months Nine people had recurrent upper respiratory infections, but the common cold did not occur except to a limited extent at the summer relief when there was contact with men from outside. We also observed herpes zoster lumbago, supraspinatus tendinitis, constipation athlete's foot, chronic blepharitis, sycosis barbæ, severe dandruff and ingrowing toenails.

The above conditions occurred in spite of a careful medical history and examination before leaving Britain The past story of malaria was admitted and the member was accepted as a calculated risk but some of the other conditions were not disclosed by members in their keenness to go on the expedition Although the list appears formidable, these conditions required little attention and in fact less than 100 man days were lost through illness by the whole expedition

There were also some anxiety states. In one man the cause was domestic trouble and in another it was abnormal fear of the cold. It is the job of the doctor to apply the therapy of common sense as such cases arise and where there has been loss of life his special job is to see that the men do not brood over a tragedy which often comes very near to them

DENTAL

Dentistry presented the biggest single problem in therapy When men are going to be deprived of first-class dental care it is essential that their teeth shall be most carefully surveyed and treated before leaving home but, in spite of advice to that effect not everyone had this done Several men who had this pre-treatment and who systematically brushed their teeth had no trouble whatsoever Those who had not had special care before leaving did have some trouble and required treatment

The dental policy was one of conservation All the men were seen at least once during the two years, and several were examined and treated many times We had a foot-operated dental machine but in view of our inexperience we always used temporary stoppings.

After some trial it was found that gutta percha was the most satisfactory filling material. A total of 22 gutta-percha fillings were inserted though some of these were in the same cavity 18 zinc oxide carbolised resin, and oil of cloves fillings, and 7 copper oxyphosphate fillings were inserted The copper oxyphosphate caused some pain in one case and the filling had to be removed. 7 teeth were extracted under 2% 'Xylotox local or regional block anæsthesia. All these teeth were so carious that we could not conserve them Several of them had pulp infections

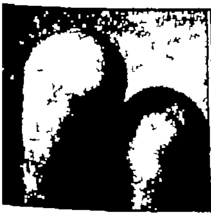

Fig. 17

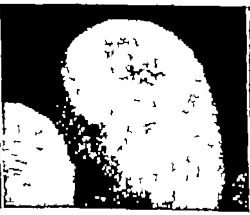

Fig 18

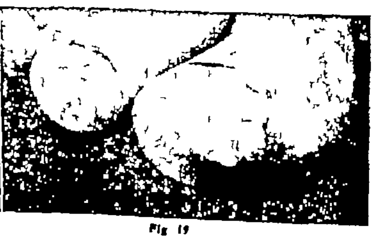

Fig 19

ostbite of the middle finger Mild cases produced a blister similar to a burn. They were caused by handling instruments like in the cold.

ostbite of the middle finger More severe but it healed, without scarring, after treatment with sterile dressings.

rostbite of the 1st, 2nd and 3rd toes following accidental wetting of the boots and then freezing Note on the 1st toe the oedema tering under the toenail. The condition healed in a week, except for the loss of the toenail and temporary paræsthesia.

In a number of cases where the cavities were very small or shallow no fillings were inserted The caries was removed and the patient advised on strict dental hygiene

It is difficult to be sure whether caries was accelerated in such conditions, but our impression is that it was not Most of the trouble was due to lack of proper care at home

What is the effect of the Arctic climate on the teeth? We did not find that fillings dropped out because of the climate Does the cold produce pain in filled or devitalised teeth? Pain is more likely to be caused by ice cream or an iced drink than by quiet inspiration of cold air through the mouth The only time when cold air may cause pain is when one pants and rapidly draws cold air over the front teeth This only happened once, in spite of men spending long periods outdoors at temperatures of –40°C (–40°F) and lower

Like those of previous explorers, our findings tended to be equivocal There is scope for a carefully planned dental survey over a long period under Polar conditions

Casualties and Escapes

On a polar expedition there is a constant threat of injury or misfortune On the whole we were lucky, except for one tragic death In the spring of 1953, one of the topographical surveyors, after taking sights from a mountain top, was descending a steep snow slope when he missed his footing He lost control and fell to his death among the rocks 300 ft below This untimely death of a very good friend brought home to us the dangers of the country, which we tended to play down through familiarity

1 While we were operating on the lake in the summer there was always the danger of immersion The suddenness of a squall could take us completely unawares in our rather unseaworthy flat-bottomed dinghies Two men were nearly drowned when they were trying to salvage the damaged power-boat They were in the water, which was at 1°C (33°F) for ten minutes Survival-time in water of this temperature is about thirty minutes (Glaser 1950) After this incident the men always wore life-jackets

2 The plane crash on the inland ice might have been more serious but for the skill of the pilot

3 During the first winter a man caught his clothing in the flywheel of a generator, but he sustained only severe bruising of his forearm

4 Another accidentally shot himself in the hand with a small-calibre pistol The bullet penetrated the base of the proximal phalanx of his right index finger He made an excellent recovery without any gross deformity of the bone and he fulfilled his duties as vehicle mechanic right to the end of the expedition On his return to Britain radiography showed a well-healed fracture of the base of the bone There was some slight articular irregularity

5 As already mentioned, a weasel fell 50 ft down a crevasse What saved the men was that they were anchored to their seats by safety-belts which prevented their being pitched the further 100 ft to the bottom. This weasel was towing a sledge trailer containing two tons of petrol cans, skis, and numerous other pieces of equipment As the trailer followed, its contents hurtled through the back of the weasel and out through the windscreen, missing the two men by a hair's breadth

6 In the summer of 1953 a Sunderland flying-boat was blown ashore in a squall and badly holed below the water-line It was patched with great difficulty During the take-off there was great danger of water forcing its way through the patch and enlarging the hole The nose would have filled with hundreds of gallons of water which would have caused the plane to nose-dive and sink However, the patch held and she took off satisfactorily As she left our skies we could see a trail of water still pouring from the damaged hull

7 One of the crew of "Northice" was lost in a blizzard for ninety minutes before he saw the hut lights again He sustained frostbite of his penis

8 During the second winter a serious fire b "Northice" Several generators were destr man was slightly burned. Fortunately the fi spread to the living hut, or the three men m have been forced to take to tents for the r the winter, which would have been a very g at such extreme temperatures The lowest r –66°C (–87°F)

9 The final lucky escape came when a weas on the inland ice The driver was blown clear scratch, but the weasel was a total wreck.

The Last Phase

In July, 1954, all the field parties reas Britannia Sø, which had thawed again, and the men were evacuated by Sunderland flying-b United Kingdom A small party which had the inland ice arrived back a week earlier, Greenland by air from the West Coast

At Britannia Sø, before the last men left laboratory, a comprehensive first aid kit and were laid out in the sickbay, similarly, there supply of food and fuel In an emergency, th be shelter for travellers, either by land or air, hut position will be marked on local maps T some discussion whether a small radio transmitte be left, it was decided (perhaps unfortunately do this

Back in Britain, we carried out follow up University College and *University College* This, incidentally, turned out to be admin complicated because the men soon disper London

The Doctor's Rôle

From what we have written it is clear that on dition the doctors should be prepared for an wide variety of medical problems, besides do to a research programme On the British North Expedition we doctors enjoyed two special ad first we were in radio contact with advisers and this continued interest in our progress pleasant fillip Secondly, in Greenland itself mutual confidence and complete loyalty to ea

As always, the doctor must be completely able, but he must not take sides in minor bicker he is accepted as a fair minded impartial per be asked to give his advice on matters of gener but he should at all times be on guard against answers exploited to suit "axe grinders" In he may be offered many paramedical duties th approach to which is usually prefaced by " doctor, you should know about cooking ventilation" The doctor's advice will be sou first-aid for the dogs, and other veterinary such as sexing newborn puppies, or the best up a musk ox

Using our anatomical knowledge, we partic dissection for the pot of the first musk ox that and the cutting up took us three days in fre tions (A trapper would have done the job half an hour!)

There are also non medical duties, for exa expected that you should willingly help the trying to put up an aerial mast in a blizzard companion on short sledging trips if you can from the laboratory This is merely to rep coöperation of these men who have acted as yo

On an expedition, a medical officer shou second string to his interests, such as ph research or biology, and he should not wa professional training on jobs which could be less "expensive" man Doctors often seek for the adventure of doing a completely d But on a *scientific* expedition, the doctor his place as a man of science e is the only doctor his first duty is medical treat- and if there are casualties a research programme ve to be jettisoned But we cannot emphasise too y that if *medical research* is on the programme it ave full time priority Ideally as on our expedi e medical officer should be incorporated into the h programme as a colleague of the physiologist

Selection of Personnel

ection committee should be cautious about aiming "expedition type in practice there is no such

We agree that there are certain desirable charac s, such as a good sense of humour ability to get h other people and honesty but we feel that ttention should be paid to some subtleties that be unnoticed unless specially looked for For e, a tendency to pompousness and over-confidence become most embarrassing and dangerous on an ion while a man who tends to be mildly querulous ne and escape notice, might, in the stress of a d winter hut appear to his fellows almost paranoid olar expedition one can occasionally observe the who thinks he is the only man doing any work small community a leaning to the self righteous come a pathological streak. Finally any personal ities existing at home between two prospective rs should be sufficient cause to disqualify one of

On an expedition, and especially during three winter darkness, mole hills rapidly become ins, and there is the possibility that certain ttitudes of one man to another might become able.

lem arises in the selection of men for menial ould one for example, select a handyman for obs of limited skills or take on a volunteer of cation and capabilities ? Although the latter of more positive use in certain circumstances, ertheless more likely to become unhappy with l tasks over the long period of one or two years good his intentions were at the beginning We on a long expedition, men should be appointed hich they are used to doing and take pride in ll. Applicants must be disabused of any sugges e glamour of a Polar expedition when they are ed What sounds glamorous before setting out ften to be tedious, and all the more irksome in ngenial surroundings. All the members must s with the really unpleasant jobs like emptying buckets, and it would be a mistake for scientists, ple to be absolved from these chores Men must lso that when they return they will have much k in writing their reports.

choosing members, one should apply the yard will he do justice to his job ? Then conven ocial strata fall away as being irrelevant and ll be the added spice on the expedition of having different backgrounds and education The most nt single attribute is competence. Selecting a who is really excellent at his special work is the sk, provided he has no serious personality defect may use his charm of personality to compensate ficiency and he may well get away with it up to But as an expedition progresses, it becomes le that a member is respected for the manner in e does his work however humble the job Thus lent carpenter becomes more acceptable than doctor of limited capability Finally it should be remembered that the men finally chosen a group of *people* not supermen ; and that and physically they will be heirs to the same ces

comments are made with diffidence because we lly stand at a distance judging our colleagues in s in which we were intimately connected ; and we accept that we ourselves may well fall short of our own criteria However with this in mind, we have offered our opinions on the basis of our own experience We emphasise also that we are not proffering anything new or revolutionary The purpose of this section is to suggest some lines of guidance for future occasions We do not think that the selection committee of the British North Greenland Expedition made mistakes, for in retrospect we see that they did the job extremely well

It is very difficult to handle a large number of applicants resulting from nation wide publicity In practice it is more feasible to make inquiries at a known source such as zoological schools of universities. However, by thus restricting the choice one may unfortunately overlook an even more competent man somewhere in the country

Some Further Recommendations

Apart from these recommendations, we learned a number of lessons for future ventures

1 In the medical examination, particular attention should be paid to the past history of the candidates and if possible a confidential report should be obtained from the family doctor While one should aim for fitness, physique per se should not be the first consideration since great muscular development, though useful, is not essential One cannot predict how members will stand up to the Polar environment.

2 It is imperative that before departure there should be plenty of time for preparation and planning The personnel should know a year beforehand that they are going, and have perhaps three months full time devoted to expedition matters immediately before setting off

3 It was very obvious to us, taking part in the stevedore work that more mechanical aids should have been available for unloading and carrying our stores at Young Sund or Britannia Sø Even a wheelbarrow would have been invaluable With so many types of fork-lifters on the market, one could have been found which was suitable even for our sandy and pebbly terrain

4 When men spend half their time in a hut, it is essential to have it roomy and well designed. We should have liked more individual privacy, better ventilation and sanitary arrangements, and better doors The facilities for washing and water heating and the latrines, must be adequate.

5 The physiology laboratory arrangements were good except for the lack of a small distilled water plant

6 In the sickroom there must be strong emphasis on good lighting and a comfortable bed cum-examination couch

7 Food at base could have been more interesting Tinned products were used too much. We could have taken a variety of articles that would have kept well in the cold The sledging ration was good but it was monotonous and badly packed

8 On the medical side many traditional items can be eliminated and with plenty of time and consultation with colleagues during planning a satisfactory kit can be compiled.

9 The constant hazard of carbon monoxide and petrol fumes in close quarters makes it essential to have efficient detectors Fire is a regular risk, and there must be enough extinguishers.

Success ?

When the second year party returned in August 1954 it was a heartening sight to see the dozens of notebooks, specimens, and hundreds of rolls of film packed and sealed so that they would float if in any accident they fell into the water

We are often asked naive questions about the expedi tion and this is largely because our activities were reported exclusively to a newspaper of limited circulation and also because of our uneventful return *Ironically* had we *met* with disaster, national interest would have been aroused But it was not our intention to participate in heroics.

Apsley Cherry Garrard (1948), who was a member of Scott's last expedition, has written most eloquently about this aspect

> "whilst we knew what we had suffered, and risked better than anyone else, we also knew that science takes no account of such things , that a man is no better for having made the worst journey in the world , and that whether he returns alive or drops by the way will all be the same a hundred years hence if his records and specimens come safely to hand "

Judged by this, we hope that we may say that our venture to the Arctic was a success

For permission to reproduce photographs, we are grateful to Dr C B Bull (fig 8) and Dr C M Slesser (fig 14) The people who have helped and still are helping us are too numerous to mention separately However, we should like to thank specially the following bodies our work the British North Greenland Expedi mittee, the Medical Director General of the Navy, Research Council, and University College, London

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Special Articles

DISTRICT NURSING

THE CHANGING SCENE

LIKE the family doctor, the district nurse is finding that her duties are changing with the times—not only with the advent of the National Health Service but with new drugs, and with the growing opinion of physicians and surgeons that bed is a dangerous place for anybody, young or old, who is not too ill to get out of it The Queen's Institute of District Nursing have lately published a special study,[1] undertaken with the help of a grant from Boots Pure Drug Company, and carried out by Miss E A B Davis, a Queen's visitor She not only reviews the changing patterns of the services, and the numbers of district nurses and other personnel likely to be needed, but considers the proper functions of these various workers, and suggests how the time and energy of district nurses might be used more economically

The most striking change in pattern has been the great increase in injections given by district nurses This means that the numbers of visits paid have gone up, too , but the average time taken over each visit has decreased, and so have the numbers of visits per patient These changes, largely the results of modern chemo therapy, have been associated with a greater number of telephone calls, and messages to be transmitted to nurses, and a larger turnover of patients Thanks to the practice of earlier ambulation, nurses in training nowadays get little experience of bedfast patients Dr J L Burn[2] has noted that the new recruits to district nursing are not as well trained in the care of such patients as their forerunners, and Miss Davis bears this out On the other hand, since patients at home are nowadays encouraged to get up as soon as possible, the actual *amount* of skilled long term bedside nursing needed is less than it used to be The older people in our population are doubtless steadily increasing in number , but while they remain active they need the help of the home help, the bath attendant, the physiotherapist, and the chiropodist more often and more regularly than that of the district nurse

In some places district nurses are nowadays being asked to cooperate with the doctors in health centres, or centres of group medical practice Miss Davis studied the arrangements made at four health centres—Woodberry Down at Stoke Newington, the William Budd Centre at Bristol, Sighthill at Edinburgh, and Darbishire House at Manchester

The first was staffed by nurses attached to the clinic, and the district nurses had "little contact and no function" at the centre At the second the district nurses, though they have no duties at the centre, call daily for messages and are in almost daily touch, in the staff room, with the g tioners, health visitors, and clinic nurses of the centre as with the midwives working in the area. Al district nurses work at the centre for a 7½ hour da days of the week, treating ambulant patients, ment, sterilising dressings, and dealing with occ gencies On their other days they work on a near Some of the work—such as packing and sterilising weighing patients, and preparing equipment in rooms and consulting rooms—could, Miss Davis been done by less skilled staff At Darbishire nurses on the staff of the district nursing associatio in rota during surgery hours, and an attempt has to allocate a given nurse to a given doctor

In group medical practices, it is unusual for the nurse to attend daily , but sometimes she hold ailments clinic at the doctors' surgery, or a d use the nurse's clinic or district room as an Often the district nurse attends the doctors' special sessions, such as antenatal or clinics

Night calls are rarer for district nurses than fo but some local authorities provide a separate give late injections and do some night nursing of Gloucester employs two permanent night some areas rotas of suitable people—retired nurses, or assistant nurses—are maintained, called on for night duty , but a more usual is to provide sitters in, often organised by the service The weakness of this last system is that no real link between the sitter in and the distr who comes by day

Taking the picture as a whole, Miss Davis not only that the pressure on district nurses is that the pattern of their work in future is likely more injection therapy, the care of more elderl with terminal illnesses (long or short), more patients discharged early from hospital, and of together with attendance at some kind of centre medical practice, and possibly night visiting nursing To meet these changing needs the nursing team, she suggests, might include Sta nurses (S R N s), mainly with district training of them to be male nurses , S R N s without training, mainly as relief staff , State enrolled nurses (S.E A N s) with district nursing the proportion of 1 5 S R N s , nursing aids helpers , and bath attendants, night home helps The patient should be further by a laundry service (of enormous value in the energy of elderly people who are lookin elderly people), chiropody, physiotherapy, occupational therapy, and the loan of necess ment

The time and energy of the nurses themselves greatly conserved, she says, by the provisio area, of adequate transport and this would better care for patients In areas where transp

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1 The Future Scope of the District Nursing Service and the Personnel needed Obtainable from the Institute at 57 Lower Belgrave Street London, S W 1

2 *Nursing Times*, 1954 50, 1425

ere poor she found ' either that very ill patients ed less care than they needed, owing to the difficulty ting twice daily or more or the care received by atient was less comprehensive than it might have " Finally, nurses could be spared much unneces writing and duplication of reports and figures. areas have already begun to introduce simplified ts of record keeping and she glances hopefully at ssibility of central statistical departments where n machinery could do the adding and analysing ad on the overburdened nurse

Public Health

Weil's Disease

number of cases of Weil's disease reported by health and other laboratories in England and during the past few weeks has been unusually The total number of cases reported by laboratories 3 and 1954 was 98 and 106 respectively but during this year there were 31 cases. Of these, 21 were *Leptospira icterohæmorrhagiæ* and 3 were fatal due to *L canicola* and in 2 the type was unknown e majority the source of infection was not found, those due to *L. icterohæmorrhagiæ* the proportion the patient gave a history of occupational risk nusually low, whereas 6 had recently bathed in Hot dry weather may have contributed to the e in leptospiral infections by encouraging bathing ssibly by increasing river pollution Cases of Weil's can easily go unrecognised, and the possibility not be forgotten in the diagnosis of febrile dis *particularly those with conjunctival injection,* al hæmorrhages, meningeal symptoms renal oms, or jaundice

Dysentery in an Infants' School

is report for 1954 Dr G Hamilton Hogben, l officer of health for Tottenham, describes an k of Sonne dysentery in an infants school. The l *source of the infection is thought to have been* ren who had a gastro-intestinal disturbance the ey returned from holiday No secondary cases ported from contacts attending other schools (all er children) whose fæces were found to contain *sonnei* In its early stages the outbreak was explosive suggesting the possibility of a food nfection; but of the children who fell ill in the ek only some two-thirds had school dinners, and ldren had no part in serving the meal Dr Hogben s that the infection may have been spread by ination of straws for drinking milk The older n took the caps off the bottles and distributed straws; and the children who first fell ill may one this.

fectious Diseases in England and Wales

Disease	Week ended August			
	6	13	20	27*
ria	5	4	3	3
y	392	373	287	374
litis				
ive	4	4	5	4
fectious	2		1	3
ooning	361	371	388	971
excluding rubella	9975	6088	6569	3745
coccal infection	11	8	15	13
mia neonatorum	20	33	29	34
hoid fever	1	19	17	25
nia primary or influenzal	188	194	202	153
elitis				
tic	146	104	198	198
aralytic	161	164	150	164
l pyrexia	253	199	260	271
fever	198	234	236	240
x				
losis				
atory	512	604	575	597
ges and C.N.S.	11	10	13	11
	60	77	82	69
fever		2	3	11
g-cough	1556	1800	1684	1702

* Not including late return

In England Now

A Running Commentary by Peripatetic Correspondents

WE were two heart cases and we were put in a small two-bedded room off the main ward because complete rest and quiet were essential for our recovery

At irregular intervals all day and sometimes at night the steriliser in the operating theatre let off steam with a noise like a railway engine at a terminus The thin partition which shut us off from the big ward of 35 beds let in a lot of the noise—the resounding tap of *leather heels on polished floors,* especially at night, and the sound like Underground trains made by the continual moving of the heavy screens throughout the day

Between 6 A.M and 9 P.M twenty four members of the hospital staff entered our own quiet little room 144 times, banging the swing door 67 times. This means that the door was opened or closed once every six minutes. Actually it was sometimes opened *much oftener and sometimes no-one* came in for a whole hour During these rare periods we tried to sleep One of us was wakened by two nurses to tidy her bed; when she protested But why just when I've just got off to sleep? the answer was But you must be made comfortable! The other, after an exhausting day had been given a sleeping tablet early and was sound asleep when she was shaken awake by a nurse to know if she wanted hot milk or '*Ovaltine*'

With the help of sleeping tablets we managed to get some sleep at night despite the competing noises, the nurse coming in to see if we were asleep or to clash the metal tablet that clipped our case-sheets onto the end of the iron bed and the fact that one of us talked in her sleep and the other snored

Patients never agree with the doctor, and we cannot agree that complete quiet was essential to our cure For we are both well on the way to recovery thanks to skilful and devoted medical care—and perhaps to our sound constitutions

* * *

The Calgary Stampede is an important annual event in the West. The whole population of the town and of much of the Province of Alberta goes to the Stampede in the way that Lancashire folk go to Blackpool for their wakes weeks. *Nobody has time to go to see the* doctor, but the doctor may well receive an extremely urgent call to sew up little Willie's foot. Everybody goes to the parade on Monday morning and it is a very good parade Though not in the same class as the Lord Mayor's Show, the mayor of Calgary is to be seen wearing a large white hat, riding upon a spirited charger, and dressed like a cowboy at a party Thereafter, during the mornings, the main streets may be roped off a block at a time for the bands to play, for the clowns to clown, for the trick motor-cyclists to motor-cycle trickily, for the square-dancers to dance their squares, and for the other performers to act their Stampede *rôles*. And the townsfolk and the country folk, themselves dressed in cowboy costume the fancy dress of the West, look on and admire the spectacle

At one street corner the traffic lights were changing unwearily from green to amber and to red and in the heat of the brilliant mid morning sunshine the crowd stood around to watch the dancers dance to the music of a Western band playing upon the back of a parked truck for bandstand, and relayed—and distorted—by multiple loud-speakers from all four corners of the truck in all four directions of the cross roads. Then came the Wheel chair Dancers, the square-dance club of the Calgary branch of the Alberta Handicapped Association wearing huge white cowboy hats and vividly coloured shirts with brilliantly embroidered broad collars and cuffs, and with coloured paper decorating the wheels of their chairs. The average age was not young One dancer had lost both legs above the knees. Others had withered limbs, and some were victims of past polio Most wore leather gloves upon the hands that spun the wheels of the chairs Every eye was keen and every *face* was bright with enjoyment as the dancers pushed their chairs in time with the music through the pattern of the square dance in all its local intricacies.

It was the most memorable sight of a remarkable Stampede and an impressive example of enjoyment in face of disability

* * *

"'Vat's your name?' she asked me, in that German way she had of speaking 'My name is Dick' 'And your other name?' 'My mother calls me Dick' That shut her up all right I never did like that woman from the first"

The patient who related this to me in the ward has not treated the consultants with quite the deference that the nursing staff would wish Scarcely surprising considering how, as a young chorister, he dealt with Queen Victoria

* * *

Gavels seem to be growing in number, and certainly a blow with a gavel is much more dignified than a tap on the table with a fountain pen But as a means of halting an ebullient speaker who has exceeded his allotted span, they do not seem to be effective unless the audience supports the chairman with vigorous hand-clapping—distinguishable from applause

A common cause of getting into difficulties with a 15-minute communication is that the first 10 minutes are devoted to other people's work, after which there are only 6, 7, or 8 for one's own The very fact that the speaker has perfected what he has to say may undo him, for a slight slip in his polished phrases may make him repeat, or (worse still) explain with "What I meant to say is ", and thus the whirligig of time overtakes him.

If a quarter of an hour is allowed it is fatal to try to fill the unforgiving 15 minutes with 900 seconds' worth of distance run The only way in which to be sure of finishing on time is to prepare what one has to say to last 12 minutes, thus allowing 1 minute for turning to one's text to explain diagrams, &c, 1 minute for laughter, and 1 minute for applause

When everybody does this, gavels can be made of ivory and revert to white elephants

* * *

Your annual educational number is of great value to those medical students and newly qualified men who are bewildered about which way to go next, but you offer little or no guidance to parents who are anxious to ensure that their young children shall in due course be accepted for training in medicine Could you now tell us which schools or which kinds of school are most efficient at producing boys and girls with the qualities and attainments required for entry to a medical school? We mention this because it is not always appreciated that the selection of the correct school requires the prior selection of the correct prep school, and there is severe competition to enter certain prep schools at the moment Indeed, we have heard that children are not accepted at one particular prep school unless they have come from one particular pre-prep school, are able to read and write, and have a working knowledge of one foreign language at the age of 7 Our own problems at the moment are—What is the best age at which to commence private tuition in passing intelligence tests, and what is the best way to prepare one's children for nursery school? We should be most grateful to you for your advice

ANXIOUS PARENTS

* * *

Israel is a land where peoples of widely divergent cultures mix, some of the newcomers from Eastern lands have a pattern of life which is very different from Western European standards But they learn fast

About two years ago, a Yemenite woman from Southern Arabia came to a maternity hospital of the Workers' Sick Fund to be delivered She was conducted into the receiving ward and invited to lie down She lay on the floor the bed was a piece of apparatus outside her experience However, she was cajoled to lie on the bed, and then the nurse said "I'll call the doctor to examine you" This distressed her, how could she submit to examination by a strange male? "Don't worry," said the nurse, "I'll call the midwife, then" The midwife came, the baby came, in due course mother and infant left the hospital

About two years later she returned for the same purpose On being shown into the receiving ward, she climbed at once on to the bed "I remember you," said the nurse smiling conspiratorially at her, "I'll call the midwife" "Midwife indeed!" snorted the mother, "Why am I worse than any of the others? The doctor is good enough for me!"

Letters to the Editor

SYSTEMATIC LECTURES

SIR,—Whenever the need for shortening
fying the curriculum is discussed someone
systematic lectures should be abolished, and
been a growing fashion to malign them as
waste of time As one responsible for teac
believer in good systematic lectures, I
Dr Clark-Kennedy's article (Aug 27) support
for the very sound reasons that "the average
is far too indigestible for ordinary human
Lectures lubricate and add perspective to it
good lectures voluntarily attended" With
most heartily agree The fact that, in your lea
same date, you suggest that these lectures
eliminated merely goes to show how difficult
even in a single school, to gain agreement on
to trim the curriculum For a long time now I
believed that those who decry systematic
those who are bad lecturers, either because
them badly, or because they do not like the
requires to prepare really good ones, or becau
make them too detailed in scientific facts without
the practical application of these facts to our
practical discipline, which is an applied science
ever was one

I believe, too, that much of the opposition res
a too rigid interpretation of the word "
regarding these lectures as an attempted sub
textbooks As I see it, they should be signposts to
and ward work, an interpretation by someone
experience illustrated from his own practice,
occasion for an assessment of new views and
But they must be carefully prepared, deliver
voice that can be heard in the back row and
monotony, and attendance must be on a
basis

With this understanding of the proper fun
systematic lectures, and believing that different
have different types of memory, I feel that
are serving a useful purpose if a third or more
group of students chooses to come to them.

Department of Surgery,
University of Birmingham

F A R STA

SLIPPED FEMORAL EPIPHYSIS

SIR,—Your annotation of July 30 raises, amo
problems, that of treatment—a subject of
controversy during the post war decade Some
statements made would, I think, meet with
disagreement

> "Attempts to reduce the displacement by
> manipulation have fallen out of favour"

Manipulation—perhaps movement is a better
the hip under anæsthesia, with radiological
essential in investigating the mobility of the
and for its reduction

> "Most surgeons prefer to apply traction only
> slipping is acute"

Traction is of doubtful value in treating the
and if the limb is postured in internal rot
flexion, or the weight is too heavy, damage to the
supply is an obvious danger

> "Insertion of a Smith Petersen nail produce
> fixation"

Such a pin is unnecessarily large and tends to
the epiphysis from the metaphysis, thus dama
blood supply at the time of its insertion

During the last eight years the following
treating recent slipping of the upper femoral

volved from the successes and failures of some 40

ase of recent slipping of this epiphysis is an emer for which the patient should be admitted to hospital it to bed forthwith At the earliest convenience an aetic is given and the hip gently moved, under ogical control, to ascertain any mobility of the sis.

he epiphysis is mobile it is reduced and two or pins are inserted

he epiphysis is immobile and the degree of slip the deformity is accepted and pins are inserted

he epiphysis is immobile and the degree of slip the patient is returned to bed, because no immedi atment is indicated The later treatment of this of case is controversial, and here I would agree tely with your annotation Open anatomical ion and subcapital or cervical osteotomy give esults in most cases but there is risk of aseptic is and ankylosis of the joint Subtrochanteric omy is safe but not ideal. The hip left as it is, severe degree of slip gives a marked limp perm disability and the possibility of early degenerative s.

y in this group of cases I abandoned the Smith en pin in favour of the Moore s type of pin, which inserted with less danger of pushing the epiphysis from the metaphysis and with less trauma to the sis itself

on W 1 **PHILIP NEWMAN**

SEQUELS TO ANÆSTHESIA

—Similar cases to those recorded by Dr Bourne 8) are not infrequently seen by those anæsthetists ork in large dental departments Of necessity the ts are not premedicated and when nitrous oxide inistered alone satisfactory operating conditions ly achieved by severely limiting the supply of Dr Bourne s efforts to secure abolition of this anæsthesia are to be greatly encouraged.

ever for your leading article in the same issue to hat general anæsthesia for the elderly should t [and] devoid of nitrous oxide is surely creating pprehension In many elderly patients who are y premedicated it is possible to produce satis first plane anæsthesia without restricting the supply to less than 21% I am aware of no work suggests that nitrous oxide per se is dangerous would seem fairer therefore to incriminate the d rather than the agent Providing such pitfalls truction underventilation and hypoxic mixtures ly those resulting from low flows of gases used O_2 absorption techniques) are avoided nitrous can provide safe and satisfactory anæsthesia for variety of operations in the elderly

chusetts General Hospital
Boston, 14 U.S.A **M K SYKES**

—As a dental surgeon may I thank Dr Bourne excellent remarks on dental gas and cerebral In general dental practice prolonged anæs is more difficult than it may seem As one medical practitioner said to me, ' one never one s patient s reaction to nitrous oxide and until after the event '

following case may be of interest

rse on whom I had previously operated for single aused me great anxiety when I was about to remove using ordinary nasal (not intubation) nitrous oxide xygen (5%) anæsthesia. After removal of 3 very teeth in about 3 minutes anæsthesia, her colour ly changed from pink to grey and breathing stopped o apparent heart beats. The anæsthetic was stopped iately; full oxygen was switched on and artificial tion was applied. The patient breathed in about 3 minutes with feeble heart-beats returning Then strychnine gr $^1/_{30}$ was administered hypodermically The patient remained unconscious for half an hour and normal heart beats and breathing returned after a further hour and a half Altogether she was in my surgery for two and a half hours after which she was able to walk to a car

The patient had had a similar episode when she was in training at hospital but did not mention this before the operation.

West Bromwich **H M BRETTELL.**

SIR —Four years ago one of us (D G H) then a junior resident anæsthetist gave gas to a 42 year old cretin for incision of an abscess of neck

The patient was supine and the gas was given from a Boyle s machine starting in the usual way with nitrous oxide alone flowing at 10 litres per minute oxygen being withheld until consciousness was lost Oxygen was then added at a concentration of 15% but very soon afterwards—about two minutes from the beginning of the gas and at the moment when the incision was made—respiration which until then had been free and unobstructed suddenly failed and with it the pulse The patient became deathly pale Artificial respiration with oxygen was given through an endotracheal tube and nikethamide was injected into the heart but the patient remained pale pulseless, and without spontaneous respiration The circulation was restored by cardiac massage through an incision in the epigastrium, and later respiration returned The patient, however did not require any anæsthetic for closing the epigastric incision and remained in coma for some time after he had been admitted to the ward Eventually he recovered completely

For more than a year now for anæsthetising out patients chiefly for dental extraction we have used cyclopropane in the manner described by Dr Bourne[1 2] Our experience of this method does not amount to more than about 250 cases yet already we are impressed by its advantages—particularly its simplicity and effectiveness Induction and recovery are rapid, and since there is no need to restrict the oxygen it would not surprise us if it turned out to be a safer method, especially in the hands of less experienced anæsthetists than the conventional one with nitrous oxide

Lambeth Hospital
London, S.E 11

D G HURTER
CHRISTINA M JONES

BREAD

SIR,—The perennial subject of white or brown bread has recently appeared in a challenging form in a Medical Research Council report by Professor McCance and Dr Widdowson[3] and in an article in *The Lancet* (July 30) by the same authors.

The report describes feeding experiments made in 1947 and 1948 among children in two orphanages in Germany The experimental diets were given for one year and extended in the case of some of the children for another six months This is equivalent in terms of length of life to experiments in rats lasting about two weeks, a length of time not sufficient to exhaust reserves There is no mention of the activities in the daily lives of the children *apparently they were free from hard work* and other stresses

The authors state that the results of the experiments were unexpected because, under the conditions of the experiments, bread made with 70%-extraction flour gave results in terms of growth and health as good as bread made with 100% or 85% extraction flours or with 70% extraction flour reinforced with vitamins

These results would *not* have been unexpected by nutritionists who have had long experience in South East Asian countries where many children are brought up on diets having more deficiencies than *the* analyses show for the diets given to the German children

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1 Bourne J G *Proc. R Soc Med* 1954 47 416
2 Bourne J G, Morton, H J V *Lancet* 1955 i, 20
3 Widdowson, E. M, McCance R A. *Spec Rep Ser med Res Coun Lond* no 287

A study of deficiency diseases suggests that it takes years to exhaust the reserves of vitamins in the human body in those leading sedentary lives, provided their diets are only moderately deficient in vitamins so that they continue to take a considerable proportion of their needed vitamins, but the exhaustion of reserves is far more rapid in persons subjected to hard work and exposure

At one time in Malaya the mortality from beriberi was very high among hard-working Chinese coolies, who were exposed to the weather and lived under overcrowded conditions The cause of the beriberi was highly milled rice, but the disease had a very small incidence among sedentary workers who lived on the same kind of rice, and it did not occur among better class Chinese who were able to reinforce their diets with many other foodstuffs

The death rate among civilians interned by the Japanese in Changi camp in Singapore was little or no higher than it would have been if they had not been interned Although their diets were obviously deficient in several respects there were few if any signs of malnutrition among them at the end of the first year apart from some loss in weight, and many of them were overweight from good living before they were interned, but at the end of the fourth year the majority showed marked signs of malnutrition, and probably few would have survived for another year A very different condition of affairs occurred among the prisoners of war forced to labour on the Burma Siam railway and working under exposure to weather Although their diets appear to have been somewhat more generous than those in Changi camp the majority of them died and the basic cause was malnutrition

Before and during the 1914–18 war there occurred in East Africa an appalling death rate among indentured labourers recruited for railway construction or for the "carrier corps" of the army They were fed almost entirely on maize meal Deaths from malnutrition and intercurrent infections started within three months of recruitment The same death rate did not occur among camp boys having similar diets, light work, and little or no exposure

Some years ago the Medical Research Council sponsored an investigation on scurvy for which 19 men and 1 woman volunteered to take the planned diets They were placed on diets containing not more than 1 mg of ascorbic acid They were divided into three groups, those of two groups had supplements of ascorbic acid, and the 10 men of the third received no supplement Six months passed before there were any signs of changes in the gums, and there were no complaints of ill health that could be attributed to the diets After nine months one man of the third group had a serious heart attack This is a very different picture to that drawn for us by Captain Lind and many other observers of the high morbidity and mortality rates from scurvy in the sailing ships of their times There are records of many seamen being crippled with the disease within two or three weeks of leaving port It appears that the reserves of ascorbic acid in the body are quickly exhausted under conditions of hard work and exposure

In their article (p 210) Professor McCance and Dr Widdowson say "The results were unexpected because general opinion and also scientific opinion had been wrong in laying so much emphasis on the value of high extraction for all persons under all conditions" General opinion is never universal, and scientific opinion would never subscribe to such an exaggeration

Scientific opinion is that there may be circumstances under which bread enters very largely into the diets of a population, and then the majority are likely to benefit by the use of high extraction flour, but where the diets contain ample B-vitamins in other foodstuffs it is unimportant whether the bread is prepared from high or low extraction flour

The war time flour was planned for the
tion hoping that it would be sufficiently
maintain the mental and physical health of th
in mines, in fields, and in factories doing hard
long hours, and for the troops in training
strenuous activities and some exposure
caloric requirements for hard work had to be
bread That there were people leading seden
and requiring less bread who might do as
extraction flour was not allowed to affect the

Table IV on p 101 of the M R C report gives
excretion of B vitamins at various stages of the
ments" At one orphanage on the day of the
ment of the experiment with 70% extraction
amount of aneurine excreted was on an average
by the end of the year it had fallen to 0 20
flavine started with an average of 0 50 mg
0 11 mg At the other orphanage the determin
aneurine are not recorded beyond three and
months, by which time the amount excreted
from 0 30 mg to 0 11 mg These figures may be
tion that there was slow depletion of these
taking place, it is not certain that had the exp
been continued for another two years the result
have been as favourable for 70% extraction
85%-extraction

Both in the report and in the *Lancet* article
statements which show that the authors are
acquainted with the views of other nutritionists.
of the report there appears "As a result the
grown that milk is essential for good nutrition,
only a diet which cannot be made to promote
growth by supplementing it with milk can be
fully adequate" It was long after man had
full physical development in the stone ages bef
entered his diets and then only among pastoral
There have been many races of strong vigorous
who have never had milk except at their mothers'
The gigantic Queen of *Tonga* was a striking
Queen's Coronation Her magnificently develop
nesian ancestors had never had milk after infanc

There appears on p 232 of my book on
Nutrition (3rd edition, 1951) "No particular
of any kind is essential because all the nutrients
man are found both in *animal* and vegetable foo
That has been almost an axiom among nutritio
many years past

Milk is undoubtedly *good* for children, but
essential Fruit is good for us all, but there is
in fruit that is not also present in vegetables

In *their article* (p 210) the authors state
experiments themselves show clearly how imp
is not to generalise too widely from any
carried out within limiting conditions" There
disagreement with that if it means that child
looked after in institutions can thrive as well
bread as on an equal amount of brown bread
diets taken over a period of a year or eighteen
There can be no deduction from the experiments
would continue to thrive indefinitely, nor can
that hard working labourers would do as well
of 70%-extraction flour as on bread of 85%-
flour where a large proportion of the calories
must come from bread

Again on p 210 they state "It is of course
quite possible that little attention will be paid
experiments of ours until we are all dead and
would be difficult now, for instance, for any
tor to go back on the policy of enrichment"
statement contains more than one unwarranted
isation?

The authors had something to do with the
policy of enrichment It was on their advoc
chalk was added to the flour There was not

nent with this because it was thought that the t of calcium needed in human nutrition had been rated.

rently the authors now condemn the "policy of nent" Possibly in respect of the use of synthetic ns the pendulum has over swung in one direction is no reason why it should swing too far in the lirection Some of us will continue to hold the at in many parts of the world reinforcement may best and cheapest way under certain circumstances nditions of making the diets of the poorest classes onally adequate.

y co Cork,
Eire
LUCIUS NICHOLLS

—In his lecture Professor McCance is most ave about the nutritional value of bread of low ion rate. One wonders, however if he is justified in deducing from the results of an experiment ildren, lasting only eighteen months and concerned with growth, that one form of bread is as good as r If the experiment had continued for the life f these children and had included observations n their children, then an improvement or deterioration general health might have been noticed

ou stated in your leading article the advantage of ge to a low extraction rate has not yet been Growth is not the only yardstick by which we neasure health

Berwick.
J C G MERCER

PSYCHIATRIC EVIDENCE IN COURT

—I was recently asked to examine a young woman ertain whether an appeal could reasonably be n psychiatric grounds in mitigation of a series of frauds to which she had pleaded guilty and for she had been sentenced to six months imprison

nd her past history rich in significant psychiatric She was the only child of parents who separated e was three years old Her father was said to have a mental hospital and her mother was described as , immoral cruel, and unscrupulous. According to the she was abused tyrannised and humiliated She eatedly threatened with 'suffocation during her s tantrums and told how ugly and hated she was In ars she asserted she was consistently robbed by her us and parasitic parent, or alternatively if no cash thcoming her personal belongings were pawned She ervous breakdown while at school.

leveloped marked feelings of inferiority and ideas of e and persecution and was subject to severe bouts of ion, obsessional repetitive conduct and auditory ations. She was coerced into a loveless marriage with rican Serviceman by her mother and a divorce followed n she married a man of colour who at times treated ruel fashion.

funds essentially derived from alimony she bought a g house on mortgage but having little experience in atters, she got into serious financial difficulties. She ated out of money which was earmarked for household and furnishings. Her husband thereupon threatened er mother for monies owing by her unless the goods l for their home were forthcoming

s while under this intolerable strain that she signed with a false name to provide household linen, pots and ishes, and the like The offences occurred over a period days. Fourteen cheques were used in all and the amount d was £180 All the goods were recovered; some had n been unwrapped and the receipts were found in her ion She uttered four cheques in the same store in one on and even returned to a shop two days after having a false cheque there

magistrate who passed sentence knew nothing of her tric history on which I decided I would give evidence behalf At the appeal I stressed the essential points gested that the woman was a borderline case of mental who in attempting to reorganise her life and establish ecurity had only succeeded in getting herself more involved I said that she required psychiatric treatment and careful supervision by some suitable older woman There had been no previous offences and a woman friend spoke of her good character and integrity

Her counsel suggested that had the magistrate known the true facts of her history he might well have awarded a less severe sentence or placed her on probation. He pleaded for leniency and a chance for the woman to repair her broken life She had suffered enough and had already paid dearly for her dishonesty Prison could only further distort her already twisted mind

The appeal was dismissed in a matter of a few minutes The unfortunate woman was admitted to Holloway Prison on the eve of Ruth Ellis's execution

The day after my unsuccessful appearance in court in this case, the following newspaper report appeared under the heading 'The 'human magpie' admitted he robbed railway 22 years':

> A 60 year old man who robbed the railways for 22 years, was described at Reading today as a human magpie In a shed at the bottom of his garden were found 1200 articles, weighing 3 tons 13 cwt and worth about £515 which he admitted stealing
>
> The man worked as a chargeman blacksmith on the railway for many years. He was put on probation for a year

How can justice be permitted to operate so inequitably? Was the railwayman lucky and was this woman's punishment deserved or was her sentence unjust? Why were the psychiatric features ignored?

Could not cases on whose behalf psychiatric evidence is called be remanded for a medical report in order to check that evidence? Until such time as adequate psychiatric treatment can be provided for offenders with neurotic disabilities, they should not be sent to prison before their cases have received the most careful medical consideration Prison is meant to punish and deter; not to mutilate and destroy

London W 1
ELLIS STUNGO

TUBERCULOUS LESIONS AFTER CHEMOTHERAPY

SIR,—I am sure that most clinicians will agree with the conclusion drawn by Dr Dick (July 30) that isoniazid is in fact the most valuable drug we have at present in the treatment of pulmonary tuberculosis and should be given in some combination in every case unless intolerance precludes its use Moreover it should be used as with all antituberculous chemotherapy for a long time. I would suggest however that the full therapeutic dose of isoniazid as given by Dr Dick (200 mg daily) is in fact not a full therapeutic dose Isoniazid treatment should commence with at least 8 mg per kg body weight per day and it is only when given in this dosage that the full therapeutic effects become apparent

Dr Dick describes in his conclusions three possible stages of open cavity walls After full dosage of isoniazid many more of the lesions with the completely healed walls which he describes will be seen The difficulty of course is that it is impossible to tell prior to surgery which cases will fall into this category I have been amazed also at the amount of resolution which can occur when patients with what appears to be chronic long standing disease are treated with isoniazid

Dr Dick says it would be interesting to know whether the [tuberculin] reaction is ever reversed after isoniazid treatment of primary lesions There is a recent interesting article by Robinson et al[1] on this subject which while not being final yet, does point out the possibility of reversing the tuberculin reaction to negative with isoniazid therapy

North Carolina Sanatorium,
McCain, North Carolina
CYRIL EVANS,
Staff Physician.

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[1] Robinson A, Meyer M, Middlebrook, G *New Engl J Med* 1955 252 893

ORAL IRON COMPOUNDS

SIR,—I have read with interest last week's article by Dr O'Sullivan and his colleagues I must congratulate them on a careful presentation of very interesting figures I would, however, in view of their references to my work, and as I was the first to introduce ferrous succinate into therapeutics, make the following remarks

Cases refractory to oral iron —Has the phosphate metabolism been investigated in these cases ? It is theoretically possible for an excess of phosphate in the alimentary tract completely to vitiate all iron absorption. Has this condition been excluded, assuming that it does exist ? If it has not been excluded, has any attempt been made to protect the iron administered from interaction with phosphates in order to improve the uptake of iron ? I need not emphasise that iron phosphates are insoluble and ferric phosphate is completely insoluble

Inclusion of ascorbic acid —This is incorrectly termed a ' supplement " It is found that the inclusion of ascorbic acid tends to protect ferrous salts from oxidation This may account for the better uptake of iron preparations administered coincidentally with ascorbic acid We are here, therefore, not concerned with vitamin-C deficiency

The criticism that ferrous sulphate was given for 42 days, compared with ferrous succinate for 24 days —I would make the point that many of us are dealing with *patients requiring treatment* If one has embarked on a particular line of treatment, one is loth to discontinue therapy in the absence of intolerance Some of these cases were obviously improving slowly on ferrous sulphate, which was continued until clinical improvement justified its discontinuance Had ferrous succinate been employed, shorter treatment would have been required

Tolerance —The salient feature here is not whether diarrhœa or constipation of " sufficient severity " was present The criterion should be, is it present at all ? Acceptable forms of therapy should produce no, or minimal, side effects The patient's well being must be considered primarily Home treated cases will only persevere with a form of treatment which does not upset them This is the crux of the matter

I should welcome any observations on these matters

London, W 1 DAVID HALER

PYRETOGENIC EFFECT OF LYSERGIC ACID DIETHYLAMIDE

SIR,—Lysergic acid diethylamide (L S D) has been found by Horita and Dille [1] to possess a pyretogenic effect in rabbits, cats, and dogs when injected intravenously in amounts as small as 0 5 µg per kg bodyweight This action was prevented by transection of the cervical spinal cord or administration of *d* tubocurarine or sodium pentobarbitone Administration of antipyrin, 'Dibenamine,' 'Hydergine,' or dihydroergotamine did not influence the pyretogenic effect, which Horita and Dille concluded was of central origin

L S D is a very potent and specific antiserotonin,[2] but this action does not manifest itself on the central nervous system [3] If the pyretogenic effect of L S D is of central origin we should not expect it to be inhibited by serotonin

We have used 16 rabbits, weighing 2 5–3 kg , divided in two groups All were given 20 µg per kg of L.S.D intravenously Group B were given simultaneously 5 mg per kg of serotonin creatinine sulphate intravenously The rectal temperature was measured by a mercury thermometer The results are summarised in the accompanying table In both there is a significant increase in the injection of L S D The pyrexia does not differ between the two groups, thus showing that in the serotonin does not inhibit the pyretogenic

This supports the opinion that the pyret L S D is of central origin

L S D was kindly supplied by Messrs Sandoz and serotonin by Abbott Laboratories, Chicago

Department of Pharmacology,
Medical Faculty, University of Zagreb,
Yugoslavia

INFLUENCE OF SEROTONIN ON THE L.S D INDUCED PYREXIA IN RABBITS

Group	No of animals	Temp (deg Centigrade) before injection	Temp (deg Centigrade) after injection				
			1 hr	2 hr	3 hr	5 hr	[illegible]
A (L.S D)	8	39 59 ±0 08	41 37 ±0 12	41 20 ±0 06	40 41 ±0 11	40 15 ±0 16	[illegible]
B (L S D + serotonin)	8	39 66 ±0 08	41 24 ±0 14	41 44 ±0 10	40 81 ±0 16	40 49 ±0 18	[illegible]

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1 Horita, A , Dille J M *J Pharmacol* 1955, 113, A29
2 Gaddum, J H , Hameed K A *Brit J Pharmacol* 1954 9, 240
3 Woolley, D W , Shaw, E *Brit med J* 1954, ii, 122

CLINICAL TESTS OF PASSIVE JOINT

SIR,—I agree with Sir Charles Symonds Gooddy (July 16) that testing the sense of motion in the usual way is an indispensable reliable part of the neurological examination there are some differences in performing Although we have to consider the possibility patient may be able to judge movement fr distortion of the skin, as Dr Lee and Mr Browne point out, I feel that grasping the toe laterally little pressure as possible is preferable to dorsal and plantar surfaces, because of the variations in pressure by using the latter method patients will attempt to move their toe up and order to judge the position of the toe, and they instructed to avoid these movements I wa however, by the fact that Lee and Browne your correspondents consider only the great not mention the small toes Yet it is well sense of position, then that of motion, is lost in toes before it disappears in the great toe testing deep sensation only in the great toe and the small toes would appear incomplete decrease the value of the test in a case where the has been found normal in the great toe

Hospital for Mental Diseases,
Brandon, Manitoba, Canada MILO T

ADENOSINE AND THE HEART

SIR,—As I understand from Dr Somló's May 28, the effects of adenosine triphosphate case are attributed to the production of a state similar to that produced by histamine, or insulin

May I suggest another explanation—name, A T P speeds up the polymerisation of actin, the whole muscle, means the relaxation of the Your annotation in the same issue states that phate is the most active member of the group supports my view, since the presence of Mg is vital to the polymerisation of actin (in other the relaxation of muscle) Hence, A T P does not bring about polymerisation, while traces of minimum amounts of Mg—com A T P —increase the polymerisation (and thus enormously

I was very interested in the ideas expressed Somló's letter and your annotation, and in of them I would suggest that the effect of paroxysmal tachycardia may be produced in by the induction of shock and actin polym

Scientific Services Division,
Snowy Mountains Hydro-electric
Authority, Cooma, New South Wales S

SPECIMENS IN THE POST

—We have been asked by the mails branch of the ugh G.P O to draw the attention of practitioners regulations governing the sending of pathological ens through the post The following paragraphs t to the transmission of deleterious liquids or ces by letter post have been abstracted from the ffice Guide

ny such liquid or substance must be enclosed in a le hermetically sealed or otherwise securely closed s receptacle must itself be placed in a strong wooden, or metal case in such a way that it cannot shift about th a sufficient quantity of some absorbent material sawdust or cotton wool) so packed about the receptacle utely to prevent any possible leakage from the package vent of damage to the receptacle The packet so made t be conspicuously marked ' Fragile with care and words " Pathological specimen

ny packet of the kind found in the parcel post or n the letter post not packed and marked as directed at once stopped and destroyed with all its wrappings losures. Further any person who sends by post a ous liquid or substance for medical examination or n otherwise than as provided by these regulations is prosecution.

ough in response to a previous appeal the number kages has been reduced over the past two years, ens are breaking in transit at the rate of twenty onth. The complaint is that such breakages, ng as they do amongst the letter post, contaminate ke unpleasant the handling of the mail.

not suggested that breakages are wholly the fault sender There are however a number of unduly tic members of the medical profession who consider single wrapping of paper constitutes adequate The destruction of wrappings and enclosures) means that in the majority of cases the laboratory are that a specimen has been sent and the sender waiting for a report on a specimen which he is held by the laboratory

mancy Diagnosis Laboratory
Usher Institute,
nder Park Road Edinburgh 9 B M HOBSON

LOWSHIP OF THE ROYAL COLLEGE OF PHYSICIANS

—On p 443 of your Educational Number (Aug 27) her diplomas of the Royal College of Physicians ntioned and it is stated that Fellows are annually at a general meeting of the college unfortunately not the case. The procedure is y fellow may propose the name of a member for to the fellowship then, after deletion of some ames by a committee, the other names are voted he body of fellows. There are no general meetings college only the fellows are entrusted with the adding to their number—and even they can only rom the names that have passed through the of the president s net It is not unfair to regard lege of Physicians as a very limited democracy

W 1. A. PINEY

A BARBITURATE ANTAGONIST

—Dr Leurer (Aug 13) quotes the results of a case iturate (type unstated) poisoning in which there lood level of 58 mg per 100 ml. some 5 days after n He then says: These figures confirm the e of Dr Wright,[1] as opposed to Professor Shaw s that on the 6th day only little barbiturate is he body '

us assume that the barbiturate was phenobar the most common stable barbiturate derivative A blood level of 58 mg per 100 ml means that there was about 24 grammes (384 grains) in the body, as barbiturates are distributed evenly throughout the body water Next apply Dr Wright's rate of disappearance, 15% per day, to this amount We find that this person must have taken over 600 grains of phenobarbitone. As our highest recorded dose has been 100 grains I am not surprised that barbiturate was present 5 days after ingestion I do wonder perhaps whether such a dose was taken or whether one should regard the analysis with suspicion

Department of Pharmacology
University of Melbourne F H SHAW

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[1] Wright J T *Lancet*, 1955 i 1073

[2] Shaw F H *Ibid* p 969

THE UTER AND THE UTERUS

SIR,—I favour an alternative explanation to that given by Mr Burnett (Aug 6) concerning the derivation of uterus.

The word uterus belongs to the sphere of Indo German languages, and its root is related to the old Indian word *udaram* (abdomen) It is not in the nature of men to call so holy and mysterious an organ after such a profane object as a bag made of goat skin

The German word is *Gebärmutter* (*gebären* is related to the English bear) The Slav is *maternica*

'Αδελφός = ἀ + δελφός from δελφύς (uterus) and ἀδελφός is the one which comes from the same (αμα = α-) uterus, and not the other way round This explanation seems to be more logical following the etymology

Zagreb A DIAMANT

TONSILLECTOMY WITHOUT TEARS

SIR,—During the past five years it has been my lot to anæsthetise upwards of 1000 children for tonsillectomy by dissection It was therefore with much interest that I read Dr Gusterson s paper[1]

Like Dr Gusterson, I have tried a variety of premedications The popular barbiturates by mouth I find very unsatisfactory Their effect is uncertain and too often they are vomited by the child before arrival in the theatre Whether the child arrives in theatre asleep or not, it is liable to be confused and uncoöperative and may struggle during induction Crying at this stage is liable to increase bleeding during the operation Even when amnesia is complete, this is outweighed by the other drawbacks. When it is not, memories seem to have a nightmarish quality Postoperatively the children tend to be restless and cry so that additional sedation with an opiate is required

Until recently my cases have normally been premedicated by an injection of pethidine and scopolamine This has proved reasonably satisfactory The great majority arrive in the theatre tranquil and will permit a careful venepuncture with little protest. Vomiting or retching is occasionally produced and a few children become flushed. Postoperatively the children are calmer and quieter than with barbiturates.

I routinely induce anæsthesia in these cases with a mixture of thiopentone and gallamine (' Flaxedil ') followed by endotracheal nitrous oxide and oxygen An armoured tube is used under the tongue-plate.

I have long felt that it would be an advantage if premedication could be given entirely by mouth I am sure that where a child is unduly apprehensive of venepuncture, this is partly due to a painful experience of premedication—and let us face it the pain of an injection varies between quite wide limits, as many adult patients can testify !

I had considered using methylpentynol (' Oblivon) but reports were on the whole unfavourable, and it seemed that atropine by injection would still be required I was therefore particularly grateful to Dr Gusterson for his suggestion that oblivon and hyoscine given by mouth should be used Immediately following the appearance of his paper I got the hospital pharmacist to prepare a supply of oblivon elixir to which hyoscine hydrobromide gr $^{1}/_{100}$ was added to each 5 drachms As a trial a number of tonsillectomy cases were given 1 drachm per stone of body-weight 1 hour before operation, up to about 6 drachms The method was soon extended to all child tonsillectomy cases, and the results so far are most encouraging The original dose is still used In the ward the children take the elixir without protest, and the nursing staff are very much in favour of the method The children usually sleep, but may not They are awake, but calm and cooperative in the theatre Vomiting has been conspicuously absent, probably owing to the hyoscine Venepuncture is easily done with little or no protest and a quiet induction follows There has been no untoward effect on anæsthesia, and respiration seems less depressed than before Return of pharyngeal reflexes after operation is not delayed Postoperatively the children do not vomit and are usually quiet Few have required any postoperative sedation

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[1] Gusterson F R *Lancet* 1955 i 940

I personally began this trial with doubts, for methyl pentynol had not impressed me, and as a result of a previous trial in the same unit there was some prejudice among the nursing staff The addition of hyoscine, however, besides giving satisfactory drying of secretions, has resulted in very satisfactory sedation

Timperley, Cheshire FRANK L ROBERTSHAW

GRAVES'S DISEASE

SIR,—In your columns last November Dr Menof[1] described transient, reversible enlargement of the thyroid in response to intravenous injections of noradrenaline and also during the paroxysmal hypertensive episodes associated with phæochromocytoma Of great interest in this connection is the original description by Graves[2] of three cases of the disease known in this country by his name His description is so atypical of the disease as we know it that it raises some doubt whether any of his three cases was in fact "Graves's disease" He wrote

> "I have lately seen three cases of violent and long continued palpitations in females, in each of which the same peculiarity presented itself, viz enlargement of the thyroid gland, the size of the gland was subject to remarkable variations in every one of these patients When the palpitations were violent the gland used notably to swell and become distended, having all the appearances of being increased in size in consequence of an interstitial and sudden effusion into its substance The swelling immediately began to subside as the violence of the paroxysm of palpitation decreased, and during the intervals the size of the gland remained stationary
>
> In one patient the beating of the heart could be heard during the paroxysm at some distance from the bed The sudden manner in which the thyroid in the above three females used to increase and again diminish in size, and the connection of this with the state of the heart s action are circumstances which may be considered as indicating that the thyroid is slightly analogous in standing to the tissues properly called erectile"

He made it clear that he did not consider the primary lesion to be in the thyroid by concluding

> "It is obvious that if palpitations depending on functional disease of the heart are capable of exciting this swollen state of the thyroid, we may expect to observe the tumefaction of the gland also where the palpitations depend on organic disease of the heart"

He then proceeded to retail a case described to him by a friend, which seems typical of that condition which we know today as Graves's disease Exophthalmos, which is not mentioned in Graves's cases, was present in this patient He ascribed the clinical manifestations here, however, to primary organic heart-disease

We have not found in any other descriptio disease anything resembling Graves's accou rapid fluctuations in the size of the thyroid however, bear a very close resemblance to the description by Bauer and Belt[3] of a case chromocytoma

> "The patient felt a swelling in her neck her heart began to pound, she shook and experien weakness and fatigue, her skin became very pale, her lips and finger nails became blue, her markedly enlarged, its contours being clearly vis whole gland was bulging The attack lasted The swelling of the thyroid disappeared comple few hours"

It is interesting to speculate whether Graves own three cases, was describing the clinical phæochromocytoma for the first time rather th disturbance of thyroid function which no his name

Nuffield Department of
Clinical Medicine
Radcliffe Infirmary, Oxford

K B TAYLO
J H B W

SUBPERIOSTEAL OR INTRA-OSSEOUS
OF THE CLAVICLE

SIR,—Cowdell[4] states that intra osseous li expansion of the cortical outline of the affected extremely rare He could only find two case which the medullary origin of the lesion appear He reported a further case of intra osseous posterior end of the left first rib Dickson and state that intra osseous lipomata of flat bones, larly vertebræ, are not infrequent, although in they are rare

Accordingly I should like to report a case of the left clavicle

The patient, a man aged 65, was admitted to wards on April 11, 1948, with emphysema, chronic and myocardial degeneration. As an incidental was a painless, spherical swelling, about 1$^{1}/_{2}$ in. in of firm elastic consistency, arising from the surface of the right clavicle in the region of the Apparently the patient had been aware of its prese past ten years, during which time it had gradual increasing in size

The tumour was removed under local anæsthesia, transverse incision over the middle third of the clavi tumour was found to arise by a narrow pedicle mainly of fibrous tissue with a very little cancel Subsequent section showed "Simple lipoma fragment of cancellar bone, containing actual the region of the clavicle"

Hackney Hospital
London, E 9

R F

MITRAL INCOMPETENCE IN F
AURICULAR FIBRILLATION

SIR,—The work of Dr Daley and his colle makes a notable contribution to our unde left auricular pressure curves I fully agree remark that the interpretation of these curve difficult[6] I have felt jets of regurgitation "normal" mitral valves both in laboratory an in human subjects with auricular fibrillation, dentally, also in laboratory animals with sinus (This latter phenomenon was distinguishable former in that aortic compression did not be c–v waves in the tracing, the A wave remained nd c and v separate) Evidence of regurgitation and gree depends on the sensitivity of the surgeon's and is I believe, reliable but objections have raised on the grounds that pericardiotomy and tomy invalidate the test The use of Evans blue ley and his colleagues is a welcome and neat tive technique

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[1] Menof, P *Lancet* 1954, ii, 996

[2] Graves, R J *Lond med surg J* 1835 7, 516

[3] Bauer, J, Belt, E *J clin Endocrin* 1947, 7, 30

[4] Cowdell, R. H *Brit J Surg* 1954, 41, 664

[5] Dickson, A B, Ayres, W W Mason, M. B., *J Bone Jt Surg* 1951, 33A 257

[6] Wilson, V H, Vetten, K B, Crawshaw, G R, *S Afr J med Sci* 1954, 19, 1

[7] Crawshaw, G R., Wilson, V H, Kreel, L, Borman, J *Brit J Surg* 1954, 42, 319

return to the main theme of the association of incompetence and auricular fibrillation in patients no 'organic incompetence of the valve it is ting to speculate on a somewhat similar phenom which may occur at operation on patients who have nitral stenosis with auricular fibrillation Mitral tation is more easily produced by valvotomy in tors than in patients with sinus rhythm The less able outlook in the long term follow up of patients uccessful valvotomy who were fibrillating at the f operation or who fibrillated afterwards compared hose who maintain sinus rhythm, may be in part the development of mitral incompetence It may le to complete mitral valvotomy in fibrillators is reason I become loth to continue cutting a commissure as soon as I feel the slightest jet of itation.

nesburg General Hospital G R CRAWSHAW

IE PROBLEM OF MULTIPLE SCLEROSIS

—Discussing the tendency for early symptoms of le sclerosis to spread according to contiguity cture, Dr McAlpine, in his article in your issue of quoted Williamson s observation on the similarity n the pattern produced by the application of a dye to the cut surface of the spinal cord and the of development of plaques (1903) He also quotes currence of a ring formation in the early plaques ltiple sclerosis, described by Hallervorden and 1933 These authors attributed this type of n to diffusion outwards from a central focus as -called Liesegang phenomenon

Dr McAlpine stressed the viewpoint that the theory is the most acceptable to the clinician tiology of multiple sclerosis and an infection e responsible for sensitisation in the allergic I would like to draw attention to Hallervorden s s seen by the neuropathologist[1] Proceeding Liesegang phenomenon, Hallervorden compares ues in multiple sclerosis, especially in the con orm, with the ring spot diseases of plants He s the pathological findings consistent with a iology ascribing the formation of focal lesions mple or rhythmic diffusion of a steadily multiply ctive agent. In the plant diseases mentioned virus has been identified Adopting the clinician's as expounded by Dr McAlpine, and Haller s findings as a base for further research could ery helpful in understanding of the ætiology of sclerosis

l for Mental Diseases,
n Manitoba, Canada MILO TYNDEL.

MORPHINE ANTAGONISTS

-In view of the reports that have recently d concerning the antagonistic actions of 2 4 -5-phenyl thiazole and ββ methyl ethyl gluta ('NP13') to the depressant actions of morphine narcotics, and the barbiturates, we describe here periences with these compounds.

have been studying the action of antagonists to nervous-system depressants, by measuring the of an antagonist to restore to normal the depressed tory volume in the rat The doses of the depressant een adjusted to give a 50% depression in respira inute volume, after which the antagonist under tration is administered intravenously intra eally or intramuscularly

The thiazole and glutaramide have been tested separately and in combination against the respiratory depression produced by quinalbarbitone ('Seconal') and pentobarbitone A larger series of studies were carried out examining the activity of the thiazole against morphine-induced depression (in a few instances methyl morphinan was the depressant used) In all of these studies it was noted that the compounds were ineffective in stimulating the depressed respiration unless they also produced a heightened reflex activity which very frequently passed into frank convulsions, or convulsions occurred with the first sign of respiratory stimulation It has been our conclusion that in the rat these materials exerted their stimulatory effects by virtue of their central convulsant action

We have not examined the effect of these two substances upon humans depressed by morphine like materials or by barbiturates, but Shulman et al.[1] reported that some of their patients poisoned with barbiturates and treated with thiazole and glutaramide exhibited excitement and restlessness to a degree requiring medication with a barbiturate. In another paper,[2] it is pointed out that high doses of the thiazole given to patients caused restlessness, muscular twitching a gasping type of respiration and even vomiting All of these observations suggest that in man as in the rat, the antagonistic actions of these substances against central depressants are the resultant of convulsive properties similar to those of central nervous system stimulants, such as picrotoxin rather than a specific antagonism as with morphine and nalorphine.

It is not our intention to suggest that these compounds should not be employed but rather to point out the possibility that in man they are potential convulsants and that therefore those who are using them should be on the lookout for signs indicating this activity The value of these agents in the treatment of overdosage of barbiturates and of morphine like drugs will become apparent only when a sufficiently large group of patients have been treated with them and when these results are compared with the excellent results obtained from conservative methods of therapy, with which mortality rates as low as 1 6 and 2%[3 4] have been reported in a larger series of patients than those reported by Shulman et al The mortality rate reported by these workers was not any lower than that obtained with the best forms of conservative therapy

Samples of the two antagonists were very kindly given to us by Dr Shaw and recently a larger sample of the thiazole (Dapazole) was supplied by Dr Victor A. Drill of G D Searle & Company

Department of Pharmacology
Yale University School of
Medicine New Haven
Conn U.S.A.

DESMOND D BONNYCASTLE
P J COSTA

IRRADIATION NEPHRITIS

SIR,—Dr Smith and Dr Williams (July 23) in reporting one case of irradiation nephritis suggest that radiotherapists are still insufficiently aware of this complication of treatment

It should be emphasised that X ray therapy to the abdomen makes a major contribution to the chances of survival of patients with certain radiosensitive tumours Thus Boden and Gibb[5] reported that with prophylactic abdominal irradiation the 5-year survival rate for early cases of seminoma testis could be raised to 80%

Kunkler Farr and Luxton[6] in their study of radiation nephritis, advised that renal function and location should be determined before X ray treatment of the abdomen was undertaken I think that radiotherapists in this country are well aware of this complication and of the limits of renal tolerance to X rays

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[1] Nervenarzt 1952, 23, 1

[1] Shulman, A. Shaw F H., Cass N M. Whyte H M *Brit med J* 1955, i 1238.
[2] Shaw F H Shulman A. *Ibid*, p 1367
[3] Clemmesen, C. *Acta med scand.* 1954, 148 83
[4] Nilsson, E *Ibid* 1951 139 suppl. 253
[5] Boden G., Gibb R *Lancet*, 1951 ii, 1105
[6] Kunkler P B Farr R F Luxton, R. W *Brit J Radiol*, 1952 25 190

In the case of the nephroblastoma reported by Dr Smith and Dr Williams it is clear that some risk of renal damage had to be accepted if the child was to have any chance of survival Nevertheless, it would have been more informative if the dose distribution in the region of the remaining kidney had been estimated

In conclusion I would like to draw attention to the recent work of Mendelsohn and Caceres [7] on experimental radiation nephritis in dogs, from which it appears that the biological dose level required to produce " nephritis " is remarkably similar in men and dogs

Birmingham, 15 P B KUNKLER

THE DEATH PENALTY

SIR,—Is Dr Whitty right ? The primary objects of the death penalty are (1) to punish the criminal, and (2) to prevent the culprit from repeating the offence Whether capital punishment acts as a deterrent is secondary and open to discussion Statistics do not seem to help Common sense suggests that it might

London W 1 HAROLD KISCH

COLLECTION OF URINE SAMPLES

SIR,—The collection of urine samples from infants, mental defectives, and uncooperative children sometimes presents considerable difficulties and makes the rapid sampling of a large hospital population administratively difficult We have developed a very simple technique which has been used with considerable success both at this hospital and at the Sick Children's Hospital in Toronto

It consists in placing on the diaper a folded sheet of 'Kleenex' or other cellulose tissue so that it will be held near the urinary meatus When the child's napkin is next changed, the kleenex is sent to the laboratory in a jar and the presence of phenylpyruvic acid may be detected by simply placing a few drops of ferric chloride solution (freshly prepared 5%) directly on the kleenex In a positive case, a greenish ring will form and spread along the surface of the tissue Further routine investigation may be carried out by placing the wet tissue in a 20 ml syringe and expressing the urine from it by squeezing the tissue with the syringe plunger

We have not found that the paper gives any reaction for sugar, albumin, or blood when this method is used

Ontario Hospital,
Smith Falls, Ontario,
Canada L A KERWOOD

IF I WERE A MINISTER OF HEALTH IN ASIA

SIR,—Mr Keeny's article of July 2 not only gives useful advice to an Asian minister of health, but also rouses the interest of many young men like myself who go abroad to gain experience I suggest that reprints of his article should be distributed to the health departments of all the countries concerned and also to the organisers of the United Nations agencies, the British Colombo Plan, the F.A O , and other similar organisations

Though money is important in executing the health schemes, a lot can be done with public support This requires widespread propaganda I can say with personal experience that in India villagers come forward with men and material once they understand the significance of a particular object Many roads, schools, and public works are being built as a result of this public support So far health matters and hospitals have not received the emphasis due to them

Mr Keeny rightly says that the men who get special training should be used for that purpose for which they are trained A friend of mine, after a training in pathology, was sent to a remote hospital where he did only a little pathology, but had to do other things for which he had no special training An ophthalmologist had to devote most of his time to being a general
Unfortunately in spite of a scarcity of
incentives are given to young doctors to go
and their remuneration is too low

Every region has its own particular problems
should be encouraged to put forward new
work should be rewarded Frequent conferences
be held Promotions should be according to
than the length of service

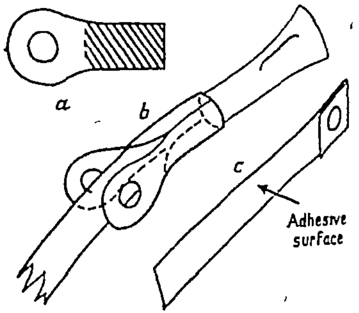
Lastly, all departments concerned should
deal with their correspondence I know of a
recently applied for four appointments,
there was a delay of three months, and from
there has so far been no acknowledgment.

Withington Hospital,
Manchester, 20 HARI

A MODIFIED TIEMANN'S CATHETER
BLADDER DRAINAGE

SIR,—A standard Tiemann's catheter is
suitable for the treatment of urinary retention
softer catheter, such as a Foley's, which is self
because of the greater facility with which
marked urethral obstruction Unfortunately,
replacement and adjustment are often necessary
tain it in position for prolonged continuous
and this is a source of much discomfort for the

Adhesive strapping around both penis and
method of fixation, soon becomes moist and allows
to slip out completely or sufficiently to cause
also has the disadvantage that the end of the penis
thus masking signs of urethritis or balanitis that
present An alternative of a rubber catheter
infallible in preventing slip, especially with the



that result from a patient's movements in bed
the band round the penis is narrow and of
Another method sometimes used is that of putting
pin through the catheter, and tying the dressing to
is a possible source of leakage, it can press against
and may come undone particularly in the case of
conscious patient who is not really aware of his

The following modification, designed to
these difficulties, is easily and cheaply made,
ordinary bicycle puncture outfit

Two pieces of tyre patch are cut as shown at
accompanying figure Then, exposing *only* the
in the diagram, they are fixed to the catheter as at
can be held in place until firm with a turn of
and the remaining area of stickiness
french chalk.

From $^{1}/_{2}$ in adhesive tape two strips are cut (c),
are fixed one on each side of the shaft of the penis,
perforated ends lie level with the glans They are
with a few turns of 1 in adhesive tape round the
catheter is held to this dressing by two pieces of
tied with a bow or other suitable knot, through
priate loops The dressing need not be
catheter has to be removed temporarily

This catheter has proved satisfactory in use
stands sterilisation by boiling, and it causes the
of discomfort to the patient

Paddington General Hospital,
London W 9 ROBERT

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[7] Mendelsohn, M. L Caceres, E *Amer J Physiol* 1953, 173 351

Obituary

ALBERT JAMES WALTON

V O MS, B.Sc Lond., F R C.S, F.A.C.S., F G.A.

over fifty years Sir James Walton has been part London Hospital His friends and colleagues, they knew him as a brilliant student or as a surgeon of great and solid reputation, will all er him for his many acts of personal kindness fessional service

as born in London in 1881, the son of Charles k Walton and he was educated at Framlingham But it was only after he began his medical at the London Hospital that he recognised his lities. For the first year or two he was content Conjoint student", but as scholarship after scholar s awarded to him he began y in earnest, and while he king for the Conjoint finals back to the school room to London matriculation He nothing to interfere with his d he played no games But vard appearance was decep- masked remarkable muscu gth P H M B relates how dent at the London in the up days he saw Walton ip the captain of the vic XV who had inadvertently on his toes throw him over lders and sit on his head had any idea that this bespectacled student who penly indulged in any form was capable of such an ing performance. His fitness without benefit of continued Nobody else has ever celebrated retire- om the active staff by g a long arm balance on his g table !

[Elliott & Fry

qualifying in 1905 he held nost of the resident appoint the London His capacity work was enormous, and while receiving room job which then meant at least ten hours a day of s work—he took, as a mere sideshow the London th honours. H S as a fellow registrar saw nings of Walton s surgical technique It was it of infinite care and wide study From the t he kept full notes of every case he ever saw: ery end he kept them in the most perfect order were the real basis of his work He was not ho cared to learn from others He had to find thing for himself, and he spared no effort to ld ground. I think it was in 1907 that my wife ok him over to Belgium for the first holiday he had The fortnight cost us each £7, including class fare from St. Katherine s Dock to Ostend d return He had never been on a steamer t was very rough and I believe he actually the inevitable result ! It was a new experience" assing the higher surgical examinations Isaak" ther junior appointments at the London as well as a resident appointment at the Albert spital under Sir Patrick Manson, before in 1913 d the staff of the London as assistant surgeon

first world war, as a captain in the R A.M.C he iched to the 2nd London General Hospital ristically he seized the opportunity to study at d cases of trauma to the nervous system. His art in energy and zeal was George Riddoch and they made a major contribution to spinal-cord which Walton in 1919 chose as the subject of erian lecture at the Royal College of Surgeons

the war he served on the staff of the Poplar for Accidents, the Evelina Hospital for Children men s Hospital and the Victoria Hospital, However, he soon recognised the value of concentrating his energies and time for the study of surgical problems at one hospital, and he gradually confined his hospital practice to the London, where he organised a follow through department—at that time a new venture in hospital practice—to check the results of his operations. He was insistent that the days when a surgeon only required to know how to operate are long since past, and now one of his most important functions is to decide when to operate Thanks to his own careful records he was able to speak in surgical debates with particular authority His opinion as a consultant was eagerly sought, and he made many original contributions to surgical literature, including his *Textbook of Surgical Dyspepsia* (1923), his oration to the Medical Society of London on carcinoma of the stomach (1930) and his Bradshaw lecture to the Royal College of Surgeons on gall-stones (1939) Gastro-enterology was his special field, but his interests were wide, and he partly wrote and partly edited his well known *Text book of Surgical Diagnosis* (1928) He also had considerable experience in the surgery of the thyroid gland and was associated with Dr Donald Hunter and Prof H M Turnbull in their work on parathyroid tumours.

In the 30s his theatre at the London Hospital was a natural meeting place for visiting surgeons from abroad. Starting promptly on time he would deal skilfully and speedily with a variety of cases, mostly in the upper abdomen. As an operator he was a superb craftsman with a mastery of tech nique that resolved the most baffling masses of adhesions and lesions. Take no thought for the pathology till the anatomy is restored" was his guiding principle as the viscera disentangled themselves under the gentle strokes of his scalpel. " Qu'il est sûr de son couteau ! was one visitor's comment. Speed was essential in Walton s day, and his operations were astonishingly rapid but only because he made no unnecessary movements He never hurried and he used only simple instruments, especially the straight needle for which he was famous. It is not surprising that he had the largest experience at that time of the reparative surgery of the common bile-duct, for he was at his best in a desperate situation Make no haste in time of trouble, he would say and his assistants would breathe a little more easily as he dissected in the hilum of the liver

In turn he visited American and European clinics and he was a fellow of the American College of Surgeons and the Academie de Chirurgie de Paris as well as a chevalier of the Legion d Honneur At home his skill was recognised by his appointments as surgeon first to the Royal Household and then to King George V, Queen Mary, and King George VI, and later as extra surgeon to Queen Elizabeth. In 1935 he was appointed K.C.V.O He also held office as president of the Association of Surgeons, of the Medical Society of London and of the surgical section of the Royal Society of Medicine, and as vice-president of the Royal College of Surgeons of England

In the second world war he joined the Home Guard as a private soldier but he was soon attached to Southern Command as a consultant with the rank of brigadier On his retirement in 1946 he took up the scientific investigation of the structure of semi precious stones, the collection of which had for long been his hobby He wrote papers on their crystalline structure, invented an apparatus for the rapid determination of their specific gravity, and was elected chairman of the Gemmological Association and president of the Association of Gold smiths in recognition of his work Of his continuing energy and vitality T H S writes: "His erect and alert figure almost springing down a corridor or street, could be recognised from afar He never seemed to have an idle moment His conversation ranged from surgery to trees from precious stones to botanical drawings, and any time spent in his company was both an entertainment and an education There can have been few surgeons who have exuded enthusiasm and retained their youthfulness for so long "

" He acquired neither conceit nor pomposity " (writes H L T), " and retained to the end a certain childlike simplicity He had a generous disposition and throughout his professional career he never exhibited envy or jealousy of others "

H T likewise writes of Walton's personal outlook as one of kindliness and simplicity, and abhorrence of pretentiousness " His dressers will remember first his unfailing courtesy to the nurses and his kindness to his juniors, then his shrewd clinical analyses, but especially his kindly word of explanation and encouragement to the patient before he moved on to the next bed He delighted in his own physical fitness, making it a rule always to walk home after a ceremonial dinner, and spending his weekends in the open air tending the trees on his estate in Sussex which he loved The stability and quality of the man astonished those about him as he calmly diagnosed the illness that would kill him, faced its implications, and endured its progress with a quiet philosophic acceptance of the end of a life of hard work and fulfilment " " His characteristics," in the words of an old friend, " were his great enthusiasm, his zeal for perfection, and his unending gentleness and kindness of heart But above all there was his great courage "

He died on Aug 27 at his home in Sussex Mary Trevett, whom he married in 1909, died in 1953 Their son, who is a surgeon, a daughter, and his second wife, Renée Carrington, survive him

ARTHUR RUPERT HALLAM

M D Edin , F R C P

Dr Rupert Hallam died at his home in Somerset on Aug 29, at the age of 77 He will have as his memorial the department of dermatology of the United Sheffield Hospitals, which was named after him in 1949 as a tribute to his thirty-three years' service as honorary dermatologist to the Sheffield Royal Infirmary

His association with the Royal Infirmary dated from his childhood, for he was the eldest son of Dr Arthur Hallam, a general practitioner in Sheffield who was honorary surgeon to the hospital He was educated in Germany and at the Sheffield Grammar School, and received his medical training at Edinburgh, where he graduated in 1901 He then served as a ship's surgeon, and for several years held house-appointments at the Sheffield Royal Infirmary His intention was to join his father in general practice, but he was introduced to dermatology by Dr W T Cocking, who was then dermatologist to the Royal Infirmary, and he took over the care of the skin patients during Dr Cocking's long absence through illness He was proposing to study dermatology further on the Continent, but on Dr Cocking's death he succeeded to the position of honorary dermatologist in 1911

As the most junior member of the staff Hallam was allotted also the duty of supervising the radiological department, which was at that time in its infancy, and he continued to practise diagnostic radiology until 1925 This almost chance association with radiology was of the utmost value to him when superficial radiotherapy became one of the tools of the dermatologist, and a legacy of this association is that at Sheffield the superficial X-ray therapy of skin patients remains in the hands of the dermatologists

During the first world war he served in the Royal Army Medical Corps, attaining the rank of major After the war, he proceeded to build up his department of dermatology, and in the late 1920s he present department incorporating many ide years ahead of their time

Well aware of the dangers of practising m spent many of his holidays visiting clinics tinent and he attended the International C Dermatology in Budapest and Copenhagen. original member of the British Association of logy, of which he became president in 19 esteem in which he was held by his coll recognised when he was elected an honorary the British Association of Dermatology He founder member of the North of England Der Society and its second president, and a regular tor to the meetings of the dermatological sec Royal Society of Medicine He became M.R.C.P and was elected F R C P in 1940 He held that logist should be first and foremost a general p

Hallam was renowned for his punctuality, handsome and upright figure could be seen outpatient department on the stroke of 2 o reserved, fastidious, and rather awe-inspiring aroused enthusiasm by his teaching, and no l six of his assistants have been spurred on to consultant dermatologists. He strongly belie research should be devoted to common diseases was best known for his contributions on pop caria, chilblains, and psoriasis At a time men expect to ease off, he was faced with department throughout the second world inadequate assistance, and he took on the visiting dermatologist to the Derby Royal To add to his difficulties, the consulting room had shared with several of his oldest friends for one years was destroyed by enemy action

An artist of considerable merit, he Medical Art Society and, after his retirement, Falmouth Group of Artists Even in his later paintings displayed a freshness and vigour his age The self-portrait here reproduced is of his skill Another pastime which he took retirement was sailing He was proud of to handle a small sailing dinghy when over 70, and he became an enthusiastic member St Mawes Sailing Club

" Hallam's shy and reserved manner," writes " perhaps prevented even wider recognition contribution to British dermatology, but th who had the privilege of working closely realise his greatness and count it a great honour been numbered amongst his friends."

J C , looking back over more than forty friendship, says

> I first met him in 1912 and we became col joined the staff of Fir Vale Hospital (now General Hospital) as radiologist in 1915 He interested in dermatology, and from the first he of the wards for diseases of the skin in addition to logical work. He gave up radiology in 1925 dermatologist to the hospital until he retired
>
> No one could wish for a better colleague. He himself where the welfare of the sick was con request for help at any time was cheerfully met. he was quiet and reserved, but once you knew true friend He loved walking in the country, back with gratitude and pleasure to many pleas in Derbyshire and also in Switzerland where holiday together Until this year he was able to his favourite hobby, but advancing years comp restrict his travels to three or four miles. In his me he said he felt perfectly well and enjoyed limitations

Dr ANDREW TOPPING

Sir Philip Manson-Bahr writes

Although I had retired some years before the Andrew Topping as dean of the London School of and Tropical Medicine, yet I am impelled to impressions of him, not only as a man but also of this important office Having served under hool since its early days, I would rate him high in this shed company He did everything in his power to he interests of public health, and in doing so he did ice to the claims of tropical medicine the world re of which he freely acknowledged During his avels abroad, and especially to West Africa, he had vitnessed many examples of the victories of tropical in the field It was generally felt that in his person a vital link which bound the staff of the school to orkers everywhere in the tropics He entertained a rsonal interest in all the students and workers in the nd was tireless in his efforts to promote good fellow ngst them. It was this social instinct which led him the school Association which has had such success in past students of all nationalities

w Topping like his fellow Scot Andrew Balfour be remembered as a great human personality who l his health and eventually his life in his labours to the doctrines of public health and tropical medicine Britain and throughout the Commonwealth and

yself I record with pride and gratitude the lead that gave to the erection of a memorial at Old Meldrum, shire the birthplace of Sir Patrick Manson, the f tropical medicine and the founder of the London Tropical Medicine in July 1954

ther tribute comes from Dr H Zborowski

ld like to say on behalf of myself and my Polish om UNRRA s displaced persons operation in Germany h we regret the death of Dr Andrew Topping As of the medical division of UNRRA s European regional London, he was well known to us as a man of noble and outstanding qualifications for his important he health and relief services of the European D P s were built up in a rapid energetic and effective der an experienced directorship—thanks to Dr and his co workers in London and their knowledge roblems involved The results were evident in the n of communicable diseases in health education, neral hygiene in the displaced persons camps and the vices. His handling of the difficult international personnel proved his excellent judgment.

LORD HORDER

MEMORIAL SERVICE

emorial service held at St Martin in the Fields last Sir Henry Dale O M gave an address in which he ord Horder

> who are able to be present here today or who are person ented in this assembly from the highest in the land to the of us, are but a proportion of a much greater number in of life and in widely scattered places who remember with admiration and with a warmth of personal affection, what de to do for so many by the use of his great and richly re of knowledge and experience by the keen swiftness of hen ion and by the spontaneous warmth of his friendly d understanding to give them enlightenment or reassur- speed the recovery of health or to make easier what will had to be borne "

son was read by Dr Geoffrey Bourne and a passage rim s *Progress* by Sir Malcolm Sargent

orial service for the late Dr Stanley Barnes will be he Cathedral Church of St Philip Birmingham at Wednesday Sept 14

Appointments

A. F. M., M.D. Edin. F R.C.S.E consultant surgeon, more Hospital, Edinburgh

KATHARINE M. H. M.B Lond, F.R.C.S. consultant Bruntsfield Hospital for Women and Children, burgh.

I W D M.S Lond F R.C.S. part time consultant on, Mount Vernon Hospital Northwood

L J., M D Lond., M.R C P asst. physician (consultant) Vale Hospital for Nervous Diseases London.

H., M.B Lond., F R.C.S E. : senior casualty officer South is district H M.C.

L. R. B., M.B. Lpool M R.C.P : consultant physician, pool Stanley Hospital

Notes and News

COLLEGE OF PHYSICIANS AND SURGEONS OF SOUTH AFRICA

THE constitution of the new College of Physicians and Surgeons of South Africa has now been decided [1] In October 1950 the federal council of the Medical Association of South Africa adopted a recommendation calling for the formation of such a college and the council later appointed for this purpose a subcommittee which prepared a draft constitution Meanwhile the idea of a South African college had been placed before all doctors in South Africa, and those interested were invited to become founders. A meeting of founders was held in May 1954 and the federal council holding that thenceforth the college should manage its own affairs, had previously discharged its subcommittee A steering committee set up at the meeting of founders has modified the draft constitution in accordance with decisions at that meeting The steering committee will guide the affairs of the college for the first year of its existence Time has been allowed for the enrolment of associate founders and in due course an election will be held for the first elected council. One of the objects of the college is : 'To conduct examinations of candidates for admission to the College and/or such other examinations in the various branches of medicine, surgery and the allied arts and sciences as may from time to time be deemed appropriate.

MENTAL HOSPITALS IN SCOTLAND

THE General Board of Control for Scotland (the body responsible in Scotland for the supervision of mental hospitals and of institutions for mental defectives) last week issued its report [2] for 1954 the first separate annual report which it has published since 1938

At the end of 1954 there were over 25 000 patients in mental and mental-deficiency hospitals in Scotland (about 40% of the total number of patients in all hospitals) and more than two-thirds of the patients admitted to mental hospitals were voluntary as compared with one-third in 1938

Commenting on this significant trend, the board says that the public are becoming increasingly aware that modern methods of treatment such as electro therapy insulin therapy and leucotomy offer in many cases increased prospects of early recovery or of amelioration of symptoms.' Other factors which have contributed to reducing public prejudice against mental institutions have been the improved amenities (television, libraries, hairdressing facilities for women, brighter furnishings and decorations, and canteens for patients and for visitors, along with more attractive visiting rooms) better food and the introduction of the open door system' either completely or in part

The board points out that although many patients are now being treated successfully in outpatient clinics who would otherwise have required inpatient care there are still accommodation difficulties for institutional treatment and the lack of junior medical staff and the shortage and poor recruitment of nurses continue to present serious problems.

PETHIDINE

THE Ministry of Health has been asked by the World Health Organisation to bring to the attention of doctors the views of its Expert Committee on Drugs Liable to Produce Addiction on the risk of addiction to pethidine and the need for the same care in its use as with morphine The expert committee considers that an important factor in the development of pethidine addiction has been the attitude of physicians towards the drug based on the widespread belief that it is less dangerous in this respect than morphine The expert committee is convinced that experience with the drug both in experiments and in clinical practice is contrary to this belief it is of the opinion that as a potential addicting agent pethidine is no less dangerous than morphine that its use should be undertaken only with full realisation of this danger and that its administration should be approached with the same attitude and attended by the same precautions as are recognised for morphine

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[1] *S Afr med J* 1955 29 761

[2] Annual Report of the General Board of Control for Scotland for the Year 1954 H.M Stationery Office 1955 Pp 18 1s

THE EDINBURGH SURGEONS' JOURNAL

In introducing the new *Journal of the Royal College of Surgeons of Edinburgh*, Prof Walter Mercer, the president, says that its aims are to bring fellows all over the world into closer touch with one another, to report lectures delivered in the college, and to publish articles of surgical and general interest, together with news of college activities The publication of this inaugural issue, dated September, closely follows the celebration last June of the 450th anniversary of the foundation, when the Duke of Edinburgh, patron of the college, was elected to an honorary fellowship The journal is handsomely produced and illustrated, and this issue contains a fitting tribute to Sir Henry Wade, president from 1935 to 1937, who died earlier in the year. Our good wishes go to the editor Mr John Bruce, vice president of the college, for the continued success of this venture

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Royal Institute of Public Health and Hygiene

Prof G P Crowden will give the Bengué Memorial Award Lecture on Tuesday, Oct 18, at 5 P M, at the Institute, 28, Portland Place, London, W 1 He will speak on Environmental Factors affecting Comfort, Health, and Working Capacity Mr Harold C Edwards, surgeon to King's College Hospital, will deliver the Blackham lecture at the institute on Thursday, Nov 17, at 5 30 P M His subject is the Contribution of War to the Advancement of Surgery

Royal Statistical Society

The former study circle on medical statistics has now been reconstituted as a full section of the society Membership is open to all fellows of the society, others wishing to become members of the section, for an annual subscription of 10*s*, should apply to the hon. secretary, M P Curwen, Department of Medical Statistics, St Bartholomew's Hospital, London, E C 1 Meetings will continue to be held on the last Tuesday of the month at the Westminster Medical School, Horseferry Road, S W 1 The opening meeting of the new session will be at 6 15 P M on Sept. 27, when Dr J O Irwin will describe a Study of the Physiological Effects of Hot Climates

Nutrition Society

The society is holding a symposium at the National Institute for Medical Research, The Ridgeway, London, N W 7, on Saturday, Oct 15, on Energy Expenditure in Man The chairman will be Prof R C Garry, and the contributors will include Prof C G Douglas, F.R S, Mr H S Wolff, Dr O G Edholm, Dr R Passmore, Dr J V G A Durnin, and Mr H R Noltie Further particulars may be obtained from Dr R J L Allen, the hon. programmes secretary of the society, c/o Beecham Foods Limited, Brentford, Middlesex

British Standard for Scalpels

A draft British Standard for surgical scalpels has been prepared and is now being circulated to industrial organisations and others concerned Comments are invited, and should be sent to the British Standards Institution, 2, Park Street, London, W 1, before Oct 7

Tuberculosis Educational Institute

A postgraduate course on tuberculosis for general practitioners will be held at the Royal Berkshire Hospital, Reading, on Saturday and Sunday, Oct 22 and 23 Further details may be had from the Institute at Tavistock House North, Tavistock Square, London, W C 1

Course in Hospital Catering

London teaching hospitals and other hospital authorities in the four Metropolitan regions are invited by the Ministry of Health to nominate candidates for a year's training as catering officers King Edward's Hospital Fund for London has offered to reserve four places again in their 1956 course Application forms may be had from the principal, School of Hospital Catering, St Pancras Hospital, N W 1

Royal Appointments

Surgeon Rear Admiral D Duncan has been appointed an honorary physician to the Queen, in succession to Surgeon Rear Admiral R W Mussen Surgeon Rear Admiral E T S Rudd has been appointed an honorary surgeon to the Queen, in succession to Surgeon Captain A. H Harkins Surgeon Captain J V Williams has been appointed an honorary physician to the Queen, in succession to Surgeon Rear Admiral J Hamilton

Salaries of Medical Superintendents

The salaries of whole time medical superintende wholly in administrative duties have been rai at each point, and the scales now range from £1 £1700–1900

Experimental Research into Problems of Agei

The Trustees of the Ciba Foundation invite submit papers on research relevant to basic ageing, for awards for 1955–56 Further det obtained from the director of the Foundation, 41, Place, London, W 1

Library Association

On Tuesday, Sept 20, at 7 P M., the medical the association will hold a meeting at Chaucer Ho Place, London, W C 1, at which Lieut Colonel F director of the Armed Forces Medical Library, Wa will speak on Problems of Medical Index Publishi

Mobile Telephone in Hospital

The hospitals where mobile telephones have been for the convenience of patients now include Pet Memorial Hospital (*Peterborough Standard*, Aug. 1 The instrument, which is in the casualty ward, a coin box similar to that in a telephone kiosk, wheeled anywhere in the ward and plugged in.

Magnetic Call System in Hospital

At St Thomas's Hospital, London, a magnetic cal for getting in touch with resident medical staff installed The hospital's report for 1954–55 records this system, which it is believed St Thomas's hospital to introduce, it is possible to get in to doctor in any part of the hospital through signals receiver which he carries in his breast pocket The will cost £2200, which is to be paid from

Salaries of Medical Laboratory Technicians

Professional and technical Whitley Council B the following salary scales for student and junior

Student technicians (technicians in training and tak technical work of a pathological laboratory) £190 p age 16, rising by £20 per year of age to £270 at age 20 age 21 and by £20 per year of age to £380 at age 25

Junior technicians (student technicians who have examination for the intermediate diploma of the Institut Laboratory Technology or the Inter B.Sc. [or equivalent tion] or who are 30 years of age) as for student tech £25 at all points

Negotiations on salaries of technicians in other proceeding

Hospitals, institutions, and nursing homes where compulsive alcoholism and drug addiction may obtain tr listed in a brochure Alcohol and Drug Addiction, issued Church of England Temperance Society, 4, Palace Gate, London, W 8

A branch of the Multiple Sclerosis Society to serve Hove and district is being formed by Miss E. S M. Burr fiore Road, Hove 4

Diary of the Week

SEPT 11 TO 17

Tuesday, 13th

ROYAL ARMY MEDICAL COLLEGE, Millbank S W 1
5 P.M Dr T C Hunt Dyspepsias of Middle Age

Wednesday, 14th

MIDDLESEX COUNTY MEDICAL SOCIETY
6 30 P M (Middlesex Guildhall, S W 1) Dr T F National Health Service and its Problems lecture)

Thursday, 15th

INSTITUTE OF NEUROLOGY, Queen Square, W C 1
5 P M Dr Walther Riese (U.S.A) Functions of the System

ROYAL SOCIETY OF MEDICINE, Wimpole Street W 1
5 P M *Epidemiology and Preventive Medicine* Prof (Cleveland) Studies of Respiratory and Oth in Cleveland Families

Friday, 16th

INSTITUTE OF NEUROLOGY
5 P M Dr Pearce Bailey (U S.A.) America's Fi Neurological Institute

ROYAL ARMY MEDICAL COLLEGE
5 P M Dr Richard Lindenberg (Baltimore) Patho Injury

DERN HOSPITAL TREATMENT AND THE PENSIONER*

LORD AMULREE
M.A., M.D. Camb, F.R.C.P.
CIAN TO UNIVERSITY COLLEGE HOSPITAL, LONDON

s Lumleian lectures for 1949 Prof A. P Thomson vivid and depressing picture of conditions in of the municipal hospitals taken over by the y of Health through the regional hospital boards 5 1948 He showed how the lack of any thorough ent and classification militated against proper nt or diagnosis of the many patients—for the part elderly—who were housed, more or less ently, in these old fashioned institutions Since here have been changes Medical and public has been aroused in the welfare of these unfor patients, and the pioneer work of Marjory Warren, Brooke, and others is bearing fruit According latest return of the Ministry of Health there are bout 60 geriatric units in this country and h the standard of work in these units must of y vary their existence shows that some progress y made in what most people think is the right n

hard to define the type of patient who is suitable e in such a unit Clearly it is impracticable to hat every hospital patient of a certain age or ould automatically be admitted to one of them average age of patients in most general hospitals

The geriatric unit caters in the main for a ass of patients whose principal common denomi s social infirmity or poverty They are the s who were once upon a time the responsibility istrict medical officer and the poor law—patients satisfactory disposal, after recovery in hospital n acute illness or from exacerbation of a long g morbid or degenerative process, was often because their social background was awkward iclude too a large number of the chronic sick un is a term which cannot be defined precisely oes comprehend many elderly persons for whom —in the sense of *restoration to bounding good* is possible, and for whom, therefore no proper nt was formerly even attempted Even these fate however, was coloured by their social und, whose unsatisfactory nature was often the why no intensive or active treatment was given condition improved substantially they could be, e transferred to the workhouse but few returned own homes. This decision often arose from a ed paternalism for it was felt that the patient's surroundings were so bad that there was little n fitting him for a return to them Far better should be taken care of by authority in the use for the rest of his days

e therefore, are the types of patient for whom a c unit at its first opening becomes responsible. umbers are large and are likely to *remain so* y because the problem is recurrent and partly of the steady increase in the number of old people community The time has come in my opinion e should consider whether the prevalence of this illness can be reduced by preventive measures and same time assess the benefit obtained by these s during their stay in hospital A considerable t of money has already been spent—and more obably be spent—on establishing geriatric units; e figures of success received from them are full of e But little has been done to ascertain whether this promise will be fulfilled If, on their return home after active treatment, these elderly patients relapse into a *bedfast or chairfast state*, it would be permissible to inquire how far this expensive treatment should be carried out If, on the other hand they enter on a period of renewed activity and happiness, then the work should be expanded as rapidly as staff and money will allow The object of geriatrics it must be emphasised is not to prolong life, but to ensure that, if life is for some biological or other reason prolonged, the added years are years of independence and happiness, rather than of dependence and misery both to patient and relatives

The Sample

On July 5 1948 University College Hospital became possessed of St Pancras Hospital with its occupants —between 200 and 300 chronic irremediable sick It was the first time that a London teaching hospital had made such a move, but those responsible rightly recognised that students would benefit from work in these wards where the future general practitioner would see the elderly patients with whom much of his work would lie I was appointed to take charge of these beds in April, 1949 and the facts and conclusions I offer here are drawn from the experience gained since that time The beds now at my disposal number 96 in the hospital and 32 in a small home or "half way house" some five miles away in Highgate The patients are mostly drawn from the Metropolitan borough of St Pancras, with a population of 140 000, a few are transferred after consultation with myself from the beds of the other physicians and surgeons at University College Hospital while a few come from neighbouring boroughs (especially Holborn, which has a population of about 20 000) and from one or two old people's homes and almshouses outside St Pancras.

The sample of patients to be analysed consists of 1956 patients admitted to the geriatric wards of St Pancras Hospital in the six years 1949–54 Their age-constitution is shown in table I

TABLE I—AGES OF PATIENTS

—	Under 60	61–65	66–70	71–75	76–80	81–85	86–90	91 and over	Unclassified
1949	9	2	5	9	9	3	4		1
1950	11	14	22	56	46	28	11	6	31
1951	27	19	64	95	86	71	25	10	16
1952	6	27	91	114	110	64	20	10	20
1953	8	29	50	95	81	63	34	7	19
1954	8	13	54	104	120	67	43	5	20
	71	104	286	473	459	298	137	38	107

It will be seen that they belonged mainly to the higher age-groups, among whom a heavy *mortality* is to be expected indeed half were over 75 years of age on admission

It was intended that all patients for whom admission to St Pancras was sought should first be visited in their homes or in other hospitals and that admission should be based entirely on medical need If the medical need was clear, the question whether their condition was remediable did not affect the decision to admit In the early days a family doctor would sometimes ask for the admission of a patient whose need could be met by the welfare authority but such requests are now rare

Patients visited were placed in one of three categories (1) those requiring immediate admission (2) those requiring admission fairly soon, but not urgently, and (3) those who should be taken in for a short time during the summer when the pressure on the beds was lowest in order to give their relatives a rest or for some similar reason (These last patients were not always ill in the true sense of the word, but were frail or had so severe

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E. Williams lecture for 1955 delivered before the yal College of Physicians of London on July 12 a disability that they could not lead an independent life) It is never possible to claim complete freedom from selection , but this sample is, I think, as free as possible

Social Circumstances

A total of 1325 visits were made during the six years to patients seeking admission for the first time either through their own doctor or through a health department † At 1205 of these visits (90%) a note was made of the social circumstances under which the patient lived (table II) Under the heading of "living with other relatives" I have included a few patients living with a friend and a few who were involved in what may be called an "irregular union," although it might have been more suitable to include these under the category of "living with spouse" But it will be seen from this table what a high proportion of the patients were living alone—462, or 38% of the total

TABLE II—SOCIAL CIRCUMSTANCES OF 1205 NEW PATIENTS VISITED

Living with spouse	351	(*29%*)
,, ,, children	241	(*20%*)
,, other relatives	102	(*8%*)
,, in hostel, almshouse, lodging house, &c	49	(*4%*)
,, alone	462	(*38%*)
	1205	(*100%*)

Now the Nuffield surveyors, in their report issued in 1947, showed that in the two London boroughs they investigated—namely, Wandsworth and St Pancras—18% of aged people were living alone , and if (as I believe) we can fairly assume that this figure holds good, more or less, for St Pancras alone it will be evident that among old people applying for admission to hospital the proportion living alone is much higher than it is among old people in general—38% as compared with 18% "Living alone" is not easily defined obviously, it applies to those who were living entirely alone, with no relative and often no friend near to visit and help , but I have also included those who, although visited regularly or occasionally by a member of their family or a friend, were alone for the whole of the night and also for the best part of the day. I have even stretched it to cover those few who were living in the same house as a member of their family but in a self-contained room on a different floor, from which communication in case of trouble would be difficult This may give an abnormally high figure for those "living alone," but I think it is justified

The proportion living with a spouse is low—351, or 29% In their survey of old people, the Rowntree surveyors found the corresponding percentage to be 45 , and, though their figure applies to a genuine random sample, including the healthy, the frail, and the sick, I regard the difference as significant The death or collapse of one spouse will often abolish the independence of the other, and it is not uncommon to find an elderly couple coping with their problems fairly well although both are frail and tottery and neither could manage a solitary existence

20%, it will be seen, live with their children—a daughter, a daughter-in law, or an unmarried son—while 4% live in some sort of communal home This includes almshouse, old people's home, or a common lodging house, of which one of several Rowton Houses is the commonest type In these first two types of dwellings there is usually some supervision, but no provision for care if the occupant of the room or flat becomes ill, while in the common lodging house any supervision is of the most superficial, and there are again whatever for care of even the most trivial

From a study of table II it seems that the to seek hospital admission is greater among living alone than among those living with other members of the family The proportion communal lives in almshouses, old people's lodging houses is too small for any deductions

I should add that the figures given here domiciliary visits do not correspond to the to of visits paid Some patients, notably those readmitted to hospital, were visited more while a few, in times of stress or when it was the practitioners' request that they were immediate admission, were not visited at all not done willingly, for we recognised the knowledge of the patient's home surroundings and friends

Habitation

A further attempt was made to find out in of the house the old person lived. St Pancras are mostly 19th century family dwellings about 1850, with a basement and three or above As family homes these were not entir factory , but nearly all of them have now be into tenements in which the elderly often rooms on the top floor or in the basement, be are cheaper Besides the difficulty of climbi flights of steep stairs to the top floor or down of dark stairs to the basement there is the that the one W C is always either on the or in the garden or backyard, while the tap for is usually on the ground floor too, although do have an additional tap on one of the half-

For 667 (56%) of the 1205 new patients situation of the room was recorded (table III)

TABLE III—HABITATION OF 667 NEW PATIENTS

Basement
Ground floor
First ,,
Second ,,
Top ,,
Other floors above the second but not described as "top"
House or maisonette

Of the 30 described as having a house, 2 old rather more exciting way of living than the one occupied a caravan and one a small hut piece of land

It will be seen that 324 (48%) lived on the floor or first floor, and were not, therefore, inconvenienced by steep staircases

Living Alone

Of the 462 patients who were recorded as l information about habitation is available for 64% This is a disappointingly low proportion perhaps large enough to permit analysis (table

TABLE IV—HABITATION OF 294 NEW PATIENTS LIVED ALONE

Basement
Ground floor
First ,,
Second ,,
Top ,,
Floors above the second but not described as "top"
House

One can, I think, regard a single basement above the first floor, as unsatisfactory acc for a patient in the age group to which I am and on this criterion 147 (50%) of these pat alone were unsuitably housed

An attempt was also made to discover wh elderly persons who were living alone were their room and themselves in a fair state of mfort Here again it proved difficult to define ms but it was agreed among the observers— r the six years these have been many—that there dition which can be called primitive" filthy" ualid" but is equally clearly recognisable under these names. Of 137 old people living alone living conditions were recorded 68 (50%) had nd squalid rooms

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† During the first two years the number of visits was small few beds were available for patients and the doctors in the neighbourhood were not yet fully aware of the existence of the services

not easy to convey the state in which some of nfortunate people lived Often the floor was with fæces swimming in urine, while buckets of g excreta might be found—the largest number of at I can recall was nine Commonly there was lation, and the stench in some of these rooms was ttable Many of these lonely patients seemed to food at all in their rooms: in fact malnutrition, ing degree, was and still is a not unusual reason ission to hospital In one room the light of a ophthalmoscope was the only light we could find ch to examine a patient, and it was therefore ble to determine the nature of the liquid with he floor was covered. In another a policeman was standing rather nervously in a passage, being to avoid all contact with the walls, which were with bugs These conditions were not always ed with poverty one old man who was dis sitting in a chair in a filthy unheated room on a winter evening suffering from pneumonia from e subsequently died, had between £20 and £30 ockets, and had apparently had an income of 10 a week One cannot be sure whether the ill and contrariness so often seen in old people lone is caused by their loneliness or whether their is a consequence of their bad temper That the together is certain

Decisions Reached at Visit

ds of the decision made at the time of visit lable in 1037 cases. The gap of 168 between visited and the records of what was done is part by patients who were seen in consultation eir doctor and for whom it was found that n and advice rather than admission was being In a few cases too visits were made during the o patients who were acutely ill but who could once be given a bed in our hospital and the ner was advised to take other steps

table v it will be seen that the majority of those ere recommended for admission and by dividing ng list into the three categories I have mentioned urgently requiring admission those requiring n but with no great urgency and those whose n for a short while would be of great help to the —it was possible to ensure that, except at real periods, a bed could nearly always be found for ly ill patient within one or two days.

—DECISIONS REACHED AS REGARDS 1037 NEW PATIENTS VISITED

	784	(76%)
ent department	89	(9%)
fused offer of admission	30	(3%)
to St Pancras not considered necessary	114	(11%)
to other hospitals while on St Pancras list	20	(2%)

Fate of Those Admitted

the six years 1950 patients were admitted e vi shows what happened to them during the hs following admission It will be evident that, odern hospital conditions, these elderly patients in general occupy beds for a very long time. remained in hospital for more than six months, e vii shows that even during the next six months is often possible

TABLE VI—FATE OF PATIENTS IN FIRST SIX MONTHS AFTER ADMISSION

—	Month					
	1st	2nd	3rd	4th	5th	6th
Discharged	562	307	123	36	31	26
Died	351	71	43	17	11	9
Transferred	66	37	18	1	4	7

The majority of the patients were disposed of—to use a rather unfortunate term—during the first two months after admission (table vi) 869 (44%) were discharged either to their own home, to a welfare institution or small home or to a voluntary home, and 422 (22%) died A further 93 patients (5%) were transferred either to a mental observation block attached to the hospital or to a surgical or other ward But many of the patients who required surgical treatment returned to the geriatric wards for final rehabilitation, and accordingly do not figure among the transfers The number (52) transferred to the mental observation block seems large; but most of these were suffering from senile mental changes which had reached a stage where increasing noisiness or anti social habits made it impossible to continue to nurse them in a general ward Our wards are large with 30 beds in each and only two have a cubicle where such patients could be nursed

TABLE VII—PATIENTS STILL IN HOSPITAL SIX MONTHS AFTER ADMISSION

Admitted	Discharged	Died	Transferred	Remain
1949	4	4	1	1
1950	11	4	4	1
1951	13	6	4	10
1952	7	7	5	11

Of the 325 patients (17%) remaining in hospital at the end of six months some could probably have been discharged if there had been more accommodation under part III of the National Assistance Act Although, in London at any rate, such accommodation has increased steadily if slowly, in the early days it was very hard to find any authority, voluntary or otherwise, who would give a home to say an old lady of 93 frail and with a colostomy which she had managed perfectly well for the past twenty five years Even now such patients tend to remain in hospital beds for longer than they need, to the detriment of those outside who require admission urgently

Of the 1119 patients discharged from hospital, 197 (17%) had to be readmitted (table VIII)

TABLE VIII—READMISSIONS

Readmitted	197	
Readmitted within a year of discharge	128	(65%)
more than once	55	(27%)
Died during a subsequent readmission	73	(35%)

These figures are shown as percentages of the whole, and are not mutually exclusive. From them it will be seen that the large majority of those discharged from hospital did not seek readmission, and that a large proportion (35%) of those who did so were in the terminal stage of their illness

In any geriatric unit a high death rate is to be expected and is indeed some evidence that the beds are being used for their proper purpose—to take care of the sick and not merely to admit patients for whom there is a fair chance of recovery or improvement Of the 1950 patients admitted 677 (35%) died during the twelve months after their admission

The figures I have given will I hope be some encouragement to those who still feel that elderly patients, of the type I have tried to define need not be classed as "chronic," and, if properly cared for can show as good a rate of improvement as many of their younger contemporaries

—A certain proportion will of course be irremediable Most of these will be suffering from arterial disease—either hemiplegics whose brain has been seriously damaged by an initial or recurrent cerebrovascular accident, or patients with what, for want of a better term, can be called generalised cerebral arteriosclerosis Others include those with rheumatoid arthritis or osteoarthritis whose joints have become fixed in such a position that they are permanently immobilised Although surgical intervention can be of great help to some arthritics, it will succeed only in those who are mentally alert and willing to cooperate with the surgeon in treatment all too often this is not the case and it is then difficult to press the surgeon too hard

The number of these irremediable patients naturally varies, but at present I have in my wards 35 of them They are not likely to improve further, either physically or mentally, and should be taken care of in a long stay annexe of the type to which I shall refer later

After Discharge

To assess the value of work done in any part of a hospital it is useful to have a scheme whereby patients can be followed up and a note made of their progress at regular, not too frequent, intervals The younger patients can usually be seen in an outpatient clinic, but attendance is difficult for many of the older ones, who cannot walk to the hospital, cannot cope with public transport, and cannot afford taxis They can, of course, be brought by ambulance, but this is an expensive and overworked method Instead, therefore, we arranged for a group of patients to be visited in their homes by the almoner six months after their discharge from hospital, and the information thus obtained has been of great value The patients (246 in number) were discharged from hospital between June 1, 1953, and Sept 2, 1954, and the findings six months later are set out in table IX

TABLE IX—STATE OF 246 PATIENTS SIX MONTHS AFTER DISCHARGE FROM HOSPITAL

Active	98	(*40%*)
Housebound	68	(*28%*)
Bedridden	16	(*6%*)
Dead	64	(*26%*)
Total	246	

That 40% should be active is encouraging The 28% who are described as "housebound" are often active enough in their own room to be moderately independent, though they cannot go out of doors, because their home, or room, is not suited to their disability The number who become bedfast is low—6% of the total

The Future

What then of the future? For on the right answer to this question depends the development of geriatrics

Let us look first at the immediate future The elderly sick, of the type to which I have been referring, should be received into wards which are part of an acute general hospital Here they will enjoy the same advantages of diagnosis and treatment as their younger contemporaries Thereafter one of five things may happen

1 A substantial proportion will die, the majority within two months of admission This is medically inevitable and should not be regarded as evidence of failure or reason for despair

2 A large proportion will return to their own homes, or, if these are not suitable, to a welfare or voluntary home Once again the discharge of most of these patients will be within two months of admission Some of those returning to their own homes will need no further help to maintain themselves in independence either they will have the help of a capable spouse, or other member of the family, or they will be well enough [illegible] alone

3 Others, who are more infirm, or live [illegible] elderly and frail spouses, will need aid from [illegible] source The local authority can supply [illegible] district nurse, or a midday meal.

In St Pancras the Invalid Meals Service [illegible] with three vans, and the borough council [illegible] stantial contribution to its funds This [illegible] much more suitable meals for frail and [illegible] than is given by the ordinary meals-on [illegible] A meal should be supplied on at least five [illegible] it will then usually be possible for some of [illegible] to be used on Saturday, and for some other [illegible] as often as not a friendly neighbour, to [illegible] Sunday

A coöperative local authority can be of [illegible] the hospital in resettling patients who are [illegible] discharge. In St Pancras we have been lucky, [illegible] willingness with which the medical officer of [illegible] his staff have assisted and coöperated with [illegible] helped in any success we may have had. [illegible] period under review 170 patients were [illegible] from my wards to their own home, where, [illegible] assistance of a home help they were able to [illegible] independent life In addition, a number of [illegible] people, some of whom had been patients of [illegible] supplied with home helps through their own [illegible] Other amenities, such as a wireless set, [illegible] provided

4 In the past, and indeed in the present, also, [illegible] too often a tendency to try and whip all the [illegible] frail elderly persons off to a home Not only [illegible] expensive way of looking after people who do [illegible] need such care but it is also quite often [illegible] wishes of the elderly themselves, who would [illegible] remain in familiar, if humble, surroundings [illegible] scenes and objects around them For some frail [illegible] however, homes where a certain amount of [illegible] given are a necessity It has hitherto been [illegible] question whether these homes should be the [illegible] of the National Health Service or of the welfare [illegible] In the absence of a joint user agreement, [illegible] probable that these homes should either be [illegible] the regional hospital boards or that the [illegible] of the hospital by whom the patients have [illegible] should be asked by the welfare authority to [illegible] supervise their health This must not be [illegible] form of empire building by the hospital staff [illegible] means of securing the most economical use of [illegible] and hospital beds An easy method of transfer [illegible] home and hospital is essential, and the fewer [illegible] trative barriers there are the less will elderly [illegible] object to a transfer back to hospital, which [illegible] all, be to familiar surroundings, should the [illegible] demand it.

5 There remain those patients—happily com[illegible] few—whose disability is such that after [illegible] remain unable to lead an independent life even [illegible] services available are employed on their behalf. [illegible] for the most part chairfast, and a few are [illegible] large number will be suffering from the effect of [illegible] vascular accident, or accidents, will be doubly [illegible] and will show mental deterioration of [illegible] Others will be immobilised by severe arthritis, [illegible] pulmonary disease, or other ailments

In many hospitals there has been a fear [illegible] admitted, these patients would gradually [illegible] number until every bed was filled by them. [illegible] has shown, however, that this does not happen [illegible] brium is reached in a comparatively short [illegible] four years—when the new intake of such [illegible] roughly equalled by the deaths of others.

These patients, however, do not require [illegible] for in a hospital bed with full medical, nursing [illegible] services They are no longer sick in the [illegible] ut are suffering from a grave and crippling y They should therefore be taken care of in a y annexe, attached to (but not necessarily a the general hospital In this annexe they should under the same medical care as when in hospital, if there is any development in treatment that ssist them or if their condition changes signifi they can readily return to the hospital Such a y annexe should probably contain about a of the number of beds available in the hospital treatment of the patients to whom I am referring

* * *

the pattern for the future, as I see it, will be d of a number of beds in an acute general closely linked with accommodation for frail ambulant patients and with annexes for the chair edfast. These should all remain the responsibility ealth service, although the welfare authority may joint user agreement for some of the Homes ve have to keep in mind not only the management o the prevention of many of the diseases of old nd here I believe that improvement in housing a great deal The principle laid down by Edwin ck over a hundred years ago that dirt, ignorance ercrowding are supremely important factors in valence of disease is as true today as it was then he elimination of these factors, and with them the ss and boredom that so often accompany old age can look for the removal of a most potent cause lisabilities of the last part of life

ENTAL ADRENALINE OVERDOSAGE ITS TREATMENT WITH PIPEROXAN

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ISHED cases of adrenaline overdosage fall into categories

prolong the duration of local anæsthesia adrenaline istered, mixed with the anæsthetic in concentrations 1 in 50 000 to 1 in 100 000 As solutions in high tend to lose potency it is the custom of some surgeons eshly prepared mixtures derived from the standard 0 solution Overdosage has arisen through errors in both by surgeon and pharmacist and through errors iption on the part of the surgeon.

erdosage has taken place from giving millilitres f the same number of minims

renaline for inhalation as a spray is used in a wide f concentrations from 1 in 10 000 (nebula adrenalinæ to 1 in 10 the 1 in 100 solution being in fairly use Overdosage has arisen in asthmatic subjects ecting a strong solution intended for inhalation in aken belief that it was the 1 in 1000 solution.

common factor in several of these accidents was the ntal error of omitting to read the label on the container

aline overdosage both lethal and non lethal, less rare than the number of recorded cases owing to an understandable reluctance to hem Apart from the tragedy of needless loss practitioners lay themselves open to actions for ce. Awareness of the pitfalls should assist in oidance but if in spite of this an accident it is helpful to have some means of treatment disposal. The following case is believed to be the which an overdose of adrenaline was successfully by administering an adrenolytic substance

Case report

atient gave a history of attacks of bronchitis since ildhood, but it was not until she was 22 years old began to suffer in addition from asthma The attacks of asthma were of mild to moderate severity and were consistently relieved by subcutaneous injections of 5 minims (0 3 ml) of 1 in 1000 adrenaline solution They could often be kept at bay by isoprenaline sulphate tablets absorbed sublingually As asthma occurred only about twice a year adrenaline injections were infrequent and no tolerance was acquired.

She was admitted to hospital at the age of 34 in the 36th week of her first pregnancy, because her blood pressure had risen to 165/100 mm. Hg With rest and sedation it fell to 140/90 mm. Hg There was no albuminuria.

Delivery at term was assisted by forceps extraction. In spite of the fact that no solid food had been taken for many hours previously she vomited copiously early in the induction of anæsthesia and some of the vomit was inhaled The respiratory tract was cleared by swabbing and endotracheal suction. Three hours later her breathing became distressed with increasing dyspnœa. She seemed to be suffering from asthma and in reply to an inquiry stated that her usual dose of adrenaline was 5 ml This quantity of adrenaline hydrochloride solution was then injected intramuscularly This was 17 times the correct dose

The error was immediately recognised and my advice was sought. When seen five minutes after the injection, the patient was pale cyanosed and collapsed. Her pulse was regular at 172 per min the respiration rate was 40 and blood pressure 90/60 mm Hg Numerous medium pitched rhonchi, mainly inspiratory were heard in all areas. Piperoxan hydrochloride 10 mg was forthwith injected intravenously Her general condition colour and respirations improved gradually during the next two hours, and her blood pressure rose to 125/80 mm. Hg However her pulse-rate rose further to 180

Except for the tachycardia, which may have been partly due to the piperoxan, her condition was mainly attributable to the consequences of inhaled vomit (early bronchopneumonia) Radiography confirmed the presence of patchy bronchopneumonia. She was treated with oxygen, intramuscular penicillin and triple sulphonamides orally Her subsequent progress was rapid and satisfactory

Composition of Adrenaline Solutions

In Britain adrenaline is manufactured by two firms Burroughs, Wellcome & Co produce a *synthetic* preparation which contains 1 mg of *l* adrenaline as the acid tartrate in 1 ml. of solution and Parke Davis & Co Ltd , produce a solution of the same concentration of animal origin which consists of the hydrochlorides of adrenaline (80%) and noradrenaline (20%), this being the proportion in the normal adrenal medulla Our patient was given 5 ml of the latter preparation and therefore received intramuscularly 4 mg of adrenaline and 1 mg of noradrenaline hydrochlorides

Deterioration of Adrenaline Solutions

Argent and Dinnick (1954) have drawn attention to the fact that adrenaline solutions may deteriorate and lose potency on prolonged storage, and that survival from what may appear to be a gross overdose may, in fact be due to the use of an inactive preparation They cite the accidental injection of 10 ml. of adrenaline hydrochloride solution into a baby aged 7 weeks, and the same amount into a woman of 35, without observable effect on either These are quantities from which one could certainly have expected a fatal outcome but subsequent examination disclosed that the solution was inactive.

Somers (1954) points out that adrenaline hydrochloride *B.P.*, not intended for injection, has poor keeping qualities, but that the tartrate is stable for at least six years. However Messrs. Parke, Davis inform me that they have assayed their adrenaline hydrochloride from both vials and ampoules and found it to retain its full potency for at least two years from the date of manufacture This was the preparation administered to our patient.

What is a Lethal Dose ?

The *British Pharmacopœia* gives the maximal therapeutic dose by subcutaneous injection as 0 5 mg Deter mination of the lethal dose from case reports is complicated by the likelihood that large non-lethal doses may have consisted of inactive material, and by the possibility that very small lethal doses may have been injected unintentionally into a vein or into tissues from which absorption is exceptionally rapid The lethal intravenous dose is very much smaller than the subcutaneous one, the ratio being from 1 50 (Gaddum 1955) to 1 75 for rabbits (Starkenstein et al 1938) The lethal intramuscular dose presumably lies between the subcutaneous and intravenous doses, approximating to the former

The following summaries of previously reported cases and the consequences of injection are instructive in that they illustrate how accidents can arise 11 fatal and 3 non-fatal cases have been reported, but there is reason to believe that these represent but a fraction of the true number that have occurred

Fatal Cases

Case 1 (*Lancet* 1947a) —3 mg apparently intravenously to a man aged 42 Died in two minutes For the treatment of varicose veins by injection the doctor withdrew from a vial the last 2 ml of 'Etalate' He then withdrew into the same syringe 3 ml of 1 in 1000 adrenaline solution, believing it to be etalate The vial of adrenaline had, however, found its way into an empty etalate carton The vial was not removed from the carton, and its label consequently was not read.

Case 2 (*Lancet* 1947b) —4 mg subcutaneously to a man. In the mistaken belief that it was procaine, 4 ml of 1 in 1000 adrenaline solution was injected for reduction of dislocated thumb Symptoms occurred in a few minutes, and the patient died in half an hour Error due to failure of both nurse and doctor to read the label

Case 3 (*British Medical Journal* 1950, Medical Protection Society 1952) —5 mg subcutaneously to a man aged 32 5 ml. of 1 in 1000 adrenaline solution was injected (for removal of a cyst in the neck) in the mistaken belief that it was a suitable procaine adrenaline mixture The patient complained of headache and abdominal pain during the injection of a further 2 ml and died shortly afterwards The quantity responsible seems to have been 5 mg Both nurse and doctor failed to read the label. The same solution had been used on two previous cases without ill effect, but the doses were not stated.

Case 4 (Fischer 1920) —10 mg subcutaneously to a man aged 35 10 ml of 1 in 1000 solution injected (for peroneal nerve block) instead of procaine adrenaline mixture Nurse failed to read the label. Symptoms were palpitations and pain in nape of neck and occiput, patient died six minutes later

Case 5 (Ziemke 1925) —10 mg intramuscularly (?) to a man aged 50 Injection of 10 ml of solution containing 1% procaine and 1 in 1000 adrenaline into buttock for relief of sciatic pain Symptoms were palpitations and anxiety, patient died in ten minutes The doctor gave spoken instructions, without written confirmation, for 100 ml of 1% procaine with "a couple of grammes" of adrenaline, and the pharmacist, who checked, but inadequately, made up the above mentioned mixture

Case 6 (Mayer and Berg 1935) —10 mg subcutaneously to a woman aged 30 Headache and vomiting occurred five minutes after the injection, death in forty five minutes Pharmacist's error in making up procaine adrenaline mixture

Case 7 (Killpack 1952) —Over 10 mg subcutaneously and intramuscularly to a male aged 20, for block anæsthesia of abdominal wall, for drainage of perinephric abscess Died about three hours later with pulmonary œdema On request the theatre nurse mixed equal parts of procaine and 1 in 1000 adrenaline, and 20 ml. or more of the mixture was administered It seems that the concentration was not stated by the doctor and not queried by the nurse

Case 8 (personal communication) —40 mg subcutaneously to a young adult female Injection of 40 ml. 0 5% procaine containing 1 in 1000 adrenaline for local anæsthesia Patient complained of nausea and died in a few minutes The error lay in a faulty prescription

Case 9 (Hval and Thomassen 1940) —50 mg.
An asthmatic male, aged 53, injected into him
a 10% adrenaline solution intended for use as
inhalation

Case 10 (Gormsen 1939) —60 mg subcuta
asthmatic female, aged 42, injected into herself
10% adrenaline solution intended for use as
inhalation Death in a few minutes

Case 11 (Wichels and Lauber 1931) —75 mg. sub
to a female aged 28 75 ml of 1 in 1000 adrenal
for procaine adrenaline mixture Dyspnœa and
came on in a quarter of an hour, after an hour
she felt well, but soon afterwards she became
she died at the fourth hour from pulmonary œdema
apparently due to failure to read the label.

Case 12 (Starkenstein and Langecker 1934) —
in which a highly ambiguous prescription was
as regards the doctor's meaning by the pharmacist,
up 50 ml of 1 in 1000 adrenaline containing 0·5
The amount injected is not stated

Excluded from the foregoing are reports
cases where the patients were under chlor
cyclopropane anæsthesia, patients who were
of advanced coronary-artery disease, and those
the solution was injected into unusual sites,
a very rapid absorption (Perret 1941) In
stances death may take place from doses
therapeutic range It is by no means implied th
lytic substances are useless in such cases.
experimental evidence that they protect against
lar fibrillation in animals anæsthetised with
(Shen 1938) or cyclopropane, though it is
they can be effective once fibrillation has set
excluded from the foregoing are poorly d
reports

Spontaneous Recoveries

Case 13 (McGinty and Baer 1947) —5 mg
to a man aged 33 5 ml of a 1 in 1000 solution
for diagnostic purposes to evoke malarial paras
peripheral blood Symptoms were headache,
feeling in throat, and precordial distress. The
rose from 120/80 mm Hg at five minutes to 100,
minutes 0 5 ml had been ordered (verbally
nurse gave 5 ml Improved greatly at six h
next day

Case 14 (Horwitz 1947) —7 mg intramuscularly
aged 21 with urticaria Slight headache only
pressure rose from 130/75 mm. Hg to 220/90 and
from 80 to 128, falling to normal after five h
was given instead of 7 minims of a 1 in 1000 soluti

Case 15 (Kleeblatt 1922) —8 mg
woman aged 30 with neuralgia. 8 ml. of 1 in
containing 1% procaine Pharmacist's error Th
was synthetic and is assumed to have been in the

Conclusion

From these case-reports it appears that the
lethal subcutaneous dose for a human adult
4 mg and the maximum tolerated dose 7–8 mg
considerably less in terms of mg per kg
than for laboratory animals Approximate
figures are man (L.D $_{100}$) 0 15 mg, rabbits
and other animals 2 5–20 0 mg (Gaddum

Adrenaline Antagonists

Blocking Agents

Adrenergic blocking agents * fall into several
which the following are the main ones

Ergot alkaloids ergotamine, ergocornine, ergo
ergocryptine, and their dihydro derivatives,
increasing potency

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* The term "adrenergic blocking agent" denotes
that specifically inhibits certain responses of
to adrenaline, related amines, and sympath
impulses

l chloroethylamines dibenamine and phenoxybenz
SKF 688A)
mbine group including ethyl yohimbine and cory
n.
zolines tolazoline (Priscol) and phentolamine
ne)
dioxanes 883F ' and piperoxan (933F ')

leal substance for antagonising the effects of an ne overdose should have the following character (1) action limited to antagonising the effects *xcess of circulating* adrenaline (i e adrenolytic) nce of inhibition of sympathetic nerve impulses n sympatholytic) (3) absence of side-effects; tion of action brief and comparable with that njected adrenaline

of the substances listed above do not fulfil iteria

alkaloids have a stimulant action on smooth muscle ich even their dihydro derivatives are not entirely free *ethylamines* have an unduly prolonged action lasting four days after a single injection, and may leave effects for longer periods. Unless the dose is nicely , they cause profound hypotension which cannot be during their period of action by giving pressor amines *zolines* appear to produce an equilibrium type of and are sympatholytic Side-effects from hypo- oses are relatively common. Phentolamine is worthy eration.

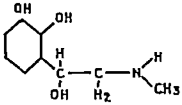
bine and *ethyl yohimbine* administered orally to mice nificant, though not marked protection against e (Loew and Micetich 1948); but too little is known effect in man to recommend them for the treatment se

dioxanes —Fourneau synthesised a large number ines exhibiting adrenergic blockade, and in e reported the synthesis of 2-diethylamino l 4-benzodioxane (883F) (Fourneau et al 1933) wed that it was adrenolytic and sympatholytic au and Bovet 1933a) and protected mice against oses of adrenaline (Fourneau and Bovet 1933b) and Frederioq (1934) reported on the action of l substance 2 (1 piperidylmethyl) 1 4 benzodi ydrochloride (933F) supplied to them by u and now known as piperoxan In suitable was adrenolytic but not sympatholytic In ge amounts (40–80 times the effective adreno e) and approaching the largest tolerated dose sympatholytic It is the absence of the latter suitable dosage which seems to make it the choice to antagonise the action of an excess ting adrenaline. In intravenous doses of 0 25 mg body weight it reduces the hypertension of with phæochromocytoma to normal levels, but s effect on most cases of hypertension not due cess of circulating adrenaline (Goldenberg et al. Its action is prompt but transient Injected in e of two minutes, in cases of phæochromocytoma sistent hypertension it causes a blood pressure h is fully developed at the conclusion of the and may remain so for a few minutes. The gradually rises and reaches its original level after twenty five minutes The period of action of n may be expected to cover that of the acute s of adrenaline overdose. Since the vasocon effect of adrenaline delays its absorption after eous or intramuscular injection intravenous n if injected promptly, can be expected to the adrenaline to the effector organs.

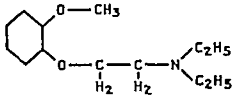
xan is relatively free from side-effects. Tachy eadache and flushing have occurred in a small on of those to whom it has been given The lood pressure that it sometimes causes in normo and essential hypertensives (Emlet et al 1951) nsequential symptoms in advanced arterio s (Green and Peterson 1950 Fremont 1954) are elevant to the case of adrenaline overdose

No doubt other adrenergic blocking agents may be suitable but much of the experimental work which has been done on animals may not be directly applicable to man In an emergency any readily available agent would be worthy of trial In particular phentolamine 2 (N *p* tolyl N [*m* hydroxyphenyl] aminomethyl) imidazoline hydrochloride suggests itself as an alternative Like piperoxan, it has been used as an aid to the diagnosis of phæochromocytoma (Gifford et al 1952 Iseri et al 1951) but it is both adrenolytic and sympatholytic (*Longino et al 1949*) *It is relatively free from side-*effects A suitable intravenous dose would probably be 5–10 mg

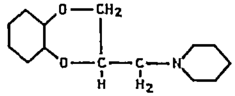
Members of the benzodioxane ergot, and yohimbine groups probably exert their adrenergic blocking effect by competing against adrenaline for alcoholic hydroxyl and amino group receptors They possess in common a benzene ring linked through oxygen to ethylamine in similar spatial configuration (Seed and Calkins 1949)



ADRENALINE



930 F (adrenolytic)



PIPEROXAN (adrenolytic)

Cholinergic Substances

Apart from blocking agents, cholinergic substances which act as physiological" antagonists, may possibly afford protection Loew and Micetich (1948) have shown that acetyl-β methylcholine (Mecholyl ') significantly reduces the adrenaline mortality in mice. Moller (1942) claims successful treatment of a girl, aged 12 years, who received adrenaline 20 mg subcutaneously (0 2 ml. of a 10% solution intended for use as a spray) Twenty minutes later she was given carbachol 0 375 mg and later, amyl nitrite inhalations recovery ensued One would have expected this dose to be lethal within a few minutes, and the probability that the preparation had lost much of its activity casts doubt on the validity of the treatment given

Recommendations

Prevention

(1) Adrenaline solutions intended for inhalation as a spray should be made up in the lowest concentration known to be effective for the patient, and in any event not higher than 4 mg per ml (0 4%) This is 40 times the concentration in adrenaline spray (neb adrenal.) *B.P C* Adrenaline and atropine compound spray (neb adrenal. et atrop co) *B.P C* contains 0 5%

(2) The routine use of commercially prepared stable local anæsthetic adrenaline mixtures in a concentration suitable for immediate use would eliminate errors in prescribing and dispensing and avoid the need for making up mixtures in the theatre.

(3) The adoption of metric units would prevent the 17 times overdosage that results from giving millilitres instead of minims. Adrenaline solution must be one of the very few drugs whose dosage by injection is still conventionally prescribed by some people in minims

(4) The fundamental rule READ THE LABEL ON THE CONTAINER BEFORE USE should be given repeated emphasis throughout nurses' and medical students' training "Container" means the actual vessel and not the carton If a container is found whose label has become detached, its contents should be forthwith discarded The temptation must be resisted to identify the contents merely by the appearance of the container Many fatalities have taken place with various drugs because of the existence of bottles, vials, or ampoules whose general appearance was similar or identical except for the label

Cure

If an overdose of adrenaline has been given, piperoxan should without delay be injected intravenously, 15 mg for an adult weighing 10 stones (63 kg), and double this amount if a very large dose, 20 mg or more, of adrenaline has been given Great speed is essential because adrenaline may be lethal in a very few minutes If phentolamine is used for treatment, a suitable dose would be 5–10 mg The advisability of keeping a supply of piperoxan at hand deserves the consideration of anæsthetists and surgeons

Summary

A case is reported of the accidental injection of 5 mg of adrenaline (5 ml of 1 in 1000 solution) intramuscularly, and the treatment of this overdose by injecting 10 mg of piperoxan intravenously

Similar published accidents are reviewed to define the minimum lethal and maximum tolerated doses (these appear to be about 4 mg and 8 mg respectively) and to study the types of error which have given rise to these accidents

Recommendations are made for the prevention of such accidents and for their treatment by adrenolytic drugs

The pharmacology of adrenergic blockade is briefly discussed, and reasons are given in favour of treatment with piperoxan

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ANTIBIOTIC-RESISTANT STAPHYLOCOCCAL INFECTIO

A STUDY OF ANTIBIOTIC SENSITIVIT RELATION TO BACTERIOPHAGE TY

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IN the present era of antibiotics staphylococ tion remains one of the major problems of Potentially pathogenic staphylococci are ubi the hospital environment, and their capacit antibiotic resistant variants appears to be

A few years after the use of penicillin ha widespread in this country Barber and Row Dowzenko (1948) showed how the incidence of resistant staphylococcal infection in a general h had risen year by year until 59% of the cases of with *Staphyloccus pyogenes* yielded penicillin strains Similar reports soon followed from ot in England (Forbes 1949, Barber and W Barber et al 1949, Cairns and Summers 19 (Rountree and Thomson 1949), the United Sta 1951), France (Chabbert and Ternal 1952), Sw (Eriksen 1952, Vogelsang 1953, Wallmark 1 U S S R (Glasman 1953), and Chile (Valenzuel and Vaccaro 1954), and today penicillin staphylococcal infection is quite common am outpatients (cf Rees et al 1955).

Penicillin-resistant infection, however, first problem among patients in the wards, and all reports emphasised that most cases were the cross infection, and that the only way to stem was to increase the aseptic control of the hospital theless the story is now being repeated with t antibiotics, and today a great deal of hospital is due to strains of *Staphylococcus aureus* resistant to penicillin, streptomycin, and all t cycline compounds (cf Rountree and Thom Lowbury et al. 1952, Clarke et al 1952) W garded by most people as good aseptic control to prevent this The present investigation w taken to see whether the reasons for this failure elucidated

Methods

Source of Strains

Nasal carriers —In the maternity unit of the for the three months January–March, 1955, were taken from all mothers on admission and and babies on discharge Nasal swabs were from all nurses in the maternity unit and from in other departments of the hospital

In all cases the anterior nares was swabbed wi moistened swab which was then plated out o agar containing phenolphthalein phosphate (B and Kuper 1951) Phosphatase positive co picked off on to antibiotic ditch plates and for coagulase by the tube method of Fisk (19

Infective processes —All strains of Sta isolated from infective processes in the routine between November, 1954, and April, 1955, w for coagulase by the method of Fisk (1940) and positive strains tested for antibiotic sensitiv

Antibiotic Sensitivity Tests

Strains were tested for antibiotic sens streaking across ditch-plates For penicillin containing 10 units per ml were used, for str chloramphenicol, oxytetracycline (terramycin thromycin the concentration used was 50 All the ditch-plates were centrally streaked Oxford staphylococcus, whose growth stopp 2 0 cm from the edge of the ditch with

—NASAL CARRIAGE OF *Staph aureus* IN MATERNITY UNIT

—	No examined	Carriers (%) Total	Penicillin resistant strains	Penicillin resistant strains of type 52A
	31	55	45	26
on admission	62	27	5	1·6
on discharge	62	48	29	19
n discharge	62	92	89	45

nycin and oxytetracycline, and at about 1 0 cm loramphenicol and erythromycin Strains were d as resistant if they grew to the edge of or the ditch Minor degrees of resistance were , they were very rare. All the oxytetracycline- t strains were similarly tested against chlortetra (aureomycin) and the correlation was found to lute.

phage-typing

os were phage typed by the method of Williams ppon (1952) which is based on that of Wilson xinson (1945)

Maternity Unit

ndings for the maternity unit are summarised in

urses 17 (55%) carried *Staph. aureus* and 14 carried penicillin resistant strains of which 8 iage type 52A

ers on admission showed a quite different picture xamined 17 carried *Staph aureus* but in only 3 e was the organism penicillin resistant and in was it phage type 52A On discharge, however,) of the same 62 women carried *Staph aureus* 9%) this was penicillin resistant, and in 12 it was ype 52A

y all the *babies* in the department picked up peni sistant strains. Thus of 62 examined on dis 57 (92%) were carrying *Staph aureus* 55 (89%) rying penicillin resistant strains and in 28 these iage-type 52A. Penicillin sensitive strains were from 9 babies, of whom 7 also carried a penicillin t strain of a different phage-type

II shows that in the vast majority of cases the n resistant strains were sensitive to the other ics tested: of 93 penicillin resistant strains 74 this pattern, and 51 of these strains were phage A. Organisms of this type have predominated in artment for many years (Barber et al. 1953) and o the commonest type of staphylococcus isolated e noses of 44 nurses in other departments (see

strains resistant to penicillin, streptomycin, and cycline (RRSR)* are of interest They were all of the same or very closely related phage-type (47/53/77+), and this staphylococcus first appeared in the nose of a mother (Mrs C) on admission to the department Subsequently 9 babies (including Mrs C's) and 1 mother acquired the organism Since the first 4 babies infected with this strain were in neighbouring beds to Mrs. C, it seems probable that she was the source. Where she got the organism from is not known, but she had been attending the hospital as an outpatient for many years

A comparison of the swabs taken from mothers on admission with those from their own babies on discharge shows that in only 7 of 62 instances were the two results the same In 5 of these both swabs were negative, and these were the only babies who were not found to be carrying *Staph aureus* Of the 2 cases where the baby had picked up the same strain of *Staph aureus* as was isolated from its mother on admission, 1 was that of Mrs. C and 1 was that of a mother who came into the ward with the prevalent penicillin resistant phage type 52A organism in her nose

It seems clear that most of the babies acquired strains of *staphylococci from the nurses In spite of this,* however, there were few infective processes in the babies during the period of study and all were trivial During the three months 170 babies were born 8 had mild conjunctivitis, and 6 had minor skin lesions. *Staph aureus* was isolated from only 3 of these 2 of the strains were the prevalent type (penicillin resistant 52A), and 1 was penicillin sensitive

Addendum—A few weeks after the close of the investigation a nurse came on duty with a boil on her face. Within a few days one baby developed acute mastitis—a much more severe infection than any seen during the course of study—and another developed conjunctivitis Swabs from all three sources yielded strains of *Staph aureus* resistant to penicillin and sensitive to other antibiotics, and of bacteriophage type 52A

Infective Processes

The antibiotic sensitivity pattern of 100 strains of *Staph aureus* isolated from infective processes between November 1954 and May 1955, are given in the lower part of table II It will be seen that 50% were resistant to penicillin, 30% to streptomycin, and 26% to oxytetracycline Only 3 strains resistant to chloramphenicol were found but this antibiotic is used very rarely in the hospital, because of the danger of anæmia All the strains resistant to oxytetracycline were also resistant to chlortetracycline All the strains were sensitive to erythromycin

Table III is an attempt to relate the antibiotic sensitivity pattern to the possible source of infection Out patients have been separated from ward patients and the ward patients have been divided into those whose infection is likely to have been acquired outside hospital (abscesses and acute infections in new patients) and those in which hospital infection is probable The miscellaneous infections in chronic patients include acute infections in

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* For explanation see table II

TABLE II—ANTIBIOTIC SENSITIVITY OF STRAINS ISOLATED

Source	No tested	Strains resistant to (%) Penicillin	Streptomycin	Chloramphenicol	Oxytetracycline	Sensitivity patterns (% of strains) SSSS	RSSS	RRSR	RRSS	RRRR	RSRS	SSSR	*
t unit													
	18	78	0	0	0	22	67	0	0	0	0	0	
s on admission	18	17	11	6	11	83	6	0	0	0	0	0	
s on discharge	31	58	10	0	3	42	48	3	0	0	0	0	
en discharge	67	57	18	0	15	12	60	13	5	0	0	2	
artments												RSSR	SRRR
	32	78	19	3	9	23	59	6	9	3	0	0	0
ve processes	100	50	30	3	26	40	28	*4	4	1	1	1	1

S sensitive R resistant the letters refer respectively to penicillin, streptomycin chloramphenicol and oxytetracycline
* These figures are approximate and in some cases represent small numbers.

TABLE III—ANALYSIS OF 100 CASES OF STAPHYLOCOCCAL INFECTION

Antibiotic sensitivity to				Total	Outpatients	Inpatients			Post operative		
Penicillin	Streptomycin	Chloramphenicol	Oxytetracycline			Total	Abscesses	Acute infection in new patients	Gynæcological	Surgical	Miscellaneous in chronic patients
S	S	S	S	40	18	22	12	4	6	0	0
R	S	S	S	28	10	18	4	0	4	5	5
R	R	S	R	24	0	24	0	0	0	17	7
R	R	S	S	4	0	4	0	0	0	3	1
Other strains				4	1	3	0	1	0	1	1

patients who have attended the hospital for long periods, and infections which have been treated for at least a month

Antibiotic sensitive Infection

In 40 patients the infection was due to antibiotic sensitive strains, 18 of these were outpatients, and of the remaining 22 ward patients 16 had abscesses (most of which were closed on admission) or were new patients with acute infections 6 strains were isolated after gynæcological operations, 5 of these were from local infections of the perineum, and 1 was from a postoperative respiratory infection

Infection Resistant to Penicillin only (*RSSS*)

28 patients yielded strains resistant to penicillin only, 10 of these were outpatients, and 4 others were inpatients with abscesses Of the 4 cases following gynæcological operations 3 were local infections of the perineum and 1 was a fatal case of septicæmia and acute endocarditis following total hysterectomy

The 5 infections following surgical operations consisted of 2 local wound infections, a deep seated infection of abdominal wound involving the peritoneal cavity, an abscess of chest wall following radical mastectomy, and an empyema following excision of a lipoma Of the 5 miscellaneous infections 3 were abscesses in infants born in hospital (not in the Maternity Unit discussed above), and 1 was a nasopharyngeal infection in a nurse The remaining case was in a diabetic who had been attending hospital for years he developed on one big toe a septic spot which led to infection of the foot followed by septicæmia, acute endocarditis, and death

Infection Resistant to Penicillin, Streptomycin and the Tetracyclines (*RRSR*)

Strains of this pattern were not isolated from outpatients or from abscesses or acute infections in new ward patients 17 such strains, however, were isolated from surgical infections These consisted of 11 local infections (including 2 burns), 2 empyemas (one after a chest operation and the other after colostomy), 1 septicæmia, and 3 cases of enterocolitis

The *septicæmia* followed an arterial graft of the artery of one leg The patient showed signs of local within twenty four hours of operation, and part of sloughed away Acute septicæmia followed, and te porary response to chloramphenicol the patient died

The 3 patients with *enterocolitis* all developed a like diarrhœa a few days after an operation, but eventually survived The one who died was opera carcinoma of the œsophagus and was given oxyte before the operation Necropsy showed acute nec mucosa of the jejunum and ileum, parts of which pletely denuded of mucosa, which had separated as a grey slough Of the 2 surviving patients one had graft and the other a laminectomy, neither was biotics before the operation

Of the 7 *miscellaneous* cases 3 were superficial skin 1 was a mouth ulcer, and 3 were pulmonary infect 3 patients with superficial skin infection included an severe pemphigus, a woman with severe dermatitis the dyeing of her hair, and a man with a chronic following puncture to remove œdematous fluid. T had been treated for several months with chlortet cream before the swab was taken. The mouth ulcer during the penicillin treatment of a case of pne meningitis

Of the 3 patients with *pulmonary infections* 1 had hospital for many months on streptomycin the tuberculosis, 1 had unresolved pneumonia and h treated with penicillin and oxytetracycline, and 1 pulmonale and bronchopneumonia In this la sputum, on admission, yielded coliform organisms three weeks later these were replaced by antibiotic *Staph aureus*

Infection Resistant to Penicillin and Streptomycin

Only 4 cases of this type of infection were followed surgical operations, and 1 was an eye in a baby born in hospital (not the maternity unit 3 postoperative cases 1 was a local wound was an infection of hand which developed in recovering from retropubic prostatectomy, a septicæmia after prostatectomy and chlortetracycline

Other Infections

An outpatient with extensive exfoliative dermatitis a strain resistant to penicillin, streptomycin, chloram and the tetracyclines This followed prolonged local with streptomycin and chlortetracycline cream.

A patient with a chronic and extensive ulcer of a strain resistant to all the above-mentioned except penicillin. He had had prolonged local treat streptomycin and chloramphenicol

A strain resistant to penicillin and oxytetracy isolated from a mediastinal infection following per the œsophagus

A strain resistant to penicillin and chloramph isolated from the eye of a child, eight months er child had had a stye, which was treated for five c chloramphenicol drops and cream.

Bacteriophage Types in Relation to Antibi Sensitivity

Table IV shows the antibiotic sensitivity pa relation to bacteriophage group The groups recommended by Williams et al (1953) group

TABLE IV—BACTERIOPHAGE GROUPS IN RELATION TO ANTIBIOTIC SENSITIVITY

Antibiotic sensitivity to				Carrier strains from maternity unit (nurses mothers, and babies)					Strains from infective			
Penicillin	Streptomycin	Chloramphenicol	Oxytetracycline	No studied	Group I	Group II	Group III	Non typable	No studied	Group I	Group II	Group III
S	S	S	S	41	14	9	11	7				
R	S	S	S	74	51	6	14	3	23	8	4	11
R	R	S	R	11	0	0	11	0	23	0	0	3
R	R	S	S	6	0	0	6	0	5	0	0	3
R	S	R	S	1	0	0	1	0	1	0	0	1
R	R	R	R	1	0	0	1	0	1	0	0	1
R	S	S	R						2	0	0	
S	R	R	R						1	0	0	1
S	S	S	R	1	0	0	1	0	0			

29 52, 52A and 70 group II 3A, 3B 3C, 55 and roup III 6 7 42E 47 53 54 70 73, 75 and 77, ype 42D remains separate It will be seen that the ive strains are fairly evenly distributed in all the s. Strains resistant to penicillin only also occur in ree groups, although most of the maternity unit s fall into group I (which includes type 52A) s of all other antibiotic resistant patterns were sally group III Most of these group III strains reactions with the phages 47 53 54 and 77 but other types were found

Source of Postoperative Infections

6 infections occurring after operation in the general al wards none was due to an antibiotic-sensitive and 17 were due to strains resistant to penicillin omycin and the tetracyclines All were phage III, and 12 were the same phage type. In spite of single source of infection was found. The 17 cases which organisms of this antibiotic pattern were d occurred in six months in ten different wards the rate of infection per ward was low During the of this period no ward had more than 3 such cases were in patients operated on by nine different ns in three different operating theatres

n attempt to find carriers nasal swabs were taken 44 nurses in the surgical wards 32 strains of *aureus* were isolated from 30 nurses. They are ed in the lower half of table II Penicillin resistant were isolated from 25 nurses, but only 2 nurses l strains resistant to penicillin streptomycin and racycline and sensitive to chloramphenicol. Anti sensitive strains were isolated from 6 nurses all m were probationers.

n most large hospitals, clean and dirty cases are ed to the same wards and operated on in the same s. This is a possible source of infection The 7 patients yielding staphylococci of this pattern n five of the ten wards in which there were post ive patients with this type of infection The 3 s with superficial skin infection had extensive which could not be kept completely covered and patients with pulmonary infections were probably ng organisms into the atmosphere.

Discussion

nship of Antibiotic Resistance to Phage-groups

ns of phage-group III appear to yield antibiotic t variants more readily than do other strains of *aureus* Barber and Whitehead (1949) in England untree and Thomson (1949) in Australia reported arly all penicillin resistant strains of *Staph aureus* l at that time from different hospitals reacted with which are now classified as group III Similar later came from France (Wahl and Fouace 1952, and Lutz 1953) and Stockholm (Wallmark 1954) ter report of a maternity department (Barber et 9) most of the penicillin resistant strains were ype 52A (group I) and organisms of this type pear to predominate in many maternity depart Finally group II strains began to yield penicillin t variants (Williams et al 1953) and today n resistant organisms of all phage-groups are

e present investigation 53 strains of *Staph aureus* t to one or more of the three antibiotics strepto- chloramphenicol, and oxytetracycline were iso nd all were phage group III Clarke et al. (1952) d several cases of hospital cross-infection due to *aureus* resistant to several antibiotics, and all of ins tested were phage group III In a study of l burns Lowbury et al (1952) reported that all strains of chlortetracycline resistant *Staph aureus* l were phage-group III but so were all but two chlortetracycline sensitive strains

Thus with the newer antibiotics we still appear to be in stage one, when the resistant variants are of phage group III A few group I strains are, however, beginning to appear among those sent to the Central Public Health Laboratory Colindale In a series received from Denmark in 1952 most organisms resistant to other antibiotics than penicillin were group III but a few were non typable and one resistant to penicillin and streptomycin was group I Of 3 other group I strains recently isolated in this country all were resistant to penicillin and streptomycin, 1 was also resistant to chloramphenicol and 1 to chlortetracycline (Rippon 1955) At present it is idle to speculate on the reason why group III strains yield antibiotic variants more readily than do other groups Perhaps strains of this group are less stable than those of other groups or perhaps they are more virulent and more readily give rise to infections

Origin of Antibiotic resistant Staphylococci

The mode of origin of antibiotic resistant staphylococci is a complex subject (see Barber 1953) It certainly varies with every antibiotic and possibly with different strains of staphylococci. With penicillin the resistant variant isolated from infective processes is resistant because of the production of penicillinase by which the organism destroys the antibiotic This type of resistance does not occur when penicillin sensitive staphylococci are serially transferred in increasing concentrations of penicillin in vitro nor has the emergence of such a variant been recorded with certainty during the treatment of penicillin sensitive staphylococcal infection since in those instances where penicillin-sensitive infection has become resistant during treatment phage typing has usually shown that two different strains are involved (Barber and Whitehead 1949) Penicillin destroying strains of *Staph aureus* probably represent mutants, but the mutation is so rare that the frequency of such organisms in the hospital environment must result from a process of selection and cross infection

Resistance to streptomycin chloramphenicol, and the tetracyclines is not due to destruction of the antibiotic the resistant variants can grow in the presence of the active agent Streptomycin resistant variants develop with extreme rapidity, since a large inoculum of staphylococci will usually contain one or two cells resistant to 100 or more µg per ml. A few days' treatment is often sufficient to leave these resistant cells a clear field. The use of streptomycin is therefore strictly limited and *it is for* this reason that only 30 of the infective processes in this study yielded streptomycin resistant strains.

Development of resistance to chloramphenicol is much slower but it is worth remembering that nearly all staphylococci are 5–20 times as resistant to this antibiotic as to chlortetracycline (Finland et al. 1950 Birnstingl et al. 1952) Strains of *Staph aureus* with an increased resistance to chloramphenicol began to appear in clinical infections between 1950 and 1951 about three years after the discovery of the antibiotic (Altmeier and Culbertson 1951 Pulaski 1951) Soon after that, however the danger of chloramphenicol to the bone-marrow became apparent and its use was drastically curtailed A sharp fall in the incidence of chloramphenicol resistant staphylococcal followed Thus in a hospital in Washington the incidence of chloramphenicol resistant staphylococcal infection was 20% between August, 1951 and May 1952 whereas during the first four months of 1953 the incidence was only 6% (Kirby and Ahern 1953) The small number of chloramphenicol resistant organisms isolated in the present investigation undoubtedly reflects the fact that chloramphenicol is reserved for those cases in which no other antibiotic is effective It is probably significant that 2 of the 3 patients with chloramphenicol resistant infection had been given local treatment with this antibiotic

Reports on chlortetracycline, soon after its discovery in 1948 claimed that there was no tendency in organisms to become resistant to this antibiotic either in vitro (Paine et al 1948) or in vivo (Collins et al 1948) This position can no longer be maintained, and, although it remains true that staphylococci do not readily yield chlortetracycline resistant variants, nevertheless today, seven years after the discovery of this, the first, tetracycline antibiotic, strains of *Staph aureus* showing from 20 fold to 50 fold increase in resistance to these compounds are by no means uncommon in hospital practice in England In the United States such strains occur even more frequently Spink (1954) reported a hospital in which 62 7% of all strains of *Staph aureus* isolated in 1953 were resistant to chlortetracycline and oxytetracycline, and already 18 3% were resistant to erythromycin

Antibiotic resistant Infection

In the present investigation 26% of the infections were due to tetracycline resistant organisms All these strains showed a gross increase in resistance to both chlortetracycline and oxytetracycline, but chlortetracycline was slightly more effective against these than it was against typically sensitive strains (Love et al 1954), and nearly all were also resistant to penicillin and streptomycin In a few cases the resistance of the infecting strains was probably the direct result of treatment This almost certainly applies to the 2 skin cases treated for months with chlortetracycline cream, but the majority were almost certainly cases of hospital cross infection

Enterocolitis

6 of the 17 postoperative infections with strains resistant to penicillin, streptomycin, and chloramphenicol were severe cases, not confined to the operation wound 3 of these were acute enterocolitis, and it is noteworthy that the patient who died was the only one given preoperative antibiotic treatment Finland (1951) first drew attention to this condition as a possible complication of antibiotic therapy, and during the past eighteen months or so 9 such cases, 8 of them fatal, have been reported in this country (Gardner 1953, Hay and McKenzie 1954, Williams 1954, Frame and Short 1955, Fowler 1955) Thus staphylococcal postoperative enterocolitis seems to have become an established entity It must, however, be remembered that postoperative pseudomembranous enterocolitis has often been reported since its first description by Finney (1893), and in most cases pathogenic bacteria have not been isolated from the fæces (*Lancet* 1954)

Preventive Measures

What then can be done? Great attention has been focused on the nasal carriers of antibiotic-resistant *Staph aureus* among the nurses It remains doubtful, however, whether these are the cause or the reflection of the infective processes In the maternity unit studied here strains of *Staph aureus* were clearly passing from the nurses' to the babies' noses and yet there were no serious infective processes until a nurse came on duty with a boil on her face On the other hand, in ten surgical wards where hospital infection with antibiotic resistant strains was taking place only 2 nurses (1 in each of two wards) were found to carry similar organisms in the anterior nares

It seems at least possible that staphylococci in an infective process become more virulent than those carried in the nasopharynx, or that staphylococci harboured in the nasopharynx tend to become less virulent Selbie (1953), comparing the properties of strains of *Staph aureus* from clinical infections with those from nasal carriers, found that the former as a group were more active than the latter in the production of coagulase, although there were strains of low and high activity in each group Possibly strains of phage group III are more virulent than the 52A strains which predominate in maternity units

This does not, of course, mean that the nasal carrier can be ignored, and the work of Gould and Allan (1954) suggests that reduction of nasal carriage may, under some conditions, cause a corresponding in hospital infection It is extremely doubtful whether chlortetracycline cream should be purpose, because its topical application seem ideal means of promoting the development organisms In any case in a ward the presence more open infections is probably more danger the presence of many nasal carriers

Recommendations

The present investigation suggests two attacking the problem The first is, so far as keep clean surgical cases in a clean ward. It desirable to separate them from patients with superficial staphylococcal lesions which covered and must therefore infect bedding environment

The second is the intelligent use of antibiotic most of these compounds local treatment for long is one of the best ways of rendering an organism and should therefore be avoided An exce this rule is neomycin, and this antibiotic or thetic compound 1 6 di-4′ chlorophenyl diguan ('Hibitane') is probably the most suitable agent local treatment of staphylococcal lesions (Lowbur More important than this, however, is to least one antibiotic in reserve All the strai recorded were sensitive to erythromycin Sinc tance to erythromycin develops quickly (Fus 1953), unless its use is rigidly curtailed will soon appear Is it too much to ask that it used only for infections resistant to all other ant

In the first volume of the annals of the Pa tute in 1887 Kossiakoff wrote a paper on "the of microbes to adapt themselves to antiseptic No bacteria have proved better able to do staphylococci It is a neck and neck race in of us tend to underestimate the opponent. Staph will not be defeated by the haphazard use of antibiotic As new antibacterial agents are let us use them with discrimination

Summary

Of 62 babies born in a maternity unit between and March of this year 55 (89%) left the hospital penicillin-resistant strains of *Staph aureus* in the nares

A study of antibiotic sensitivity patterns and phage types suggested that in most cases the acquired these organisms from the nurses from their mother Nevertheless throughout the of investigation there were no serious cases of

Between last November and last April *Staph aureus* were isolated from 100 infective in other departments, 59 of these were re penicillin, 30 to streptomycin, 26 to oxytetracy 3 to chloramphenicol

Most of the antibiotic sensitive strains were from outpatients or from new patients closed abscesses, whereas a large number of resistant infections appeared to have result hospital cross infection

Of 24 infective processes yielding strains re penicillin, streptomycin, and the tetracyclines, surgical operation and the remaining 7 chronic hospital patients while under treatment conditions The source of these infections is

All the strains showing multiple resistance with bacteriophages of group III

All bacteriophage typing was done at the Cen Health Laboratory, Colindale, by Dr R E O Dr J E Rippon, to whom I am very grateful for much valuable advice

References at foot of next column

PLASMA-INSULIN ACTIVITY IN DIABETES MELLITUS

ıEASURED BY THE RAT DIAPHRAGM TECHNIQUE

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broad clinical types of diabetes mellitus are y recognised (Himsworth 1949, Lawrence 1951) first the patients, besides having hyperglycæmia cosuria, usually develop ketosis and rapidly lose unless given insulin injections to which they are nsitive. In the second type the patients do not insulin and are usually obese middle aged females. ave hyperglycæmia and glycosuria but rarely ketosis unless their diabetes is complicated by a They generally recover from the diabetic state ey lose weight on a low-carbohydrate reducing l they are relatively insensitive to insulin injec

al workers (Groen et al 1952 Randle 1954 -Owen and Hurlock 1954) have described for imation of insulin in normal human plasma methods based on the glucose uptake of the isolated rat diaphragm We have used this method to investigate the effective plasma insulin levels in these two groups of diabetics

Method

The method previously described by us was used Briefly the uptake of glucose from undiluted plasma is compared with the uptake from buffer solution (Gey and Gey 1936) of ionic composition similar to plasma, with or without added insulin

The standard solutions of insulin used were 1000 100 and 10 micro units of insulin per ml The glucose uptake was measured in mg per 100 ml. per 10 mg (dry weight) of diaphragm Though there was considerable day to day variation in the absolute amount of glucose utilised, the difference of glucose uptake from the basal level, when no insulin was added, with any one insulin concentration was more constant. The mean glucose uptake with 10 micro units of insulin was 3·54 above the basal level with 100 micro units it was 2·87 above that with 10 micro units and with 1000 micro units it was 0·18 above that with 100 micro-units

It has been found empirically† that if the glucose uptake is plotted against the cube-root of the insulin concentration there is an apparently linear relation over the range 10–1000 micro units per ml which enables the plasma-insulin in this range to be estimated There was no significant difference among the slopes of such lines in any of the experiments reported here The more usual relation between the glucose uptake and the logarithm of the insulin concentration was curvilinear and therefore unsuitable for this purpose.

Nature of the Substance Estimated

Some doubt has been expressed about the nature of the substance measured by this method of assay (Park 1952, Randle 1954)

The argument that the effective insulin concentration or the insulin activity—i.e the resultant of insulin and its antagonists in undiluted plasma—is being estimated and causes the effect on glucose uptake rests on the following points

(1) Groen et al. (1952) found that the change in glucose uptake caused by normal dogs serum was abolished by pancreatectomy

(2) The increased glucose uptake from standard solutions and from plasma can be inhibited with cysteine and gluta thione and insulin loses its activity in the presence of –SH compounds (Groen et al. 1952, Randle 1954 Vallance-Owen and Hurlock 1954).

(3) When soluble insulin 0·1 unit per kg body weight was injected intravenously into a normal fasting subject a con siderably greater glucose uptake and hence insulin effect, was found from plasma obtained twenty minutes after the injection than from plasma removed in the fasting state before the injection was given (Vallance-Owen et al 1954)

(4) A patient with severe spontaneous hypoglycæmic attacks was found to have an excessively high level of plasma-insulin both in the fasting state and an hour after receiving 50 g of glucose by mouth. These levels fell into the lower normal range following operation, when a tumour consisting entirely of β-cells was removed from the body of the pancreas (Vallance Owen and Hurlock, unpublished results) Willebrands and Groen (1954) have reported the same finding in four cases in which the diagnosis of islet-cell adenoma was confirmed

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ceipt of a grant from the Medical Research Council.

† It is well known that in many bio assays the relation between the response (y) and the concentration (x) is of the form $y = \alpha + \beta x^{\lambda}$ or $y = \alpha + \beta \log x$ where α, β and λ are constants. In this case, if y_1 y_2 and y_3 are the mean uptake at 10 100 and 1000 micro units of insulin per ml. respectively then $\lambda = \log_{10} \frac{y_3 - y_2}{y_2 - y_1}$

From observations made on 53 previous cases a value of $\lambda = 0{\cdot}354$ was found which suggested that y was linear with the cube-root of the concentration—i e $\lambda = 1/3$

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TABLE I—PLASMA-INSULIN ACTIVITY IN DIABETICS NOT ON INSULIN
(None of these patients had ketonuria)

Clinical details					Fasting blood-sugar level (mg per 100 ml)	Fasting plasma		Plasma after
Case	Sex	Age (yr)	Age at onset of diabetes (yr)	Obese		G U * (mg per 100 ml per 10 mg of diaphragm)	Insulin conc. (micro units per ml)	G U * (mg per 100 ml. per 10 mg of diaphragm)
1	F	67	67	+	220	8 0	242	8 1
2	F	68	68	+	200	10 2	526	10 5
3	F	63	63	+	220	7 0	153	
4	F	63	62	+	200	8 1	250	
5	M	52	52	+	186	7 3	175	
6	M	67	64	+	180	4 5	33	
7	F	46	41	+	133	5 8	82	8 9
8	F	69	41	+	136	5 0	48	
9	F	71	70	+	81	5 6	71	9 7
10	F	65	65	+	102	8 4	285	9 6
11	F	68	68	+	110			10 6
12	F	53	51	+	110	6 7	130	
13	F	42	41	+	101	6 2	99	10 5
14	F	68	63	+	278	7 3	178	8 4
15	M	52	48	+	263	7 0	207	
16	F	68	66	Was +	222	7 1 6 9	164 144	8 4 8 9
17	F	81	75	–	220	6 8	138	10 3

* G U , increase in glucose uptake above basal level

Results

In previous work with normal subjects, plasma-insulin levels were studied after a 12-hour fasting period and an hour after receiving glucose 50 g by mouth

Diabetic patients were taken at random, the only criterion being whether they were or were not receiving insulin therapy Only later was a complete and independent survey of the clinical picture made

Diabetic patients not receiving insulin treatment were handled in a similar way to normal subjects, blood being removed in the fasting state and usually an hour after the receipt of glucose 50 g

Diabetic patients having insulin injections were handled in one of two ways Either blood was taken after a 12 hour fast and before the morning or blood was removed an hour after the mo of insulin and about 30 minutes after breakfa the patients in either section of this group had on the day of the test

Insulin activity was found in the plasma diabetics not receiving insulin The mean higher than that found in normal fastin (Vallance-Owen and Hurlock 1954) Table I increase in glucose uptake over the basal with the calculated effective insulin con Increased *insulin* activity above the fasting usually found after the administration of glu independent clinical assessment of the type of

TABLE II—PLASMA-INSULIN ACTIVITY IN UNCONTROLLED BUT NON-KETOTIC DIABETICS ON INSULIN

Clinical details							Blood sugar (mg per 100 ml)	Plasma alone		Plasma + 100 µ per ml
Case	Sex	Age (yr)	Age at onset of diabetes (yr)	Ketonuria off insulin	Obese	Usual insulin dose (units)		G U * (mg per 100 ml per 10 mg of diaphragm)	Insulin conc (micro units per ml)	G U * (mg per 100 ml per 10 mg of diaphragm)
Patients fasting no morning insulin										
18	F	30	7	+	–	26 S I 28 P Z I	335	–0 7	0	-2 3
19	F	18	18	+	–	48 I Z.S	280	–0 8	0	–0 4
20	M	38	38	+	–	48 I Z S	218	–4 5	0	
21	M	49	49	+	–	20 I Z.S	290	0 2	0	3 3
22	F	21	15	+	–	28 10 S I 10	400	2 3	0	5 1
23	M	51	51	+	–	40 I.Z.S	320	0 4	0	3 0
24	M	51	38	+	–	48 I Z S	175	–0 2	0	
25	M	48	42	–	+	40 I Z.S	210	1 8	0	0 9
26	M	56	51	+	–	80 S I 40 P Z I	170	1 7	0	
Patients 1 hour after morning insulin injection and ½ hour p c										
27	F	68	49	+	–	48 P Z I	250	–0 9	0	0 3
28	F	70	66	+	–	24 I.Z S	192	–3 1	0	0·5
29	F	53	53	+	–	72 I Z S	230	2 3	<10	5 [illegible]
30	M	36	29	+	–	92 I.Z.S	230			0 [illegible]
31	F	50	49	+	–	80 60 S I 40	250	–1 3	0	1 4
32	M	33	26	+	–	92 I.Z S	270	1 3	0	[illegible] 1
33	F	44	36	+	–	30 30 S I 30	230	–4 5	0	–5 3
34	M	46	41	+	–	92 I.Z.S	300	–2 4	0	3 7
35	M	29	8	+	–	36 I Z S	475	–2 0	0	–0·9
36	F	71	69	+	–	24 I Z.S	230	0 4	0	1·9
37	F	45	43	?	–	98 I.Z.S	250			0·3

*G U increase in glucose uptake above basal level
S I soluble insulin.

P.Z I , protamine zinc insulin.
I Z.S insulin zinc suspension (lente).

l in this group shows that all but two cases fell typically obese diabetic group, of these two was thin but on treatment with a low drate diet alone the fasting blood-sugar fell 0 to 140 mg per 100 ml and the glycosuria d Case 16 had been obese but was ultimately small dose of insulin

iabetic patients having insulin injections present complex picture In most of them no plasma activity was found, whether the blood was l after the morning insulin injection or in the state the glucose uptake from plasma in these as not significantly different from the basal uptake. In these cases (table II cases 18–37) it noted that the blood sugar level was raised well the normal physiological range, the diabetes sufficiently controlled

w patients, however the glucose uptake increased above the basal level, and here it was noted that od sugar was within the normal physiological d corresponding to diabetic control (table III –46) In only 1 case was no insulin found when the gar level was in the normal physiological range A later clinical study of this group shows that bjects with no plasma insulin activity and with blood sugar, 18 of the 20 patients were thin and ketonuria when off insulin—they were typical requiring" diabetics Case 36 was later dis to have a carcinoma of the pancreas. Case 25 aving insulin therapy but was obese and no f ketosis was found Case 37 probably had s syndrome

e few patients whose blood sugar was in the range and who had plasma insulin activity) cases 39–41 and 43–45 were typical insulin diabetics. Two patients were studied on two occasions (cases 31 and 44 and cases 24 and 41) irst occasion the blood-sugar level was raised r showed no plasma-insulin activity on the ccasion the blood sugar level was physiological, ulin activity was now found in the plasma. was a thin elderly diabetic, but there was no that she had ever had ketosis Case 46 had been t lost weight and was given insulin injections development of reticulosarcoma.

TABLE IV—MEAN GLUCOSE UPTAKE ABOVE THE BASAL LEVEL (+ STANDARD ERROR OF THE MEAN)
(mg per 100 ml. per 10 mg (dry weight) of diaphragm)

Group	Plasma	Plasma after glucose	Plasma +400 micro units per ml insulin
Obese diabetics	9·97 ± 0·360 (9·98 ± 0·103)	9·53 ± 0·200 (9·51 ± 0·348)	10·0 ± 0·40
Insulin requiring diabetics with raised blood-sugar level	−0·56 ± 0·501 (−0·09 ± 0·510)		1·10 ± 0·628 (1·15 ± 0·713)
Insulin requiring diabetics with physiological blood sugar level	7·24 ± 0·893 (6·80 ± 1·073)		9·74 ± 1·097 (9·35 ± 2·107)

These figures include all cases studied in each group, the figures in parentheses exclude the doubtful cases mentioned in the text

Addition of Insulin to Plasma

When a known amount of insulin has been added to normal plasma it has been satisfactorily recovered, 400 micro units of insulin per ml was added to the plasma from most of the diabetics receiving insulin injections In the case of diabetics on insulin with a raised blood sugar there was no insulin activity, even when 400 micro units of insulin was added The activity of added insulin appeared to be inhibited (table II)

Diabetics on insulin with a blood-sugar in the physiological range did not show inhibition of added insulin except case 38, in whom no plasma-insulin activity was found either with or without added insulin

Insulin was also added to the plasma of a few of the diabetic patients not on insulin and was satisfactorily recovered

Comparison of Diabetic Groups

For the group of diabetics not on insulin, the plasma insulin level was estimated by using standards of 10 100 and 1000 micro units of insulin and interpolating the plasma uptake on the line obtained from the standards on the cube-root basis mentioned above Any insulin estimation made in this group of diabetics—in fasting state, after glucose, or after the addition of insulin—are therefore directly comparable

However to compare the 'insulin requiring' diabetics with the 'obese' diabetics, it proved more

TABLE III—PLASMA INSULIN ACTIVITY IN CONTROLLED DIABETICS ON INSULIN INJECTIONS

Clinical details						Blood-sugar (mg per 100 ml.)	Plasma alone		Plasma +400 micro units per ml insulin	
x	Age (yr)	Age at onset of diabetes (yr)	Ketonuria off insulin	Obese	Usual insulin dose (units)		G U (mg. per 100 ml per 10 mg of diaphragm)	Insulin conc. (micro units per ml.)	G U (mg per 100 ml per 10 mg of diaphragm)	Insulin conc. (micro units per ml.)
Patients fasting no morning insulin										
	37	33	+	–	53 I.Z.S.	76	1·7	0	4·1	<10
	39	3	+	–	20 S.I 20 P.Z.I	90	7·0	233	10·6	760
	53	38	+	–	72 S.I 2-hourly	96	7·7	215		
	51	35	+	–	40 I.Z.S.	95	8·4 5·3	275 58		
	82	77	?	–	16 S.I 20 P.Z.I	120	7·0	400		
Patients 1 hour after morning insulin injection and ½ hour p c.										
	20	18	+	–	120 I.Z.S	150	10·7 9·0	597 455	14·3	>1000
	50	49	+	–	80 60 S.I 80	140	6·0	158	8·4	120
	16	13	+	–	140 S.I 60 P.Z.I	148	9·8	470		
	62	61	–	+	28 I.Z.S	145	10·0	495	11·3	739

G U., increase in glucose uptake above basal level.
S.I soluble insulin
P.Z.I. protamine zinc insulin
I.Z.S. insulin zinc suspension (lente)

convenient to express the uptakes as differences from the basal level This entailed calculating the basal glucose uptake in many experiments on the "obese" group, when they were not estimated experimentally This was done by virtue of the apparently constant differences between the basal levels and the standards over a large series of experiments There will be a few discrepancies between the insulin values calculated from the standard line and those that would be obtained if the glucose uptake above the basal level were used, for this latter does not take into account the uptake values obtained for standard concentration of insulin at 10, 100, and 1000 micro units per ml The mean glucose uptake above the basal level, calculated for each group, is given in table IV

Among the "insulin requiring" diabetics with a high blood sugar level neither the mean uptake with plasma nor the uptake when insulin was added differed significantly from zero Both the "obese" diabetics and the "insulin requiring" diabetics with blood-sugar in the physiological range gave significantly greater uptakes than did the "insulin requiring" diabetics with raised blood sugar For "obese" diabetics the uptakes for plasma after glucose and for plasma with added insulin were both significantly greater than for plasma taken in the fasting state

Accuracy of Estimates and Sources of Error

Among the people who showed insulin activity the differences of insulin concentration may be due to two causes (1) variation in actual insulin concentration from person to person, and (2) variations due to experimental inaccuracies, which will depend on the variability of uptake by rat hemidiaphragms and on the number of hemidiaphragms used in each estimation

These sources of variation cannot be examined by the actual estimates of insulin, for their distribution is not symmetrical, and a standard deviation is of little use in measuring the variability of a skew distribution The distribution of the glucose-uptake values from person to person is, however, apparently symmetrical, and it is these values which are examined

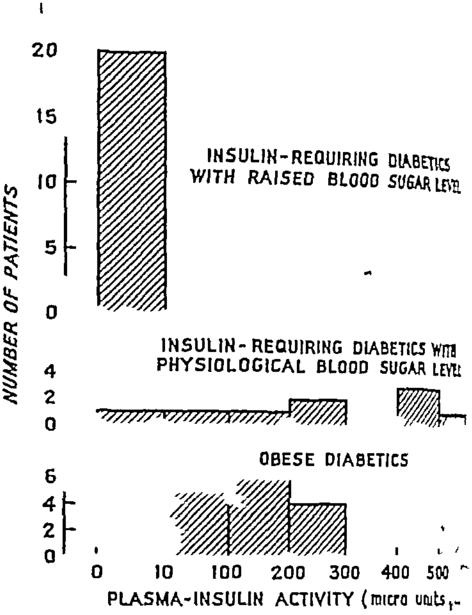
TABLE V—STANDARD DEVIATION (S.D) OF GLUCOSE UPTAKE VALUES OVER BASAL LEVEL

Group	Plasma	Experimental S D	Observed S D
Obese diabetics	Fasting	1 60	1 40
	After glucose	1 67	0 95
	With added insulin	1 77	0 80
Insulin requiring diabetics with physiological blood-sugar level	Fasting or 1 hr after insulin injection	1 01	2 68
	With added insulin	1 57	3 79

By comparison of replicate uptake measurements it was possible to estimate the standard deviations of uptake values (over basal values) due to experimental variation These are given in table V with the standard deviations of the observed uptake values for each group They are, however, only approximate, since the number of hemidiaphragms per estimate was not constant (usually three with standard solutions), nor were the experiments all of the same accuracy

It will be seen that with the "obese" diabetics the experimental and actual S D are of the same order, which suggests that a large part of the variation is due to experimental errors In other words, the insulin variation is very much less than appears from the accompanying figure

For "insulin-requiring" diabetics with blood-sugar in the normal physiological range, the experimental S D is less than the observed, suggesting that, though person-to person variation is less than appears in the figure, it is greater than among "obese" diabetics



Plasma insulin activity in diabetics.

Discussion

The results recorded here agree with th observations of Bornstein and Lawrence (195 but are at variance with those of Groen et a who failed to find insulin activity only in th of severely ketotic diabetic patients.

The failure to recover insulin added in vitro t plasma with no insulin activity may be the findings of Bornstein and Lawrence (1951b) test animals (alloxan diabetic hypoph ectomised rats), injected with such inactive plasma samples, were rendered insensitive to subsequent control tests Bornstein and (1950), however, had previously reported th plasma lacking insulin activity did not mask of insulin added to the plasma before injection prepared animals

Our observations suggest that many diabetic require insulin to overcome an inhibitor their plasma This would explain why diabe require more insulin than do depancreatised subjects (Goldner and Clarke 1944, Whitfield et and the development of severe insulin res merely indicate an increase in this inhibitor without the need to postulate any new mech account for it

It is interesting to speculate on the natur inhibition Stowers (1951) has shown that, ketosis, there is an increased excretion of cortic suggesting increased secretion of the adrenal the cause of the considerable insulin resistanc condition could be adrenal overactivity, which account for the increased insulin requirement tions of stress, such as infection But there tion of increased adrenal activity in non ketot patients, in five of the plasmas reported h exhibited inhibition the total amounts of corticosteroids were within the normal range

Glucagon, probably the hormone of the pancreatic islet tissue, might be expected t anti insulin effect, but no in vitro effects of the rat diaphragm have been confirmed

Increased insulin requirement in patient and insulin resistance by the insulin tolerance known to occur with some disorders of the pitui Overaction of this gland, acting alone or th adrenal, cannot be ruled out as a cause of the reported here Recently Bornstein and Par escribed an inhibitor substance in alloxan-diabetic im which is not present after hypophysectomy or ectomy Moreover it was necessary to inject both hormone and cortisone to restore the inhibiting ies of the serum from diabetic hypophysectomised The injection of either substance alone failed to ce the inhibition

Summary

na insulin activity was studied in the two broad types of diabetes mellitus.

e obese group who do not require insulin injec nsulin activity was found. The activity in the state was greater than that found in normal subjects There was usually an increase in plasma activity 1 hour after the administration of 50 g orally but this activity did not exceed that n normal subjects under similar conditions When n amount of insulin was added to the plasma from atients in vitro, it was satisfactorily recovered

controlled but non ketotic diabetics who require no plasma insulin activity was found When was added to the plasma of these patients in vitro not recovered—its activity being apparently d When the patients in this group were con however plasma-insulin activity was found of the possible causes of this apparent inhibition tioned

sh to thank Prof J McMichael and Prof E J King ing us facilities to do this work Dr Russell Fraser uragement and help with the clinical assessment ical Research Council for a grant for scientific assis- and Messrs. Boots Pure Drug Co for supplies of lised insulin.

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MONARY TUBERCULOSIS DUE TO LI RESISTANT TO STREPTOMYCIN AND ISONIAZID

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tion with tubercle bacilli resistant to strepto r to *p* aminosalicylic acid (P A.S) has already orted by Thomas et al (1954) who recorded 15 pulmonary tuberculosis in which drug resistant s were isolated although no previous chemo with the relevant drugs had been given

aid resistant tubercle bacilli have been trans y accidental laboratory infection (Borgen 1953) d (1954) have reported a fatal case of tuberculous ia due to organisms resistant to streptomycin isoniazid, and P.A.S The source of infection in this case was not traced.

We report here a case of pulmonary tuberculosis from which organisms resistant to streptomycin and isoniazid were isolated although no previous chemotherapy with either drug had been given Details are also given of a potential source of infection

Drug sensitivity tests in both cases were made on solid medium The figures given for streptomycin and P.A S sensitivities are the ratio of the drug resistance of the test organisms to that of the control strain of H37Rv (Mitchison and Monk 1955 Stewart 1955) Those for isoniazid are the highest concentration of the drug on which growth was obtained (Medical Research Council 1953)

Case-report

A man aged 20 was first seen at the Royal Victoria Dispensary Edinburgh on Sept 15 1949 as a contact of his sister who had pulmonary tuberculosis. Screening of his chest was negative He subsequently served with the Royal Navy and was not seen again until Sept. 22 1954, having been discharged from the Service. Radiography of his chest then showed enlargement of the right hilar shadow and disease in the right lower lobe The Mantoux response was strongly positive to 1/10 000 Old Tuberculin. The erythrocyte-sedimentation rate was 10 mm in one hour (Westergren) No tubercle bacilli were isolated from the sputum by the concentration method. He was kept under observation and, as further radiography of the chest on Oct. 7 1954 showed no change in the appearances, a provisional diagnosis of active pulmonary tuberculosis was made and treatment with P.A.S 18 g and isoniazid 200 mg daily was started

BACTERIAL SENSITIVITY TESTS

Specimen	Date of culture	Streptomycin	Isoniazid	P.A.S
Contact's sputum	Sept. 15 1954	> 32	10	2
		32	10	2
Patient's sputum before treatment	Sept. 23 1954	16	10	2
		4	5	1
Patient's sputum after treatment	Feb. 19 1955	> 16	5	2
	Feb. 21 1955	16	10	2
	Feb 22 1955	> 16	5	1
	Feb 23 1955	> 16	5	1
	Feb. 24 1955	> 8	10	1
	Feb. 28 1955	8	10	1
	March 7 1955	> 8	10	4
	March 14 1955	> 16	5	1
	March 28, 1955	16	5	4

The figures given for streptomycin and P.A.S are the ratio of the drug resistance of the test organism to that of the control strain of H37Rv Those for isoniazid are the highest concentration of the drug on which growth was obtained

Bacterial Resistance.—Positive sputum cultures obtained from the pre-treatment specimens of *Sept. 23 1954* were subsequently tested for bacterial resistance to streptomycin P.A.S., and isoniazid and the organisms were found to be resistant to streptomycin and isoniazid but sensitive to P.A.S *As* a result of these findings close inquiry into the patient's home conditions revealed that his sister who was at the time living in the same house as the patient had been treated with P.A.S alone 20 g daily from May to August, 1951 with streptomycin 1 g daily and P.A.S. 20 g daily from August to November 1951 and with isoniazid alone 200 mg daily for nine months in 1953-53. She remained sputum positive however and specimens obtained on Aug *15 1954* showed bacterial resistance to streptomycin and isoniazid. When the results of the patient's sensitivity tests were known his treatment with isoniazid and P.A.S was discontinued and he was admitted to the City Hospital Edinburgh, on Feb 18, 1955 Nine subsequent sputum specimens were positive on culture and all showed the tubercle bacilli to be resistant to streptomycin and isoniazid. There was no change in his clinical state and the radiographic appearance of the pulmonary lesion was unaltered.

Viomycin Therapy—Treatment with viomycin 2 g twice weekly and oxytetracycline 4 g daily was begun on Feb 28 The sputum became negative on culture in April and the chest film was normal by June. The patient is now clinically well and fit to resume work.

Bacterial Sensitivity Tests—The results of the tests made on specimens obtained from the patient before treatment was started, and from his sister, are given in the accompanying table, which shows that there is an almost identical degree of bacterial resistance to streptomycin and isoniazid in the two cases The table also shows that there was no significant change in the degree of resistance of the patient's organisms to any of the three drugs after three months' treatment with P A S and isoniazid

Virulence Study—A culture of the sputum obtained from the patient on Sept 23, 1954, was subsequently inoculated into a guineapig, which was killed nine weeks later At necropsy slight glandular enlargement was found at the site of inoculation, the spleen was enlarged but showed no macroscopic or microscopic evidence of tuberculosis, the liver was normal, and a few scattered tuberculous foci were present in both lungs but showed no tubercle bacilli on staining by the Ziehl Neelsen method

It was concluded from this investigation that the organisms were of low virulence for the guineapig

Discussion

As the patient's sister, with whom he had been in close contact, was excreting tubercle bacilli resistant to streptomycin and isoniazid, and the organisms isolated from the two cases showed an almost identical pattern of drug resistance, it seems reasonable to assume that the patient was infected by his sister So far as we know, this is the first instance, in clinical practice, of infection by isoniazid-resistant bacilli where the source of infection could be traced

The organisms isolated from the patient's sputum were of low virulence for a guineapig In view of his rapid and complete response to what has been described as a less effective form of treatment—i e, viomycin and oxytetracycline (Tucker 1954)—it is possible that the bacilli were also of low virulence for the patient, but the fact remains that they were initially capable of producing a frank pulmonary lesion

There has recently been a tendency to deny the clinical significance of in-vitro isoniazid resistance (Deuschle et al 1954) and to return to the practice of using isoniazid by itself in the treatment of pulmonary tuberculosis It therefore seems important to record any evidence supporting the opposite view, including cases such as this, in which isoniazid-resistant infection is transmitted to other persons

Summary

A case of pulmonary tuberculosis is described from which organisms resistant to streptomycin and isoniazid were isolated, although no previous chemotherapy with either drug had been given

The source of infection was almost certainly the patient's sister, whose tubercle bacilli showed an almost identical resistance pattern

The organisms were of low virulence for the guineapig

The transmission of isoniazid-resistant infection from one person to another suggests that, in this instance at least, in vitro isoniazid resistance was of clinical significance

We wish to thank Dr A T Wallace, consultant bacteriologist, City Hospital, Edinburgh, for the bacterial sensitivity tests, and Miss Sheila Stewart, of the Department of Tuberculosis and Diseases of the Respiratory System, University of Edinburgh, for the animal inoculation studies

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PRESSURE RESPIRATORS

THE APPLICATION OF NEGATIVE PRE

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SINCE positive pressure ventilation began, t tages of "suck" as well as "blow" have be many quarters Physiologically there seem to arguments in its favour Unfortunately the benefits are extremely difficult to assess, e results being vitiated either by deficiencies i line system or by the pathological condition of th

Two main methods of positive pressure venti used (1) The patient exhausts into a system volume and permanent low pressure, and (2) a negative wave results from the contra-action of or similar pumping device

The second method appears to be the sounder the use of lower pressure to aid emptying without danger of causing collapse at the e phase Whichever system is used, the expiratory valve must be positively operated

The normal types worked by the main not open under the action of effective negative Accordingly some form of positive operation, be mechanical, electromagnetic, hydraulic, or is essential

If negative pressure is deemed advisable it w be embodied in the original design of the m almost any existing apparatus can be adapte purpose

Two features are essential (1) positively valves, as previously mentioned, and (2) a of twice the stroke volume required by the Machines designed by me have all had a stroke of 1350–1700 c cm This at 18 revolutions p gives a minimum minute volume of 24 litres

ADDITIONAL APPARATUS

The additional apparatus is a large U tube of a rectangular vessel 30 × 10 × 12 cm. vertically by a partition which does not reach t Large water passages are essential

The principle is best followed from fig 1 pressure stroke the volume in the "patient of the delivery pipe will be slightly less than t U-tube owing to the greater resistance of th &c The exhaust air in the second arm of th is blown out through the flap outlet valve. T rises to a height corresponding to the positive

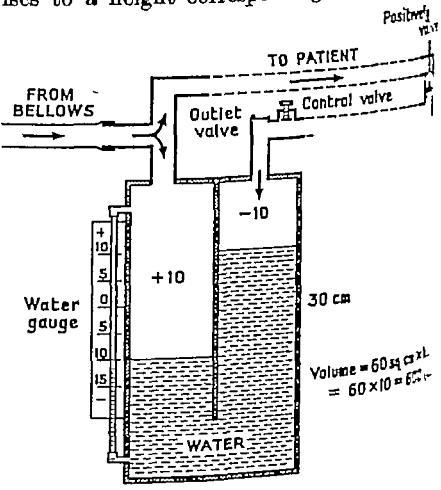

Fig 1

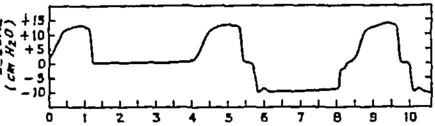

Fig. 2.

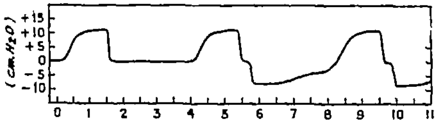

Fig 3

lelivered When the expiratory valve opens this pressure s converted to a negative suck, which is considerable and s shown in fig 2, the reading being taken at the catheter nount in a chronic poliomyelitis patient A spring oaded control valve is embodied which will limit the uck to a fixed maximum

If an adjustable leak be arranged in this control valve, he shape of the curve can be varied (fig 3) The volume f air delivered to this patient was 550 c.cm at 18 evolutions per minute at a positive pressure of 14 cm vater and a suck of −7 cm water

This simple accessory works well and can be made by ny metal worker There is nothing to wear out, and it nables a negative phase to be obtained from any existing nachine.

MODIFIED ELECTROCONVULSION THERAPY WITHOUT ANÆSTHESIA

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In view of the risk of fractures (Kalinowsky and Hoch 1952) and a death rate of 0·8% (Impastato and Almansi 1942) it is difficult to justify the use of electroconvulsion therapy (E.C T) without muscle relaxants.

In the usual method of giving modified E C T thiopentone and a muscle relaxant suxamethonium chloride (' Scoline ') are used This technique can give rise to such serious complications that some authorities insist on the presence of two doctors during the treatment which is often given by an anæsthetist

In the search for a safer method of modifying E.C T Murray (1953) used suxamethonium without an anæsthetic and claimed that it was satisfactory, but so far his technique has not been tried in this country Gillie and McNeill (1955) have reported on the use of suxethonium bromide (' Brevidil E ') without anæsthesia Neither of these techniques has been controlled by comparison with E C.T modified with suxamethonium and an anæsthetic The purpose of the present investigation was to compare these three techniques in the same group of patients.

Method

The fifty patients included in this investigation were from recent and chronic cases under treatment with E.C.T There were twenty five males and twenty five females Their ages ranged from 21 to 56 Their diagnoses were schizophrenia 34 affective psychoses 12, and paraphrenia 4

An ' Ectron ' apparatus was used and the stimulus was applied for 1 sec in all three techniques One investigator carried out all the procedures connected with the treatments and the other observed the patients' reactions timed them with a stop watch, and recorded them The same teams of nurses assisted in all the treatments which were in all cases given in the same rooms and in the same manner

Investigation

Technique

Atropine sulphate gr $^{1}/_{100}$ was injected subcutaneously an hour before the treatment in all three techniques. The limbs were not restrained and a pillow was not used under the back.

E C T modified with thiopentone and suxamethonium chloride was given in the usual manner (Moss et al 1953) Males had thiopentone 0 25–0 35 g as required, and suxamethonium 40 mg Females had thiopentone 0 2–0 3 g and suxamethonium 30 mg

When suxamethonium chloride was used alone, males were given 25 mg and females 20 mg Facial fasciculation developed 5–20 sec after the end of the injection (average 11 sec) ; a gag was inserted, and the stimulus was given 10 sec after the beginning of the facial fasciculation an airway was substituted for the gag and the patient was respired intermittently until spontaneous respirations started ; in this way cyanosis was avoided.

When suxethonium bromide was used alone, 100 mg dissolved in 2 ml of water was injected into males and 75 mg dissolved in 1 5 ml of water into females, and a gag was inserted before the injection Facial fasciculation or grimacing moaning or restlessness began 5–13 sec. after the end of the injection (average 9 sec) and the stimulus was given 3–5 sec later—i e , 10–16 sec after the end of the injection (average 11 sec) An airway was substituted for the gag and the patient was respired intermittently from the end of the fit until spontaneous respirations started

Criteria

A fit was judged to be satisfactorily modified if the tonic stage was absent and the clonic stage mild Anxiety was thought to be due to the drug if after the injection the patient moaned or cried out struggled or was restless , the facial expression was also taken into account The duration of apnœa was *measured from the* end of the fit to the first breath perceptible in the oxygen bag The duration of the fit was measured from the application of the stimulus to the cessation of muscle twitching

Findings

Opisthotonos and the epileptic cry did not occur in any patient with any *technique*

Anxiety did not occur with thiopentone and suxamethonium chloride after the injection it occurred in sixteen patients with suxamethonium alone and in twenty nine patients with suxethonium bromide. The quality of the anxiety was much more intense with suxethonium bromide and it was then accompanied by groans and restlessness more frequently There was complete amnesia for this period of anxiety in all the patients

No patient complained of anything after any of the treatments

The fit was somewhat modified in all the patients with all three techniques *An entirely* satisfactory degree of modification was present *in forty* five patients with thiopentone and suxamethonium, and in forty-seven patients with suxamethonium alone, and in the same number with suxethonium alone There was no difference in the degree of modification with the three techniques

Although an analysis of variance indicates significant differences (P 0·01–0 05) between *mean durations of the fit* in the three procedures, these are not considered large enough to have any clinical importance.

The figures of the *duration of apnœa* were subjected to an analysis of variance of the ' t " test, which was

COMPARISON OF EFFECTS OF THREE TECHNIQUES OF GIVING E C T IN THE SAME 50 PATIENTS

Type of technique	Duration of fit (sec.)		Duration of apnœa (sec)	
	Mean	S.D	Mean	S D
Thiopentone and suxamethonium chloride	42 4	11 43	56 1	42 04
Suxamethonium chloride alone	49 4	15 71	35 7	32 34
Suxethonium bromide alone	45 4	6 45	63 8	39 27

applied to measure the significance of the observed differences between means The duration of apnœa was significantly shorter with suxamethonium alone than it was with either suxethonium ($P < 0.001$) or thiopentone and suxamethonium ($P < 0.01$) The duration of apnœa after suxethonium was longer than that after thiopentone and suxamethonium, but the difference was not significant ($P > 0.3$) The longest duration of apnœa with suxamethonium alone was 2 min 32 sec, with suxethonium 2 min 53 sec, and with thiopentone and suxamethonium 3 min 5 sec

The accompanying table shows the mean values and standard deviations of these results

Discussion

Safety

Prolonged apnœa due to sensitivity to suxamethonium is the commonest complication of E C T modified with thiopentone and suxamethonium (Bourne et al 1952, Evans et al 1952, Bourne 1953) Since suxamethonium sensitive patients cannot be readily excluded from treatment, the use of the drug in small doses is the only remedy (Calvert et al 1954) This safeguard may fail because thiopentone is a respiratory depressant and prolongs the apnœa produced by the suxamethonium (Richards and Youngman 1952, Mesham and Barton 1952) In addition, thiopentone can give rise to serious complications, including laryngeal spasm (Millar 1951, Hale 1947)

Prolonged apnœa is less likely to occur when suxamethonium is used alone, since a smaller dose of suxamethonium is then effective Moreover, the largest dose used in this investigation (25 mg) is less than the dose (30 mg) which produced apnœa lasting 2 min 45 sec in a patient sensitive to suxamethonium (Calvert et al 1954)

Both suxethonium bromide and suxamethonium chloride are derived from choline succinic ester, and the patients' sensitivity to them depends on his serum pseudocholinesterase level (Monro et al 1953) By contrast with suxamethonium a "safe" level of suxethonium has not been ascertained Therefore it is possible that the dose of suxethonium used in this investigation could cause prolonged apnœa in a sensitive patient, and it is probably significant that the duration of apnœa was longer with suxethonium than with suxamethonium, and even with thiopentone and suxamethonium

Suxethonium has other disadvantages The response to it may vary not only from patient to patient but also in the same patient at different times (Monro et al 1953, Gillie and McNeill 1955, Wolfers 1953) Moreover cyanosis often develops because oxygenation during the fit is inadvisable since it may prolong the clonic stage (Gillie and McNeill 1955)

Anxiety

When either suxamethonium or suxethonium is used without an anæsthetic, the patient may experience anxiety in association with the onset of fasciculation and paralysis Seve[illegible] anxiety might be experienced if the reaction [illegible] to a point where the patient experienced f[illegible] [illegible]sis, including respiratory paralysis Mayrhofer (1952) and Murray (1953), who observed their own reactions to suxamethonium, found that full paralysis did not develop until 30–60 sec after the end of the injection In the present investigation facial fasciculation began 5–20 sec after the injection of suxamethonium, and the reaction was interrupted 10 sec later—i e , 15–30 sec after the end of the injection Therefore the patients probably did not experience the unpleasant sensations associated with full paralysis This is borne out by the absence of anxiety in two thirds of the patients treated with suxamethonium and the occurrence of only mild anxiety in association with facial fasciculation in the other third

Since there are no reports of personal observations of the effects of suxethonium, the only grounds for surmise are the patients' reactions More than half the patients experienced severe anxiety after injections of suxethonium Presumably the severe intensity of the anxiety was due to the shock-like onset and rapid spread of paralysis that took place with this drug It seems likely that some of the patients experienced respiratory paralysis despite the application of the stimulus within 3–5 sec of the onset of the reaction Moreover one o Gillie and McNeill's (1955) patients recalled a sensatio of smothering after the injection of suxethonium A further disadvantage is that the speed of the reactio with suxethonium is such that reassurance could not be given, whereas, with the longer induction of suxamethonium, reassurance can be given and is said to be helpful (Murray 1953)

Convenience of Administration

When thiopentone is used with suxamethonium, the drugs have to be injected with great care because thiopentone is highly irritant and can damage the vein and surrounding tissues Repeated treatments are sometimes difficult owing to wear and tear of the veins Moreover the preparation of the thiopentone for injection is time consuming and, in giving the injection, the two syringe technique is sometimes difficult After the treatment the patient may have to rest on a bed for half an hour or longer, and this often presents difficulties, especially in outpatient clinics

Suxamethonium and suxethonium are not irritants Both are easy to prepare for injection, but suxamethonium is better because it is already in solution In this hospital, where suxamethonium alone is now used as a routine in the outpatient clinic, it is mixed with a 1 ml. ampoule of atropine sulphate gr $^{1}/_{100}$, and this saves the patient's time Injections of suxethonium and of suxamethonium are much easier to give than injections of thiopentone and suxamethonium Since a general anæsthetic is not used, with suxamethonium alone the patients' recovery-time is about halved (Murray 1953).

Degree of Modification

With suxamethonium alone the doses recommended by Murray (1953) did not produce satisfactory modification in earlier trials of his technique in this hospital. In th investigation the degree of modification was so satisfactory with both suxamethonium alone and su ethonium alone that it is most improbable that a fracture could occur with either when these doses ar used In Murray's series with suxamethonium alo in none of 60 patients radiographed was there any change in the vertebræ after a course of treatment

Conclusion

E C T modified with either suxamethonium chlor or suxethonium bromide without anæsthesia is safer, l time consuming, and less complex than E C T modi with thiopentone and suxamethonium Except in ca with grave physical complications, the procedure giving E C T modified by suxamethonium chloride wi an anæsthetic can be administered by one doctor on used alone suxamethonium and suxethonium cause anxiety in the patient during induction; but, electrical stimulus is given early the duration of the ty is brief, and there is amnesia for it after ment

xamethonium alone is preferable to suxethonium because (1) it causes anxiety less often, and the ety is less severe, (2) its action is slower, and so it is ble to reassure the patient (3) its action is more tant and predictable; and (4) it causes a shorter a and probably, in the doses used in this investi n it could not cause prolonged apnœa

T modified by suxamethonium alone can be omended for routine use both with inpatients and tients

are indebted to Dr F T Thorpe and Dr D R Wood lp and advice

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TRICHINOSIS IN GREENLAND

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From the British North Greenland Expedition

ecorded in our previous paper (Lewis and Masterton the British North Greenland Expedition estab in August 1952 a base in Dronning Louise Land th East Greenland. There the members stayed for ars, exploring unknown territory

ning Louise Land—a mountainous region—is separated e East Greenland coast by two formidable glaciers out 25 miles broad yet there is evidence that the ls inhabiting it, particularly the fox and musk-ox, so glaciers to the coast where polar bear walrus, and to be found. The remains of a polar bear was seen in g Louise Land itself which suggests that animals land too There is no question therefore of this area olated from the coastal belt and one would expect e pattern of animal disease in each area.

ards the end of the first year in Greenland one of n developed symptoms suggestive of trichinosis l muscular pains, localised œdema, and eosino He returned home at the end of one year was gated, and was found to have filariasis contracted ly in the tropics However in view of the work (1949) and Leiper (1938) who regard trichinosis jor problem in the Arctic we decided to look for ls among the sledge dogs and carnivora of ng Louise Land.

urther evidence of this disease was seen among They had an occasional meal of seal or polar at but this was always thoroughly cooked All od came from Britain

The Investigation.—Specimens were collected from the sledge-dogs which were shot or died during the second year, and also from the local fauna, of which Arctic fox was the only carnivore

Specimens of fore-leg muscle or diaphragm were taken from the dogs, and of masseter and diaphragm from the fox. They were preserved in dry salt or alcohol which are considered satisfactory preservatives, and when the expedition returned the specimens were examined at the department of pathology of the Royal Army Medical College

Each specimen was cut in half, one piece being placed in an artificial gastric-juice solution to dissolve out any cysts. The other piece was embedded in paraffin and sectioned The best material was diaphragmatic muscle since intercostal muscle was difficult to section. In no case was it possible to recognise the cysts by the naked eye

The findings were as follows:

Examined	*No infected*
9 dogs	7
6 foxes	0
7 newborn puppies	0

In 6 of the 7 cases of infection the result was positive by both methods. In the 7th case no cysts were demonstrated on dissolving out

Comment

It is interesting that like Roth (1949) we found no infestation in the fox though the numbers are perhaps too small to justify any conclusion

Of the 2 dogs not infested one was a bitch born in Dronning Louise Land which had had little opportunity to eat raw meat The other 8 dogs examined had been brought with 29 others, from West Greenland and the high prevalence of trichinosis in such dogs agrees with the findings of Roth (1949) It is no doubt perpetuated in West Greenland by the habit of feeding them with the raw meat of polar bear, walrus, and seal, and also with the carcasses of older dogs which have been shot

Leiper (1938) has drawn attention to the significance of this infestation in Polar exploration Dogs given fresh meat from other carnivores run a great risk, which may explain the occasional unexpected breakdown in the stamina of dog teams and sudden death of dogs, on Polar journeys

Our observations should further discourage readers from eating undercooked meat in Greenland

We are indebted to Colonel L. R. S MacFarlane professor of pathology at the Royal Army Medical College who kindly carried out the laboratory investigations for us.

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THE BLADDER NECK

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The medical student is surprised to learn that the degree of obstruction caused by an enlarged prostate bears no constant relation to the size of the prostate The reason for this, which no one bothers to explain to him is that there is a second factor involved—namely, the musculature around the bladder neck—and of the two this is probably the more important

In the animal kingdom only the dog develops an enlarged prostate, and even he is none the worse for it because the enlargement is free to thrust its way harmlessly up into the bladder In man the more elaborate sphincteric arrangement at the bladder neck interferes with this simple way out of the difficulty but the prostatic patient who notes that his water comes more freely when he stops straining is unwittingly taking advantage of it. Diminution of muscular tone during sleep or under anæsthesia produces the same effect and explains the bed wetting of the later stages of the disease Some day we may discover a drug that puts the sphincter out of action so far we have only found one that constricts it—ephedrine does this, as the elderly asthmatic sometimes learns to his cost

Anatomy of the Enlargement

Whatever may be the nature of the change that enlarges the prostate, two facts about it are indisputable (1) it is very common, and (2) it is limited to the central part of the gland So common is this adenomatous enlargement that it is found, in greater or less degree, associated with almost any form of prostatic disorder—with prostatic calculi, with prostatic carcinoma, and even with prostatic fibrosis

The adenoma (as good a name for it as any other) grows slowly In the early stages the process is of limited extent, and quite poorly defined—a fact that is not unimportant for the surgeon to remember It has been said that a prostate, like a cataract, must ripen before it is fit to be removed Fortunately the ripening prostate seldom causes symptoms, so there is no great temptation to interfere with it prematurely

Randall's (1931) classical work on the pathology of the enlargement shows that it tends to follow certain patterns or combinations of patterns

(1) The *lateral lobes enlarge*, either in situ or by insinuating themselves through the sphincter vesicæ into the bladder A patient with this type of enlargement complains of urgency and frequency, but, like the dog, he does not accumulate residual urine, and, if he is unlucky enough to develop an acute retention, he can be cured, for the time being at least, by passing a catheter and emptying his bladder

(2) The *posterior commissure, or "middle lobe," enlarges* This enlargement arises in the tissue connecting one lateral lobe to the other beneath the floor of the internal meatus, and consequently is ideally placed for interfering with the complicated musculature of the bladder neck The sphincter vesicæ is stretched and the trigonal muscle hypertrophies in consequence Micturition is increasingly difficult, but frequency only grows troublesome when emptying becomes incomplete and residual urine accumulates in the bladder Catheterisation does not cure retention when it supervenes, or if it seems to do so, leaves the patient with an overflow which may go unsuspected

Types 1 and 2 are often combined giving the "horse collar" appearance from above

(3) The *subcervical lobe enlarges* upwards through the meatus in a pedunculated fashion The symptoms are an early irritative frequency, which develops into an overflow, ending in retention, and, since residual urine has been mounting steadily, this is not cured by catheterisation

(4) The *posterior lip of the internal meatus becomes elevated and thickened*, either as part of a fibrosing process in the prostate generally or as an early stage of posterior-commissure formation, so that a sort of threshold is formed at the entrance of the bladder The two processes are pathologically distinct, but produce similar mechanical results At operation it may be difficult to force a finger through a meatus of this type, which, in striking contrast to the patulous meatus usually found with adenomatous formation, is small and rigid Both these conditions tend to start much earlier in life than a frank enlargement, and the patients complain of having to pass small amounts at short intervals with a stream which becomes steadily feebler Residual urine may amount to enormous quantities, but retention is more likely to be of the overflow variety Women occasionally develop a similar disorder

It will be noticed that, of the symptoms produced by these various enlargements, those of the first group are irritative, while those of the other three are mainly ob

From a physiological standpoint it is also possible t make a broad distinction the obstructions can b divided into those with a more yielding and those wi more rigid meatus I believe this is a very importa distinction

Bladder Response to Obstruction

There are two possible vesical responses to obstru —hypertrophy or dilatation—and these may be combi or follow one upon the other Which gets the upper h depends on

1 *Age and General Condition of the Patient.*—An eld patient's bladder, or the bladder of a patient who is *in bed, will dilate atonically in the presence of* very li obstruction or no obstruction at all Acute retent common in younger men and acute-on chronic or o flow retention in older men

2 *Rate of Onset* —A very insidious obstruction te to cause dilatation rather than hypertrophy

3 *Nature of the Obstruction* —Herein lies the importa of distinguishing between a yielding and a rigid mea With a yielding meatus the neighbouring musculatu given every opportunity and encouragement to hyp trophy with a rigid meatus its efforts are ent fruitless Like the musculature operating on an ankyl joint, it atrophies, and in consequence the bladder beco progressively more distended, an extreme examp seen in a case of long-standing fibrosis of the bla neck, when the bladder may have a capacity of up to a gallon with the thickness of a piece of blo paper

4 *The frequency* —Frequency leads to hypertro Again the meatus plays a part, for the yielding meat often patulous as well, with the result that the post urethra is continually stimulated by the seepage of into it, and the patient is never free for very long the urge to micturate

The Bladder Musculature

It is customary to divide the bladder muscu into a trigonal component which opens the meatu detrusor which empties the viscus, but it is do whether the function of the two is as sharply differenti as this suggests Certainly they have a contr structure, the trigonal muscle being a compact sh the other a loose network, but they are continuo each other, and an independent nerve supply been demonstrated

The bladder is thicker towards its base and towards its fundus, in keeping with physiological r ments In the obstructed bladder this contrast conspicuous A thickness of $^3/_4$ in below with n than $^1/_4$ in above is not unusual Distension p part in producing the disparity, but it does not all cases, since the same difference is seen when th no residual urine and capacity is reduced to a few Another possibility suggests itself It may be th bladder base is thicker when the outlet is obstr because the hypertrophy starts below with the ef the trigonal muscle to open the meatus, and only s upwards and outwards to the detrusor muscle at a stage Were it intended primarily to empty the b it would surely be more uniformly distributed fro start If this interpretation is correct it mea trigonal hypertrophy is a necessary forerunner of d hypertrophy, without one the other cannot occ

Because of the crisscross arrangement of its f bundles, hypertrophy of the detrusor is nearly a accompanied by more or less trabeculation—the t culæ, being, of course, isolated strands of musc above the level of the remainder Like the hyper these trabeculæ develop first in the lateral rec retrotrigonal area, as time goes on they are seen sides and vault, but even so they remain most ma around the base

Saccules tend to form between the trabeculæ an may become diverticula When this happens it ıg that the diverticula should be multiple and ıe same distribution as the process which gave :hem Diverticula of this type are seldom large ult to remove The solitary diverticulum found ı contracted bladder neck is less easy to deal with explain

ontra, dilatation, whether it occurs from the follows on hypertrophy affects mainly the vault, the base untouched except the area behind the :teric bar which subsides into a *bas fond* As a dilatation is uniform but occasionally it is ıe, and one or other lateral wall or perhaps the f the bladder balloons out independently

unfortunate thing about vesical dilatation is hen it has been present for a long time or when ds a certain limit, it becomes irreversible Even *emoval of the obstruction* the bladder is still to empty itself This leads to many sequelæ and ong argument in favour of early operation

Renal Back-pressure

ureteric orifices are not splayed open when the outlet is obstructed on the contrary they are ited by the hypertrophy of the bladder muscle A examination of a post mortem specimen will show is is so: the intramural ureter in these cases is r than normal the dilatation only commences the bladder wall One is struck by the contrast the thin walled ureter and the thick walled and imagines the difficulty that the one might overcoming the resistance of the other

observation throws grave doubt on the assumption nal *back* pressure results from ureteric reflux ureteric reflux is seldom seen in prostatic tion Bumpus (1924) found it in only 4 7% of es before, and a slightly higher percentage (11 4) peration When present before operation it was lly unilateral, whereas the back pressure was l so that it could not be held responsible for the essure. The increased incidence of reflux after n is probably related to infection which converts amural ureter into a rigid track.

back pressure therefore must be related to r hypertrophy interfering with the emptying of er and not to intravesical tension It may in velop when the bladder is emptying itself com as well as when it is always half full. Many a sufferers from extreme effects of obstruction with sical trabeculation dilated upper urinary tract, vated blood urea, yet has a negligible residue. essure sometimes exists where obstruction is not as in chronic cystitis with intractable frequency urition, or *persists where it has been completely* by drainage—hence the sometimes disappointing of suprapubic cystotomy Per contra, it is in Marion s disease although there may be a sidual amount of urine because hypertrophy is prominent feature of this condition So we see ng combination and degree

outlet—muscular atrophy—back pressure late.

ng outlet—muscular hypertrophy—back pressure

the ureters begin to dilate deterioration is rapid, feeble musculature has little reserve of power on the calyces of the kidneys lose their definition es become distended and it is not long before renal as well as vesical residual urine But the m does not progress steadily from below up a stage when it is quite considerable at the lower the ureter and in the pelvis of the kidney while er end of the ureter remains almost normal. an advanced case there may still be evidence nomaly, which is probably due to the fact that the pelvi ureteric sphincter mechanism intervenes between the pelvis and the ureter just as the uretero vesical does between the ureter and bladder It may be argued that *no such sphincter exists, and indeed there is* no evidence of it in an anatomical sense, but that there is a physiological break at this level no one can doubt who has any knowledge of hydronephrosis

If the existence of sphincter mechanisms at the outlet of bladder, ureters, and pelves, is recognised, then it is permissible to think of the urinary tract as a series of locks, separated by gates which open and close. The locks may overflow, but the gates rarely give way

Summary

1 The types of enlarged prostate are described

2 It is suggested that the relative rigidity or laxity of the bladder neck *is a factor in determining* the vesical response

3 It is suggested that on this response depends the degree of renal back pressure

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ARTIFICIAL HYPOTHERMIA IN POLIOMYELITIS WITH HYPERPYREXIA

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ARTIFICIAL hypothermia has been used in the treatment of various infectious diseases such as *tetanus* (Janbon et al. 1952, Mollaret et al. 1952 Contzen 1954) traumatic meningitis (Francillon et al 1953) septicæmia (Martin 1953) and post-infectious encephalitis (Janbon et al 1953)

Brehme (1955) proposed the use of chlorpromazine induced hypothermia in poliomyelitis, and Rollason (1955) has since *suggested that* Hydergine might be preferable because chlorpromazine might increase the oxygen requirement

Chlorpromazine by itself has been used in *acute polio* myelitis (Thieffry 1954 Harries and Lawes 1955) In these cases, however no attempt was made to induce hypothermia We have not been able to find *any* published *report of* such treatment in acute poliomyelitis

Case-report

A farm labourer aged 23 *had* a *history of* pulmonary tuberculosis that had been quiescent for 4 years. In January 1955 catarrhal symptoms and muscle pain developed He continued his work for the next 5 days when rapidly progressing paralysis came on. Some 12 *hours* after the onset of these symptoms he found it difficult to breathe and was admitted to the respiratory centre of the Epidemic Hospital Malmö During transport to hospital artificial respiration was necessary He had paralysis of the arms legs, and bladder

Treatment after Admission

The patient was immediately tracheotomised and artificial respiration was instituted with a respirator of the Lundia type (Hellsten 1953 Hellsten and Miörner 1954 Haglund and

Waldinger 1954), with which rhythmic compression of a pair of rubber bellows pumps air through the tracheal tube. During a third of the respiratory cycle there is positive pressure in the patient's airways, and expiration is facilitated by a slight negative pressure during expiration (–3 cm H_2O). This provides adequate ventilation with low endotracheal mean pressure without any adverse effect on the pulmonary circulation. The respirator permits exact adjustment of the tidal air and respiratory frequency.

The trachea and bronchi were kept free from mucus by frequent changes in the position of the patient and by repeated suction with a rubber catheter passed through the tracheal tube.

Ventilation was controlled by determination of the alveolar carbon dioxide level by infra red gas-analysis (Fastie and Pfund 1947, Fowler 1949, Miörner 1954). Ventilation (fig 1) was adjusted according to the alveolar carbon dioxide level, which was maintained at about 5% (by volume) or less, according to the decrease in body temperature. The arterial oxygen and carbon dioxide tensions were estimated by the method of Riley et al (1945). In our laboratory we have found the normal pO_2 at rest to be 80–95 mm Hg.

Progress

During the first day the body temperature gradually rose to 40 4°C (104 7°F) (fig 1). Adequate elimination of carbon dioxide required a ventilation of 11 5 litres per min. (fig 1). The arterial oxygen tension (fig 2), determined first before oxygenation was started, was slightly decreased. Because of clinical signs of oxygen want, some hours later (fig 2) the patient received oxygenated air (3 litres of oxygen per min.). Despite this oxygenation, subsequent analyses showed subnormal oxygen tension. Such a discrepancy between carbon dioxide elimination and oxygen intake can be due to lung collapse or to impaired diffusion in the alveolar membrane (Elam et al 1948, Riley 1951, Riley and Cournand 1951). There was abundant bronchial secretion, which might have favoured lung collapse and impaired diffusion. Daily bedside radiography, however, never showed definite signs of any large area of collapse. Energetic measures to eliminate any small areas produced no improvement.

In the evening of the second day after admission the patient had high pyrexia and was restless, and despite extra oxygen the blood was not properly oxygenated. The prospects of survival were regarded as poor. Control of the oxygen-want was considered necessary if the patient was to be carried over this crisis. It was therefore suggested that either the oxygen supply should be increased or the oxygen consumption should be reduced by induced hypothermia. Further increase in the oxygen supply would involve the risk of bronchial œdema, impaired diffusion, and lung collapse. Moreover the rising temperature itself might be fatal (Engström 1954, Lassen 1954). With this in mind hypothermia was tried.

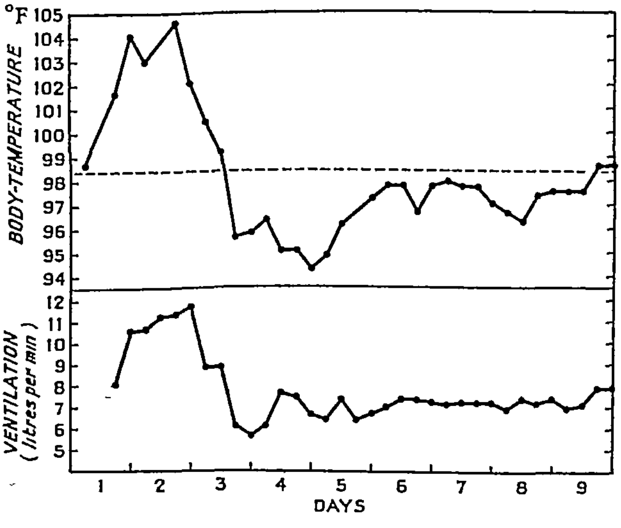

Fig 1—Body-temperature and ventilation

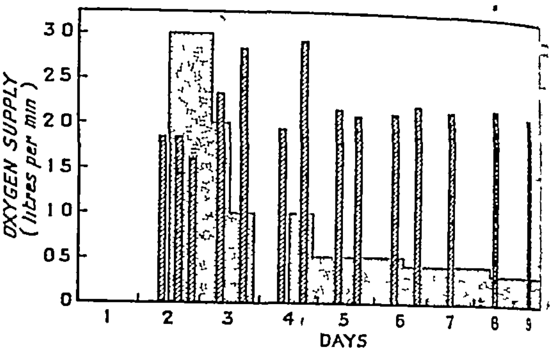

Fig 2—Oxygen supply and arterial oxygen tension

Induction of Hypothermia

Hypothermia was induced by the method of Ca After intravenous injection of just enough am sodium to induce sleep the patient received 0 ml solution 'M2' every 10 min for the first 3 hours, t half hour until his body temperature had dropped (98 6°F). Further doses were given only when his tended to increase.

Cahn's solution M2 consists of hydergine 6 parts, p (50 mg per 100 ml.) 1 part, promethazine h ('Phenergan') 3 parts, and physiological saline 10 parts.

The room temperature was kept at 13–15°C (simply by keeping the windows open. The patient l on his bed, and during the first few hours ice placed on his groins to accelerate cooling. His body ture was recorded continuously with thermo-electric with a rectal thermo couple. His body temp lowered to 34 5°C (94 1°F) at which the patient felt able, and the arterial oxygen tension and the re suggested that further depression of the temper unnecessary. Care was taken to end the to prevent reactive hyperthermia. Not until t been closed for some time were the radiators turned and then only gradually.

Effect of Hypothermia

With decreasing temperature ventilation had to ished to maintain normal alveolar carbon dioxide. D decrease in ventilation and oxygen supply the tension increased (fig 2). On inspiration of room a additional oxygen, however, the tension tended t subnormal levels (fig 2, fourth day), for which re was added. The amount of extra oxygen required lated from the determinations of the oxygen ten need of this slightly increased amount of oxyg decreased oxygen consumption was probably due to of small portions of lung.

The restoration of body temperature made a sl in ventilation necessary (fig 1), and when the body ture reached 37°C (98 6°F) the patient was venti 8 litres of air with an addition of 0 3 litre of oxyge (figs 1 and 2).

During the first few hours of hypothermia much ment was noted in the patient's general condit persisted throughout the treatment. He did not fe lay in a twilight sleep, from which he could r awakened. No shivering was observed. During hy the blood-pressure fell from 185/80 to 125/90 mm. H wards the blood pressure rose again to 145/85 was thus accompanied by a considerable fall in blood pressure but not in the diastolic, which increase slightly.

Fluid, electrolytes, amino acids, and blood we tored by intravenous drip. After a few days the p received protein rich and high-caloric food through tube. The levels of sodium, potassium, calcium, ch bicarbonate in the serum were regularly found to b and the serum protein level slightly decreased (100 ml). Because of paralysis of the bladder a catheter was passed. Electrocardiography wa throughout the period of hypothermia.

Discussion

his case of rapidly progressing poliomyelitis, with respiratory paralysis and hyperpyrexia, artificial ation could not supply the increased oxygen ed Induction of hypothermia permitted consider eduction of the ventilation and of the extra oxygen In view of the unfavourable experiences of n (1954) and Engström (1954) and the favourable of induced hypothermia in the present case moder ypothermia is recommended in similar cases with a prognosis. It not only decreases metabolism to a ermitting adequate ventilation which is a condition cess, but also gives the patient complete relief the often painful acute stage of poliomyelitis. The emperature need only be lowered enough to main atisfactory oxygenation of the tissues but if ary it could probably be lowered to 30°C (86°F) it risk of the cardiac arrhythmia which may be t lower temperatures

he present case the paralysis was fairly widespread , hypothermia was induced However as is well the spread of the paralysis is not correlated with egree of hyperpyrexia due to virus infection of parts of the central nervous system regulating the temperature. Whether early hypothermia can ice the development of the paralysis is not The patient has improved somewhat while in al

We should add that successful induction of hypothermia in poliomyelitis requires (1) sufficient personnel well trained in the care of respiratory distress (2) modern equipment for artificial respiration; and (3) analysis of the expired air and blood gases so that the ventilation can be frequently adjusted

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Preliminary Communication

A P C VIRUSES AND RESPIRATORY DISEASE IN NORTHERN ENGLAND

EW group of viruses has recently been discovered U.S.A.[1] [2] The viruses multiply readily in human lial cells in tissue-culture but not in the embryo hen s egg or any laboratory animal so far tried ed cells become rounded and clumped they ce large amounts of infectious virus and a soluble ement fixing antigen The viruses may be separated ypes by cross neutralisation tests in tissue-culture ey produce a common complement fixing antigen ve been recovered from tissue cultures of a high on of surgically removed adenoids and tonsils[1] been termed the A.P C (adenoidal pharyngeal ival) viruses.

ons of virus and antibody responses indicate se viruses may cause outbreaks of acute pharyn l conjunctivitis in civilians, especially children,[3] te respiratory disease and atypical pneumonia in nen[4] [5] The epidemic disease of children has amed pharyngo conjunctival fever[6] Antibody indicate that infection by these viruses is widely ated in certain North American populations.[2] [5] len the viruses have been recovered from fæces nph nodes of patients with mesenteric lymph [7]

resent here data collected in a study designed to trate the existence of these viruses in Britain and sociation with disease

Isolation of A.P C Viruses in Material from Sheffield

18 adenoids were cultured. From cultures containing degenerated cells we obtained 8 agents which were transmissible in cultures of the HeLa strain of human epidermoid carcinoma cells The properties of these are being studied, and the results so far obtained are given below All of 3 agents tested passed through glass filters which retained bacteria All of 5 agents tested were still infectious after overnight contact with ethyl ether at 4°C All 8 agents are apparently insusceptible to penicillin and streptomycin and cause in HeLa cells degeneration like that described by Rowe et al.[1] and Hilleman and Werner[2] 2 strains were studied by inoculation into other hosts. They caused degeneration of cultures of human embryo lung epithelium, human kidney monkey kidney and rabbit kidney, and delayed degeneration in human embryo fibroblasts They had no effect on chick embryo fibroblasts or on lung epithelial cells, and caused no apparent disease of suckling or young adult mice when inoculatd by the nasal or intracerebral routes

The cells and fluids from HeLa cell cultures infected with these agents were frozen homogenised, and centrifuged at 3000 r p m and the supernatant fluids were used as antigens in a complement-fixation test with a human convalescent serum kindly supplied by Dr M R Hilleman Both of 2 strains tested gave specific fixation Rabbit immune sera against types 1–6 A.P C viruses were kindly supplied by Dr H G Pereira Diluted culture fluids containing each of 5 agents were mixed with samples of the above immune sera, and in each case specific neutralisation of the degenerative effect of the virus on rabbit kidney cultures was demonstrated By this test the agents were assigned to types 1 2 (2 agents) and 5 (2 agents)

It is concluded that adenoids collected in Sheffield yield viruses which have the biological properties of A P C viruses

Demonstration of Human Antibodies for A.P C Viruses

Complement-fixation tests on Perspex plates[8] were used with antigens prepared in tissue-cultures from two strains of virus derived from adenoids in Sheffield

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Sera from apparently normal persons (54 students and 65 factory workers) were titrated by this technique 20% of the students and 76% of the factory workers showed complement fixation antibodies at a titre of 1/4 to 1/64

Titrations were also made on paired sera from 254 military and civilian patients with acute respiratory disease of many clinical types Antibody levels in the acute phase sera were comparable with those in the above mentioned groups Greater than fourfold rises in antibody against A P C viruses believed to indicate infection were found in 17 soldiers and 1 civilian with acute respiratory-tract infections of the type previously described in this country as "febrile catarrh"[9] Similar rises also took place in the serum titres of 3 elderly patients with acute relapses of chronic bronchitis Some of these rises were confirmed by specific neutralising antibody titrations A fuller analysis of the correlation between the clinical and the laboratory findings will be published later By complement fixation tests on the same sera it was possible to recognise two cases of influenza A infection, 28 of influenza-B infection, and 6 of influenza-C infection All these serological responses were specific except 1 rise in titre against both A and B influenza viruses Examples of our serological findings are illustrated in the table

EXAMPLES OF SEROLOGICAL RESPONSES FOUND IN SERVICEMEN WITH ACUTE RESPIRATORY ILLNESS

Case no	Complement fixation titre against			
	Influenza A *	Influenza B *	Influenza C†	A P C
1	*2/96*‡	<4/<4	<8/<8	<4/<4
2	4/<4	*4/24*	8/8	<4/<4
3	<4/<4	<4/<4	<*4/40*	8/12
4	<4/<4	<4/<4	<4/<4	<*4/16*

*, soluble" or S antigen
†, amniotic fluid antigen
‡ first figure = titre of serum obtained at onset of illness, second figure = titre of serum obtained about 14 days after onset

Summary

A P C viruses have been isolated from adenoids removed in Sheffield

Complement-fixing antibody against the A P C viruses was found in many members of the several population groups tested, and rises in antibody titre, indicating specific infection, were found in paired sera from 20 persons with acute respiratory illnesses

We wish to thank Lieut-Colonel T P H McKelvey, Captain A R Pate, and Captain K. J Dennis (all of the R.A.M C), and Dr F J Flint for supplying sera and clinical data from their patients, Dr J M. Whitehead for the results of antibody titrations against influenza viruses on some of the sera, and Mr J D Gray for supplying adenoids Expenses of this investigation were defrayed by the Medical Research Council The work was done in consultation with, and under the direction of, Prof C H Stuart Harris and Prof C P Beattie

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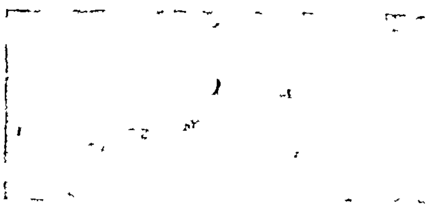
New Inventions

AN AID TO SUTURE OF THE LEFT BRONCHUS

WHEN a left pneumonectomy is performed patient prone, the surgeon, in closing the often hampered by the aorta, which, at the op of bronchial division, may overlap by an inch This difficulty is particularly noticeable if bronchus method of closure is used—i.e., bronchus clamp is employed It is usually easier to insert the needle from the anterior from the posterior, but it is then often hard the needle-point as it emerges through the of the bronchus The instrument illustrated made to my specifications by the Genito-Urin ment Company, Ltd Not only does it provide access to the bronchus stump with the least retraction, but it enables one to recognise the point as it emerges



I would like to thank Mr Christopher Parish for and Dr G T Ey and Mr E W Groves for the ph

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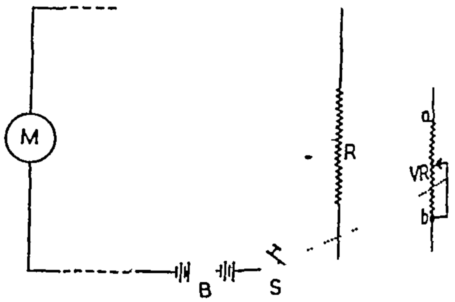
A SENSITIVE PULSE-INDICATOR

THE indicator was originally designed to estimation of the systolic blood pressure in severe patients It is now also being used as an hypotensive anæsthesia

A small microphone,[1] connected as shown diagram, is strapped to the pulp of the patient's or big toe, and a sphygmomanometer cuff is some suitable place proximal to it, if necessar bandages The cuff is inflated until the arteria occluded and the microphone no longer picks tions The air is slowly released, and the cuff at which the meter pointer again starts to is taken as the systolic blood-pressure



The Circuit

M U.S Army T-30-V throat microphone with brass
R, 270 ohms. C, 100 mfd 50-V wkg electrolytic condenser
μa, 50 or 100 μA FSD micro-ammeter or ex W.D
VR, sensitivity control 5000 ohms variable resistance
S, on-off switch on VR B, 12 18-V battery
VR must be connected so that slider is at point "a"

By this method it has been found possible to systolic pressures of 25 mm Hg in an adult and of Hg in a child aged 5 years

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[1] Keating, V J *Brit med J* 195° i, 111

RSATILE THOMAS SPLINT FOR SLIDING TRACTION

vercome the difficulty frequently experienced, ining a Thomas splint of the appropriate size, y or in emergency, the following modification 1 *found* helpful.

plint (fig 1) consists of a half ring and strap, two

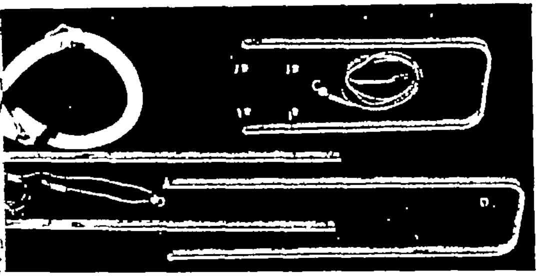

Fig 1—The parts ready for assembling (fig 2)

rs (one 2 inches longer than the other) and two end pieces

alf ring is made of malleable iron to which two side are attached and hinged to allow the outer side to r than the *inner when used either for left or right* The half ring is padded and covered with leather, continued as a soft strap A half ring being malleable opened or closed a little to fit the thigh. The longer o is used for the outer side The longer end piece used as a knee-flexion piece (fig 2)

wo *side-bars* are made of duralumin with holes at ntervals; each bar fits into the sleeved hinge bracket alf ring with one screw and to the end piece with ws.

end piece may be fastened to the side bars to give uired length or the longer may be fastened at the the knee and used as a knee flexion device

lint in fig 2 is suspended by a pair of cords previously with s hooks that fit in the holes of the The outer cord is adjustable by means of a simple rip with two holes (guy rope method) and this ome control of rotation of the splint and leg (e g shortening the outer cord causes internal rotation) (see also fig 1)

In order to fit a splint to any size of limb, a set of three half rings, four side-bars, and two end pieces is required These components are interchangeable and a small stock will allow of many splints being used at the same time Sufficient parts for a large accident or orthopædic department may be stored in a small space The cupboard (from Messrs. Gamages Ltd) holds a stock sufficient to provide many splints and the oddments are kept in the drawer (fig 3)

It is convenient to keep in the splint-room a bag (a tennis bag does well) containing three half rings, two side-bars and two end pieces, together with cords &c This bag can be taken to the bedside, where a splint to fit any type of patient, whether small child or large adult can be assembled in a few minutes.

The splint is light, rigid, and easily cleaned, and looks attractive

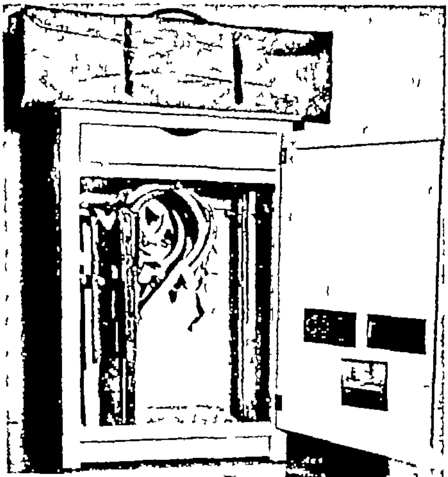

Fig 3—Splint cupboard with emergency bag

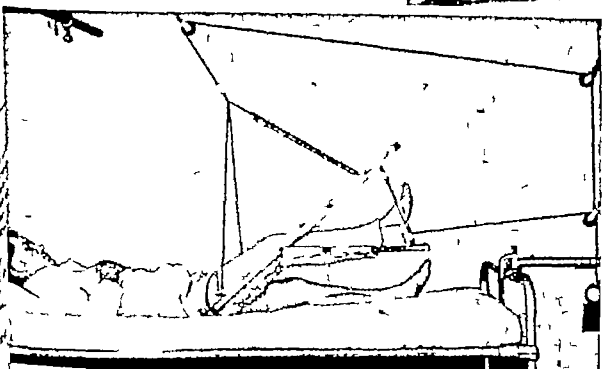

Fig 2—Splint suspended using knee piece, for skin traction.

I am indebted to Mr Charles Gray for his encouragement to Dr Tecwyn Jones who as house-surgeon gave most valuable help in the later development and trials of this splint and to the workshops of Harlow Wood Orthopædic Hospital and the Royal Free Hospital, London. The photographs were taken by Mr J Sheppard These splints have been made by Remploy Ltd. Croydon, Zimmer Orthopædic Ltd and The London Splint Company

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Reviews of Books

Urology

Edited by MEREDITH CAMPBELL, M S , emeritus professor of urology, New York University Philadelphia and London W B Saunders 1954 Pp 2356 Three volumes £15

THIS is a solid contribution to urological literature There are 52 contributors, all eminent and all but 3 American (To speak of even 3 non-Americans is perhaps misleading, for 2 of them come from Toronto and Puerto Rico Mr Terence Millin is the only complete foreigner) The book is therefore a statement of American urological opinion and practice, and British readers will have to adjust their focus a good deal For example, in the chapters on prostatectomy the standard transvesical operation given is a modification of what we would call Freyer's (that is to say it is followed by suprapubic drainage) transvesical prostatectomy with closure is added as if it were an ingenious but not altogether respectable alternative Perurethral prostatectomy is described in terms of the diathermy-loop technique, and the cold punch is no more than mentioned once in passing Such differences from standard British practice are of course common, but the direction taken by the divergence is sometimes unexpected There is a remarkable freedom from contradictions and inconsistencies in spite of the multiple authorship In a students' textbook this is desirable, but in a work such as this there is a place for some contradictory or even irreconcilable opinions and perhaps the editor has chosen his team too carefully On the other hand extremist views on purely technical matters would be unsuitable, and it is good to read Nesbit's remark that "a duffer at golf does not shoot par by the purchase of fancy clubs "

The general plan of the book is conventional, with special sections devoted to urology in childhood (written by the editor), urology in the female, and medical diseases of the kidney A meagre section on radiation treatment, though it comes with all the authority of the New York Memorial Hospital, is confined almost entirely to surgical radiotherapy of the most conventional sort The articles on operative urology are segregated from the rest of the book and written by a different set of authors Even this dichotomy does not seem to lead to contradictions for example, Hinman's discussion on hydronephrosis is harmoniously matched and adequately supplemented by Priestley's account of the surgery of the kidney

It is in the main a very good book and will surely be the standard American work on urology for some years Mr Winsbury-White's is the only British book which can be compared with it

Advances in Pediatrics

Vol. VII Editor S Z LEVINE, Cornell University Medical College, New York Chicago Year Book Publishers London Interscience Publishers 1955 Pp 351 62s

OUTSTANDING among the contributions to this annual collection of monographs are Meredith Campbell's lucid and comprehensive survey of urinary-tract disorders in childhood—a textbook of pædiatric urology in miniature, save that operative details are omitted—and the review of fibrocystic disease of the pancreas (mucoviscidosis) by Shwachman and Leubner, which contains much material hitherto unpublished Of particular importance is the recognition of those cases which only have partial pancreatic insufficiency, even though severe pulmonary disease may be present The concentration of electrolytes in the sweat of patients with fibrocystic disease has been shown to be 2–4 times higher than normal, and the simple method of collecting specimens of sweat which the authors describe may prove of considerable value in diagnosis

Other monographs deal with benign, symptomless, cortical defects in the long bones of growing children (Caffey), phonocardiography in children (Mannheimer); severe malnutrition in childhood, especially as seen in tropical and subtropical countries (by a group of Mexican authors), and cerebral palsy (Perlstein), with the emphasis on ætiology classification rather than treatment There is a authoritative paper on Hirschsprung's disease by

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Biomathematics (3rd ed London Charles G Pp 712 80s)—If a science becomes more mathe it progresses, then medicine has not yet achieved s tion But it is going that way, and research-w laboratory sciences will welcome the appearance of nated Feldman's *Biomathematics* Dr Feldman's aim was to give a background of just those m ideas and methods which are immediately ap biology; Dr Cedric Smith, author of the present so extended the scope and modernised the conte original form that it is almost a new publication a chapter is devoted to simple statistical procedur not a textbook on statistics, but an introduction to of any of the standard texts on that subject Th volume is forbidding, but Smith takes little f the intelligent layman is given enough help t understanding of mathematical concepts which means immediately self evident Quite large sect book are intended to explain methods of particular biologists which are not fully set out elsewhere, useful for reference but need not be digested reading

Réaction organique à l'agression et choc Paris Masson 1955 Pp 261 Fr 1400)—Dr is well known for his contributions to the experim therapeutic study of shock states. The views be here are not always in accord with general opinion, appear uncritical, but because of their individuality stimulating Though this work is well referenced, to the subject is largely personal, depending on pretation of the various reactions of the autonom system and the pituitary adrenal mechanisms in stress These, and the clinical, pathological, and changes which result, are described in detail. value of prophylaxis and treatment are discu particular reference to artificial hibernation. In lation and practice of this form of therapy Laborit a prominent part, and his book can be said to though hardly to prove—his contention that such is the logical way to prevent autonomic and stimulation

Human Physiology (2nd ed New York and McGraw Hill 1955 Pp 1177 80s)—Seven physiologists, pharmacologists, and biochemists, Bernardo A Houssay at their head, have written specifically for students of medicine Transl the Spanish by Prof Juan T Lewis, one of the and Olive T Lewis, it is no compendium of potted p but a satisfying and carefully selected survey of subject Short summaries of physical laws and ph recall some basic points that may have been useful preliminary page is given to definitions of units The biochemical aspects of the subject are presented Professor Houssay's preface is worth ing his balanced account of the interplay between and the other sciences makes it clear why the book is so good

Change of Life (Revised edition. London 1955 Pp 82 7s 6d)—This little book by (Dr Joan Malleson) has already proved its value. mainly for middle aged women, it contains ma husbands, and even doctors, have found helpful nating This revised issue of the 4th edition appendices on how to keep a calendar, weight red the management of fluid retention

Common Skin Diseases (10th ed London H. 1955 Pp 515 £1 10s)—Dr A. C. Roxburgh live this latest careful revision of his standard work, and the proofs, though not to see it published He has new matter on the applications in dermatology of trophin and cortisone, and on the use of isoniazid vulgaris, mepacrine in lupus erythematosus, and de derivatives in vitiligo—and on many other things is ready for a new generation of the clinical cle he dedicated it

THE LANCET

ONDON   SATURDAY SEPT 17, 1955

Professional Responsibility

minimis non curat lex and among the little of which the Law at present takes no account difference in status between professional and rofessional people who work in hospitals eyes of the Law, both the senior surgeon and inior boiler man are servants of the hospital rity, which has assumed responsibility for the f patients and employs various kinds of tech s as its agents This view is of course unaccept- o doctors, who, whether they work in a hospital heir own surgery, regard themselves as nobody s and nobody s servant but their patients' see the situation the care of patients is under not by committees boards or Ministers but octors, and the National Health Service is y an administrative device by which people et this professional help whenever they need it lless of their capacity to pay Until lately there fact some hope that the Law would recognise whether paid by salary or not a professional either is nor can be an employee in the usual , for in Scotland at least there was a strong ition to argue that doctors are fully and directly sible to their patients But unhappily this ard legal action ceased when the late Lord s, citing the duty of hospital authorities 'to e medical, nursing and other services ' said

> find it quite impossible to read the statutory ions for the new Health Services scheme as if the luty imposed upon the hospital board was an istrative one, involving merely that the board introduce the patient to the hospital medical nel and leave them to do their best however ntly, without further responsibility on the board, than the responsibility 'to provide an efficient , clean and wholesome sick house, equipped with cessary furniture and fittings and to employ etent staff Under the new Act and regulations oligation on the State is in my view to treat the t and not merely to make arrangements for his ent by and at the sole responsibility of independent ctors."[1]

re are those who argue that this decision does any way threaten the relationship of doctor patient or the standard of professional care notice it is said a hospital authority would re give its doctors instructions about the treat- of a patient than the directors of a shipping ny would give their captains detailed directions navigation or seamanship[2] But in the long is is not true for if the doctor is the servant authority that authority is liable for his ence, and if it may have to pay for his mistakes l sooner or later begin to interfere with his l work in the hope of preventing them That y we for our part expressed grave doubts about visdom of the arrangements made eighteen s ago whereby the profession may in certain circumstances allow the hospitals to subscribe to damages otherwise entirely payable by doctors through the defence societies "If," we said "over the years, it were accepted that hospital authorities ought to go shares in any damages awarded against their doctors, they would be justified in introducing more and more small rules for doctors—indeed they would feel obliged to do so "[3] The same thought is expressed in Dr SHERWOOD's letter this week, and he comes to a conclusion much canvassed in Scotland—namely, that our profession must, if it values its freedom, accept full responsibility for its actions and pay in full for its errors In Scotland where general principles have a stronger appeal than in the South, many members of the profession have taken the view that on this cardinal question of professional financial responsibility it is essential to make it absolutely clear that the doctor does not accept the subordinate position assigned him by the lawyers[4] It is very encouraging to hear that in a referendum conducted by the Joint Consultants Committee (Scotland) among hospital doctors, the majority so far is more than 10 to 1 in favour of their asking Parliament to re establish in law their former relationship to the management of the hospitals in which they work—on the understanding that membership of a medical defence society (or equivalent insurance) should be a condition of engagement[5] From all this it should surely be clear that the profession is not trying negatively to avoid what is described as 'the duty owed by a skilled employee to his employer to be faithful and diligent in his work,"[2] but rather is seeking positively to preserve in medicine the tradi tional ideal of service evoked only by full personal responsibility to the patient—a kind of service that often goes far beyond what could ever be legally demanded.

The custom of making the master vicariously responsible for the acts of his servant has arisen from social expediency—from the need to have, standing behind the potential wrongdoer, someone financially capable of paying damages[2] In the case of doctors the someone " is or should be their defence societies and there is therefore no social necessity for them to accept a dependent *position*. Indeed in our opinion there is, on the contrary, a strong social reason why they should not do so , for we believe that in a country where a large proportion of services are necessarily financed out of public funds it is socially very important to avoid the gradual transformation of all professional people—doctors, lawyers, or any *others*—into officers, officials, and Civil Servants Such a transformation can be avoided if the *nation, though* it pays these people, takes the trouble to preserve their private and professional status If, *in the* event, this cannot be done for hospital doctors by the means now proposed by our Scottish colleagues, we may yet have to consider the more radical alternative of organising National Health Service doctors into a professional guild[6] through which their salaries would be paid and their services deployed, and in which—in so far as they must have a master beyond their patients—this would be their own profession

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Donald v Glasgow Western Hospitals Board Hayward v inburgh Royal Infirmary Board 1954
ish *Law Review* August 1955 p 177

[3] *Lancet* 1954 i 713
[4] Hamilton J G M. *Ibid* p 675 Legal Liability in the N H S *Brit med J* 1955 i 1431
[5] *Brit med J* Sept. 10 1955 Suppl p 65
[6] See *Lancet* 1951 ii 172

Benign Intracranial Hypertension

IN 1912 PASSOT[1] described a complication of otitis media in which raised intracranial pressure with papillœdema developed without focal neurological signs and with normal cerebrospinal fluid He pointed out that this disorder was commonest in children and adolescents, and that the prognosis for life was good although vision might be impaired as a result of the raised intracranial pressure This important paper attracted little comment until 1931 when SYMONDS[2] [3] drew attention to it, described several more cases of the disorder, and suggested the name otitic hydrocephalus He emphasised that usually this disorder was distinguishable clinically from an otitic intracranial abscess by the general physical fitness, the mental alertness, and the absence of localising signs In 1937 SYMONDS[4] suggested how the syndrome might arise Thrombosis of a lateral sinus had been found at operation in 5 out of 12 personal cases, and there was a probable thrombosis in 2 others BAILEY and HASS[5] had recorded the necropsy findings in a patient with otitic hydrocephalus who had died from rheumatic heart disease, there was thrombophlebitis, without complete occlusion, of the right lateral and superior longitudinal sinuses In view of these findings SYMONDS suggested that the raised pressure might be due to thrombophlebitis of the superior longitudinal sinus spreading from a lateral sinus and interfering with the absorption of cerebrospinal fluid by the arachnoid villi In 1952[6] he modified this view as the result of post-mortem examination of a patient with otitic hydrocephalus who had died after a lumbar puncture, in this case the greater part of the superior longitudinal sinus was free from clot, but the right lateral sinus contained clot which extended up as far as the posterior end of the superior longitudinal sinus so that the pathway into the left lateral sinus was occluded Accordingly SYMONDS suggested that the syndrome could be caused by thrombosis of both lateral sinuses, of one of these alone if the other was vestigial, or of the superior longitudinal sinus alone if the obstruction was sufficient to cause generalised congestion of the cerebral veins, the raised pressure resulting either from obstruction of arachnoid villi, or from cerebral œdema due to venous engorgement, or from a combination of these factors

Comparable cases of raised intracranial pressure with a good prognosis, but without a preceding ear infection, have been recognised for some years In 1937 MCALPINE[7] recorded 5 instances in patients who had had minor respiratory infections, and he called the condition toxic hydrocephalus Other cases have been reported under such names as pseudo-tumour and hypertensive meningeal hydrops, and there has been some disagreement as to whether these were also the result of thrombosis of intracranial sinuses FOLEY[8] has now studied 60 cases of the condition, which he has designated benign intracranial hypertension His diagnostic criteria were strict bilateral papillœdema, symptoms of increased intracranial pressure, objective evidence of increased pressure (radiographic, a raised lumbar puncture very high dural tension at ventriculography), of systemic hypertension or other general which could account for the papillœdema, evidence of a focal cerebral lesion or mental suggesting diffuse cerebral disease, and a ve gram showing no evidence of a cerebral obstruction of the cerebrospinal fluid path the 60 patients 11 had otitic hydrocephalus, others there was probable cerebral thromb The remaining 47 patients fell into two one of 16, in which young males and fem almost equally represented, where the apparently followed an infection or a [illegible] injury, and one of 31, mostly in the fourth d life, all but 3 of whom were women In group the antecedent infections were a [illegible] varying from a sore throat to juvenile arthri hip, and, as FOLEY says, it is difficult to d common factor among them In the 4 ca followed a head injury, this was apparently was not associated with concussion or with in the early stages suggesting subarachnoid in 2 the episode of intracranial hypertension within a few days of the injury, and in the injury had preceded admission to hospital eighteen months, but it is not clear when cranial hypertension first developed In the without a preceding infection 20 of the 28 noted as being fat, in 4 the episode of tension seems to have occurred during and in 2 others it followed a miscarriage or a stillborn infant, while in 3 it was prec menorrhagia FOLEY suggests that in this rise of intracranial pressure was connected endocrine disturbance—probably an electrolyte balance In some of the cases the of the illness could not be defined, the "end is indefinite, and several patients were disch hospital before papillœdema had subsided, wh evident that they were recovering and their not failing Most commonly the episode of intracranial pressure lasted between six and weeks, the otitic cases and those preceded by in general having a shorter course than the But the illness lasted for more than a year cases, and for more than two years in 2. Th danger is visual impairment, this did not any of the otitic cases, but there was some p impairment in 12 of the 47 other patients, of them there was almost complete blindness

This study does not throw any further light ætiology SYMONDS's[6] suggestion of sinus bosis in the otitic cases is supported by a goo evidence, it is the most probable explanati episode of raised intracranial pressure with spo recovery But in the non otitic cases there is evidence of sinus thrombosis, and despite the clinical picture the lesion may well be FOLEY suggests that here the cause may be grade infection, and he mentions in favour of finding of slight pleocytosis in the ventric (after correction for blood contamination) in 40 cases, or, as alternative possibilities, acute œdema or other vascular disturbance Even the suitable name for the disorder is undecided now been proved that the size of the ventri ed, and any name including the word hydro- us is theoretically best avoided, but otitic ephalus is widely accepted as the name for the on following otitis media as described by and by SYMONDS, and an attempt to change ould only lead to further confusion. FOLEY orward the term benign intracranial hyper to cover the whole group of cases, and this a reasonable generic name to apply till more is red of the ætiology Even so, the clinical course ot be as benign as the pathological process ntly is, permanent visual impairment may from the intracranial hypertension if this is ntinued, and careful and repeated estimations visual acuity and fields are needed to detect evidence of visual failure These cases are treated by repeated lumbar puncture, the ing withdrawn slowly and the pressure reduced it 150 mm This method is generally safe and o, but SYMONDS[6] has described a case where ient died some hours after two lumbar punctures four hours In persistent cases where vision is subtemporal decompression to relieve the pressure is probably safer and more effective

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[1] Passot, R. Thèse de Paris 1912–13
[2] Symonds C P *Brain* 1931 54 55
[3] Symonds C P *Brit med J* 1932 i 53
[4] Symonds C P *Brain* 1937 60 531
[5] Bailey, O T, Hass G M *Ibid* p 293
[6] Symonds Sir Charles *Ann R Coll Surg Engl* 1952 10, 347
[7] McAlpine, D *Brain*, 1937, 60, 180
[8] Foley, J *Ibid*, 1955, 78, 1

se or Reinfection in Chronic Bronchitis?

the least of the problems in the management nts with chronic bronchitis is how to prevent ion within a few days or weeks of the end of e of chemotherapy The high hopes of relief sands of patients through the advent of anti have been only partly realised, and the n of relapse, after temporary suppression of n, looms as large as ever It is now believed *æmophilus influenzæ* and the pneumococcus most important pathogenic bacteria in chronic tis and that repeated infections by them are responsible for the insidious progress of the [9], but the reasons why these infections, lly those caused by *H influenzæ*, are so difficult trol beyond short periods have barely been gated

organisms causing relapses may come from three sources They may be lying dormant bronchopulmonary tissues from which they ever been truly eradicated by chemotherapy, ay reside in some reservoir in the patient's espiratory tract from which they reinvade the d bronchi, or they may come from the 's contacts There is evidence for each of possibilities, and all may play a part The pical observation of minute abscesses which progressively walled off and form fibrous in the lung[10] indicates that in bronchitis the n is not entirely superficial This is supported demonstration that *H influenzæ* penetrates n the epithelial cells of the bronchial mucosa y even be found below the basement mem Quite possibly these organisms may not be y a short course of chemotherapy and may ently proliferate and set up a new infection. is mechanism is unlikely to account entirely relapses, for such organisms should be adequately disposed of by the normal body defences when prolonged chemotherapy is given to keep the infection in check, yet patients treated in this way seem to fare no better after therapy has been discontinued than others who have received only short-term treatment[12 13] The association between upper respiratory infection and chronic bronchitis is well known, and the belief that bronchial reinfections originate from such upper respiratory reservoirs is widely held, there need not necessarily be an infective site, since *H influenzæ* and pneumococci are found in the normal nasopharynx[14] Again, prolonged administration of effective antibiotics by aerosol should eliminate these reservoirs and thereby reduce the tendency to reinfection of the bronchi—though this was not the experience of KNOX et al.[12] The part played by exogenous infection by *H influenzæ* has not been evaluated This is no doubt due mainly to the impossibility at present of typing the strains found in the respiratory tract, which are mainly non encapsulated

CLIFTON et al[15] describe an investigation into epidemiological aspects of pneumococcal infection in chronic bronchitis and bronchiectasis, and their findings may be applicable also to the behaviour of *H influenzæ* CLIFTON et al investigated pneumococcal carriage in the nasopharynx of 11 healthy male volunteers and their families—a total of 45 persons (group A) A similar study was made of 13 men with chronic bronchitis or bronchiectasis and their families—54 persons (group B) In addition the sputum of the patients in group B was examined All specimens were investigated by mouse inoculation for the presence of pneumococci, which, when found, were serologically typed The investigations were carried out over a period of about two years swabs (and sputum from patients) being taken every four to six weeks Perhaps the most interesting finding is that spread of pneumococci among the members of any family is comparatively rare Thus a new type of pneumococcus was found in one member of a group-A family on 47 occasions, but on only 5 was the same type found in another member at the next monthly visit The frequency of spread was slightly higher in group-B families, in which a new type was found in one member on 40 occasions and a month later had spread to another member on 7 occasions Despite this generally low rate of spread there was evidence that the patient in any group B family was more often involved in the spread, either as the originator or as recipient than his healthy counterpart in group A. Thus the patients in group B were concerned on 4 occasions in the spread of a new type, and on another 6 in the spread of a type already present in the family In group A a healthy volunteer was involved in only 1 instance of each sort Nevertheless, the spread of pneumococci either to or from a patient was still comparatively uncommon which accords with the clinical observation that early relapses of pneumococcal infections after penicillin therapy are infrequent[16] It is likely that the bactericidal activity of penicillin usually eradicates pneumo-

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ancet 1954 i 450

eld L McA. *Ibid* p 275

ern J I P Mulder J *J Path Bact* 1953 66 103

[12] Knox, K Elmes, P C, Fletcher C M *Lancet*, 1955 i, 120

[13] Helm W H May, J R, Livingstone J L *Ibid* 1954 ii, 630

[14] Straker E, Bradford Hill A Lovell R, *Rep Minist Hlth Lond* 1939 no 90.

[15] Clifton, M, Pownall, M, Stuart-Harris, C H *J Hyg Camb* 1955 53, 5

[16] May J R *Lancet* 1953 ii 890

cocci completely, and reinfections must therefore be of exogenous origin

It is unwise to draw too close an analogy between the behaviour of pneumococci and that of *H influenzæ*, but it seems likely that cross-infection with this organism too is not very usual Early relapses of *H influenzæ* infections after treatment are, however, common, and until we know more about the epidemiological behaviour of this organism such relapses should be tentatively regarded as of endogenous origin, but the site of the responsible organisms remains a mystery

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Annotations

PRECLINICAL COURSES IN SCOTLAND

EXEMPTION from first year subjects is granted in most English medical schools for passes in the General Certificate of Education at the advanced level This concession lifts something from the load of the medical curriculum and shortens the time spent in medical study At present no such concession is made by the Scottish universities, but if a draft ordinance is approved by the four universities and the Privy Council, candidates for admission to the medical faculty will soon be allowed to sit the examinations in the first year subjects without attending the university classes in these subjects In theory this would enable some students to graduate in five years, in practice, under present conditions, the ordinance will be largely ineffective

Pupils in Scottish schools aim to obtain in the fifth form, when they are about 17 years, the passes in the Higher Leaving Certificate which qualify for entrance to the university They naturally present themselves for examination in the subjects which they have been taught at school, and the number of pupils who sit the examination in all four science subjects, in addition to the compulsory subjects such as English and a language, must be infinitesimal (In Glasgow, Edinburgh, and St Andrews botany and zoology are separate courses and examinations) Indeed there are few schools in Scotland where botany and zoology could be taught to the required level Another snag is that, as the university syllabus is arranged, the student who had previously passed in physics and chemistry but still needed to take the course in botany and zoology would save no time Moreover, at present school chemistry and physics differ in content and extent from medical chemistry and physics, and it is doubtful whether schools would agree to reorientate their courses to suit the needs of intending medical students Of the Scottish universities, St Andrews has the biggest proportion of medical entrants from south of the border, but, even so, few of them will be able to take advantage of exemption from the classes of the first year unless the university is prepared to gear this examination to suit school instruction—which is unlikely Traditionally Scottish educationists have a deep rooted objection to early specialism in schools and this is unlikely to be modified by special pleading on behalf of medical students The length of the medical curriculum, they would say, is the concern of the medical profession, and their own duty and intention is to provide a liberal education If a pupil elects to do an extra year in the sixth form at school it should be to extend his general education and not as a substitute for proscribed university courses

Many medical teachers doubt the need to spend a whole year on physics, chemistry, and biology They argue that most medical students are well grounded in physics and chemistry at school and a six-month course at the university should be enough The introductory courses in anatomy and physiology are in la and could be begun in the third term, thus re first year to six months The medical cur Denmark was lately reduced from seven and-a-h to six-and-a-half—this includes a year as und intern—by cutting out the first year and modified course in chemistry and physics along second year subjects

But, even if futile as a practical measure the medical curriculum, the ordinance is welc gesture showing a wish to shorten the time spe medical student at the university Teaching and tion reach saturation point much more quic divorced from actual practice, and herein lies t advantage of a training system which combine ticeship and theoretical teaching No other p demands six years of passive instruction witho training Peak performance in creative work be reached before the mid thirties[1] and one dangerous failings of our age is the tendency training and demand more and more qualific raising the age at which people start their real curtailing the years when they are likely to do original work The doctor, we are told, should culture, a scientific background, and underst his fellow-men, and should acquire knowledge enable him to practise the art of medicine should be added a strong plea that he be al assume responsibility and make his contribu medicine while mentally and physically at his be

SYNNEMATIN B IN TYPHOID FEVER

SYNNEMATIN B, an antibiotic discovered in found to free mice from *Salmonella typhi* and *S* *murium* and chicks from *S pullorum*[3] As it was against a wide variety of salmonella strains in relatively non-toxic to human beings, Olson collaborators[4] in Mexico decided to evaluate th biotic in the treatment of typhoid fever in ma attempt was made to select early uncomplicated typhoid fever for study, although this was no possible The diagnosis was established clinica confirmed by laboratory methods before treatme begun In all, 16 cases were treated, 3 were very 9 severe, and 4 moderate There were only which 3 were untreated, 1 was treated with 1 with tetracycline and chloramphenicol, and synnematin B on the twenty sixth day of the All patients were kept under observation in ho at least a month, and physical and laboratory te performed during and after this period C made of blood, fæces, and urine, agglutinatio were done on blood specimens, and sensitivity te performed on all strains of *S typhi* The prepa synnematin B used contained about 25% of p and was given at dose levels corresponding to 40 mg, and 87 5 mg per day of pure antibiotic given intramuscularly every four hours A load was originally given at the start of treatment, b caused pyrexia and was abandoned All pati synnematin B for fourteen days

The response to synnematin B was the same in 1 of the patients Regardless of the day of the on which treatment began, the temperature returned to normal, the toxæmia was relie appetite increased, mental alertness returned days, and there was a pronounced improvement well being *S typhi* disappeared from the blo fæces of every patient early in treatment, and 16 remained free until discharge from hospital

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1 Ciba Colloquium on Ageing London, 1954
2 Olson B, Jennings, J, Junek, A *Science*, 1953, 117
3 Olson, B, Jennings, J *Antibiotics*, 1954, 4 11
4 Benevides, L, Olson B, Varela, G, Holt, S H *J* *Ass* 1955, 157 989

ts blood cultures were positive at the end of treat

Of the 16 patients treated, the clinical response ery good in 8 good in 4 moderate in 2 and poor All strains of *S typhi* were sensitive to synnematin gh sensitivity varied 3 of the patients studied had ose The control patients did not fare as well as treated with synnematin but as there were only 6, nparison of the two groups was not significant. months' follow up showed that none of the patients ecome a carrier No toxic side effects were noted, n the 1 patient who had a heavy loading dose et al consider that in the treatment and control phoid synnematin B is efficient and, in many ts, superior to chloramphenicol If more of this otic becomes available, a trial on a larger scale certainly be justified.

CHROME DERMATITIS

ROUP of American lithographers is reported to have d the investigation of chrome dermatitis. As [1] remarks, this reminds us that many of the old ms of industrial dermatitis remain unsolved The r so occupations involving chromates range from plating to glass frosting rubber mixing, and hanging

e the days of classical antiquity masons have been to suffer from eczema. The rôle of chromates in t dermatitis has only lately been brought to light. d to be assumed that cement caused dermatitis by virtue of its alkalinity Patch testing has now that a considerable proportion of patients with t dermatitis are sensitive to chrome.[2–4] They may o the crude cement but not to cement which has ashed free of chromates. Cement contains a very amount of chromates and it has been suggested alkalinity is important by damaging the normally ive horny layer of the skin and thus promoting ation of the chromates into the living layers of the nis A new source of chrome dermatitis is the fluid of diesel engines,[5] in which chromates are d to inhibit rusting

lts [6] was impressed by the chronicity of his cases me dermatitis, which he thought might be due to ence of the allergen in the skin in the form of um protein complexes This is no new con , for some sensitising compounds have long been to have an affinity for proteins: paraphenylene e is used as a hair and fur dye because its attach o hair keratin is gratifyingly permanent mercury rmalin are used as histological fixatives and in tanning leather On the other hand it is often t to prevent further contact with the offending nce A familiar instance is nickel dermatitis due to g suspenders. The patients can use painted or suspenders but they can scarcely avoid daily g of our increasingly debased coinage, keys, , cutlery and so forth, which in cases of severe ity is enough to maintain dermatitis A similar f affairs may arise with chromium both with to plated metal articles and to chrome leather used t bands watch straps, and shoes. Morris [7] has ed cases of chrome dermatitis from a glue made out p chrome leather

suggestions for the control of dermatitis from t with metals include the use of non specific barrier nts based on silicones, and others incorporating aprol [8] or chelating agents [9] to immobilise the metallic ions In general, however prevention demands a wider scrutiny of the uses to which well known sensitising agents are put In France a great deal of housewives' dermatitis of the hands is due to chromates in proprietary solutions of hypochlorites What useful purpose is served by this addition is not clear, since the housewives of many other lands find bleaches without chrome equally satisfactory Likewise is it justifiable to use chromates as a routine in cleaning laboratory glassware? How essential are chromates in the fifty trades which use them?

PYROGENS

MOST people with much experience of giving intravenous infusions regard pyrogens with distaste But the history of progress includes many instances of snags and disadvantages being turned to good account and even the pyrogens seem now to be coming into their own This was well shown at this year's British Pharmaceutical Conference in Aberdeen In his chairman's address on Aug 29 Prof J P Todd described some remarkable therapeutic advances with pyrogens

The chemistry of these substances is now in a fair way to being worked out, and experiments in treatment are yielding interesting results ranging from a tumour necrotising action to probable stimulation of the hypophysis to produce corticotrophin In treatment pyrogens are replacing the older crude methods of evoking fever by injecting typhoid vaccine or milk and purified pyrogens are being tested (as non specific stimulators) in dermatology and neurology, to promote healing in damaged tissues including duodenal ulcers, and in agranulocytosis Professor Berry concluded ' It would be foolish to suggest that pyrogen therapy is a panacea or will render any existing useful drug unnecessary but it is suggested that it will act as a vigorous booster to the well tried medicament Pyrogen therapy, I feel is an ally and not a substitute for specific therapy '

In using these substances a new outlook, or perhaps return to an old outlook, will have to be encouraged for whereas the physicians of old ignorant of the nature of the patient's illness treated him by non-specific means, the modern physician tends to use specific routines to treat the disease rather than the patient It seems likely that pyrogen therapy will be used to counter the individual idiosyncrasies which may arise during routine treatment

RADIOGRAPHY OF THE EAR

OTOLOGISTS and radiologists have long debated the value of radiography in the diagnosis of infections of the middle-ear cleft and especially of chronic infections in which surgery is contemplated Potentially the most dangerous ears are those in which cholesteatoma is present in the cleft—a state usually associated with a marginal perforation of the tympanic membrane In some cases cholesteatosis " is evident clinically; in others it is not Cholesteatoma is not demonstrable as such in a radiograph; radiographic diagnosis depends on the bony destruction caused by cholesteatoma and this is determined partly by its site but mainly by its extent

Winderen and Zimmer [1] of Oslo have reviewed 536 cases of chronic infection of the middle-ear cleft with special regard to the operative finding of cholesteatoma in the middle ear and its vicinity Of 131 cholesteatomas removed at operation 70 (53 4%) were found in the mastoid antrum as well as the aditus and attic regions Radiographic diagnosis of cholesteatoma was possible in 68 (97 1%) of this group 29 cholesteatomas were in the antrum only and 82 7% of these were diagnosed correctly by radiography The radiographic diagnosis of cholesteatoma limited to the attic was much less reliable and was made in only about half of a small series of such cases

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[1] Winderen, L. Zimmer J *Acta radiol Stockh.* 1954 suppl. 111

The larger the cholesteatoma, the greater was the possibility of diagnosing it correctly by radiography According to Winderen and Zimmer, the size and shape of the antrum (as seen in the fronto occipital projection) are sometimes of great value in the diagnosis of cholesteatoma In chronic otitis media without cholesteatoma, evaluation of the radiographic findings was more difficult

Solve Welin[2] holds that radiography is useful in cases of chronic infection of the cleft, even in the absence of cholesteatoma In such cases, he has found, there is usually a smaller cell system, particularly in patients with a marginal perforation, and the extent of osteitic changes may be demonstrated T V Crichlow[2] uses six standard views and has found that the submentovertical projection is the most useful In the diagnosis of cholesteatoma his results have been unsatisfactory In 1952, 63% of the cases he had diagnosed as cholesteatoma were confirmed at operation, but he was wrong in 88 4% of the cases in which he had said that there was none These poor results can, he believes, be attributed to lack of cooperation between the radiologist and the otologist The radiologist, if he cannot attend the operation himself, should always be informed of the operative findings W I Daggett[2] has found the anatomical information from radiographs a convenient aid which may reduce the time of operation He analysed 95 cases of recent chronic suppuration which had been submitted to operation after radiographs had been taken In 21 there was radiographic evidence of bony erosion and cholesteatoma was confirmed at operation, but cholesteatoma was also found at operation in no fewer than 56 cases in which there was no positive radiographic evidence of erosion The reports were misleading in 18 cases, in 4 of which a cholesteatoma had caused a fistula into the external semicircular canal, in only 1 of them had the radiologist suggested a cholesteatoma The radiologist, says Daggett, can demonstrate chronic disease in a cellular mastoid and a large cholesteatoma in an acellular one, but he cannot often help when a cholesteatoma is present with only very slight cavitation Clinical judgment is as important as ever

Perhaps with improved techniques, greater understanding of the limitations of radiography, and closer coöperation between the radiologist and the surgeon, radiographic examination of the mastoid will become more useful in the assessment of chronic infection of the ear

LOBELINE AND NICOTINE

THE similarity between the pharmacological actions of lobeline and those of nicotine[3] led to the suggestion that lobeline might relieve the symptoms of nicotine withdrawal in people who were trying to stop smoking[4], but lobeline caused severe gastro intestinal disturbances in the doses used (up to 8 mg by mouth)[3] Workers at Loyola University, Chicago, now claim to have overcome these gastro-intestinal side effects of lobeline by combining it with antacids in a single tablet, which contains 2 mg of lobeline sulphate together with 100 mg of a mixture of slow and fast acting antacids Rapp and Olen[5] have conducted a controlled study of the pharmacological actions of this combination, and of its ability to discourage smoking A hundred chronic smokers used an average of over 20 cigarettes a day during a week when they received no medication or dummy tablets, but only 5 cigarettes a day during a week in which they received the lobeline antacid compound In fact, by the end of the week in which the lobeline antacid tablets were taken, 83 of the 100 had stopped smoking Neither lobeline alone nor the antacid alone was more effective than the placebo

These are encouraging results, although Rapp and Olen do not say what happened a month after the end of their study Moreover, the subjects students, perhaps not yet fixed in the The pharmacological effects of nicotine factor in this habit, another is said to be satisfaction derived from manual and labial of the object to be smoked "[5]

TRAINING THE MENTAL NURSE

> "The patients spend by far the greater par in contact with nurses, and may derive as benefit from the ward environment as from atrist"

THIS thought gives the key to an experim progress at the Maudsley Hospital and another page by Dr Brian Ackner and the sisters—Miss M Charles and Miss D Coutts taken part in it They mention as their starting job-analysis of the work of mental nurses hospital and Bethlem Royal by Mr A N Opp but they note, as he did, that many of the the nurse-patient relationship are bound to study Their small experiment, begun in only, aims at improving this relationship, young nurses more insight into the behaviour and into their own responses to it The exper been based on a principle which nearly alwa with young people—that of giving responsib

When teaching her student nurses the usually relies on example, praise, and well cism, rather than on exposition The Nuffield analysed the work of nurses in general hospitals the amount of time spent on teaching student the wards as "negligible", and the joint Manchester Regional Hospital Board and their survey *The Work of the Mental Nurse*,[7] same word—adding, moreover, that in none studied did the amount of practical tuition than five minutes per head per day Here was weakness, which Ackner and his nursing colle made good by arranging for each of the two to meet all her nurses as a group, daily, for the night report, and of the handling of certain as well as for allocation of work Besides this, throughout the day teaches the nurses individ encourages them to exchange with their fe any observations they make on their patient thus able to work together as a fully informed

Each nurse is made responsible for the pat particular junior psychiatrist, meeting him discuss her observations on his patients Her contains headings under which she can group the facts she notices, and these nurse' proved so useful that they are now always the consultant's rounds The junior psychiatr over, give weekly talks to the nurses on present special medical or nursing problems the always being on what can be done for the pat social setting of the hospital ward By a almost as spectacular as the release of Pinel's from their chains, the sister tutor has escaped classroom to make her way into the wards Her visits, made on sufferance, have been repl weekly visit, and a discussion with the ward aspects of nurse training, and a full weekly on which she is accompanied by a student

Occupational therapy, too, is moving out of ment to become a living part of ward life A tional therapist organises the work to be done wards, and a student occupational therapist to each of them for three months at a time nurses, every day, are detailed to help her discuss the programme and go round the separating to help the patients who need it The

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[2] *J Laryng* 1955 69, 515
[3] Wright, J S Littauer, D *J Amer med Ass* 1937 109, 649
[4] Dorsey J L *Ann intern Med* 1936 10 628
[5] Rapp, G W Olen, A A *Amer J med Sci* 1955, 230 9
[6] The Work of Nurses in Hospital Wards. London Foundation, 1953 See also *Lancet* 1953, i, 3,
[7] Manchester University Press, 1955 Pp 154

erapy department itself is becoming mainly the
f patients doing specialised work, and of those
nfluence is disrupting the social atmosphere of
rd
l be interesting to learn in due course what
is better standard of training is having on the
wastage of student nurses it may well reduce
nwhile the new system is evidently serving the
rpose of the hospital—the care of patients Not
e doctors better informed about the moods,
ir and response to treatment of the patients,
nurses are discussing freely with one another
he guidance of the sister any differences of
they may have about the management of
This means that they can no longer be played
ist one another by patients they have gained in
and confidence and are working as a team with
al approach and this very security has great
itic value for the patients.

laudsley experiment bears a family resemblance
lan now practised at Belmont Hospital[8] where
the nurses but also the patients are in the
ce of each other and of the doctors. The "treat
am"—consisting of psychiatrists social worker
psychologist social anthropologist, disablement
ent officers, workshop instructors nurses social
s, and patients—hold a community meeting for
every day This experiment was started in a
psychopathic patients and since responsibility
ributed among the whole community any anti
haviour of a member became the concern of
Authority has proved more acceptable when it
l in all not in one authoritarian figure. The
can discuss their resentments verbally instead
them out in antisocial conduct, and the staff can
some of their own anxieties by expressing them
etings, and getting help from staff and patients
Dr Maxwell Jones points out the method calls
bearance and understanding on the part of the
ch can only be achieved with the help of special
In his recent paper written jointly with
Rapoport,[9] he mentions the finding of Stanton
wartz[10] at Chestnut Lodge, Washington, that
ng aides "who had the lowest status in terms of
salary and authority were the people in most
contact with the patient. The load which such
tact with patients throws on nurses and auxiliary
n be great At Chestnut Lodge with a staff
eople (psycho analysts administrative doctors
ides, and student nurses) to only 60 patients,
e during the two year study 2 psychotic episodes
icide among trained nurses, and 7 psychotic
and 2 suicides among the nursing aides. If
nurses of whatever grade, are to carry their
e responsibility without undue strain they must
iately prepared for it by their training and
ly supported by their medical and nursing
otherwise they will either leave or fall sick.
aining the therapeutic atmosphere of a ward in
the tensions of others they submit to much
themselves and when this goes unrelieved
disagreements, and misunderstandings—not
ween nurse and nurse, but between nurse and
nd nurse and patient—are the natural outcome
of pathological excitement among patients,
and Stanton found may often have their
ot in personal emotional conflicts but in the
quiet of their surroundings. The secret of a more
l mental hospital service lies, it seems to us, in
r preparation of mental nurses for their inevitable
iderable share in therapy

M. Lancet 1954 ii 1277
Aug 20 1955 p 387
n A Schwartz, M. The Mental Hospital London, 1955
ancet Aug 20 1955 p 379

PLEURAL BIOPSY

IN a series of presumed tuberculous pleural effusions in young adults, Close[1] was able to culture the tubercle bacillus from 90% of cases, but Small and Landman[2] have recently remarked that the difficulties of isolation in the laboratory are such that 70% positive would be generally regarded as "excellent, and 50% as average At all events, a large number of pleural effusions classed as tuberculous are not bacteriologically confirmed, and Small and Landman point out that as there are many other possible causes, there is a chance of patients without tuberculosis being exposed to the risk of infection in a sanatorium and suffering the inconvenience of unnecessary bed rest and other treatment In some cases of effusion in which they were unable to isolate the tubercle bacillus, Small and Landman used pleural biopsy, previously described by Sutliff et al,[3] in an attempt to clinch the diagnosis The procedure was simple: the thoracic surgeon excised a section of parietal pleura measuring approximately 1 5 cm by 3 cm through an 8-cm incision, and palpated the lung before closing up Small and Landman cite 3 illustrative cases in which a firm diagnosis was made in this way after other methods had failed They find that when tubercle bacilli cannot be cultured from the effusion, examination of the visceral and parietal pleura will often show such extensive tuberculosis that there is no need to invoke an allergic mechanism to account for the outpouring of fluid.

Pleural biopsy will rarely be indicated in young people with effusions, because in nearly all the diagnosis can be made with confidence on clinical grounds but in patients over 30 it may often be valuable in distinguishing tuberculous from malignant disease On the other hand, no one welcomes an additional operation, however slight, and careful technique for culturing the tubercle bacillus from effusions will reduce the need to consider pleural biopsy

INTERNATIONAL CONGRESSES IN LONDON

LAST Monday Sir Henry Dale, O M F R S, welcomed delegates from more than thirty nations to the second International Congress of Neuropathology which is being held in London Dr J G Greenfield in his presidential address on historical landmarks in the pathology of involuntary movements, paid tribute to James Parkinson of Shoreditch, whose *Essay on the Shaking Palsy* was written in 1817[4]

Dr Denis Carroll is presiding over the third International Congress on Criminology which is also being held in London. The congress has been considering *recidivism*; and Major Gwilym Lloyd George, the Home Secretary speaking on Monday at the first meeting, described the persistent offender as "the central problem of any penal system." Dr Carroll in his presidential address defended the current tendency in penology towards liberty leniency, and prolonged aftercare Mistakes will be made and avoidable crimes will be committed but they are fewer than under a harsher system The 400 delegates to the congress include psychiatrists prison officers and social workers from forty two countries.

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1 Close, H G *Lancet* 1946 i, 193
2 Small M J, Landman, M *J Amer med Ass* 1955 158, 907
3 Sutliff, W D Hughes, F Rice M L Transaction of 12th Conference on the Chemotherapy of Tuberculosis Veterans Administration 1953 p 176
4 See Morris, A. D *Lancet* 1955 i 701

THE INDEX and title-page to Vol I, 1955, which was completed with THE LANCET of June 25 is published with our present issue A copy will be sent gratis to subscribers on receipt of a postcard addressed to the Manager of THE LANCET, 7 Adam Street, Adelphi W C 2 Subscribers who have not already indicated their desire to receive indexes regularly *as* published should do so now

Special Articles

TRAINING THE PSYCHIATRIC NURSE ON THE WARD

An Experiment

BRIAN ACKNER
M A , M D Camb , M R C P , D P M
PHYSICIAN, PROFESSORIAL UNIT

M CHARLES
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WARD SISTER

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WARD SISTER

THE MAUDSLEY HOSPITAL, LONDON

IN an investigation of the work and training of nurses in Bethlem Royal and the Maudsley Hospitals, Oppenheim [1] made a job-analysis of the time spent by psychiatric nurses on the tasks for which they are employed and trained From this investigation there emerged valuable data, a number of criticisms of certain existing practices, and some suggestions for improvement But the quantitative nature of the inquiry necessarily limited its scope, and important qualities of the nurse doctor and nurse patient relationship eluded study Perhaps for this reason, it yielded no clear answer to one of the basic questions underlying the need for the job analysis—namely, what should be the function of a psychiatric nurse ?

The present paper describes a project which has now been in progress for nine months and which aimed at modifying some of the nursing practices and training methods on two wards at the Maudsley Hospital An experiment on a small scale seemed desirable, because experience was insufficient to justify disturbing the whole hospital by changes of practice which might prove premature and perhaps injudicious By starting in two wards we were able to institute new procedures, and adopt or discard them without major administrative difficulties

The two sisters of the wards (M C and D C), together with one of the senior physicians (B A), worked in close partnership and, when necessary, in consultation with the superintendent of nursing and the house governor They were able to enlist the enthusiastic cooperation of the junior doctors, the help of the senior occupational therapists, and the good will of the sister tutors With such a joint approach it was possible to have valuable discussions and to achieve without difficulty the agreement and cooperation of all concerned in testing new ideas

The Setting of the Wards

Each ward contained 32 women patients, and, as in the other wards of Bethlem Royal and the Maudsley Hospitals, all of these were voluntary patients

One ward was downstairs, and to this were admitted the patients who were more acutely ill—mostly depressive, schizophrenic, and organic reaction types Patients with suicidal tendencies were usually admitted to this ward, but those who were severely disturbed or violent in their behaviour were treated in another ward This acute ward was an " open " one until shortly before the night staff came on duty, continuous nursing observation being maintained throughout the day

The other ward was upstairs, and took patients with more neurotic disturbances, and those transferred from downstairs when sufficiently improved On this ward patients were allowed considerable freedom of movement within the hospital and the grounds

On the acute ward there was a nursing staff of one sister, one deputy sister or staff nurse, two part-time staff nurses, four student nurses, and one nursing assistant On the non-acute ward there was one sister, sister or staff nurse, and three student nurse two wards most of the student nurses w general trained) The effective daily num was reduced by holidays, days off, lectures, & All nursing staff worked from 7 30 A.M. to two and half days off duty weekly

The medical staffing was more comple Maudsley Hospital doctors are not assigned but are attached to particular senior have charge of beds in various wards. Th junior doctors having care of patients on the (as well as sometimes on some other wards were four senior physicians to whom they were (Two of the senior physicians of the profe each had two junior doctors allocated to h experience of the junior doctors ranged from had only just begun their psychiatric training who had had four or five or more years' ex psychiatric work The practice of attaching to wards but to " firms " has advantages f doctors, who can follow their patients thr stay in hospital, and for the patients, who d to change doctors on moving from one ward to But it means that nursing staff have to deal w number of doctors, conflicting practices oft and there is no clear source of ward authority To overcome the latter difficulty ward policy were dealt with by one of us (B. A consultation with the other three senior concerned

The Teachers

The Ward Sister

Unlike her colleague in a general hospital, tric ward sister must look on her patients as a well as knowing them as individuals. She fore, be continually pointing out to her nurs the needs of each patient but also their ch ships with each other and with the staff past the tendency was for the nurses to lea ward sister through her example in the patients, and from her advice given from time new situations arose As a group the nurses regularly except perhaps to be told of the and be given any immediate instructions.

Recognising the need for the nursing staff team, the ward sister has taken on a much teaching rôle and meets all her nurses daily Because of the differences in the nature of the two wards, different patterns have the non acute (upstairs) ward meetings are morning for discussion of the night report, duties, and a short talk on the handling patients More detailed group discussions the sister about twice a week, but through individual teaching and instruction is carried or her deputy Each nurse is encouraged to her colleagues the information she receives, be available to all at the next group discu acute ward more detailed group discussions nurses are held each morning The ward the staff nurses for some twenty minutes then spends another twenty minutes with all nurses and the nursing assistant

At the nurses' group meetings a variety of their turn in discussion, including the signs of mental disorders with reference to actual the ward, the value of diagnosis in treatment nosis, the importance of nurses' observa behaviour of the patient, and the influence personal relationships Emphasis is attitudes to individual patients, and somet need for all the staff to adopt a similar app demands of some particular patient This

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[1] Oppenheim A N Function and Training of Mental Nurses London, 1955 See *Lancet* 1955 i, 753

t does not play off one member of the staff against
To this end also the nurses are encouraged to
between themselves differences of opinion in the
of patients Some nurses may for example,
another for giving too much attention to one
atients and the free ventilation of such feelings
ie guidance of the ward sister prevents tensions
among them.

ior Psychiatrists

rly the patients allocated to each nurse might
o a number of different doctors. Student nurses
nly met the doctors when dealing with a par
quest or when helping with physical procedures
ystem was started in which one nurse is respon
the observation and notes of the patients of one
r doctor (Occasionally two nurses are allocated
ctor or one nurse is responsible for the patients
doctors) The junior psychiatrist is now expected
is particular nurse once a week, to discuss per
ith her the notes she has written and to suggest
icular observations to be made Information is
ed about patients behaviour and the nurse may
lained to her the basis of some of the patients
together with advice as to future handling
some doctors have needed occasional prompting
e meetings with their nurses, the majority have
st conscientious and have freely admitted the
f the exchange of information Lately the ward
s made regular appointments in advance and
overcome some of the difficulties of arranging
meeting times.

nior psychiatrist has always been responsible,
ay of admission of a patient for filling in the
e of the nurse s notes giving a brief history of
, suggesting the attitude to be adopted by the
nd indicating any special observations to be
owadays, as far as possible each nurse admits
nts who are to be allocated to her and she is
le on the day of admission for writing a detailed
escription of the patient together with observa
behaviour and mood On the acute ward notes
en daily for a week on all new admissions, and
r (on both wards) the notes are written weekly
e doctor asks for them more often

empt has been made to improve the information
l in the nurses notes by revising their pre
The nurses now each have a book in which
t occurrences can be entered at the time, and
dy recalled when writing their notes at the end
ek In each book there is a list of the headings
ich their weekly observations on the patients
made These include

rance and general demeanour
rsation—amount topics and actual examples of talk.
ude to staff
ude to other patients
ude to illness.
abnormal behaviour
ation and recreation.
t and sleeping habits

rses notes are now always available at the
the consultant and because of the increasing
of the information they contain they are
d more often

talks, lasting an hour have been given to the
junior psychiatrists with intermittent regu
a number of years Now to ensure regularity
h the date on which each doctor will give his
t up some weeks in advance in the sister s duty
lost of the student nurses attend these talks,
some occupational therapy students occasion
ring the week before the talk the ward sister
with the doctor the subject of his talk If a
a problem from the medical or nursing point
she is the one most likely to be chosen for
discussion More stress is laid on the patient in her present environment, and the advantages to be gained from certain approaches than on the detailed history or on any particular aspect of mental disorder Sometimes members of ancillary departments—e.g , psychiatric social work, psychology, or occupational therapy—are now asked to give the weekly talk and this helps the nurses to understand the working of those other departments within the hospital which also have responsibilities towards the patient

Despite their own very full programme, the junior psychiatrists have given freely of their time and have met with good humour and often with much enthusiasm the demands of the ward sister to incorporate them in the ward nursing training programme.

The Sister-tutor

Previously the sister tutor visited the wards at irregular intervals primarily to obtain information about a particularly interesting patient or to learn of the progress of a particular nurse She now visits each week to discuss all aspects of the nurses training with the ward sister Later she makes a full round of the ward accompanied not by the ward sister but by one of the student nurses She can thus study directly the nurses attitude and approach to patients and she and the students have a chance to observe and discuss patients already mentioned in the classroom as nursing problems

If this scheme spreads to include all wards in Bethlem Royal and the Maudsley Hospitals the tutors will not perhaps find it possible to visit as often as weekly but regularity of visits seems very desirable

The Occupational Therapist

In the recent past, occupational therapy has tended to be concentrated upon a limited number of patients who attended the occupational therapy department with the remainder of the patients being given occupational work to carry out on the ward though able to attend some of the group activities of the department if they were sufficiently well As a result the nurses came to regard occupational therapy as a treatment separate from their own activities Their contacts with the occupational therapy staff were usually limited to taking the patients to the department and fetching them back. Patients engaged in occupational therapy on the wards tended to receive inadequate supervision owing to difficulties in organising a joint approach in an overlapping field

To maintain the ward group intact and to draw the nurses into the activities of the patients occupational therapy for all patients is now held on the ward from 10 A M to noon and from 2 to 4 P M One staff occupational therapist organises the work on both wards, and to each ward is attached one student occupational therapist for three months Each day one or more nurses are detailed for occupational therapy duty Shortly before the morning s work begins the nurse and the occupational therapy student spend a short time discussing the day s programme, later doing a tour of the patients together before separating to give individual attention where it is most needed An attempt is made to place greater emphasis on work of a practical useful nature together with group activities, rather than on more refined craft work A few patients still attend the occupational therapy department for more specialised work, and this can sometimes serve the need to remove a neurotic patient for a time from the ward group if temporarily she is being disruptive or having a bad influence On the acute ward, activities have to be adjusted more to suit the needs of each patient and some, for a while, may be too mentally disturbed or withdrawn to be accessible Patients from the acute ward who have improved are usually sent daily to the other ward to take part in the group activities such as dancing and light exercises and in suitable weather the patients from the non-acute ward meet for games in the garden of the acute ward

Personal Relations

Patients' Visitors

Both wards are open to visitors on Wednesday (6–7 P M), and on Saturdays and Sundays (2–4 P M) There used to be little supervision of visitors by the nurses, apart from an effort to insist that the rule of no more than two visitors at a time was observed, and the exclusion of certain visitors at the request of the medical staff However, as visitors are part of the environment of the patient, it was felt that the nurses should adopt a more active rôle towards them, especially on the acute ward

On this ward each visitor is now issued by the ward sister or staff nurse with a visiting card The card is given to the relatives on the admission of the patient, the name of the patient and relative are filled in, and on the back are instructions for the guidance of visitors At visiting times a nurse receives the relatives and visitors and collects the cards from them A list of the visitors to each patient is then made and the cards are returned to the visitors when they leave New visitors who arrive are interviewed by the sister or the staff nurse and are issued with a card unless, for some reason—e g , on the instruction of the medical staff—visiting by them is considered unsuitable This new arrangement ensures that all visitors are known to the nurses and that none considered unsuitable obtain entry to the ward The reaction of the patients to their visitors can be better appreciated when their relationship is clearly known, and any disturbances after visiting can be interpreted in the light of known visitors

The Two Wards

The wards are connected in various ways Consultants and junior psychiatrists are common to both, and patients are moved from one ward to another according to their clinical state Since the new occupational-therapy régime has been started there is more mixing of the patients belonging to the two wards, and, as a result, their transfer from one ward to another is easier In the past, particularly on the acute ward, patients tended to become accustomed to a more organised circumscribed environment and often resisted change Nowadays the change does not seem to be viewed as a break, and little difficulty is experienced in settling to a different environment

Nurses at the Royal Bethlem and Maudsley Hospitals spend three months on one ward before being transferred to another On our two wards nurses, when they have completed their time on one of the wards, are, as far as possible, transferred for a further three months to the other ward As a result nurses remain for six months within the same training régime and are often able to follow the treatment and progress of patients during their recovery and maintain a continuity of relationship with patients and medical staff

Conclusion

So far we have made no attempt to carry out a factual study of the ward activities throughout the day, for we have been more concerned with the nature and significance of these activities than with the time spent on them In this paper we describe changes that have actually been put into practice That they have been achieved is a fact, but that they are valuable is only our personal opinion, albeit endorsed by others with whom we have collaborated

The junior medical staff have gained an appreciation of some of the needs of the nurses, have increased their teaching experience, and gained more understanding of the dynamics of ward activities As a result of improved communication they have received more useful information about their patients, and have been the
instructions with more confidence that the
understood and carried out

The nurses have learnt more about their
about the functions they are expected to per
teaching of the ward sister has helped them
stand better their influence on the patients
other From their greater contact with the
doctors they have learnt more of the
contribution, and this has been reflected in
handling of their patients

For the patients, a more secure nursing staff,
together and communicating well, has meant
ment not only better organised to meet many
needs but also better able to withstand many
more common disruptive forces. The tendency
patients, in working out their problems, to set
against each other has been strikingly reduced
corresponding increase in security to the
general To be warned of such problems, to
arising, and to achieve success in their manage-
contributed immensely to the confidence of the
her relationship with the patient The hostility
patients has ceased to be so threatening, and the
dency sought by others could be encouraged and
allowed to get out of control As a background
general attitude of tolerance and permissiveness
the kindly but firm authority of the ward sister,
by the senior medical staff

The patients spend by far the greater part
time in contact with the nurses, and may derive
or more, benefit from the ward environment
psychiatrist More attention, therefore, must
to training the psychiatric nurse on the ward.
this fully to succeed the psychiatrist himself
actively in her training

We should like to thank all who have cooperated
and in particular Miss Robinson, superintendent
at the hospital, without whose support this work
have begun or still be continuing

"DOWN AND OUT IN LONDO
Mental Illness in the Lower Social C

J STUART WHITELEY
M.B Leeds, D.P.M
REGISTRAR, WARLINGHAM PARK HOSPITAL

"I should like to understand what really goes
souls of plongeurs and tramps and Embankment
—GEORGE ORWELL.

OF 1536 men admitted to an observation
South London during 1953 and 1954, 130 (
as their last address a London County Council
centre or a common lodging house The night
tion at these shelters is largely transient, so
total population cannot be reliably assessed;
probably about 12,000 Certainly it is far
8 4% of the normal community served by the
ward This suggests that the incidence of me
is higher in the disorganised community,
keeping with the findings of Faris and Dun
in Chicago Furthermore 72% of the patie
relapse and only 28% had been referred for
care for the first time This again is in
relapse rate of about 42% for the normal
As the down and out environment appears
ciated with mental illness, the following study
of the problems of 100 of these 130 men

For ease of classification I selected those
from a reception centre and from a Salvation
lodging-house, and from a private lodging
reception centre anyone who has less than
a night's lodging is admitted in the evening

here is an active welfare and re employment nd the average stay is six days At a Salvation ostel, the nightly rate is from 1s 6d, and there lfare service At privately managed lodging he amenities are better and the minimum charge

t not be inferred that all the population of the last ps are down-and-out. About a third book by the nd include old age pensioners and people in regular ent who choose to live that way

FIRST ADMISSIONS

ases referred for psychiatric care for the first 1 into two groups (table I) those from the a centre were almost all schizophrenic (10 out th an average age of 36 7 Most of them were s and had been in regular employment until the their symptoms some three to six months ago d gradually drifted into the reception centre they had no family or friends to look after them

TABLE I—DIAGNOSIS ON FIRST REFERRALS

Diagnosis	*Reception centre*	*Lodging house*
ophrenia	10	—
ession	—	8
oid state	1	1
opathic personality	—	3
psy	—	1
olism	—	1
ington's	—	1
gnosed	1	1
Total	12	16

of the 10 were not English and 1 was from was an orphan, and 1 was left alone when his kin was sent to prison

l —Aged 36 An Indian who had been eleven years d He had been in regular employment as a fitter years but had worked more sporadically since his ly job being as a baker s assistant six months ago had no friends nor relatives in this country and had ng in lodgings until six months ago when after s with his landlord he was turned out He had d in common lodging houses and then at the recep re He was found wandering in the street by the d was unable to give coherent explanations. He acutely disturbed schizophrenic with whom little ould be made

6 from the lodging houses were mostly patients ressive reactions Their average age was 42 8 About half of them had lived in the lodging r some time. Some were unstable before going to e but in 7 some present stress had led to the wn In most of the others increasing age and ulty of finding work had been the precipitating 6 gave the name of their next of kin but all ntarily discontinued normal relationships

—Aged 52. Working as a messenger he had lived g houses on and off for the past ten years. His left him twelve years ago He had been enuretic and his enuresis had been aggravated by a spinal ring the war and by drinking bouts. He had been er and was under a court order to repay money tained on false credit in a public house This he unable to do and in despair had taken phenobarbitone ound comatose in his bed.

tients from the lodging houses had many psycho aits which were not seen in the reception-centre hus 3 of them had a family history of mental of them had a broken marriage, 5 had been in nd 1 was on probation and 6 drank to excess the reception centre group expressed suicidal ut 4 of the lodging house cases made serious attempts in depressive moods 2 of them after bouts.

RELAPSED CASES

g the 72 patients referred in relapse the dis between the reception-centre and lodging house did not exist, and there was more similarity in the life histories of the two groups There was a hard core of schizophrenics in the reception-centre group (16 out of 36) but there were fewer psychopaths and alcoholics (table II) The schizophrenics who had made the best adjustment judging from their rise from the reception centres to lodging houses were those who were more psychopathic It seemed as though to exist in the environment an antisocial and psychopathic attitude was necessary

TABLE II—DIAGNOSIS OF RELAPSES

Diagnosis	*Reception centre*	*Lodging house*
Schizophrenia	16	6
Psychopathic personality:		
Depressed	5	7
Drug-addict	1	1
Other	—	2
Alcoholism	2	11
Epilepsy	4	—
Depression	3	5
Paranoid state	2	2
Other	3	1
Total	36	36

The average age of the schizophrenics was 40 8 years and most had been twice admitted since their first referral some four years ago Chronic alcoholics now formed the largest group in the lodging house cases They were of an average age of 46 8 years and had been first referred at 38 4 years, which is in agreement with Glatt s (1955) findings for middle-class alcoholics

The relapsed and chronic cases make unsatisfactory patients, and they often take their discharge against advice within a few days of transfer to a mental hospital

Case 3 —Aged 30 First ill at the age of 24 when he was boarded from the Army diagnosed as an anxiety state A year later he left his wife who had had three illegitimate children during his absence He was readmitted to hospital and diagnosed as schizophrenic and had had at least eight admissions since He worked sporadically as a builder s labourer had been in prison twice He had been to his old home four days ago, but his brother had turned him out He had only been four days in London when the police found him wandering and brought him to the hospital He was unable to get work and had frequent alcoholic bouts.

Psychopathic behaviour was more common among the relapsed cases Many had been ejected by their relatives because of their behaviour and only a third of them were able to name a next-of kin There was evidence of mental illness in the family of 4 of the patients Of the reception-centre cases 26 were unmarried and 1 a widower, 9 had a broken marriage as had 15 from the lodging house group. 5 of the lodging house cases and 6 of the reception-centre patients had been in prison 2 who had completed sentences for man slaughter after impulsive aggression six and twenty years later developed a paranoid psychosis

Of the lodging house group 11 were alcoholics and from the reception centre 2 In 13 other patients alcohol had been a contributory factor Physical illness played a small part in the relapses Suicidal attempts were made by only 4 of the 72 relapses as opposed to 4 of 28 first referrals

DISCUSSION

The down and out culture in London is an asocial, and often antisocial community with little comradeship Unlike the Skid Road fraternity described by Jackson and Connor (1953) it is one in which each lives for himself in an air of mistrust and paranoia There is a high incidence of paranoid schizophrenia (Faris and Dunham 1939) 19 of the 32 schizophrenics had paranoid symptoms, 6 more were diagnosed as paranoid states, and another 6 expressed paranoid ideas To his environment the down and out contributes nothing and in return receives nothing To exist in it he must be as psychopathic as his neighbour

The down and out population is fed from two sources —the asocial personality who cannot establish normal relationships and retreats to the environment where he will have to make none, and the psychotic who lacked the usual social ties when he fell ill and, having no one to care for him, drifted to the lowest social level The longer he stays there the harder it is to get out he becomes ill equipped, psychologically and materially, to exist in the outside world He lives from day to day, books his bed nightly, and takes casual work in the kitchens of the West End

Straus (1946) has pointed out the undersocialisation of the homeless man, and Anderson (1923) the mixed causes of homelessness But the main cause is the personality defect which does not allow him to form relationships It may be only asocial psychopathy or it may lead to the ultimate withdrawal of frank schizophrenia

Alcohol, too, is an important factor Some are homeless because they drink and others drink because they are homeless Straus (1946) found that 80% of homeless men drank to excess and that two thirds of these had no desire to stop nor friend to encourage them to stop

Outside his retreat the down and-out is uneasy and unlikely to coöperate in treatment, he is basically unable to establish relationships with the therapist, and the hospital environment makes him more withdrawn To help the alcoholics a psychiatrist might hold a voluntary discussion or counselling group in the reception centre or lodging-house, in the hope that on his own ground the down and out might more easily accept the therapist and through him the outside world Workers from Alcoholics Anonymous might then help Projects of this kind have been tried in the United States (Wattenberg 1954)

When he falls ill, the down and-out should, ideally, be treated in a separate institution—similar to that suggested for the criminal psychopath by East and Hubert (1939)—where his environment was as near his normal habitat as possible. He would then be more likely to stay, and attempts to meet his personality deficits could be made by therapists with an understanding of his particular problems—perhaps by group therapy It would be an advantage if he could be committed to the institution for a definite period, and as so many down-and outs appear in court this should be possible

I wish to thank Dr E Stengel of the Maudsley Hospital, London, for his encouragement and permission to publish this study on cases under his supervision

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PILOT SURVEYS OF INDUSTRIAL HEALTH

One of the Dale Committee's recommendations [1] was that a standing Industrial Health Advisory Committee should be formed to advise on the development of the industrial health services and on their coordination with the National Health Service This committee, composed of persons appointed by the Ministry of Health and Ministry of Labour, together with representatives of the Ministry of Fuel and Power, employers, workers, doctors, and nurses, held its first meeting in March of this year, and it has since recommended that two pilot surveys should be carried out At an inaugural meeting last week to discuss the first of these surveys, Sir George Barnett, Chief Inspector of Factories, said that much could be done at national level to improve the industrial health services He continued

"But the committee has also recognised that of the workers in the smaller factories—which for whelming majority—are to be catered for adeq of the necessary action must be taken on a local ba

The object of the survey, he said, was to needs for industrial health services in a partic and how these services could best be organ called for investigation into the nature and sickness among the workers, and study of conditions and the precautions to prevent ill health The medical and nursing resources in the area for industrial health work would noted.

Halifax was considered suitable for the fir because of its size and the variety of its indu survey will be carried out by a team of insp will examine every factory in Halifax The be reported to a local advisory committee representatives of the local employers' or trade unions, and the medical profession), a rep going to the chief inspector of factories Sub the district inspector will approach individual a clear need for preventive measures is shown medical supervision seems desirable the firms will be asked to make arrangements with a loc who could possibly take part in a group schem a number of firms would participate.

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[1] Report of a Committee of Enquiry on Industrial Health Services Cmd 8170 H.M Stationery Office 1951

Before Our Time

MEDICINE AT MONTEVIDEO

In 1807 a British expeditionary force abo strong besieged and captured the fortified Montevideo and later attacked Buenos Aires month campaign was brought to an unsatisfac clusion by an agreement whereby the British the whole colony of La Plata

This ill conducted campaign has received lit tion from British military historians, but it is from a medical viewpoint owing to the extr detailed and illuminating report by Dr Theodore the Inspector of Army Hospitals, who was in charge This report was never published, but l among the War Office records until it recently light in the Public Record Office

Dr Gordon, who qualified at King's College, in 1796, served in St Domingo during the yellow-fever epidemic of 1794–95 and subseq many years in Jamaica and the Leeward Having himself survived the dangers of the We climate for so long, he was exceptionally well ex in the treatment of those diseases with which the American theatre of war were threatened.

On the conclusion of the La Plata campa mitted a report which showed that over the p Jan 1 to July 1, 1807, a force of average 10,508 men had no fewer than 5531 admitt Army hospitals Of these, 4434 were discharg course, 396 died, and 701 remained for further The mortality rate was rightly considered unc since 198 had died as a direct result of injuri in action and only 43 from "tetanus of wound a total of 1095 wounded men admitted. Ove the admissions to hospital were due to disease to battle casualties

Dysentery (1550 cases) and diarrhœa (650 the chief causes of admission, followed by cases), ophthalmia (458 cases), ulcers (218 case atism (148 cases), and venereal diseases (8 "the hardships of the campaign and the use of ardent spirits" Dr Gordon ascribed majority of the cases admitted to hospital out however—and backed his opinion by ons on a regimental basis—that "where care was by Commanding Officers and (regimental) Sur the climate was responsible for comparatively s of sickness, but that "where proper attention paid complaints, mild at first, laid the foundation to disease rendering the men unfit"

is one item in the report which deserves particular n since it indicates the severity of discipline in ish Army of the period Under the heading iment" it is shown that 338 men were admitted tal as the result of flogging Dr Gordon, in g that "the climate is particularly unfavourable aling of wounds and sores of every description" ont that even military punishment has fre been followed by mortification almost always l with fever injurious to the constitution and ves have been endangered in South America by s of punishment which in England would be d trifling"

ordon reported that experience has proved to faction of everybody" that sick soldiers recovered ickly when accommodated on board ship than ned in hospitals ashore He again emphasised l for good interior economy in units and con with his considered opinion that "a garrison e maintained in Buenos Aires and Montevideo annual loss by disease than in England"

is evidence that Dr Gordon's report reached Commander in Chief and the Secretary of State with a strong recommendation that its con ns should be carefully studied Unfortunately point—the insistence on the primary responsi the commanding officer and the regimental for the health of their men—received little , and it required nearly a century and a half er bitter experience before the lesson was ned

M E S Laws
O.B.E., M.C F.R.Hist.S

Public Health

Ebb and Flow of Infection

tory of the successive major infections which gued these islands in the last six centuries is told in a fascinating account by Thomson[1]

ack Death (*bubonic plague*) entered at Weymouth t, 1348, and in its first great outburst killed at lth of England's population of 3–4 million.[2] It endemically for over 300 years, which were ed by occasional epidemics of which the Great f London in 1665–66 was the culmination rwards it disappeared almost as suddenly as it and 253 years elapsed before the next visitation l outbreak near Ipswich, probably an importa ain ships.

hile *typhus*, or spotted fever which was by Willis as a new disease in 1643 was rising its persistent annual mortality was probably d responsible for as many deaths as plague. onyms, jail fever ship fever,' and famine ndicate where constant foci of the disease were At that time its contagiousness was still in but Willis had no doubts: he urged the 'to go near and try Until 1909, when monstrated the transmission from lice, medical could go no further than the clinical observation striking distance of typhus is short. In 1818 ctions with typhus in the seven great London led to the Select Committee of Enquiry which ded the establishment of isolation hospitals 37 and 1838 deaths from typhus now registered rst time but still to some extent confused with nd relapsing fever outstripped those from any ection. The last great epidemic was in 1847 mainly in the surroundings of the Irish immigrants who flocked to Merseyside after the failure of the potato crops in the 'hungry 'forties.' But, on the whole, typhus was already on the decline, and it yielded the leading position among the infectious diseases first to smallpox, then to *measles, and for the 40 year period from 1840 to 1880*, to scarlet fever

Smallpox and *measles* were probably prevalent about the time of the decline of plague and the rise of typhus But they were slow to assume the position of major infections "Smallpox measles, pox and pokkes (possibly syphilis) were much mixed up in Tudor England"[2] There is little evidence that smallpox and measles were severe in the 16th and 17th centuries "Variolæ and morbilli although contagious are not pestilential because for the most part they are salubrious"[3] But in the 18th century smallpox earned Macaulay's description as "the most terrible of all the ministers of death" It was widespread and virulent with a case-fatality rate of 15–30%, when the first smallpox hospital was opened in 1746 This phase culminated in the epidemics of 1837–40 and of 1871–72 each with about 40,000 deaths in England and Wales. Thereafter smallpox declined steadily except for a minor upsurge in the early years of this century

As regards measles, Sydenham tells of a severe epidemic in 1674 during which the extreme infectiousness of this disease was noted But not until *the second half* of the 18th century coincident with increasing over crowding in towns, did epidemics of measles begin to occur every second or third year and even then this disease caused only about a tenth of the number of deaths attributed to smallpox The position changed sharply in the years 1804 and 1808 when a malignant form of measles affecting adults as well as children produced mortality greater than that of smallpox From then throughout the 19th century and indeed until 1915, except for the 40 years when scarlet fever was predominant, deaths from measles outnumbered those from smallpox scarlet fever, and diphtheria combined. Not until 1933 did its mortality again become inferior to that of another infection—diphtheria.

The *scarlet fever* interlude was at its height between 1840 and 1880, when it was the chief killing disease of childhood and was responsible for 4–6% of deaths at all ages. Dr Tait, successor of Arnold as Headmaster of Rugby lost 5 of his 6 children within a month from scarlet fever To our grandmothers 'the fever' was a word of ill omen

In 1859 diphtheria first flared up as an epidemic in Britain. Yet it had been rife on the continent of Europe for some time Bretonneau having defined it and given it its name in 1826 It remained a major though never predominant infection until 1947 when it declined so rapidly as almost to disappear This steep decline was mainly due to mass immunisation but was probably not uninfluenced by improvements in diet, *housing* and hygiene

Typhoid fever never seemed to have the same drastic effect on the nation's mortality as the infections already mentioned It was first registered as a separate disease in 1869 when it accounted for 8050 deaths By then it had passed its peak, and its decline has been steady and progressive

Cholera, like plague, made a sudden onslaught upon us and as suddenly disappeared. There were four deadly outbreaks of this exotic infection starting at various ports in 1831, 1848 1854, and 1866, and it spread widely over the country John Snow in 1854 demonstrated its transmission from the *infected* water-supply of the Broad Street pump but his teaching had little effect until after the 1866 epidemic This was the last occasion on which cholera was allowed to obtain a foothold in this country

Influenza was first recognised as a separate entity in the epidemic of 1743 Its usual characteristics *of* suddenness, simultaneity and universality' were exhibited by epidemics in 1510 1557–58, and 1580–82 which were then attributed to coqueluche because of the spasmodic cough which accompanied it.[3] In 1775 the spread of an influenza epidemic was traced through Italy and France to Britain by *Gregory* of Edinburgh. Major

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n D *Mon Bull. Minist Hlth Lab Serv* 1955 14 106.
an C History of Epidemics in Britain. London 1891–94

[3] Fracastoro G De Contagionibus. Venice 1546

epidemics have been recorded during the past two centuries at roughly 30-year intervals, with many minor waves at intervals of 2–5 years The pandemic of 1918–19, one of the greatest upsurges of infection in all history, showed a sudden and complete change in age-incidence and mortality from the middle-aged and elderly to the young, 25% of the deaths being at ages 0–15 years and 45% at 15–35 years Influenza has seen the rise and fall of all the other major infections, and no-one can say that its power is yet on the wane

Thomson's review is limited to those nine infections, but his theme could also include the "English sweats," malaria, whooping-cough, encephalitis lethargica, and poliomyelitis Was there ever such an epidemiological puzzle as the *sweating sickness* of 1485 introduced by the troops of Henry VII, and recurring in 1508, 1517, 1528, and 1557, after which it disappeared? "It was named 'stop-gallant,' for there were some dancing at the Court at nine o'clock that were dead at eleven It was all in contrast with the bubo-plague, the poor's plague, for it fell mostly on the great houses, on the Kings Court, on luxurious establishments, on the lusty and well-fed, sparing the poor "[3]

* * *

How did all this ebb and flow of infection come about? From Hippocrates to Sydenham the theory of "epidemic constituents" held the field, with the emphasis mainly on factors of weather and climate Changes in the state and circumstances of the host cannot, however, explain these great cyclical variations in virulence over the centuries In the modern view mutation of the parasite is the more decisive factor, and this is demonstrable in the influenza virus, B C G, and other micro organisms Mutation of the pathogen towards greater virulence, with coincident favourable host factors, opens the way to its rapid proliferation and transfer for a time But with increasing slaughter of the hosts, the parasite too tends to perish and its field of action is soon narrowed Natural selection may thus be constantly acting in favour of a more comfortable ecology, a state of live-and-let live with the host whereby both survive with only minor inconvenience This would make the explosive (epidemic) phase short and the stabilised (endemic or symptomless) phase relatively long If this be so, a constant flux in the epidemiological pattern of a country is a natural phenomenon, and is likely to continue as new varieties, milder or more deadly, arise from ordinary pathogens or from Nature's vast reservoir of feebly pathogenic or non-pathogenic micro organisms

General Morbidity, Cancer, and Mental Health

The supplement to the Registrar-General's Statistical Review for the years 1950–51 on General Morbidity, Cancer, and Mental Health[4] is the successor of the 1949 supplement on the same subjects[5] The companion volume on Hospital In-patient Statistics[6] has already been published

General morbidity is again examined from the results of the Survey of Sickness, which was suspended early in 1952, this volume carries the account of it to its close The effect of the 1951 influenza epidemic is analysed in relation to prevalence, incapacity, and number of consultations This epidemic affected men over 65 more than any other age group, the prevalence among them being double that of 1949 At all ages the duration of incapacity and the number of consultations in 1951 increased, compared with 1949, even more than the prevalence, and thus it may be concluded that the cases were more serious as well as more numerous

The section on *cancer registration* is concerned mainly with continuing for the fifth year the story of the cases of cancer which were first registered in 1945 and 1946 These cases form only about a quarter of the estimated years, but in later years this proportion more and in 1954 registration in some areas was In this volume four sites are selected for special female breast, the cervix uteri, the rectum, and of the skin They are examined mainly with age-distributions and survival rates The survival rates for cases of primary cancer without which received radical treatment were cancer of 67%, cancer of the cervix uteri, 51%, cancer of 50%, and epithelioma of the skin, over 80

The *mental health* section continues the study of of patients in mental and mental deficiency result of the general fall in the death rate at ages has been an increase in the proportion of older people accommodation in mental hospitals In contrast less than half the waiting list of mental defectives for mental deficiency hospitals were children under mental hospital admission rate for psychoses phrenia was much higher for social class V (unskilled tions) than for any other class, but the admission alcoholism was much greater for social class I (professional administrative)

Poliomyelitis

Uncorrected notifications of poliomyelitis and Wales during the week ended Sept 3 (35th as follows paralytic 206 (198), non paralytic total 398(362) (Figures for the previous theses)

Total uncorrected notifications up to and 35th week in each of the years, since 19 follows 1947, 4277, 1948, 1140, 1949, 4616, 1951, 1836, 1952, 2605, 1953, 3306, 1955, 2986 Total uncorrected notifications week of each of these years (percentage of cases in parentheses) were as follows 1948, 73, 1949, 308, 1950, 491 (61 5%) (39 3%), 1952, 215 (70 0%), 1953, 224 (51 71 (62 0%), 1955, 398 (51 8%)

In the week ended Sept. 3 there was an proportion of non-paralytic cases. The East Ridings of Yorkshire had the highest rate, Greater London The lowest rate was in the region In London so far this year the reached an abnormally high level, with notifications amounting to 15 2 per 100,000 For and Wales as a whole, the rate for the year about 6 7 per 100,000

A seasonal fall in notifications may start week or two, but the possibility of further rise peak, as in 1949, cannot yet be excluded.

Food-poisoning in Lancashire

Some 294 cases of food poisoning occurred Lancashire, on Sept 6 The symptoms were vomiting, and abdominal discomfort, some more hours after a midday school meal which of minced beef and vegetables and steam pudding and custard The patients were mostly in about a dozen of the primary schools, but they also some adult school meal servers and a few Some 1750 persons had partaken of the illness seems to have been relatively mild, and rapid, the majority did not seek medical Investigations are still incomplete, but the picture suggests a salmonella infection, and a laboratory report supports this

At Accrington, Lancashire, 98 cases of ing occurred on Aug 26 at a large works symptom was mild diarrhœa, vomiting was in only 2 cases Most of those affected continue at work, they were seen by the and did not seek medical aid A heavy *Staphylococcus pyogenes* was obtained from tin of synthetic cream, and from a cream bun this material, and a scanty growth of the same was obtained from one of three meat pies interval after the meal was uncertain, since affected had had snacks of tea and buns at but the impression was that the interval longer than is usual for outbreaks due to toxin, and the rarity of vomiting is a cause

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[4] Registrar General's Statistical Review of England and Wales for the Two Years 1950–1951 Supplement on General Morbidity, Cancer, and Mental Health H M. Stationery Office, 1955 Pp 241 8s 6d

[5] Registrar General's Statistical Review of England and Wales, 1949 Supplement on General Morbidity, Cancer, and Mental Health H M Stationery Office

[6] Registrar General's Statistical Review of England and Wales for the Two Years 1950–1951 Supplement on Hospital In patient Statistics H M Stationery Office

In England Now

ning Commentary by Peripatetic Correspondents

informality of our cottage hospital is such that I surprised to find one of our men patients standing ressing-gown by a cot in the children s ward As d past he touched me on the elbow "Have you wonder-child doctor? he asked Clutching the the cot was a nightgowned young sage of 21 surveying the world of the ward with a quiet His remarkable serenity had already attracted ntion ' Is this who you call the wonder-child?"

"Yes' said my patient, "just watch this" ed over the cot rails and picked up a copy of s *Bird Book for the Pocket* which was lying on kets.

ng it at random he held the book in front of the d said What bird is this, Nicholas? ' Nicholas ery swift glance at the picture and came straight th "mistle-thrush His pronunciation was , I ll agree, but there was absolutely no gain hat he recognised the bird So we opened the ain "Chaffinch" said Nicholas. He followed this fieldfare, swallow and nuthatch without mis- His answers were given briskly and with confidence ly a momentary glance at the picture

then on the climax of each day s ward round this catechism of Nicholas, which we kept down birds only so as not to tire him. The day after meeting I decided to try him on more difficult o I opened the book in the middle of the ducks. neye' said Nicholas without a moment's hesita was flabbergasted 'Right,' I said craftily about this one? Curlee, said Nicholas and e he was right. Now it so happens that beneath ew is a picture of the whimbrel which is appar- most respects a miniature curlew And what's ? I asked For the first time Nicholas seemed He frowned, looked up, looked down, looked , and then turned his head away and said in a considerable disdain Curlee too He made up mistake soon afterwards by getting Capercailzie and by showing us his book of cars, from which -de-force was pantechnicon"

k later it was Nicholas s last morning in hospital, r of us were clustered as usual round his bed the bird game when into the ward came his parents. Their first words on seeing us were ar! Has Nicholas been annoying you with his 'Not at all' we protested far from it. e first infant prodigy we ve met who really is it as well as a prodigy, and we re fascinated

some diffidence his parents then went on to tell e difficulties and anxieties of having to bring up emarkable child 'At first we used to take the way, they said but it was no use He was le until he had them back. So now he is told the any bird he wants to know, and having heard it remembers it In fact he often sits in front of dow at home and recognises the birds in the

Extraordinary we said, and have you y plans for the future? ' The parents looked at her hesitating Shall we tell them?' asked and After a moment or two his wife answered All right. Go on Well,' said her husband, dly like to admit it and we re afraid you ll laugh e decided that as Nicholas is so determined to erything anyhow we must cater for his brain have just started saving up for his fifth birthday y him the *Encyclopædia Britannica*

now 3½ years since I met Nicholas and I find wondering how he is getting on with the book ummy and Daddy have just given him for his r

* * *

o past the use of the unicorn as a laboratory was limited by its great ferocity Under the to Animals Act 1876 there is no provision for , so that the intending research worker may run ministrative difficulties at the Home Office A l technique however exists for taming it[1]; a unicorn will become docile in the presence of a young virgin and lay its head gently in her lap The method may have a useful diagnostic medicolegal application, though difficulties can be foreseen when the result is negative. Besides, our outpatient sister rarely takes kindly to new ideas— I will not have a unicorn in my outpatients.

We had never actually seen a unicorn ourselves until last week when the morris dancers came to our suburb Twenty lusty yeomen pranced and jingled to accordion and fiddle; and there kicking high to the music, was a unicorn An atypical two-legged specimen, true, but ferocious it snapped and snarled menacingly at a worrying mob of excited small boys Suddenly, one of them pointed a snub-nosed bright red object and the unicorn shrank back. From a careful study of the literature[2] we can vouch that the bright red object was an atomic space-blaster

Clearly the day of the virgin is ended and the title of our first paper will be, 'The Biological Effects of Radiation on the Unicorn

* * *

I had many requests from my flock to see my Bisset-Hawkins medal One woman said ' Aye, George got one for darts.' I asked to see it. "Ye can't,' she said ' he has it on his watch chain"

* * *

There is scope for a great deal of rationalisation in this matter of places and jobs 'Good Heavens! say your friends, " but you can t possibly be thinking of applying for a job in West Bromwich, surely! But yes indeed; you have bought a map and discovered how near you would be to the Welsh marches—a lovely countryside that you have always wanted to explore you have recollected that Aunt Dora lives in Wolverhampton and you have even managed to discover a guide-book that quotes Birmingham as being a good shopping centre The schools are said to be excellent, and it will be pleasant to be able to see county cricket again

You spend the morning before the interview wandering round the town You have been told of the strength of the local candidate, but it is only after you have examined the art gallery that you begin to be doubtful about the whole thing You are still, nevertheless, in that curious state of ambivalence when you would be prepared either to condemn the art gallery outright or to praise it as the best you have seen—without, of course, letting on that that means the best of three.

Even a day containing an interview comes to an end and, with a sigh of relief, you find yourself on your way home Now comes the moment of real insight. What, after all you now realise, has Aunt Dora meant to you in the last few years except a Christmas card? And is there to be honest, ever time to watch county cricket, anyway? Furthermore—and it occurs to you suddenly that you are rather a genius in these matters—you have cleverly left yourself completely free to apply when the time comes, for that delightful vacancy in Devon, or wherever else it is that you have set your heart on ending your days

* * *

I have just gone back to work at my teaching hospital and I find the students younger than they were in my day But then our chiefs used to tell us that we were younger than they were in their day And their chiefs used to tell them and so on Obviously Methuselah had nothing on the original student body

Teaching induces in me a mental ambivalence If the firm's bright boy asks me a question just as the round ends, I find myself thinking how I would have loathed him in my clerking days But if the collective *catatonic* stupor comes to an end and they stream off to coffee without a query then I reflect bitterly how my pearls have been wasted on such idle oafs

* * *

News from the breakfast table

Jane (aged 13): I had a terrible dream last night I dreamt I stabbed Miss Smith our French mistress, in the back with a knife '

Hugh (aged 9): Oh Jane, what super dreams you do have I wish mine were like that they are always so dull '

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[1] aves R. (1952) The White Goddess. London; p 251

[2] Dare D., et al. (1955) *Eagle* 6, no. 5 p 1

Letters to the Editor

PROFESSIONAL RESPONSIBILITY

SIR,—It would appear that it is now customary for some hospital management committees to issue books of rules for resident medical staff Prospective residents are asked to sign a statement agreeing to abide by them The following are examples from the book of rules given to me at a hospital where I was offered a post recently

> "(a) When a patient who has attempted to commit suicide is admitted, the house officer must notify the police immediately"
>
> "(b) Resident officers shall give general anæsthetics when required, but they shall not use chloroform or undertake spinal anæsthesia"

Whilst agreeing that administrative instructions are necessary for the smooth running of any large institution, it is wholly undesirable that these should extend into the clinical field Furthermore, this set of rules shows no visible evidence of clinical authorship but presumably has the authority of the hospital management committee

With regard to the first example, it is doubtful whether the doctor should be used as another arm of the law or that his patients should regard him as such On the contrary, it is important that these patients should seek advice in the secure knowledge that they are not going to be reported If these rules were framed by medical men then the authors are coercing their colleagues into *unethical conduct*

I am aware of recent medicolegal events which prompt hospital management committees to protect themselves against the vicarious liabilities of an employer, but to frame rules of conduct for clinical practice in order to reduce financial liability in the event of litigation can only do harm to the profession and thereby to the public

A study of recent trends would seem to indicate that in cases where damages are awarded the tendency is for the doctor and the hospital management committee to be equally liable Equal liability would indicate equal responsibility With this logical development in mind it would appear reasonable for the hospital management committee to have some detailed clinical control over the acts of its employees Hitherto, hospitals have limited themselves to engaging suitable staff, and have allowed them, once appointed, to get on with the job Although perhaps logical, this latest trend of events is altogether undesirable, from the point of view both of the profession and of the public An Act of Parliament is required to alter the law, thereby making fully registered practitioners fully responsible for all their actions The cost of litigation would then be borne entirely by the profession The defence societies may find it financially satisfactory to share a liability, but their interests should go deeper than this, for only when a doctor is completely liable can he be wholly responsible Only when he is wholly responsible can he be sure of freedom from direction and of freedom to exercise his clinical judgment to the best interests of all concerned If the proposed new onus of responsibility resulted in an increase of the annual subscription-rates of the defence societies then this would be a small price to pay for clinical freedom

Meanwhile, all practitioners should hesitate before signing statements agreeing to abide by clinical rules, and, if compelled to do so, should seek skilled advice immediately

Andover, Hampshire PETER H SHERWOOD

THE ACTION OF INSULIN

SIR,—I have read with interest your leading article on this subject (July 30), and especially the mention of the theory that one action of insulin is to affect cell permeability to sugars

H D Kay and I many years ago produced that the rabbit's corpuscle became mor to glucose when insulin was administered, found that this action was shared with " insulin and peptone, and thus considered to be not a specific insulin action I wonder of the workers reporting this permeability insulin have done controls with inactivated

Dental Research Unit,
University of the Witwatersrand,
Johannesburg J T

COMMONWEALTH PROSPECTS

SIR,—In your editorial of Aug 27 you owing to the large number of students in the schools of Australia, there is a serious danger may soon be more doctors than the popula Commonwealth can support

On a recent tour sponsored by the Au graduate Federation in Medicine, I was something of medical practice in Brisbane, Sydney, Melbourne, and Tasmania, and I was told that neither is there a surplus of doctors practice at the present time nor is there likely surplus for several years to come Indeed, of the Victorian branch of the British Medical went to considerable trouble to tell me of opportunities that still exist throughout Vi put me in touch with a number of young ge tioners who have recently acquired country I interviewed some of them and they told me had had very little difficulty in finding the while the necessary finance was relatively easy Their earnings seem to be fantastically high cannot have been very much over 30 years was in practice in a large village, admitted th takings were as much as £12,000 a year, wh of about the same age and experience w £6000–7000 a year in a village about twenty I have reason to believe that these example means unusual

Another indication that the country is not doctored is the difficulty experienced in obt dents for hospital posts in many parts of the the virtual impossibility of obtaining locum tices—which seems to be the general experience out New South Wales, Victoria, and Tasmania

In regard to specialist practice, op undoubtedly vary with the locality and th concerned, but in general there would seem adequate supply of physicians, surgeons, specialists in most parts of the country Ne was told that in Tasmania there is only one op gist and one ear, nose, and throat surgeon for of this very large island, with two fair sized 100 miles apart

Undoubtedly the most numerous opportun be found in laboratory medicine, and every I was asked to recommend pathologists, ha hæmatologists, and chemical pathologists in might wish to take up the many posts w filled These posts are hospital appointm private practice is not allowed The salaries by the State governments concerned But nately, when one takes the cost of living sideration, the salaries offered are quite indeed they are well below those paid for work and responsibilities in this country matters worse, only a few of the posts carry superannuation or pension.

Thus, although I cannot recommend Aus suitable country for emigrants who wish

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1 J *Physiol* 1926, 61, 113

aboratories, I have no doubt that there are many cellent opportunities in clinical medicine than torial would suggest

partment of Bacteriology
mas's Hospital Medical School
London, S E 1

RONALD HARE

ROYAL COLLEGE OF MIDWIVES

May I call attention to the appeal that is being the Nation on behalf of the Royal College of s

the facts are that present accommodation is quite te for the purposes and needs of the college Accord ry suitable corner site has been secured at 15 Mans t London W 1 on which to erect an appropriate It is calculated that to acquire the site to erect the and to maintain it on completion, £150 000 is required efore hoped to raise this sum in the course of the

rom the many and increasing services contributed 1 midwifery the Royal College also serves world and undertakes the secretariat of the International ation of Midwives A number of your readers will first World Congress of Midwives which was held in ist year and was sponsored organised and financed ers of the Royal College and attended by repre of 47 countries

bt many of your readers will have a kindly sympathy od shape of the college and indeed many will have contacts with its officers and offices and may well ed to support the appeal by sending a cheque able to the Royal College of Midwives Building at 57 Lower Belgrave Street London S W 1

members of the many branches of the college t the United Kingdom will in various ways be taking se funds for the benefit of the appeal and the help agement of your readers by coöperation with their ld be most valuable and warmly appreciated

ge of Midwives
Belgrave Street
on, S.W 1

C S B WENTWORTH STANLEY
Chairman, Appeal and Building Committee

ONSILLECTOMY WITHOUT TEARS

ast week a letter from Dr Robertshaw prompts cribe experience of rather more than 1000 cases ars 1951–54

rds premedication, all the children were given l' by mouth according to a rule-of thumb method age. The results were assessed three or four weeks peration by asking parents the following questions : the child remember induction ? (This was ethyl n a mask in all cases.) (2) If it does, was there of nervous upset or fright on return home ? (3) If u think any nervous upset remains ?

uestions were put to the parents of 380 consecutive cted children. The replies showed that of children ars or less, 88% had no memory of induction, 98% noticeably upset on return home on the third day were said by their parents to show nervous dis a few weeks later In children over 9 years the re bed, 40% remembering the induction Of 50 e children operated on in nursing homes, not 1 recollection of any part of the proceedings after the nembutal mainly I think because in these ces induction was always carried out in bed.

efore seems to me impossible to agree that the al barbiturate is ineffective and personally I er seen any disadvantage offsetting the benefit Admittedly the majority of the children require rative injection of Nepenthe' or other sedative ward staffs (and the children) regard this as ful in getting through the first few uncomfort- s. I do not think there can be any question n young children oral premedication is preferable orm of injection and that this applies with re to induction As a result of this survey I have now abandoned this method in children age of 8, and use preliminary Omnopon and scopolamine followed by thiopentone But perhaps the methylpentynol hyoscine mixture suggested by Dr Gusterson[1] may be an improvement on the former

As to maintenance of anæsthesia, I confess I find it difficult to understand the justification for endotracheal technique in these children Apart from the risk of trauma to teeth or larynx either deeper anæsthesia or the addition of an unnecessary relaxant is required to insert the tube not to mention the waste of time and the advantage of greater control of the airway appears to me only theoretical

May I finally offer myself as a target by saying that the thousand children under review several thousands before them and I fully expect more thousands *to come* were and will be kept anæsthetised after induction with chloroform ? After twenty years of managing these cases I find no other drug so satisfactory And in my experience the administration of no other drug is so free from anxiety as that of chloroform rightly used

Windsor

DOUGLAS BELFRAGE

POLISHED FLOORS

SIR,—In certain hospitals occupational therapy takes an exceedingly dangerous form—the excessive polishing of ward floors I speak from personal experience having fractured two ribs from this cause Each morning the *polishing process* was pursued vigorously an electric machine being brought into play the bathroom was the only place where one could walk in safety It is hard to understand why this dangerous practice is allowed.

Twyford
near Winchester

C B L HASLEWOOD

SEPARATION EXPERIENCES AND MENTAL HEALTH

SIR —The subject of the article by Dr Howells and Miss Layng (Aug 6) is of considerable topical importance —not to mention controversy

'Separation anxiety as the basis of subsequent neurotic ill health is by no means a new theme in analytic psychiatry though its historical origins have been some what obscured by the hullabaloo of its rediscovery during and just after the late war

It will be found in the teaching of a school of psychiatrists working at the Tavistock Clinic between the wars, of whom Hadfield[2] Suttie[3] and Dicks[4] were outstanding exponents As used by them, the term was but a convenient expression to denote the feelings of anxiety engendered in the young child when normal protective contact with the mother was interfered with for any reason It did not necessarily imply gross and complete physical separation of mother and child but could be brought about by various forms of psychological rejection (= separation) For instance, Hadfield *repeatedly* refers to fear of loss of love " as a source of neurotic conflict. It is only since our experiences with evacuated children during the war that *physical* separation *of mother* and child as a source of anxiety has come into such prominence

In this connection there is much confusion of thought. It is not the externals of the situation that matter but the internal repercussions in the child The key to the situation not to be *lost sight* of lies in the child s feelings in response to the separation Let me quote :

> It is now generally accepted that the deepest psychological need of the young child in its early years is for an inner emotional security such as can only be maintained in the presence of steady and persistent parental protection and affection Where it is lacking or more accurately *where the child feels it to be lacking* there may follow a whole series of psychopathological reactions [5]

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1 Gusterson, F R *Lancet* 1955 i 940
2 Hadfield J A Psychology and Mental Health London 1950
3 Suttie I Origins of Love and Hate London 1935
4 Dicks H V Clinical Studies in Psychopathology London, 1939
5. Edelston H Earliest Stages of Delinquency Edinburgh 1952

I would repeat the phrase "*where the child feels it to be lacking*," for such feelings vary enormously between one child and another under similar external circumstances of separation from the mother It is my impression from many years of clinical experience that individual variations with regard to emotional security are much more important in the genesis of subsequent mental ill health than the exact details of the separation None the less I cannot accept your contributors' easy dismissal of the traumatic effects of the separation and all its attendant circumstances—especially in the early years I am quite sure that this must be taken much more seriously

I was particularly surprised at the statement "It is uncommon in clinical practice to be able to relate the onset of a neurotic disturbance to a separation experience" Indeed my experience is precisely to the contrary, more times than I care to contemplate do I find children's neuroses touched off by separation from home—for example, by removal to hospital I would agree that in such cases one often finds an insecure or conflicted child to begin with, but always the child was made much worse by the hospitalisation or other removal from home, which event finally served to precipitate the symptoms Indeed I have come to look upon an adverse reaction to separation (*a*) as a sign of a neurotic child, (*b*) as a contributory cause of further neurotic development It is my teaching that one's handling of such children after their traumatic separation is of paramount interest in preventive child psychiatry[6]

I do not agree that "It is generally considered that a history of separation is common in disturbed children" I maintain rather that a history of emotional disturbance is common in separated children Here Bowlby[7] is on very safe ground in that he shows the common association of deprivation and separation True "Separation is not synonymous with deprivation", but the two often go together, especially in the mind of the child It is in fact the child's misinterpretation of the separation situation, which cannot at this early age and in his state of emotional insecurity be explained to him, which causes all the havoc Here lie the foundations of subsequent neurotic disturbances which can easily be seen at work in the clinically recognisable insecure children of child-guidance practice It is not the separation that does the long-term damage but the repressions and other defence mechanisms set up against its anxieties that lead to neurosis and other personality distortions

From the point of view of preventive psychiatry, our aim must be to counter the separation anxieties as and when they occur, so as to anticipate and forestall the formation of pathological defence mechanisms Of course, better still would be to avoid separations, but this is an advice of perfection Nor is it necessary in every case, for as Dr Howells and Miss Layng show, and in accordance with common experience, not all separations are traumatic and most leave no sequelæ

Even so one should not take the risk of separation lightly, any more than, say, an exposure to tuberculosis because only a small proportion are likely to be infected The parallel can be taken further It is for the public health administrator to take adequate precautions for all, which should be more rigorous where there is a suggestion of susceptibility In the same way the public mental health administrator has to see that the best conditions are available for maternal care for all children In addition, where there is reason to suspect increased susceptibility to separation (i e, the insecure child) the safeguards must be increased accordingly

The last word in any particular case lies with the clinical psychiatrist, for only he is able to take into account the many elements that vary between one case and another The danger of statistical analyses is oversimplification It is in fact the wide publi the findings of Bowlby and others that to the exaggerated fear of separation in The opposite extreme view, taken by that the separation hardly matters, is also truth There are significant references in the "a small number of cases of long durati neurotic group It may be that the number neurotic casualties are small, but the effects and persistent It is, I take it, our function trists to be alert and skilful enough to pi cases where separation is seriously harmfu greater majority where the child is either ha or can be put right simply and without diffic

Leeds H F

DEATHS DUE TO SMOG

SIR,—In his Ernestine Henry lecture (Lan Dr Kenneth Perry says that "in the wee the dense fog of Dec 8, 1952, deaths in Lond of those usual for the time of year were mor than those caused by the Great Plague in 16 attributable to smog numbered, I believe, 4 a population of 8,000,000 Deaths due to Plague (which occurred in 1665, not 1668) at 97,000, out of a population of about 4 climax was reached in the third week in Septe according to Nathaniel Hodges, a close numbered 12,000 We shall soon be asked that the present outbreaks of poliomyelitis than the Black Death

Chesham, Bucks FFRANGCON R

ADULT IMBECILES

SIR,—We were interested in the article by and Mr Hermelin (Aug 13) on the abilit ability of adult imbeciles Following a report et al[1] we undertook a study to determine th of imbeciles to different incentive conditi view to applying its findings to the training employment of low grade defectives attending centres in Liverpool

48 defective imbeciles were studied Each individually given the leg persistence test seated and told to keep his leg a few inches seat of a chair opposite to him The number of seconds he held his leg in this posi touching the chair On the basis of the sco first trial the subjects were divided into fo groups and asked to perform under different conditions Four incentive conditions were

1 *Control* —The subject was told to keep his l chair as long as he was able No encouragement comment was given by the examiner

2 *Goal* —The defective was able to follow his watching a pointer recording his persistence showed his level of achievement on the previo under control conditions, no encouragement or made by the examiner

3 *Competition* —This group watched each oth knowing their own results and those of the oth the group As in (2) the "pointer" was used

4 *Personal encouragement* —This involved co sonal contact and praise of the subject by the ex each experimental trial

The experiment continued at the rate of day over a further twenty trials Exce unavoidable delays each of the four groups on the same day for the equivalent trial In the early stages of the experiment the ment" group made very rapid progress greater than that of the remaining nty was maintained for ten trials, after which the etition ' and " goal ' groups did equally as well he tenth trial these three groups all showed a in persistence This decline continued until the the experiment Their level at the end, was ntly superior to the control group

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[6] Edelston, H Separation Anxiety in Young Children A Study of Hospital Cases *Genet Psychol Monogr* 1943, 28, 1

[7] Bowlby, J Maternal Care and Mental Health Geneva, 1951

[1] Gordon, S, O'Connor, N, Tizard, J *Brit J* 45 277

control group with no incentives showed a ation in performance from the second trial This intained with minor irregularities until the final n analysis of variance, calculated for the signifi f the difference between method means, showed ariority of incentive to control conditions

esults of the study appear to suggest :

ocial approval " is important in the improvement of ormance of imbeciles. In this our study agrees with O Connor and Claridge [2]

performance of low grade defectives, even under conditions, does deteriorate if the task is sufficiently nd devoid of interest. This deterioration takes place dier if little or no attention is paid to the imbecile ts as these argue very strongly against the views of [3] and Lewis [4] (cited by Clarke and Hermelin) the end of the experiment all of the subjects were ing that they were tired and bored with the experi

vork of Tizard [5] is consistent with this finding red that adolescent mental defectives, employed eltered workshop doing simple subcontractual two firms were affected according to the type rvision—'strict,' friendly," and laissez (neither praise nor blame given—the nurse l aloof and uninterested) The scores under this lition contrasted very unfavourably with those e other two

ears from the results of our study and those of et al. [1] O'Connor and Claridge,[2] and Tizard [5] ctives do respond in an essentially normal way tives (cf Mace [6]) Contrary to usual clinical t appears also wrong to assume that defectives, of low intelligence can be left to do simple ng routine tasks similar to those suggested by [3] and Lewis [4] for we have seen that under onditions to those they lose interest and their nce deteriorates

the excellent pioneer work of Clarke and others that not only will our views on the supervision ing of mental defectives have to be reconsidered e-value ' impressions of the abilities of defectives to give rise to carefully controlled experiments nine how best their abilities can be employed dvantage both of the subjects themselves and mmunity

nks are due to Prof A. B Semple medical officer for Liverpool for permission to conduct this ion.

ents of Clinical Psychology
l and Winwick Hospitals
ic Health Department
Liverpool

D WALTON
T L BEGG

SYCHIATRIC EVIDENCE IN COURT

lany of us will agree with the sentiments by Dr Stungo in his letter last week

given expert evidence on four occasions The o times found me ignorant fearful defeatist certain only that I would not be able to help at all with my evidence On the contrary Everybody was charming, I was listened to with great attention and in each case our side won the day On the fourth occasion I was certain of the facts. I strode into the court confident strong positive, and assured of victory I was to save a murderer from being hanged for I knew he was a psychotic The learned judge was cold and distant, the opposing counsel was very rude, and the psychotic was duly hanged—though not before he had given a cheer and a boxer s salute to the judge's pronouncement of the death sentence

Let Dr Stungo and me console ourselves with the words of Sophocles ' There is a point at which even Justice is unjust "

London, W 1

GORDON AMBROSE

ILIO-INGUINAL BLOCK DISSECTION

SIR —Mr Lee (Sept 10) seems to have solved a problem which has defeated surgeons for years and it may be that his are the first published photographs of primary healing after radical dissection of the groin In my limited experience these wounds always take six to eight weeks to heal but I was surprised to read that permanence of the inevitable lymphœdema was common. In the relatively few cases I have followed up it has always disappeared completely after a few months

Mr Lee states that ' The chief cause of delayed healing is sloughing of the skin because it has to be very thinly dissected from the underlying fat and nodes. I wonder if this is so Is not the explanation to be found in the vascular arrangement of the part ?

Comparison with radical mastectomy is *irresistible* and here, although the flaps are equally thin and very much larger one can expect primary healing in a high proportion of cases Is it not significant that the vessels of the breast thrust into it from the periphery of the gland whereas in the groin they are arranged like the spokes of a wheel with its hub at the saphenous opening ? An adequate dissection must inevitably and completely devascularise that area of skin which, until now has sloughed with such unfailing regularity

South Mimms, Herts

V J DOWNIE.

THE DEATH PENALTY

SIR,—*In all the lengthy* correspondence on the death penalty, I have not seen one letter which faces the real problem involved Surely by the time one has been convicted of murder the time for prevention or punishment has passed and need not be considered It is now the question of the disposal of an individual, who by his own act (and this may apply to other forms of crime) has cut himself from his fellows. His crime may be expiated or forgiven, but it cannot be forgotten in a modern community Transportation appears to have been of real value in rehabilitating such people in another age but this is out of the question now, unless perhaps space travel offers a possibility Our only alternative is long term imprisonment Can we be justified *in sterilising* a fellow creature physically and mentally for the rest of his life ? Can we be justified in employing large numbers of our fellow creatures in the degrading occupation of warding the prison population ?

That some silly people are mistakenly distressed over a humane death is no excuse for widespread and prolonged inhumanity to man

Shirley
near Birmingham.

W BRIAN GOUGH

SIR —The majority of your correspondents seem very emphatic in their repudiation of capital punishment.

I am wondering whether they are all equally persuaded about the criminality in every circumstance of *artificially* induced abortion The murderer standing condemned

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Claridge G S *Quart J exp Psychol.* 1955

A I A Textbook of Mental Deficiency London,

O Report of the Mental Deficiency Committee H M Stationery Office 19[illegible]

mer J ment *Defic* 1953 58 no 1

L. Incentives: Some Experimental Studies Medical ch Council Industrial Health Research Board, report H.M Stationery Office 1935 by the courts has at least been found guilty on circumstantial evidence of the wilful destruction of the life of another human person, whereas the operative word "wilful" can never apply to the unborn, nor can its potential aggression amount at most to more than a threat I believe that some people shirk this dilemma by refusing to regard the embryo as a separate entity, but if it is not from the moment of conception a human being in its own right, to what category of creature does it, in their opinion, belong?

Health Department,
Darlington

JOSEPH V WALKER

Sir,—May I ask two simple questions? Is there one of us who would not rather beg his bread than earn his living as a public executioner? Have we any right to employ a man to do what we would in no circumstances do ourselves?

Buxton, Derbyshire

F A BEARN

RUPTURE OF THE STOMACH COMPLICATING GASTRIC HÆMORRHAGE

Sir,—We have read with great interest the article by Mr Bolt and Dr Hennessy (Sept 3) reporting two cases of rupture of the stomach complicating gastric hæmorrhage A question that occurred to us is whether a Ryle tube was passed in either of these cases in an endeavour to evacuate the gastric contents In our experience most of the blood can be evacuated by means of a Ryle tube, and any remaining clot is not of sufficient size to over distend the stomach We would suggest, therefore, that gastric rupture is unlikely to occur in these cases provided efficient gastric aspiration is instituted

Fulham Hospital,
London, W 6

T W MILLIKEN
R D SMITH

REHABILITATION OF PSYCHIATRIC INPATIENTS AS EMPLOYEES IN A UNIT OF THE SAME HOSPITAL GROUP

Sir,—Usually the rehabilitation of psychiatric cases does not present any difficulty a home with sympathetic relatives or friends awaits the patient, and his job has been kept open for him Sometimes, however, the situation is very different His home and relatives are far away, or he has neither relatives nor friends who can help, the previous lodgings are no longer available, and his post has been filled while he was in hospital In such cases Mrs K Wade, the social worker at Park Prewett Hospital, has for some years been in the habit of placing the patient in employment locally whilst he continues to reside in the hospital for a trial period of a month or two If all goes well, lodgings are then arranged for him This plan has the advantage of testing and encouraging reliability and confidence in borderline cases In accordance with Ministry regulations, the patient returns part of his wages to the hospital so long as he remains in residence

A particularly difficult type of case is the one where recovery is not perfect, or there is a possibility of relapse, and where the patient's previous experience and inclination suggests that he or she should do
—as a domestic, an orderly, or a nurse. T
psychiatrist should be the last to be prejudi
such a patient—in fact he should set an
confidence to others—it is obviously not poli
an employee out of an ex-patient in the same
and other hospitals are seldom eager to take
whom they may regard as bad risks

At Park Prewett this particular problem
solved by the existence of a unit, some l
belonging to the same hospital group, where
patient can be given the opportunity of re
while remaining under the care of the same p
Of the ten patients thus placed (see accomp
only one has relapsed, and I hope that our
experience will encourage other hospital gro
similar facilities in the same way

Park Prewett Hospital,
Basingstoke, Hampshire

I A
Physician S

ORAL IRON COMPOUNDS

Sir,—In their excellent article of Sept 3, Dr
and his colleagues refer to our report on Iron
Anæmia in Pregnancy [1] They state "Here
fundamental mistake is made of saying that t
is the same, whereas in fact what is meant
number of tablets taken is the same."

We wish to point out that it is obvious from
that the amounts of available iron differed in t
preparations used However, it was our ai
compare the therapeutic efficacy of three
used proprietary preparations of iron as they are
prescribed (i e, as tablets, not as amounts
iron) This method does not alter our conclu
ferrous gluconate is better tolerated by pregna
than ferrous sulphate, and that there is little
the hæmatological response to these prepara
dosages used

Dublin

P B B
E W

Sir,—When Dr O'Sullivan and his
pared the efficacy of four iron salts in the
of hypochromic anæmia, the daily dosage
210 mg of metallic iron Ferrous suc
stated to produce intolerance in 4% of
treated

I have reported [2] on a clinical trial comp
patients suffering from diverse ir
which were treated with ferrous succinate (
that the average minimal daily effective dose
This produced the same percentage hæm
as was reported by these workers It can be
therefore, that as the number of patients suf
gastro-intestinal disturbances is directly p
to the concentration of the iron salt released in
part of the gut, this complication would b

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1 Gatenby, P B B, Lillie, E W *Lancet* 195
2 Gillhespy, R O *Med illus* 1955, 9, 14

No	Age on discharge	Status	Period in hospital (continuous)	Diagnosis	Previous occupation	Post at hospital
1	52	Certified	9 yr 6 mos	Melancholia	Housewife	Domestic
2	28	Voluntary	1 yr 8 mos	Recurrent mania	Housewife	Nursing assistant
3	38	Voluntary	2 mos	Recurrent depression	S R N	Nurse
4	30	Certified	2 yr 1 mo	Paranoid schizophrenia	Housewife	Nursing assistant
5	26	Certified	9 yr 1 mo	Schizophrenia	Domestic	Nursing assistant
6	34	Certified	12 yr 1 mo	Schizophrenia	Housewife	Nursing assistant
7	48	Voluntary	4 mos	Hysteria	S.R.N	Nurse
8	37	Voluntary	2 mos	Schizoid personality	S.R N	Nurse
9	52	Voluntary	2 mos	Schizoid personality	V.A.D	Nursing assistant
10	36	Voluntary	2 mos	Schizophrenia	Domestic	Domestic

Of these patients nos 4 6 and 8 left after a while to obtain other posts Patient no 10 relapsed after 2 months and wa
a patient to the main hospital

t to a minimum with the smaller dose (as I found) more, their calculated cost of 11*s* 6*d* for a thirty iod of treatment would have been halved

r Road Hospital
rmingham.

R O GILLHESPY

TRAINING THE DISTRICT NURSE

-I read with astonishment in your leading ast week, the suggestion that care of the elderly es not come the way of most general trained

the sister of the women's medical ward at the Sussex County Hospital Brighton A large ion of our patients are elderly showing every of the frailties of old age. This applies to the wards as well as the medical I am certain the true of a vast number of hospitals over the whole

of these patients stay in for many weeks or onths owing to our difficulty in finding any odation for them and this, in addition to being our major headaches, does provide experience lescence for the nurses

nder whether this idea arises from the very iculty in admitting old people to hospital, where and for beds is so much greater than the supply acute case in a young patient must, of necessity, fore a chronic case in an elderly patient A large of our emergency admissions are over 60 years

my old ladies but how I wish someone would m when they are better, so that I am not always to say to an ever hopeful house-physician sorry, we haven t a hope of a bed."

MARY G WALKER.

A BARBITURATE ANTAGONIST

I should like to contribute to the evaluation of de (β β methyl ethyl glutarimide) in acute ate poisoning and from a clinical point of view some light on the question whether this sub a true antagonist to barbiturates

s clinic we have since the latter half of July nine cases of acute barbiturate poisoning with e and Daptazole (2-4-diamino 5 phenyl Two of these were serious cases and both d The effect of megimide and daptazole is d by the following serious case

an, aged 32 and weighing 45 kg had eighteen hours dmission taken 2 8 g phenobarbitone and 5 g bitone ("Amytal") On admission at 10 A.M on he was deeply unconscious tendon reflexes absent flex absent pupils fixed and unreactive no reaction l stimuli. Pulse-rate 100 per min blood pressure m Hg respirations 24 per min

A M.—Blood pressure 90/60 mm. Hg. Megimide d daptazole 15 mg were given at five-minute intervals drip intravenously to a total of eighteen injections ndred and thirty five minutes (last injection at) The total dose of megimide was 900 mg of 270 mg
—Tendon reflexes restored
M—Patient opened her eyes on being called and there was some voluntary movement
-Vomiting
—Moderate regression (tendon reflexes still present)
05 P.M—Megimide 25 mg and daptazole 7 5 mg twice
—Awake answered questions
—Moderate regression repetition of drugs in same times.
—Awake
M.—Slight regression; repetition of same doses
-Last dose given Remission stabilised
10.30 A.M the blood pressure remained stable at 5/80 mm. Hg The pulse-rate did not rise above in. after noon it was 80–90 per min.

The serum levels of barbiturate (estimated as barbitone) were as follows

		mg per 100 ml
July 29	10 A.M	6 1
29	8 P.M	5 4
30	9 A.M	4 3
30	8 P.M	3 8
31	9 A.M	2 8
31	7 P.M	2 0
Aug 1	9 A.M	2 5
2	9 A.M	2 2

This patient with very severe intoxication became much better half an hour after treatment was started, and she seemed to be in a 'safe state' after one hour's treatment; but after treatment had been discontinued (after two and a quarter hours) moderate regression occurred though the tendon reflexes were still present The safe state was soon restored by repeating treatment with smaller doses, after treatment had again been discontinued, mild regression occurred twice, but after a total of 405 mg daptazole and 1350 mg megimide in four courses over nine and a half hours the patient was stabilised in a safe state We possibly could have foregone the last course of megimide and daptazole, since the last regression was only slight

From the determinations of barbiturate in the blood it is clear that quite a considerable amount of barbiturate was still present in the blood on the next morning (4 3 mg per 100 ml estimated as barbitone) but the patient was awake and had actually for twelve hours been in a safe state

I do not consider it possible that with the usual treatment the coma in this case could have been obviously clearing within an hour after treatment had started

The seven cases which were not considered serious all reacted very quickly, and had passed into a '*safe state*' or were awake in five to sixty minutes after treatment was started.

Comparing this with our previous experience in about nine hundred cases between 1948 and July 1955 treated conservatively with particular care to maintain blood pressure normal blood concentration, and adequate oxygen supply by means of transfusions fluid therapy and oxygen administration combined with regular stimulation with amphetamine, we feel that the treatment of Shaw et al.[1] is a very important advance We are convinced that even in those of our cases that were not severe we should not have been able to bring the patients into a safe state in so very short a time, and we do not doubt that in the two serious cases the coma might without megimide have continued for forty-eight to seventy two hours and the patients might have died

Judging by our experience in these cases we consider it quite improbable that the drug acts essentially as a central analeptic It is true that megimide may cause convulsions in laboratory animals,[1] and perhaps also in man but only in very large doses The prominent feature in all our cases has been the very rapid reversion of the patient's state as testified by the return of reflexes and reaction to pain the obeying of orders, &c

No signs of any central analeptic effect of megimide and daptazole could be demonstrated in these patients the respiration rate and pulse rate did not increase (indeed the pulse rate slowed a little) the blood pressure rose only very little there was only very moderate motor activity and no sneezing occurred This absence of the common signs of central stimulation along with the simultaneous rapid improvement of the patients condition seems to indicate that a true antagonism of megimide to barbiturates is a main factor This agrees with the experimental evidence found by Shaw and his co workers

I do not doubt that treatment with megimide and daptazole represents a radical advance in the therapy of acute barbiturate poisoning whether one advocates conservative treatment alone or the use of analeptics in addition to conservative treatment Prolonged deep anæsthesia (Nilsson) can be abolished, and the patient quickly brought into a state of light anæsthesia resembling therapeutic anæsthesia and with the same insignificant risk

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[1] Shaw F H Simon, S E, Cass N Shulman A. Anster R Nelson E. A. *Nature Lond* 1954 173 402.

Medical School
University of Aarhus
Medical Department
Municipal Hospital

C Holten

Sir,—I wish to report the successful use of 'Megimide' (β, β-methyl ethyl-glutarimide, *NP13*) and 'Daptazole' (2-4-diamino-5 phenylthiazole) in a case where the patient recovered completely from barbiturate poisoning after a phase of regression following initial recovery

The patient, a woman aged 48 weighing about 9 st, had taken gr 9 of pentobarbitone sodium and gr 18 of amylobarbitone sodium at 7 P.M on Aug 1, 1955 She was sent to us from the casualty department of Woolwich Memorial Hospital, at 9 30 P.M that day At the Memorial Hospital she was given a stomach washout, and 3 ml. of picrotoxin intravenously On arrival at the Brook Hospital she was deeply comatose, cold, and clammy, with shallow respirations (22 per min), pulse rate 72 per min., poor volume, temperature 96°F Her pupils were constricted and reacted very sluggishly to light, corneal reflexes were absent All her limbs were completely flaccid, and tendon reflexes were absent She did not react to pinprick, nor to any form of stimulation. Blood pressure 60/50 mm Hg, heart sounds very feeble There were no abnormalities in any of the other systems

Soon after arrival she was given oxygen inhalation and nikethamide 2 ml intravenously There was an instantaneous response to this injection, the respirations increased in depth, and the volume of the pulse also increased, but the improvement was short lived A further 4 ml of nikethamide was given intravenously

An intravenous dextran infusion was set up at 60 drops per min At 11 26 P M 1 ml of daptazole (15 mg) was injected into the rubber tubing of the drip immediately followed by 10 ml of megimide (50 mg) This procedure was repeated at three minute intervals for eighteen minutes During this time the only change in the patient's condition was that she once heaved a deep sighing respiration. The injections were now given at five minute intervals, but in giving the first three injections at five minute intervals an error was made, and 2 ml. of daptazole (30 mg) was injected instead of 1 ml, the megimide being injected in 10 ml amounts For the next twenty minutes, at three and five minute intervals, only 0 5 ml. of daptazole was given, followed by 10 ml of megimide During this time the only signs of improvement were an increase in the volume of the pulse, an increase in the depth of respiration, and a rise in blood-pressure (90/60 at midnight)

A few minutes after the thirteenth injection (at 12 25 A M) of megimide and daptazole (in all 750 mg of megimide and 332 5 mg of daptazole, about one hour after start of treatment) she was seen to swallow for the first time, and she occasionally groaned The pupils were large, reacting actively to light All limb reflexes had returned, plantars flexor The tone in the limbs was also returning, in fact they appeared to be somewhat spastic The patient withdrew her limbs when they were pinched Very occasionally she moved her upper limbs voluntarily Blood pressure 100/60, pulse rate 70 per min, good volume, respirations deeper, 20 per min Thiopentone was kept ready at hand to use in the event of signs of toxicity appearing The injections were stopped, since quite clearly "the safe state" had been reached

The drip was slowed down to 30 drops per min, physiological saline being put up when the dextran was finished, and the patient was cared for as one recovering from light anæsthesia

At 3 A M her blood pressure was 115/75, pulse rate 72 per min, clinical signs as at 12 25 A M

At 8 25 A.M her blood pressure had fallen to 90/60, she did not withdraw her limbs on pricking them or when they were pinched The limb reflexes were still present but sluggish, and the pupils still reacted to light but not so actively At 8 52 A.M the rate of the drip was increased to 60 drops per min., and the injections of megimide and daptazole were recommenced as previously—this time at five minute intervals After 5 of each of these injections (250 mg of megimide and 75 mg of daptazole, half an hour after the start of this second course) she started to first time) and yawn, move all her limbs about groan. Her blood pressure started to rise 9 45 A M it was 120/75 After an interval of a further series of seven injections of both megim and daptazole (105 mg) was given at five-mi (In all with this second course she had received megimide and 512 5 mg of daptazole) There was of toxicity after this second course of injections tions were now stopped and the intravenous drip after the third pint ($^1/_5$ glucose and $^4/_5$ normal intravenous fluid had been infused

The improvement was maintained and the rapidly recovering consciousness, frequent spon movements soon began blood pressure 120/80, 75 per min, good volume At 6 P.M she was but very drowsy The following day she was fully While under treatment the patient was given 500,000 units of crystalline penicillin twice daily

I wish to thank Dr R S Bruce Pearson for to publish this case, Dr Rosemary Hart for criticism, and Dr Terry Coates for his able assista

Brook Hospital
Shooters Hill,
London, S E 18

M S Perinpan

TRACHEOTOMY IN ACUTE RESPIR EMBARRASSMENT

Sir,—I read with interest, but not with apprehension, the article last week by Dr Dr Wilson I admire their courage Becau size of the problem [1] we must be careful before on tracheotomy in the treatment of the alter state associated with anoxia or emphysematous subject

My remarks are concerned only with the has emphysema and who is admitted to hospital of a respiratory infection

At necropsy it is uncommon to see the maj blocked by sputum, but common to see exude from the cut surface of the lung when it —pus out of range of a sucker I have only pulmonary collapse due to sputum blocking bronchus and that in a patient who, in add respiratory infection, had a spontaneous pne in the contralateral lung In this instance effective in relieving the obstruction I have patients whose clinical course parallels that of recover rapidly from their drowsy or coma without any treatment other than that direct the respiratory infection Inhalation of 'Trypure' is sometimes effective in getting tenaceous sputum [2,3] The same can be frequent use of a bronchodilator aerosol.

With regard to the coma supervening therapy, the sequence of events is as follo anoxic drive to respiration is relieved by the tration of oxygen, the minute volume of falls, carbon dioxide accumulates in the carbon dioxide narcosis may result [4] Analy arterial blood in these patients shows that is compatible with a normal mental state normal or nearly so Therefore, to avoid carb narcosis or minimise its effects the oxygen in gradually increasing concentration so that carbon dioxide is slowly built up and precip the pH are avoided [1] Once carbon dioxide established the obvious treatment is to minute volume of respiration, which will get carbon dioxide at the same time permitting tion Attention has been directed to this end mechanical respirators have not been

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1 Simpson T *Brit med J* 1954 1 297
2 Oswald, N C *Lancet*, 1954, ii 1179
3 Simpson, T *Ibid* 1955, 1 48
4 Westlake, E K, Simpson T Kaye M *Quart J*
24, 155

Pitman and Wilson's method is effective in this

dness and coma may result not only from hyper but also from anoxia, and a single rapid intra injection of 6–8 ml. of nikethamide is often t to rouse patients suffering from either of these itions.

y, it is a matter of clinical observation that some suffering from severe emphysema who have a ry infection slip into irreversible respiratory It would be a pity if such patients were subjected eotomy

tention is not to depreciate the work of Pitman on but to point out other less drastic methods of it which are often successful and to indicate it clinical considerations.

rm Hospital,
l Middlesex.
THOMAS SIMPSON

Dr Pitman and Dr Wilson are to be con ed on drawing attention in their article last week *hanging indications for tracheotomy in present* licine and for giving many new indications, for reasons Of the examples of indications quoted xtbooks, all are now extremely rare except it disease and œdema of the larynx I once had m an emergency tracheotomy for œdema of the n an unconscious fellow member of my golf club had his throat painted with Mandl's pigment tunately a happy result

cussion on this subject would be complete without mon indications for tracheotomy in children cute non specific laryngeal obstruction or tracheo bronchitis[1] occurring de novo or after [2] Such children rapidly succumb to exhaustion ssing efforts to expectorate thick tenacious, material produced by inflamed air passages a narrowed and inflamed larynx Tracheotomy em to be the most efficient method of providing uate airway and permitting easy access for ronchial suction toilet when required—day or Bronchoscopy or repeated bronchoscopy, is less ory, and prolonged intubation must surely ffend an already inflamed larynx

cussing the ' disadvantages of tracheotomy it ot be out of place to refer to the complications of emphysema and tension pneumothorax which produced by the tracheotomy tube slipping out achea, especially when the skin has been sutured round it

J B PRENDIVILLE.

REGISTRARS

I believe that registrars and ex registrars have a troublesome minority whose fate hardly dis e profession's conscience any longer Pray allow mphasise that already we have become as was to ted, neither fish nor fowl nor good red meat '

me extent this unhappy state is of our own making r representative organisations never demanded that we should simply remain employable It is knowledge that entry into general practice is now ficult for us than it was seven years ago

conviction that the profession and the State ot ultimately penalise us for so doing we earned ualifications and studied specialties. To achieve made our homes in urban centres near hospitals nd that designated areas for entry to general became progressively fewer and farther away were reckoned an asset to their profession have an embarrassment to whom the best advice has the same common denominator—to accept the virtual direction of labour that now confronts them, sell their homes, and take their problems elsewhere

Where is the evidence that men with an excellent background of general medicine and surgery are (as is alleged) welcome recruits to general practice, and to certain specialties such as radiology and chest diseases? Our welcome is a barrier which no executive council or regional hospital board can honestly deny

If we have deserved better treatment, elementary justice can still be done by means of: (1) giving avowed preference in filling executive council vacancies, to well qualified men with one year's experience in general practice (2) establishing a significant number of paid trainee posts in those specialties which claim to welcome recruits of higher general standard

We can look only to our profession to get fair treatment for us—a profession which now sometimes salves its conscience by looking on us as disgruntled failures. We may well be disgruntled Give us at least a fair chance to prove that we are certainly not failures, for shabby treatment does not of itself make failures of its victims and *spare us the humiliation of seeing more newspaper* articles referring to us as ' doctors on the dole "[1]

EX REGISTRAR

J N, Hazeldine J H *Brit med J* 1952, ii, 1064
iville J B Middleton, H G *Ibid* 1954 i 1158

[1] *News Chronicle* Sept 10 1954

Obituary

RALPH MONTGOMERY FULLARTON PICKEN

C.B.E., M.B B.Sc. Glasg., D.P.H.

Professor Picken died in his sleep at his house in Cardiff on Sept. 7 Though he was due to retire from the office of provost of the Welsh National School of Medicine at the end of this month he had shown no apparent sign of illness, and he had spent the previous day planning his usual programme of meetings and public engagements His place in medical administration in South Wales will be hard to fill

He was born at Lamlash on the Isle of Arran in 1884 the son of David Picken a retired schoolmaster of Glasgow He went to the Glasgow High School and to Allan Glen's School before he entered Glasgow University In 1905 he graduated B SC., with special distinction in zoology, and in 1908 he was placed third in his year in the lists of the M B degree After qualifying he was appointed house-surgeon to Sir William Macewen at the Glasgow Western Hospital and later he served as house-physician in the Royal Hospital for Sick Children, Glasgow, and as resident obstetrical officer in the Glasgow Royal Maternity and Women's Hospital

His first contact with the public health service was his appointment as resident assistant physician in Ruchill Fever Hospital In the following year he took the D P H., and for a time he was acting medical officer for the county of Renfrew In 1913 he joined the staff of the Glasgow health department and later he acted as medical officer of health in the Port of Glasgow He held posts in the public-health services of the county and burghs of Dumfries before he returned to Glasgow as assistant tuberculosis officer In due course he was appointed a divisional medical officer for one of the five administrative areas of the city

In 1921 he left Glasgow to become medical officer of health for Cardiff His years of office saw the introduction of municipal hospital services under the Local Government Act of 1929, and through his strength of endeavour he secured that the plans for a new hospital at Llandough, begun by the old poor-law authority should be transferred to the public-health committee of the Cardiff City Council He also did his best to develop the other hospitals in the area, and long before the 1929 Act his initiative secured a bequest to start one of the first juvenile rheumatism supervisory schemes in the country A colleague admits that Picken's "fearless and unyielding integrity did not always make for his general popularity with his colleagues or the city councillors, but he was a strong, just, and efficient public-health administrator, a clear thinker, and a lucid teacher and writer of reports, and he brought his gifts to bear on the health services at an important period in their evolution"

In 1933 Picken left the public-health service on his election to the Mansel-Talbot chair of preventive medicine in the Welsh National School of Medicine To his teaching duties in 1947 he added those of provost of the school For two years he carried this double burden till in 1949 the office of provost was made a full-time one As Picken interpreted his duties this was certainly true, and C L P, who was one of his students, writes "Since his academic specialty had been preventive medicine it was natural that Picken should turn his attention to the development of a student health service In the University of Wales, where the constituent colleges are scattered throughout the Principality, the administrative difficulties of organising a service might have been made an excuse for shelving the whole problem But Picken was a man who found a challenge, instead of an excuse, in difficulties He expected the same spirit from his students, and his admonition to those of us who fell by the examination wayside was the simple, and only, advice to work harder His personality may not have made an immediate appeal to the undergraduate mind, but he had our welfare very much at heart, and he supported our viewpoint in committee more often than we were allowed to suspect The good name of the medical school at Cardiff was precious to him, and he would condone nothing in a Christmas show or in the students' magazine that overreached the bounds of good taste He encouraged the activities of the British Medical Students' Association in its early years when most of our teachers and many students viewed it with amused scepticism Cardiff has lost a provost who never sought the limelight of ephemeral popularity, but who was a vigilant guardian of the students' interests"

His natural gift for chairmanship drew him, as an adviser and counsellor, into many different parts of medicine He was vice-chairman of the Board of Governors of the United Cardiff Hospitals, chairman of its establishment committee, and vice-chairman of the Welsh Regional Hospital Board He represented the medical school on the General Medical Council, he was a member of the General Nursing Council, and he was vice-chairman of the Medical Personnel Priority Committee A former president of the Society of Medical Officers of Health and of Cardiff Medical Society, he was also a member of the medical advisory council of the Nuffield Provincial Hospitals Trust At one time he took a prominent part in the British Medical Association He was a member of the central council and chairman of the public-health committee, the young practitioners' committee, and the Central Medical War Committee On his appointment as provost he gave up his central B M A work, but he was later elected a vice-president in recognition of his outstanding service to the association In 1949 his public services were recognised by his appointment as C B E

"To all his numerous and responsible offices," writes G I S, "Picken brought great energy and a keen analytical mind which at once made him a formidable and respected member of committee or council His unusually retentive memory often enabled him to recall regulations or events, such as previous resolutions, which other members might have forgotten, but which could be of great importance to the business in hand He was a fair-minded and enlightened public-health administrator who did much to improve the health services of the City of Cardiff

"He regarded life and work as serious matters and he expected a similar dedication from those who worked with him His personality might be described as distant, and some found him rather unapproachable, but those who were admitted to his intimacy regarded him with affection It was indeed fortunate that a such as the Welsh National School of Medi have had such a strong and competent guiding a difficult and even vital period in its dev

Thanks to his great and varied experience health administration, and knowledge of soci and academic administration, Picken's advice sought in medical planning of national imp F H recalls how "he gave this advice wi stated his opinion without fear or fervour H powers of observation and his accurate assessm situation made his judgment sure and sound. occasions a turbulent meeting has been calm clear and concise review of the facts which necessary, followed by correct and practical Perhaps his greatest attribute was his frankness and veracity

> 'which he could wisely use, and well apply,
> To please the best, and th evill to emba
> For he loathed leasing and base flattery
> and loved simple truth and steadfast honest'

Picken will be sadly missed, but his advice and will be remembered and followed for many yea

In 1913 Professor Picken married Jean Bar who survives him with a son, Dr. David Pi two daughters

MURIEL BARTON HALL

M D Lpool

THE death on Sept 5 of Dr Muriel Barton deprived social and child psychiatry of one of pioneers, investigators, and advocates. She w to this specialty by her selfless devotion to her professional interests She had graduated at in 1922 and her early postgraduate work was pathology and bacteriology, but after her 1924 to Dr Stephen Barton Hall, who had the vast problems which mental illness p asylums, her interest in psychiatry grew and the management of the nervous child were major interests, and the experience which she ex her paper in THE LANCET in 1938 on "Juvenile and Mental Instability a Study of 1000 Cases" monograph she published in 1947 on "Psychiatric Examination of the School Child" led to her being recognised, both nationally and internationally, as an authority and wise counsellor in this field, and many Government departments, including the Home Office, sought her advice in their difficult and perplexing problems

Her earlier appointments as honorary psychiatrist to the Liverpool child-guidance clinic (1931–38), consulting psychiatrist to Birkenhead (1940–48), and to the Westmorland County Council (1943–47) reflect this special interest, but I saw more of her work in general psychiatry during the years (until 1952) in which she held the post of psychiatrist to the Liverpool Royal Infirmary work there in all types of psychiatric disorders not only her firm grasp of modern methods of and treatment, but also her innate wisdom. T meticulous care with which, as I recall, she dis recorded by word and line the cranial nerves of fish when we sat side by side in practical zoo given to the examination of her patients, the kept, and the reports which she sent to her But her main work continued to be in child p as psychiatrist in charge of the department Liverpool Children's Hospital and of the c department at the Liverpool Psychiatric Clinic the University of Liverpool established a dep psychological medicine, with her husband as dir claims to the lectureship in child psychia unchallenged She was for some years a mem Home Office Advisory Council on Child consultant psychiatrist to its approved schoo ll her work she brought rare qualities of devotion, tanding and sympathy I doubt if anyone ever r ruffled or rushed She was free from the fads and s so common to an infant science, and her thera results convinced the most sceptical of her medical ues. I have enjoyed and valued the friendship of l her husband since we were fellow students, over ive years ago In that time I never heard her harsh judgment though she was no sycophant, r silence was often more eloquent than words in ning the superficial and pretentious

and her husband worked together for over a of a century, and to them more than to anyone an appropriate university recognition of psycho medicine in Liverpool. They shared a deep sense l responsibility, and in order to have more time ieve their objectives, they endured a hotel life ny years. Yet their recreations lay in outdoor s, and they looked forward to the day when they justifiably relax a little in a house and garden of wn. They had recently acquired a country house, ly a few weeks ago Muriel was telling me of the s that this wonderful summer had brought them— le reward and recompense for their earlier depriva

But it was not to last A rapidly fatal illness the partnership which had encompassed so much ere can be no real regrets for a life so rich in ment and so warm in its colourful variety of

H C.

HOWARD GRAY

M.D Harvard, F.A.C.S

Heneage Ogilvie writes

ccidental death on Sept 6 of Dr Howard Gray of o Clinic removes a leading figure in American surgery oan greatly admired and widely loved in Britain.

wdie" Gray was a general surgeon in every sense of n. He was a first-class clinician, and a man whose nt in difficult matters was almost infallible He was he best operators in a centre that has for fifty years ame for safe and successful surgery safe sure gentle adapt his procedures to the problem in front of him. gentle and lovable and had the great gift of inspiring d affection of giving confidence to those who had come for operation, and courage and cheerfulness to those re recovering

o things he was pre-eminent in a country where good is common. The first was his clinical or bedside founded on a long memory of cases each of which n to him a personal problem His ward rounds were an n in methods of examination in symptomatic treat n prognosis and in the handling of humanity in His teaching in the theatre was equally imbued with ons of case experience His second outstanding r was his ability as a teacher as a writer and above speaker Gray had mastered the lesson that few ever learn that the lecture as delivered must be from the lecture as written. The written lecture must rly factual, and convincing Its arguments must be tive and it must contain all the facts upon which the nts are based It can be as dry and as heavy as the demands, for the man who reads it does so of his own and in his own time The spoken lecture is delivered dience who have come in hope and who cannot after et away It must be simple and convincing assertive than reasoned and it must contain no tables per a, or any information that cannot be mastered in Howdie Gray knew the exact approach to each e I heard him give three consecutive lectures: one all group of registrars and junior surgeons, one to the of surgery at the Royal Society of Medicine and one Royal College of Surgeons Each was exactly right place the audience and the occasion

was a lovable man of many interests. At Princetown utation as a footballer was known throughout the Later he excelled at the less violent games, and loved d the day and to entertain his friends on his yacht on ssissippi He and his wife Wint had a delightful n Rochester where countless visiting British surgeons, larly youngsters paying their first visit to the States ember their kindly hospitality morning prayers at the at table and in the evening Howdie playing the

Dr E W AINLEY-WALKER

K J F, writing as a pupil friend, and colleague, describes how he profited in his own teaching from Ainley Walker's example of selfless service to the younger generation, and adds

In tutorials Ainley Walker educated rather than taught, and even the methods of education were often unorthodox. I was more often asked What are you going to write on this week?' than I was given an essay subject by him The method would presumably not work in the Oxford of today but in retrospect its advantages seem to have outweighed its disadvantages in the Oxford of thirty or more years ago and Ainley Walker certainly carried a fine tradition of help to pupils across the gap for which the first world war was responsible In that war medical students were not until quite late reserved so the survival of tradition was much more precarious. Some may wonder why he did not seek to rise to greater heights in the academic world and I think the answer may be that he was anticipated by another worker in what he regarded as his greatest discovery certainly the greatest of his younger days and thereby had some of the first fine fervour for research taken from him though as his later publications show it was not by any means abolished and he continued to produce distinguished original contributions

His liking for and promotion of the social side of Oxford life led to the formation of a number of dining clubs, designed not solely to increase conviviality but so that medical men could get to know better both their own colleagues and also those in other spheres of university life Some of the societies he initiated died in course of time but others still continue though perhaps few of their members realise their indebtedness to their founder

Present-day medical Oxford is a vastly different affair from that of thirty to fifty years ago and I should probably not be believed if I quoted the sum allotted to a particular department for running expenses in the mid twenties, or the amount I was told I could expect for research costs for a year Ainley Walker's achievement, however, has to be assessed with that sort of knowledge in one's mind and it is a filial duty on my part to pay tribute to his scientific accomplishment in the Oxford of a generation or two ago as well as to his outstanding devotion to those who were fortunate enough to be his pupils. All of us must feel acutely the loss of a close friend and wish to record our lasting indebtedness to him.

Diary of the Week

SEPT 18 TO 24

Tuesday, 20th

ROYAL ARMY MEDICAL COLLEGE Millbank S W 1
5 P.M. Mr A. Dickson Wright Sciatica of the Arm.

Wednesday 21st

HYPNOTHERAPY GROUP
8 P.M (1 Wimpole Street W 1) Dr Noel Sherrard Mind is the Only Thing that Matters

Friday 23rd

ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS 58 Queen Anne Street, W 1
2 45 P.M Prof Benjamin P Watson (New York): Factors Responsible for the Lowering of Maternal Mortality and Morbidity in the Past Fifty Years (William Meredith Fletcher Shaw lecture)

Appointments

DONALDSON R J M.D Belf. D.P.H.: deputy M.O.H Stoke-on Trent
GATHERER ALEXANDER, M.B Aberd senior asst M O and deputy principal school M.O Warrington.
JENNINGS E M. M.B Lpool D OBST: asst M.O Hertfordshire
MCCARTHY J J M.B. N U.I appointed factory doctor Castleton, Derby
MCVERRY, E A F R.C.S.I F.R.C.S E surgeon, Laois County Council
MURPHY M. J., F R C.S.E surgeon co Limerick
WATKINS M E. M.B Lond asst. M.O Hertfordshire.
Kent Education Committee:
  CAMPION, BEATRICE LUCY, M R.C.S asst M.O
  LISTER JEANNE C M B. Lond asst. M O
Newcastle Regional Hospital Board:
  BOULLE J ROGER M.B. Cape Town: senior casualty officer Hartlepool H.M.C
  CARSTAIRS L W M D Durh., M.R.C.P asst. chest physician (S.H.M.O) Newcastle east tuberculosis administrative area.
  DYKE ISABEL, M B Durh., M.R.C O.G consultant obstetrician gynæcologist, South West Durham and Durham H.M.C.s
  GHYSTEERDT, G L M.S Lond D.M R consultant radiologist Newcastle upon Tyne H.M.C and United Newcastle upon Tyne hospitals.
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Notes and News

MEDICAL V C s

THE summer number of the *Army Medical Services Magazine*, prompted by the recent purchase of the "Hartley" V C, contains an article on the award of the Victoria Cross to members of the medical services. Since it was instituted in 1856 the V.C has been won by 40 medical officers and 2 other ranks of the medical services A bar to the cross has been awarded to three of these The "Hartley" V C was won during the Moirosi rebellion of 1879 by Edmund Hartley, who founded the Cape Medical Corps, which eventually became the South African Medical Corps.

CENTENARY IN KENT

THE West Kent Medico Chirurgical Society, founded in 1856 as the result of an invitation extended to doctors in the area by the staff of the Royal Kent Dispensary, is celebrating its centenary this winter, under the presidency of Dr F R Waldron Since 1895 the highlight of the society's year has been the Purvis oration, which was initiated in tribute to Dr Prior Purvis, a founder, the hon treasurer for more than forty years, and president in 1869 The list of Purvis orators includes many of the names best known in English medicine in the past sixty years In this centenary year the oration is to be delivered, on Dec 9, by Sir Russell Brain, P R C.P, who will speak on Dickensian Diagnoses

MEDICAL FILMS

Radio isotopes their Application to Humans, as Tracer Studies and for Therapeutic Use (16 mm, sound, colour, 35 minutes), produced by the American Medical Film Guild, was introduced by Mr Joseph P Hackel, the guild's president, in London recently when it was described as the only film on this aspect of the peaceful uses of atomic energy

The film opens with a dramatised sequence in which Pasteur is depicted complaining that as his microbes could not speak, no-one would believe his theories Atomic energy, on the other hand, has a voice, and the rest of the film shows its application to medicine as a tracer and for therapeutic radiation Several radioactive elements and their uses are mentioned circulation tests in arteriosclerotic limbs and in tube pedicle grafts by measuring the clearance rate of injected sodium iron-metabolism studies; dental and thyroid research with iodine, and the use of calcium for bone studies, of strontium for the treatment of eye tumours, of gold for reducing effusions into body cavities, of phosphorus for the treatment of polycythæmia vera, and of boron for the local irradiation of brain tumours

Perhaps the most serious fault with the film is the lack of coördination between the picture and the narration. It seems as if the cameraman was hard pressed to find pictures to accompany the relentless commentary, and the commentator is still speaking while the closing credits, which include some of the titles shown at the beginning of the film, are on the screen The static graphs and the diagrams contain too much information, especially since the narration continues through them and not infrequently half the screen contains other irrelevant visual action, such as an irradiation machine revolving round a patient or the face of the commentator appearing through a hole in the chart This film is spoilt because the audience is never clear whether it is better to listen to the commentary or to watch the right or the left half of the screen

Pitfalls in the Management of Refractory Heart Failure (16 mm., sound, colour, 35 minutes), produced by the same organisation, has many of the faults of the *Radio isotopes* film

A dramatised incident, in which an intern is rebuked by a physician for suggesting that a particular heart case is refractory to treatment precedes the titles The commentator then begins, while the titles are on the screen, to outline the scope of the film by suggesting reasons why cardiac cases may not respond to treatment The bulk of the information is given by the commentary and the picture rather than contributing to the exposition, tends to distract the attention from what the narrator is saying The excessive use of trick photography—split-frame techniques, mask inserts, superimpositions, and so on—and the inclusion in the picture of irrelevant features, such as groups of medical students in varied attire the head of a patient with the doctor listing his symptoms in the background, and dishes of food rotating on half the screen while a chart is crowded into the other half all detract seriously from the teaching value of the film A professional commentator would have done better than the doctors themselves whose delivery is hesitant The film ends with a commercial "plug"

These two films are not yet available in Britain

University of Edinburgh

On Monday, Oct 17, at 5 P M, at the University New Buildings, Prof R A. McCance, F.R S, will give the Sharpey Schafer lecture, on the Chemical Structure of the Body

King's College Hospital, London

On Friday, Sept 30, at 3 P M, Dr J H Sheldon will give the inaugural address for the 1955–56 session at the medical school

Royal College of Physicians of London

On St Luke's day, Tuesday, Oct 18, at 5 P.M college, Pall Mall East, S W 1, Sir John Charles the Harveian oration He is to speak on the Co Collegiation

Royal Free Hospital, London

On Friday, Sept 30, at 3 P.M, Sir Wilfrid Le G F R S, will give the inaugural address at the medi The title of his address is Chant of Pleasant Exp

Course for G P.s at Cardiff

A course for general practitioners who are the National Health Service is to be held in Car Oct 31 to Nov 12 Application should be made possible to the secretary of the Welsh National Medicine, 34, Newport Road, Cardiff

In Memory of James Parkinson

Today, Saturday, Sept 17, at 2 P.M., at St. L Church, Shoreditch, London, N 1, Dr A. D Morr a plaque to the memory of James Parkinson, whose surgeon, palæontologist, and political reformer described in our columns (*Lancet*, 1955, i, 761).

London Medical Exhibition

Sir Charles Dodds, F R S, will open this exhibit is being held at the Royal Horticultural Hall, W from Nov 14 to 18 Further information may be the organisers, the British & Colonial Druggist Bishopsgate, E C 2

Patients from Malta

In response to an appeal from the government the Ministry of Health has agreed that 100–200 tu patients shall come to England next month for treatment which cannot be provided in Malta sanatorium has been built The Maltese defray the expenses and will also send some some doctors are also to come for postgraduate tuberculosis The Ministry states that the been made possible by the steady reduction in the lists for sanatoria in this country

St Luke's Day Service

A service for doctors is to be held at All Souls' Langham Place, London, W 1, at 11 A.M. on Sunday two days before St Luke's day The president of the tion of Surgeons and the chairman of the British Association will read the lessons Seats will be re doctors and members of their families. Application made to the church secretary, All Souls' Vestry, Place, W 1, by Oct 13

Medical Visitors to Russia

A party of British doctors left on Sept. 8 to weeks in the Soviet Union at the invitation of ministry of health, extended through the medical of the Society for Cultural Relations with the U members of the party are

Dr D B Bradshaw, deputy M.O.H, Leeds Brockington, professor of social and preventive of Manchester, Dr L J H Burton, medical Council for Health Education, Dr H B O secretary, Medical Practitioners' Union, Dr B R Northern Ireland Tuberculosis Authority, Dr J senior lecturer, department of medicine, University Dr S Gottlieb, general practitioner, London, Dr M O H, Colchester, Dr S Luff, M O H, Willesden, McPherson, Prophit scholar, Royal College of Ph R Sargood, member of the South West Hospital Board, Dr R S Saxton, medical practit Dr A G M. Severn, M O H, Pontypridd, Dr Alfre in social medicine, Social Medicine Unit, Oxford Miller general practitioner, Glasgow

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Sir Harry Platt, P R C.S, will visit Canada and the during October as the guest of the Royal College of P Surgeons of Canada at their annual meeting in Quebec American College of Surgeons during the clinical con

The National Association for Mental Health has proceedings of the conference on *Preventive Aspects* Health Work held in London last March Copies had from the association 39 Queen Anne Street, W.1

Births, Marriages, and Deaths

DEATHS

THOMPSON —On Aug 24 at Ealing Winifrede T formerly general secretary of the International Society Hydrology and a member of the medical department worth & Co aged 64

A CONCEPT OF DIABETES*

W P U JACKSON
M.A. M D Camb M.R C.P D C.H
ISTANT DEPARTMENT OF MEDICINE UNIVERSITY OF
WN AND PHYSICIAN TO GROOTE SCHUUR HOSPITAL
LI LILLY FELLOW MASSACHUSETTS GENERAL HOSPITAL,
BOSTON

TES mellitus is a fascinating condition For one e more we know about it the less we understand or a second thing it can be diagnosed before it is I shall suggest that diabetes may be inherited l or acquired , that it is present not just when ræmia is found but for years before—in fact h † I shall suggest that it is an innate obscure of carbohydrate metabolism which manifests urious diverse ways—in the hypertrophied islets eight stillborn babies in micro aneurysms in a in cardiac infarction in the female and in tallness in the child and obesity in the mother from the clinically obvious glycosuria, ketosis rglycæmia

Diabetes and Size

Mothers

been known for some time that the infant of the mother is often stillborn oversize, and over Such a baby is also red fat, flabby œdematous t. It respires with difficulty and has hepato cardiac hypertrophy, erythroblastosis and— ificant—hyperplasia of the islets of Langerhans and Andérodias 1920) We now know too, that the woman who develops diabetes only later in life may give birth to this sort of baby years before her diabetes is evident Fig 1 shows a baby borne by a woman who was in the ' prediabetic phase at the time of her pregnancy Table I illustrates the frequency of large babies and stillbirths in prediabetic women in the Cape Peninsula 62% of women who had babies before becoming diabetic claimed at least one to have been over 10 lb in weight at birth (Jackson 1952) The stillbirth rate was also much higher in prediabetic than in non prediabetic women

Diabetic Fathers

Since diabetes is largely hereditary, it would not be surprising if the tendency to stillbirths and/or large babies were carried also by the father We found that the diabetic and prediabetic fathers certainly did tend to produce large children (table I) but the same table shows that the stillbirth rate among children of prediabetic fathers was no greater than among children of normal parents. The figures represent the combined results of interviews in Cape Town and Boston and are highly significant statistically (Jackson 1954) Fig 2 shows that this tendency to produce large babies is not just concerned with freak 10 pounders, but that there is a general or mean increase in birth weight of the children of prediabetic parents, with shift to the right of the mode 7 lb in the controls, 8 lb in the children of prediabetic fathers and 9 lb in those of prediabetic mothers

TABLE I—CHILDREN OF (PRE)DIABETIC FATHERS PREDIABETIC, (PRE)ACROMEGALIC AND CONTROL MOTHERS

Children	No	Birth-weight (lb)				Still born (%)
		Less than 8	8 0–8 9	9–10	More than 10	
Of prediabetic mothers	428	22 %	32 %	15 %	31 %	15
Of (pre)diabetic fathers*	393	48 %	3[illegible] %	9 3 %	10 7 %	<3
Of (pre)acromegalic mothers†	61	66 %	26 %	8 %	10 %	0
Of control mothers	810	72 %	19 %	5 3 %	3 7 %	<3

Only one mother out of eleven actually developing acromegaly had a child weighing over 9 lb at birth

* Plainly diabetic at time of fatherhood or developed diabetes later

† Plainly acromegalic at time of motherhood or developed acromegaly later

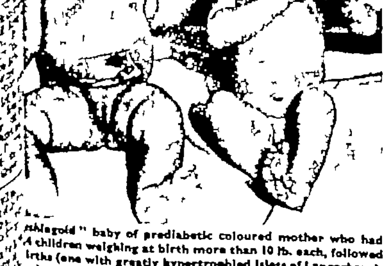
Ætiology

Figs. 3 and 4 are attempts to interpret these results The difference between the sizes of infants of prediabetic fathers and of normal parents can only be due to inheritance, whereas the difference between the sizes of infants of prediabetic mothers and of prediabetic fathers is presumably caused by the maternal internal environment —i e. to local happenings in the uterus during gestation (Penrose [1952] claims that the excessively large babies of some non diabetic families are due partly to heredity and partly to the maternal internal environment.) On the other hand the mother is entirely responsible for the high stillbirth rate because (as already stated) the stillbirth rate among children of prediabetic fathers is no greater than among children of normal parents (fig 4)

Examples

(1) Fig 5 is the family tree of two sisters with a diabetic mother Mrs. A exhibits no overt signs of diabetes but had a somewhat abnormal glucose-tolerance curve during her last pregnancy Her sister has developed diabetes since the birth of her last baby Their obstetric stories are unfortunate The 4 stillbirths would probably have been saved if the prediabetic condition had been recognised in time Mrs. A s last pregnancy was terminated by cæsarean section at 37 weeks, and a live baby weighing $6^{1}/_{2}$ lb was obtained.

(2) Fig 6 illustrates the fecundity of the prediabetic Mrs B has been pregnant 26 times : every baby weighed more than 11 lb., 12 were stillborn and there were 5 miscarriages.



ehlegeld " baby of prediabetic coloured mother who had 4 children weighing at birth more than 10 lb. each, followed irths (one with greatly hypertrophied islets of Langerhans) r last pregnancy the mother had an abnormal carbohydrate which returned to normal after delivery Her own mother tic. The baby who weighed 13 lb and was delivered by section is depicted with a normal child several days older hed 6 / lb. at birth. Note fat flabby œdematous congested e.

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a talk given to the Research Forum Groote Schuur tal, in March 1954

see the question of the definition of the term etes. Most people would say prediabetes here since some quite definite clinical features may be est in this state it is evident that the disorder which ventually lead to hyperglycæmia is already making known. Is not this also to be called " diabetes ? not pre-anything it is already there

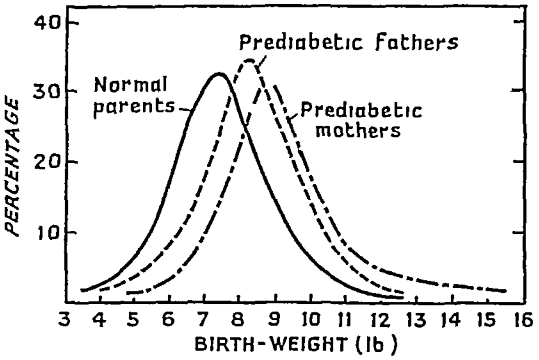


Fig 2—Frequency distribution curves of birth weights of babies born to normal parents, to prediabetic fathers, and to prediabetic mothers

Her mother was diabetic, Mrs B became diabetic four years after her last pregnancy, and her eldest daughter is diabetic

(3) The third patient is a German woman I saw recently In 1917 at the birth of her second large baby, which weighed 12 lb , her doctor said "When I come to deliver your off spring I don't see a baby, I see an ox" He did not know that this meant she would develop diabetes nearly forty years later Her fasting blood sugar is now only 129 mg per 100 ml , but the ox story clinches the diagnosis of diabetes

Recognition of the Prediabetic Woman

Can we recognise the prediabetic early? Starting with a very large baby or an unexplained stillbirth, can one detect whether prediabetes in the mother was the cause? Table II shows that one often can By testing the glucose tolerance of mothers after childbirth we had, up to 1952, discovered 15 unsuspected diabetics and 11 with slightly abnormal curves whom I believe to be "pre diabetics" (Jackson 1953) These findings have since been corroborated by Kritzer (1952) and Lund and Weese (1953) It is therefore desirable to test the glucose tolerance of all mothers who have overlarge babies or stillbirths, particularly if they give a family history of diabetes or have glycosuria during pregnancy Glycosuria during pregnancy is often not benign, and conversely it is perfectly possible (as in 4 of my cases) to find a diabetic type of glucose tolerance curve without glycosuria because of a high renal threshold (Lund and Weese also found this) The best time to test the glucose tolerance is during a subsequent pregnancy, for reasons given below

Fig 7 shows my criteria of abnormality (using the standard oral 50 g glucose test, capillary blood, and a modified Hagedorn Jansen method of consider a curve "prediabetic" if the 2–3 hours, are in the "diabetic zone," fasting and maximum may be As indicated this means that a value above 140 mg at 130 at $2^1/_2$ hours, suggests pre diabetes, between these and 120 are suspicious or the last babies born to the 10 mothers prediabetic curve (table II) 5 were still weighed more than 10 lb It certainly looks as if this rather minor aberration in toler were significant, and this is supported by the long term studies by John (1950)

Follow-up examinations are beginning to the correctness of this conclusion, despite the levelled at it (*British Medical Journal* 1952) show cases with suspicious obstetrical suspiciously high blood sugar values at 2– the first tolerance curve Tests repeated much more definite abnormality in a diabetic

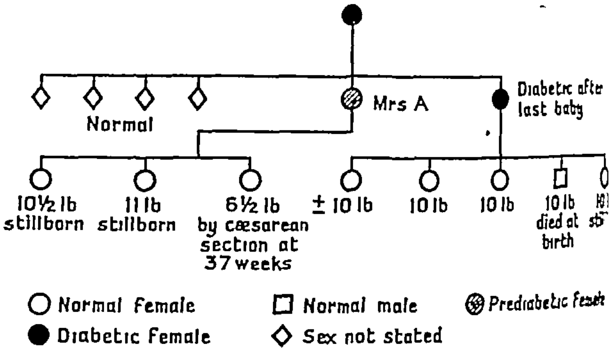


Fig 5—Family chart of Mrs. A

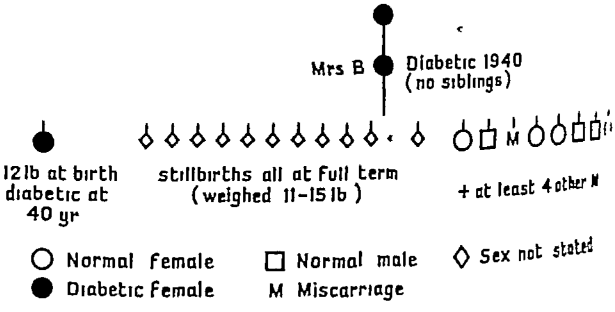

Mrs B
Diabetic 1940 (no siblings)
12 lb at birth diabetic at 40 yr
stillbirths all at full term (weighed 11–15 lb)
M
+ at least 4 other
○ Normal female
● Diabetic female
☐ Normal male
M Miscarriage
◇ Sex not stated

Fig 6—Family chart of Mrs. B

tempting to believe that the third patient's baby weighing 14 lb in 1951 could have been the mother attended our clinic when she was The fourth patient (fig 11) showed a variability tolerance in different circumstances, with a towards definite diab is made more frank a single dose of cort The fifth set of curv show a remarkable that suspicious but no progression certain diabetes has place.

Child's Size and Diabetes

There is considerable that children, before diabetic, grow excess size and weight Priscilla White et al. 1

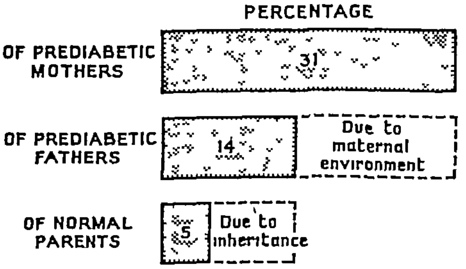


Fig 3—Comparison of percentages of infants weighing at birth more than 10 lb each of prediabetic mothers, of prediabetic fathers, and of normal parents showing apparent importance of maternal internal environment and of inheritance in producing large babies.

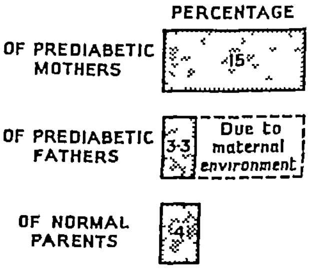


Fig 4—Comparison of percentages of stillborn children of prediabetic mothers, of prediabetic fathers, and of normal parents, showing difference apparently due solely to maternal environment.

has several experimental counterparts—e g (1944) report that subtotal pancreatectomy in ls first to obesity and then to diabetes Priscilla t al. (1953) show that non diabetic children of mothers have a very pronounced tendency to rmally tall and heavy (table III) Thus a diabetic is likely to have not only large fœtuses but also ildren

ic Mothers Increase in Size during or after ry

betic mothers tend to gain excessively and in weight either during or immediately after a y (Sheldon 1949)

an aged 44, had a sylph like figure until immediately first pregnancy sixteen years ago, when she gained

I—GLUCOSE TOLERANCE CURVES IN PARTURIENT ERS OF BABIES IN DIFFERENT WEIGHT GROUPS

baby	Mothers' glucose tolerance curve			Total
	Diabetic	Pre diabetic	Normal	
7 lb	0	1	41	4[illegible]
	[illegible]	1	43	46
	5	2	38	45
10 lb	8	6	[illegible]6	10
al	15	11	148	173
	7 (*47*%)	5 (*45*%)	6 (*4 1*%)	18 (*10 4*%)

ght of one of these babies (which was stillborn) was wn.

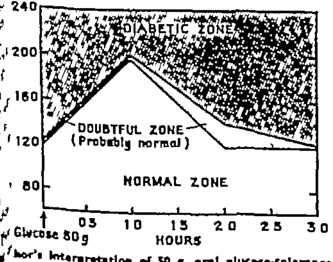
pidly Today she weighs 21 st 10 lb has been or six years, and has had 5 children of which 3 more than 10 lb each, and 1 stillbirth. All her es were associated with toxæmia

and Obesity in Middle Age

(1949) interviewed women ten to twenty years y had produced large babies He found 6 who me diabetic, and all these 6 were obese The n between diabetes and obesity has been shown ntally—e g., the hereditary obese-diabetic syn mice (Mayer et al. 1951) and Long's (1952) ation that hypothalamic obesity in rats leads tes. To say that these are special types of explains nothing there are many special diabetes but the features they share are more than those which distinguish them. Thus both and lean ' types develop the same array of disorders are subject to the same embryo and apparently even show the same type of ce pattern and frequency (Pirart 1954)

rowth Hormone

(1953) suggests that growth hormone is the ween size and diabetes Certainly growth hormone can stimulate the islets of Langerhans (Conn 1945, Young 1953), worsen human diabetes, and produce diabetes in some animals—though not during pregnancy nor during the growth phase (Young 1951) Acromegalics may develop diabetes but they do not seem to do so very often for only 1 or 2 of about 60 cases at the Massachusetts General Hospital needed insulin



hor's interpretation of 50 g oral glucose-tolerance curve (capillary blood; Hagedorn-Jansen method)

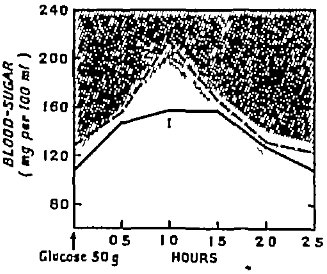


Fig 8—Glucose-tolerance curves at interval of 4 years indicating progression of prediabetes in a mother who had borne four large children: (1) in 1949 two months after bearing a baby weighing 10½ lb.; (2) in 1953.

Figs 8–12 were obtained from tolerance curves obtained under standard conditions with all patients on high carbohydrate diets, and may be compared with large numbers of tolerance curves obtained in controls in all ways similar except for the absence of suspicious obstetric histories (Jackson 1952)

Growth hormone given to pregnant non diabetic animals can almost certainly cause the production of large fœtuses showing typical "diabetic " embryopathy (Hultquist and Engfeldt 1949) On the other hand growth hormone does not appear to be implicated in the tie up between diabetes and obesity since its metabolic action is concerned with retention of nitrogen and not fat unless it has a fattening effect by increasing appetite (Young 1951)

Further those diabetic and prediabetic women who produce large babies do not have an acromegaloid appearance as one would expect if they had too much growth hormone nor has excess of growth hormone ever been demonstrated in them Now surely if growth hormone causes embryopathy in man acromegalic mothers should have enormous babies and stillbirths But they do not of 14 children of 11 mothers in whom acromegaly was active or just developing during their pregnancies only 1 weighed more than 9 lb at birth and none was stillborn If we consider all the children of our acromegalic women including those born before the onset of the mother's acromegaly—i e in the pre acromegalic phase—we observe an apparent tendency for the birth weights to be higher than those of the controls (table I) This tendency is of the same order as with the prediabetic fathers, and very much less than with the prediabetic mothers. If this is a valid finding (and the figures

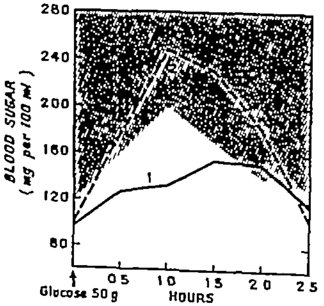


Fig 9—Glucose-tolerance curves with interval of 2 years in a mother who had produced a stillborn child weighing 12 ¼ lb.: (1) six days after stillbirth; (2) 2 years later

are not claimed to be statistically significant) its meaning is unknown

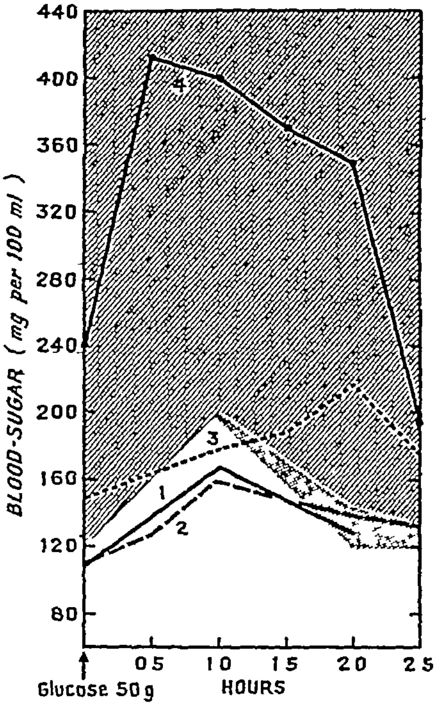


Fig 10—Progression of prediabetes in a woman who was told to return to the clinic whenever pregnant but did not: (1) in 1950 nine days after bearing baby weighing 11¾ lb, (2) in 1951, (3) in 1953 after bearing stillborn baby weighing 14½ lb, (4) in 1955

Rôle of Insulin

Insulin is a growth hormone (Best 1953, Young 1953), in fact the pituitary growth hormone will not function without insulin Are the beta cells of the pancreas stimulated to produce excessive quantities of insulin before they are ultimately damaged by exhaustion? In laboratory animals many substances can apparently stimulate these cells, including the pituitary, the adrenal cortex, the alpha cells of the pancreas, excessive carbohydrate intake, and perhaps some unknown polysaccharide metabolic abnormality (Warren and LeCompte 1952) Excess insulin activity has been claimed to be present in the plasma of acromegalic diabetics (Randle 1954), and in certain types of diabetes in animals (e g, the recessive-diabetic obese syndrome in mice) abnormally large amounts of insulin can be extracted from the pancreas (Mayer et al 1951)

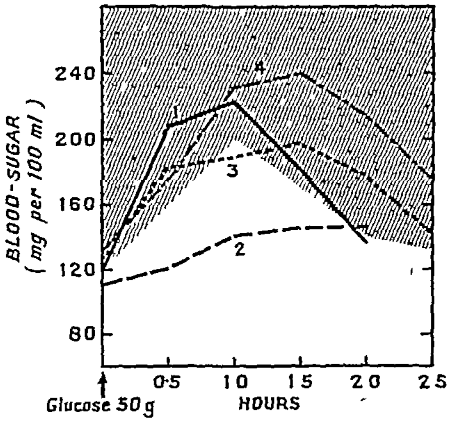


Fig 11—More complicated case, in which stress of pregnancy and of corticotrophin therapy diminished the glucose tolerance and progression to definite diabetes took place (1) in 1951 six days after bearing stillborn baby (only child) weighing 8½ lb, (2) six months later, (3) in 1953; (4) in 1953 after administration of corticotrophin 100 units

In this connection "pregnancy pancreas" is of interest During normal pregnancy the islets of Langerhans in the mother enlarge greatly Exactly similar, enormously hypertrophied islets can be found in the stillborn infant of a diabetic mother (fig 13) Even more significant is the finding of these islets in the stillborn of a prediabetic mother Van Beek (1952) observed some stillborn babies with such islets and was surprised that their mothers were not diabetic However, she followed them up for ten to twenty years, and 5 of them became diabetic Miller (1945) has reported the sam cases, and we can confirm this from our ol Cape Town Diabetes, then, is in a unique p it can sometimes be predicted twenty year becomes manifest, by looking at the cells of individual!

Rôle of Glucocorticoids

The patient who has Cushing's syndrome or treated with cortisone becomes obese and abnormal glucose tolerance curve of diabetic diabetic" type There are many other links adrenal corticoids and diabetes the babies of and prediabetic mothers look as if they have syndrome, and occasionally a patient trea corticotrophin develops the typical retinal diabetes (Becker 1952) (I have seen them deve in a diabetic treated with cortisone for arthritis) Cortisone will worsen diabetes in animals, whereas both adrenalectomy (Green et and Addison's disease reduce the insulin re The patient with Addison's disease, moreover very sensitive to the diabetogenic effect of cortisone, and I know of a case in which fatal diabetic coma was produced by treatment with cortisone Experimentally cortisone can induce hyperplasia of the beta cells of the pancreas in animals, some species of which later develop diabetes (Frawl Hausberger and Ramsey 1953)

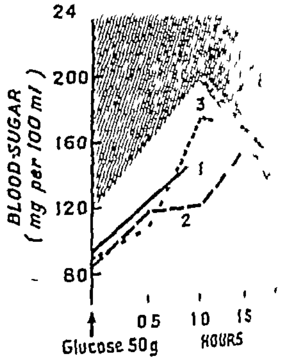


Fig 12—This patient does not yet gi diabetic curve, but the suspicion i constant (1) 38 weeks pregnant; after producing stillbirth, (2) 1

There is a particular relation of the cort pregnancy, in which their production is greatly (Gemzell 1953, Venning and Browne 1947) Ho (Gemzell 1953, Venning and Browne 1947) Ho and Hoet and Lukens (1954) experimented o (figs 14–18) and obtained the following results

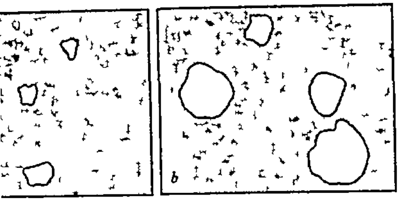
(1) During a normal pregnancy the change in glucose tolerance is slight (fig 14) A small dose insufficient by itself to produce diabetes, was sufficient, with the diabetogenic effect of pregnanc diabetic curve (fig 15) The fœtus died, and returned to normal. Hoet in this way simulated diabetes" of women, which shows up only in p

(2) Figs 16 and 17 show the lack of effect of grow on the tolerance of a pregnant rabbit, and the lack a small dose of cortisone on the tolerance of a no rabbit However, the same dose of cortisone in th rabbit produced a grossly diabetic curve, whic

TABLE III—GROWTH AND GLUCOSE TOLERANCE OF C DIABETIC PARENTS

(After Priscilla White et al. 1953)

Children	Sex	No	Height 3 in above standard	Weight 30 lb above standard	Gluc
					Hyperglycæ
Of diabetic mothers	M	51	57 %	50 %	45
	F	54	31 %	20 %	1
Of diabetic fathers		25			



dings of projections of typical microscopical fields of islets of s in newborn of normal mother (a) in comparison with islets wborn of diabetic mother (b) (same magnification)

ıth of the fœtus (fig 18) The diabetogenic effect of y was thus brought out by subclinical doses of either r cortisone

sta and Abelman (1052) reported on a rabbit which l excessively large stillborn fœtuses after being treated tisone during pregnancy

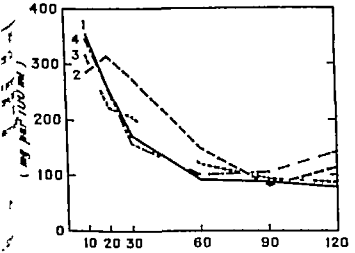
st these impressive effects of cortisone it must d that

ucocorticoid excretion is not increased in uncompli abetes (Talbot et al 1051)

laboratory animals glucocorticoids do not usually the size of the fœtus

bies born to mothers with Cushing's disease in ll series of about 10 babies were neither large nor

rtisone and corticotrophin are really not very potent enic agents in man: of all the patients with treated oid arthritis observed at the Massachusetts General only 1 whose carbohydrate metabolism had ly been previously normal developed frank diabetes



travenous glucose tolerance of pregnant rabbit, indicating l change: (1) before pregnancy; (2) on 25th day of pregnancy; th day (1 day after delivery); (4) 5 days after delivery

y

nclusion we cannot really say what factors link l size with diabetes. Inheritance plus growth s may be responsible for the large size of babies, wth hormone overstimulating the production of Corticoids may be responsible for the stillbirths le position is complicated because in animals any ental method of producing diabetes in the mother ncreatectomy or alloxan) may produce the same pathy Perhaps simple hyperglycæmia will turn e the important factor even in pre-diabetes in e raised blood sugar level may not be recognised

tes as an Innate Disease present from Birth

l facts suggest that diabetes is present from t only later becomes evident and measurable by e yardsticks of glycosuria and hyperglycæmia we have this prediabetic embryopathic syndrome, ems to have no limit to the time it extends back into the past of a given patient (Pirart 1954) This is indicated in table IV and illustrated by one old but intelligent woman who claimed to have borne a 12 lb baby fifty one years before she became overtly diabetic

Colwell (1042) plotted graphs of the increase of insulin requirement with age in very many diabetics by extrapolating backwards found that these lines, which were straight, nearly always hit zero at the time of birth! He concluded that "diabetes starts at birth" (Probably we should not find the same nowadays since diabetes being better controlled, may not continue to deteriorate, as assessed by increasing insulin requirement)

Very recently Priscilla White et al (1953) found that a high proportion of children of diabetic mothers had plainly diabetic glucose tolerance curves (table III) They claim 28 out of 105 but on re examining the glucose tolerance curves they published I should put the proportion considerably higher for 32 of 84 curves gave values over 140 mg at 2 hours. Certainly, the proportion is far higher than could be explained by any previous theory of diabetic inheritance. Furthermore, though we have not yet got the full figures the proportion of diabetic curves in children of diabetic fathers is far less. This shows fairly clearly that the diabetic maternal internal environment may itself adversely affect the child—i e it is diabetogenic producing a congenital but not inherited diabetes This idea has experimental backing, in that Bartelheimer (1953) and Bartelheimer and Kloos (1032) claim that rats made mildly diabetic with alloxan

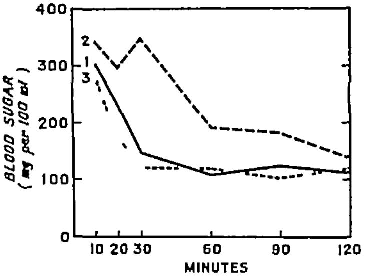


Fig 15—Intravenous glucose tolerance of pregnant rabbit pretreated with alloxan, showing that combined diabetogenic effects of the subminimal alloxan dose plus pregnancy produce a diabetic curve which reverts to normal after resorption of the fœtus: (1) 9 days after administration of alloxan (1st day of pregnancy); (2) on 15th day of pregnancy (complete resorption takes place in following days); (3) after resorption.

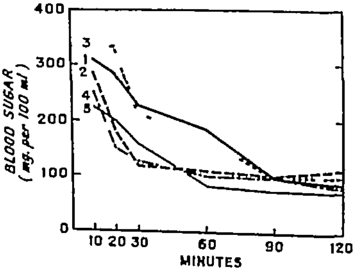


Fig 16—Lack of effect of growth hormone on glucose tolerance of pregnant rabbit: (1) before pregnancy; (2) on 13th day; (3) on 18th day; (4) on 21st day; (5) on 24th day Growth hormone 5 mg per kg of body-weight was given daily from 12th day onwards.

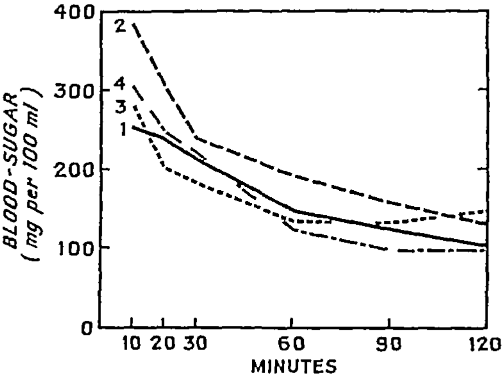


Fig 17—Lack of effect of subminimal doses of cortisone 5 mg per kg of body weight daily on glucose tolerance of non pregnant rabbit (1) before administration of cortisone , (2) after 3 days ; (3) after 8 days , (4) after 13 days

may bear progeny which first become larger than normal and later diabetic

These results may well explain the difficulties facing geneticists dealing with diabetes , familial diabetes is not entirely hereditary but is partly congenital and caused by damage to the fœtus in utero This must remind one again of the large islets of Langerhans in these children of diabetic mothers Have they not been damaged during the diabetic pregnancy after being stimulated to hypertrophy ? Furthermore these are the same children who grow abnormally large and heavy

One can go even further Ditzel et al (1954) show that a characteristic abnormal vascular pattern is recognisable in the conjunctivæ of diabetics They did not find these abnormalities in 75 normal children but found them in 35 of 75 children of diabetic or prediabetic mothers, particularly in those with abnormal glucose tolerance curves At the time of examination these workers were not aware into which groups the children fell

Other findings, too, suggest that the vascular abnormalities of diabetes are not " complications " but an integral part of diabetes (Dry and Hines 1941, Lundbaek 1953), and may be present occasionally before the blood sugar level is high (Wagener 1945)

A woman of 60 presented with myxœdema without glycosuria Five months later she complained of polyuria and was discovered to be diabetic She already had a patch of dry gangrene on her left heel, considerable peripheral neuropathy, and bilateral retinopathy with hard exudates and aneurysms, and arterial pulsation was absent from both legs

On the other hand, acquired or experimental can apparently lead to the same vasculopath must here be a " complication " Growth (Lukens and Dohan 1946), chronic pancreatitis 1947), Cushing's syndrome (Becker et al. 19 (Mann and Goddard 1948), corticotrophin (B cortisone (Rich et al 1950), alloxan pl (Friedenwald 1952), and subtotal pancreatect et al 1950) have all been implicated in this wa placed in the same difficulty here regarding th pathy as regarding the embryopathy That have a great deal of evidence that both the and the vascular disorder are integral and sp of the congenital or hereditary syndrome we betes " , both may develop before hypergly do not seem to depend on it Yet any acquired cause of long-continued hyperglycæmia seem produce the same disorders of pregnan blood vessels

Next we may consider why the occasi treated with cortisone or corticotrophin becom

TABLE IV—LENGTH OF PREDIABETIC PE

Before diabetes (yr)	No of babies	More than 10 lb
0–4	35	54%
5–9	56	44%
10–14	61	23%
15–19	92	28%
20–29	102	35%
More than 30	43	26%
Total	398	33%
Controls	439	4 6%

It would seem that this complication occurs who are already predisposed, " prediabet possess a previously innately insecure metabolism Thus I found that 6 of 10 at the Massachusetts General Hospital ha history of diabetes and 2 had a suspiciously obstetric history If we take in other report et al 1952, Sprague et al 1950) we find that 60% of these corticoid induced diabetics hav family history, enormously above the 1- et al 1952) of normal people who have diabet Joslin et al also claim a similar high incidence in the families of those acromegalic and h patients who develop diabetes as a complicat conditions The same will probably be found " temporary " diabetes of pregnancy, of st

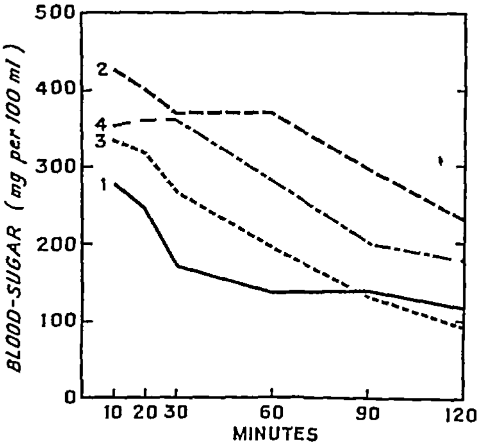


Fig 18—Combination of cortisone 5 mg per kg of body-weight daily plus pregnancy proves too much for pancreas and produces diabetic curve (cf fig 15) in pregnant rabbit (1) before pregnancy , (2) on 15th day ; (3) on 20th day, with abortion of three macerated fœtuses; (4) on 25th day

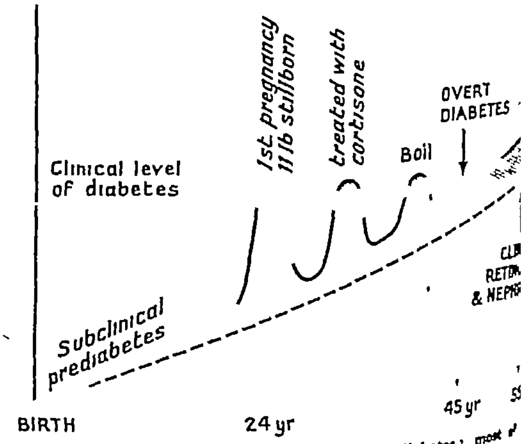


Fig 19—Author s " Iceberg " conception of diabetes ; most of which here include the clinical level of overt manifestations, during staphylococcal at age of 24, transient hyperglycæmia while on cortisone therapy, and clinically apparent diabetes at 4 retinopathy and nephropathy at age of 55

is and of the diabetes of Cushing s syndrome. In words, all these diabetogenic states only act as mechanisms to an already inherently partially e carbohydrate metabolism They do not diabetes in an entirely healthy person

o finally led then to the conclusion that diabetes om birth that a gradual deterioration takes place entual appearance of hyperglycæmia, and that cular disease is a specific diabetic entity also g in the early years but manifesting itself usually en than the high blood-sugar level This is ed in fig 19, which shows that occasionally extra such as we have discussed occurring in the betic" years will bring submerged diabetes to ace Prediabetes plus pregnancy thus gives us ropathy prediabetes plus a boil gives us a ry hyperglycæmia; and so on Corticoids and cy may also bring to the surface the submerged part of diabetes, most evident as a retinopathy

Conclusions and Summary

ancy is a dangerous stress to the pancreas.

it is diabetogenic to the mother is evident from ening of the hyperglycæmia and the retinopathy tablished diabetic during pregnancy from the nce of retinopathy for the first time during cy and its disappearance after parturition 1952, Lawrence 1948), from the occasional nce of hyperglycæmia and glycosuria in a non which disappears after parturition, from the phied ' pregnancy pancreas from the rarity es in the postmenopausal woman who is childless n the potentiation of the diabetogenic effect of and alloxan in laboratory animals.

pregnancy is diabetogenic also to the fœtus we eady suggested The abnormal internal uterine nent of the prediabetic may produce a baby which m gigantic, and cushingoid or a child who grows has an abnormal vascular system and develops

not know the cause of diabetes, nor do we under very real relation to growth and size but ly diabetes in the latent form (pre-diabetes) with the victim years or decades before he or she overtly diabetic During this time pregnancy, ophin therapy acquisition of Cushing s syndrome romegaly a staphylococcal infection or over nay uncover the individual already predisposed tes. The previously adequately compensating cannot stand the additional stress completely dence of the latent diabetic state is brought surface divulging its menacing presence by athies or changes in carbohydrate tolerance t is wrong to talk of diabetes only when in and hypercalcæmia are present It is a dis ich goes back much further than that—even into b

xtremely grateful to the many people with whom I ussed these ideas and who have given help and ment Among these I would mention particularly Forman Prof J F Brock, and Prof G C Lauder Town; Prof Fuller Albright and Prof Jean Mayer ; Sir Harold Himsworth Prof F G Young, and Sheldon of England and Prof J P Hoet of Belgium. I am further indebted to Professor Hoet sion to use figs. 5 and 13–18 and to the editor of or figs. 5 and 15 of the *British Medical Journal* for the *Journal of Clinical Endocrinology* for figs. 3 and 4, South African Medical Journal for fig 7 Prof J T kindly allowed unrestricted access to the mothers in his obstetric wards and the use of data concerning of. J G Thomson and Dr N Woolf are to be thanked I am grateful also to Mr B Todt for the photo- ork, and to the technicians who helped at different pecially Miss Dorothy Borcherds, B.SC

The cost of much of the work was defrayed by grants from the University of Cape Town Staff Research Fund, and the Eli Lilly Research Fellowship enabled me to collect more data and ideas.

ADDENDUM

I have recently seen several even more convincing cases of progression from " prediabetes " to diabetes than are charted in figs 8–12 Reports of these will be published later

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"Among the changes of environment with which every species must cope are the changes which its own living creates Forest trees, for example, may flourish so successfully that their own seedlings cannot grow in their shade 'Smog' provides a parallel exact in character though not yet so extreme in degree Other animals, I believe seldom create lethal conditions for themselves, and when they are in danger of doing so they can usually move on. But our present way of living alters the world we live in far more radically and far more quickly than it did in any pre-technological era; and this is equally true whether you think of the physical changes which have made Greater London or the organisational ones which have left us dependent on Canada for bread and the Argentine for meat and unlike our fellow mammals or our nomadic ancestors, we cannot move on —SIR GEOFFREY VICKERS in *Studies in Communication*, London, 1955 p 88

METABOLIC RESPONSE TO TOTAL ADRENALECTOMY AND HYPOPHYSECTOMY

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The study of metabolic changes after trauma was initiated by Cuthbertson (1932), who demonstrated that injury to a limb was followed by loss of nitrogen and phosphorus Further work indicated that this loss was associated at first with retention of salt (Wilkinson et al 1949) The disturbance of metabolism was found to be qualitatively similar in all types of trauma, including operation, and related quantitatively to the severity of injury (Cuthbertson 1942)

Similarity of this initial biochemical response to that induced by the administration of corticotrophin has led to the suggestion that operative trauma stimulates the pituitary-adrenal axis to a greater production of adrenal steroids, which produce the metabolic changes (Moore and Ball 1952) Evidence for an increased secretion of adrenal hormones is suggested by a postoperative rise in the level of corticosteroids in blood and urine (Bayliss 1955) However, the relationship between the adrenal hormones and the tissues they affect is not clear On the one hand, the adrenal glands may directly control tissue metabolism so that the direction and degree of any biochemical change is proportional at all times to the amount of circulating hormone On the other hand, local mechanisms in the tissues may be responsible for the metabolic changes, provided there is an adequate supply of adrenal hormones

This " permissive " rôle of the adrenal cortex, allowing the body to achieve homœostasis, has been discussed by Engel (1951) and Ingle (1951) Their experimental work on adrenalectomised rats may now be repeated in patients who are subjected to total adrenalectomy in the treatment of carcinomatosis In this paper I describe metabolic studies on such patients, with particular reference to the concept of the " permissive " rôle of the adrenal cortex

Method of Study

The clinical material comprised eight women with carcinoma of the breast Metastases were present in seven patients Two patients were subject to total hypophysectomy, one to total adrenalectomy, and five to total adrenalectomy and oophorectomy

Corticotrophin (A C T H) was administered intramuscularly every 6 hours to patients undergoing hypophysectomy , and cortisone was injected intramuscularly twice daily to patients undergoing adrenalectomy In six patients administration of the hormone was started 2–4 days before the operation, and the daily dose was kept constant throughout the study This scheme of constant dosage, initiated before operation, was essential to the study of postoperative metabolism with an unvarying amount of hormone The amount of the daily dose was determined by trial on the patients included in this series and on others undergoing adrenalectomy or hypophysectomy without full metabolic study It was found that corticotrophin 60 mg daily was adequate therapy for total hypophysectomy, and cortisone 80 mg daily for total adrenalectomy A dosage of 60 mg of cortisone daily was also used, but clinically it seemed to be suboptimal

All the patients were fed from the diet kitchen The composition of the weighed diet was calculated from the tables of McCance and Widdowson (1946) Urine was collected in 24 hour samples, and fæces in 3–4 day periods

Sodium and potassium were measured with a flame photometer, and chloride by the method of Asper et al. (1947)

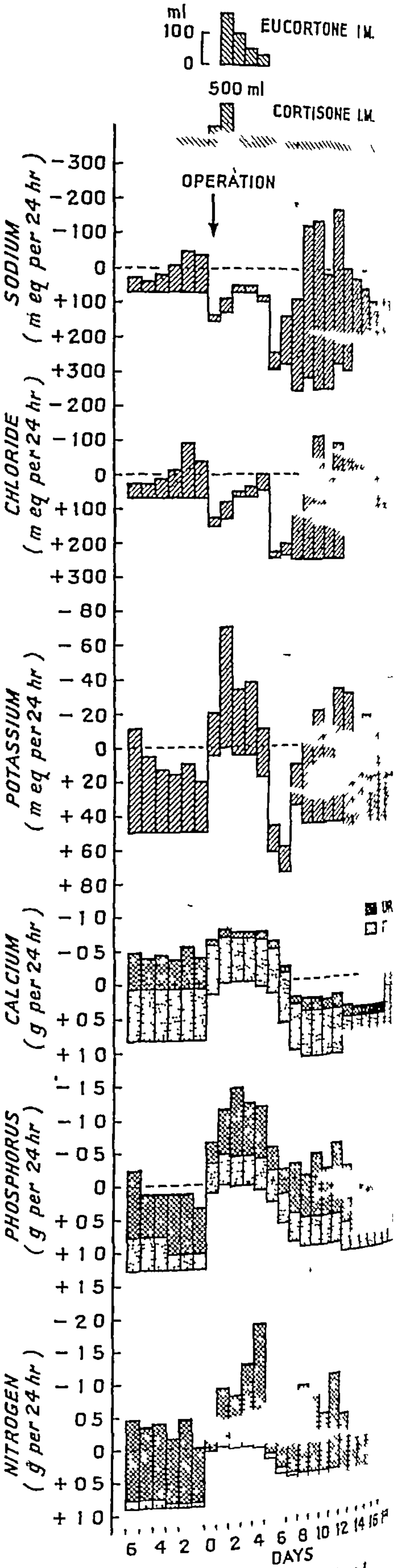


Fig 1—Metabolic changes in case 1.

orus was determined by the method of Fiske and ow (1925), and nitrogen by the micro-Kjeldahl tech Calcium was measured by oxalate precipitation and ination with standard permanganate. The fæcal of sodium and potassium was not determined The otained were illustrated graphically according to the of Reifenstein et al. (1945)

Clinical and Biochemical Data

FIRST CASE (fig 1)

man, aged 42 with carcinoma of breast and metastases a. General condition

tion (Mr J E. Richard total adrenalectomy t oöphorectomy)

perative course —Very during the first 4 days hypotension responded adrenaline Partial of lungs, and later nsion.

one therapy —Intra ar cortisone 50 mg laily for 3 days before on increasing to 150 day of operation (day lays 2–5 intramuscular tone was given to with 450 mg of corti subsequently cortisone duced to 150 mg., was continued until and then to 100 lly to the end of the

ical Data

um chloride —There ight loss of sodium and when cortisone was tered preoperatively was considerable salt n on days 1–8 followed oss over days 9–12 fter a phase of positive lance there was a loss. The intake of increased for day 1 on greatly increased 300 m.eq daily) on 13

sium.—Over days 1–4 m balance was nega ith maximal loss on oincident with hæmo of transfused blood. was some retention on –8 followed by some

gen —The preopera ance was negative but a loss was consider ove this level on days Towards the end of the he balance had almost d equilibrium The of nitrogen was mini days 1–6 but during e the urinary nitrogen n was slightly above operative level and on and 6 it reached a um (15·0 g daily ed with 10 7 g daily operation) which did ncide with the largest of cortisone

ium —Hypercalcuria resent before opera The urinary calcium

returned to normal on day 1 and remained so throughout the rest of the study the balance becoming positive on day 8 The operation did not produce any recession of the bony metastases which continued to spread The negative calcium balance over the immediate period of operation was due to diminished intake, with normal fæcal excretion as would be expected on very sudden restriction of dietary calcium

Phosphorus —The immediate postoperative balance was negative mainly because of low intake and continued fæcal excretion as was the case with calcium. The balance remained negative during the time when the calcium balance was

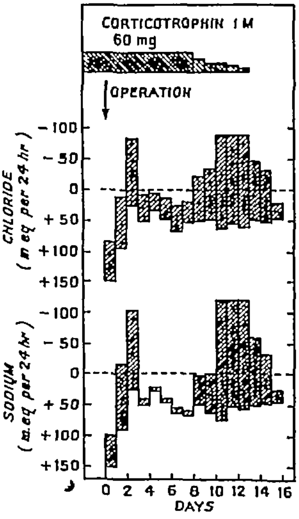


Fig 2—Metabolic changes in case 2.

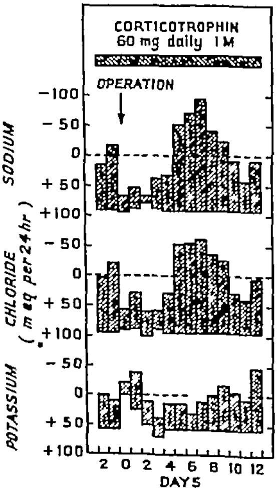


Fig. 3—Metabolic changes in case 3

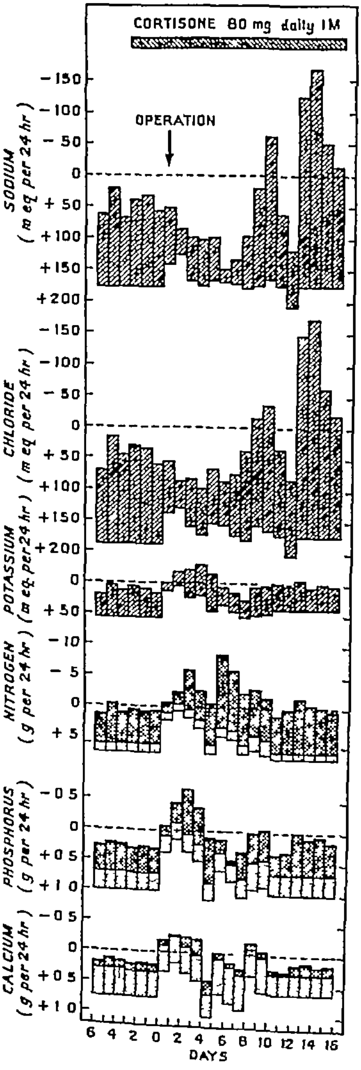


Fig. 4—Metabolic changes in case 4.

positive because the phosphorus output was reflecting the increased nitrogen loss at this time

SECOND CASE (fig 2)

A woman, aged 45, with carcinoma of breast and multiple metastases in bone General condition poor

Operation (Mr D W C Northfield) total hypophysectomy

Postoperative course —Despite severe hæmorrhage at operation necessitating large transfusion of blood, the recovery was entirely smooth and without incident On withdrawal of corticotrophin the patient experienced rapidly increasing lassitude with drowsiness and anorexia These symptoms were alleviated by cortisone

Hormone therapy —Intramuscular corticotrophin 6 hourly to 60 I U daily from 2 days before operation to postoperative day 8 Dosage then decreased until therapy stopped on day 12

Biochemical Data

There was an over all retention of sodium and chloride on days 1–8, after which there was a considerable loss, coincident with decrease in corticotrophin dosage, but the loss became smaller when the hormone was discontinued

The salt intake on days 1 and 2 was greatly in excess of that on day 3 This variation of intake probably accounts for a negative balance on day 3, when the over all postoperative pattern was one of salt retention

THIRD CASE (fig 3)

A woman, aged 58, with carcinoma of breast and axillary metastases and multiple metastases in bone General condition fair

Operation (Mr D W C Northfield) total hypophysectomy

Postoperative course —Uneventful recovery

Hormone treatment —Intramuscular corticotrophin 6 hourly to 60 I U daily from 2 days before operation and throughout study

Biochemical Data

Sodium and chloride —Retention on days 1–5 On days 6–10 there was a loss of salt equivalent to the amount retained postoperatively (Total retention of sodium 263 m eq and total loss 267 m eq) Throughout the study the salt intake was unchanged (daily sodium intake 91 m eq)

Potassium —On days 1 and 2 the balance was negative and the intake decreased No significant change during rest of study

FOURTH CASE (fig 4)

A woman, aged 71, with massive carcinoma infiltrating whole breast and unresponsive to deep X ray therapy and to testosterone No evidence of metastases General condition very good

Operation (Mr Hermon Taylor) total adrenalectomy and oöphorectomy

Postoperative course —Immediate hypotension controlled by noradrenaline Condition remained good, uneventful recovery

Hormone therapy —Intramuscular cortisone twice daily to 80 mg daily started 3 days before operation and continued without alteration to end of study

Biochemical Data

Sodium and chloride —During the preoperative period there was some salt retention, which was accentuated during days 1–8 After this there was salt loss In the postoperative phase of retention the average daily amount of sodium retained in excess of the preoperative level was 60 m.eq In the later phase of negative balance the difference from the preoperative period was –65 m.eq of sodium daily Values for chloride followed these figures closely The intake of salt was high (177 m.eq of sodium daily) throughout the study

Potassium —There was a loss of potassium over days 1–5 After that the balance returned to preoperative levels The loss was coincident with maximal urinary excretion of nitrogen

Nitrogen —The balance was positive before operation, being consistent with the patient's well nourished state But on days 1–10 there was considerable loss of nitrogen, maximal on days 6 and 7, by which time the intake had been restored to normal Urinary loss of nitrogen averaged 5 5 g daily before operation, but on days 6–10 averaged 9 0 g daily After this stage of nitrogen loss the balance once more became positive until the end of the study

Phosphorus —A slightly positive balance before changed over days 1–4 to negative, corresponding [illegible] initial phase of nitrogen loss The phosphorus ba[illegible] positive again at the stage of further nitrogen l[illegible] calcium balance was positive at this time.

Calcium balance was positive before operation [illegible] was no significant change throughout There was [illegible] of [illegible] metastases in this patient

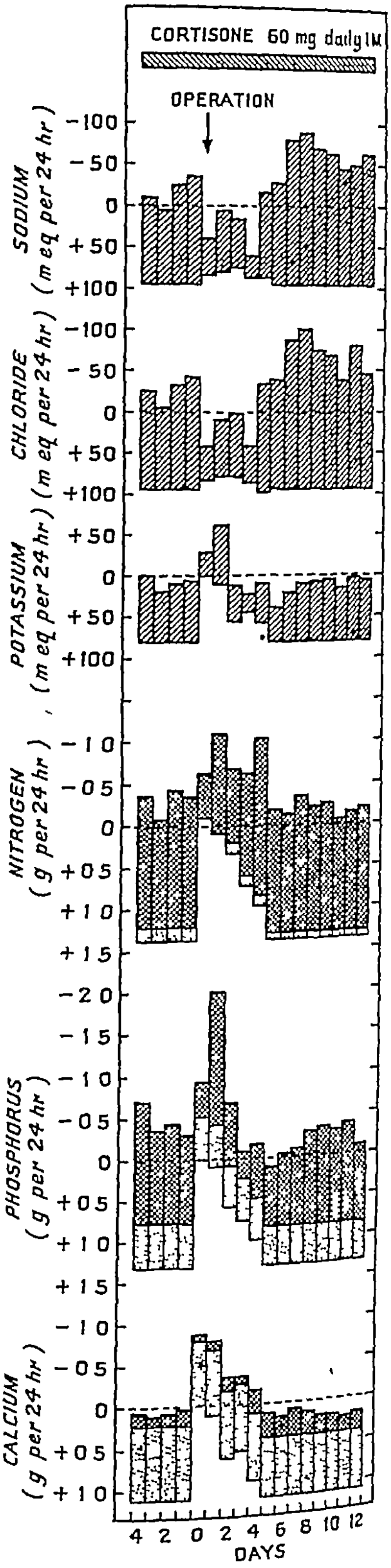


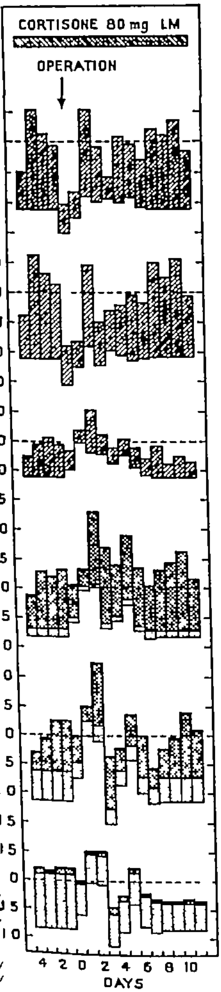
Fig 5—Metabolic changes in case 5

sium —There was a negative balance on days 1 and … intake was least but otherwise there was no … nt change

en —The negative preoperative balance was much … l on days 1–5 the nitrogen loss remaining constant … restoration to normal intake Urinary excretion of … exceeded preoperative levels on day 5 only From … nwards the balance showed a daily loss of 1 0 g … d with 3 g daily before operation.

horus —Preoperative negative balance reflecting … loss. On days 1–5 there was an increased loss, but … the loss decreased when the calcium balance became …

m —Despite metastases in bone there was no … curia. There was a negative balance on days … inly due to diminished intake and continued fæcal … After this a definite positive balance was established



6—Metabolic changes in case 6.

SIXTH CASE
(fig 6)

A woman aged 30 with carcinoma of breast and multiple secondaries in lungs and in scar of mastectomy General condition poor

Operation (Mr E C Butler): total adrenalectomy and oöphorectomy

Postoperative course —Uneventful recovery

Hormone therapy —Intramuscular cortisone 80 mg daily (in twice daily doses) started 5 days before operation and continued throughout the study

Biochemical Data

Sodium and chloride —Average of postoperative period indicated equilibrium Over days 1–5 there was an average retention of 40 m.eq of sodium daily with an equivalent amount of chloride There was much retention on days 1 and 2 when salt intake was greatly increased but salt was lost on day 3 associated with considerable diminution in intake On days 6–8 there was a slight retention of salt followed by loss over days 9–12 the daily average loss for sodium being 12 m eq but for chloride 31 m.eq

Potassium —The balance became negative on days 2–4 when nitrogen loss was greatest. After that a positive balance was established

Nitrogen —The preoperative slight nitrogen loss gave way to a marked loss especially on days 3–6 when urinary excretion averaged 12 5 g daily, compared with preoperative average of 8 5 g daily Some loss continued until day 10 but equilibrium was established on the last 6 days.

Phosphorus —After preoperative equilibrium there was a negative balance over days 2–6 but the loss was slight From day 7 onwards some retention was associated with a positive calcium balance

Calcium —Preoperative loss was changed to postoperative gain starting from day 4

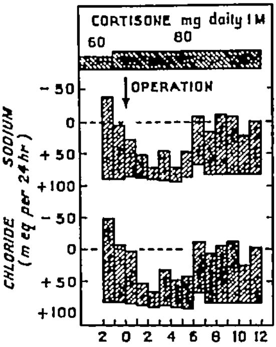


Fig 7—Metabolic changes in case 7

SEVENTH CASE (fig 7)

A woman aged 49 with carcinoma of breast and metastases in spine and pelvis. Partial paraplegia. General condition fair

Operation (Mr Hermon Taylor) total adrenalectomy and oöphorectomy

Postoperative course —Uneventful recovery

Hormone therapy —Intramuscular cortisone (in twice-daily doses) 60 mg daily starting 4 days before operation, increased to 80 mg daily 1 day before operation and continued at this dose until end of study

Biochemical Data

On days 1–6 salt was retained the average daily retention of sodium being 53 m eq On days 7–12 both sodium and chloride balances were in approximate equilibrium. The difference in average daily sodium balance was –49 m.eq, compared with the first 6 days after operation The intake of salt was constant throughout the study (sodium intake 85 m.eq daily)

EIGHTH CASE

A woman aged 40 with carcinoma of breast and multiple metastases in bone.

Operation (Mr E C Butler): total adrenalectomy and oöphorectomy

Postoperative course —Uneventful recovery Bone pain continued.

Hormone therapy —Intramuscular cortisone (in twice-daily doses) 80 mg daily starting 3 days before operation and continued throughout the study

Biochemical Data

Nitrogen —On a daily intake of 7 5 g the average urinary excretion of nitrogen was 9 g daily On days 1 and 2 the intake was increased, but from day 3 the intake was rapidly brought up to preoperative levels. The greatest amount of nitrogen was lost on days 1 and 2; but when the intake was increased, the urinary nitrogen was considerably above preoperative levels, averaging 14 5 g on days 2–6

Calcium —In association with osteolytic metastases there was a preoperative hypercalcuria This continued at the same level after operation. There was no evidence of any regression of the tumour after the operation.

Discussion

The metabolic changes which have been described as following operations pass through two phases initially there is salt retention some potassium loss, and a negative nitrogen balance, despite adequate protein intake but in the second phase salt is lost and the nitrogen balance returns to equilibrium followed by nitrogen retention

Moore and Ball (1952), who examined these changes in detail, consider that the initial phase at least is regulated by adrenocortical hormones The data in case 1 illustrate these changes, when, on removal of the adrenals, large amounts of cortisone and eucortone were administered over the immediate period of operation Therefore the metabolic changes could be reflecting directly the alterations in hormone dosage However, salt retention persisted beyond the period of maximal hormone therapy, and the nitrogen loss continued after the dose of cortisone had been decreased In contrast to the massive therapy used in case 1, a small constant dosage of hormone was given to cover the operation period in case 2 with good clinical results, and the usual postoperative salt retention was observed The succeeding phase of salt loss coincided with a reduction of hormone dosage, hence it was impossible to observe the full cycle of metabolic change under a constant régime

In view of the results in the first two cases it became obvious that in order to observe the body's metabolic changes in response to trauma, under conditions of constant hormone dosage, it was essential to start the régime 2–3 days before removal of the endogenous source of hormone, and to keep the dosage constant throughout the study Satisfactory schemes of dosage were formulated as follows for total hypophysectomy intramuscular corticotrophin 60 mg daily in 6-hourly doses, and for total adrenalectomy intramuscular cortisone 60–80 mg daily in twice daily doses were found to be adequate as therapy throughout the whole period of the study It must be emphasised that this régime was designed for the particular circumstances of these operations, and it is not implied that this would be a correct dosage in all circumstances

The electrolyte balance in case 3 indicates that the initial phase of postoperative salt retention and subsequent salt loss can occur in the absence of the pituitary gland when the adrenal glands are exposed to a constant dosage of corticotrophin Similar biphasic changes in salt balance were observed in the other cases The degree of change appeared to be related to the salt intake and the amount of hormone present Sudden variations in salt intake produced corresponding changes in salt balance, as in case 6, when a large increase in intake on days 1 and 2 was followed by a relatively small intake on day 3 As a result the positive balance of the first 2 days gave way to a negative balance on day 3 This delay in the kidney's response to alterations in salt loss is observed in the normal subject

Changes in nitrogen balance, reflected also in the phosphorus balance, followed the recognised pattern in patients with intact adrenals, undergoing surgery The nitrogen loss following operation is more obvious if the patient has been well nourished before operation, as in case 4, when a preoperative nitrogen retention gave way to considerable postoperative loss and finally to equilibrium The effect of restoring protein intake early after operation does not alter the negative balance, the urinary nitrogen excretion being above the preoperative level (case 8)

The data obtained from these patients indicate that the postoperative metabolic response is essentially normal despite the constant hormone dosage This does not in any way invalidate the evidence for changes in pituitary adrenal function obtained on normal patients undergoing surgery, but it does show that alterations in metabolism are not directly related to variations in the amount of circulating adrenal corticoids It appears that the body possesses mechanisms which will produce a certain biochemical response to trauma, provided a sufficient but constant supply of corticoids is available

From the practical standpoint, when the normal pituitary gland or the adrenal glands are removed, massive doses of adrenal steroids are unnecessary, nor need the daily dose be varied Cortisone alone satisfactory cover for adrenalectomy, provided administered regularly for 2–3 days before op Similarly, corticotrophin in constant dosage preoperatively, provides a satisfactory cover for hypophysectomy There is no need for an i intake over the immediate period of operation constant intake is preferable, in amounts similar in a normal diet—i e, 6–8 g of sodium chloride

Summary

The metabolism of patients undergoing physectomy or adrenalectomy in the treat carcinomatosis was studied

The metabolic response after these similar to that seen after operations on patients intact adrenals.

A normal postoperative response was obtained substitution therapy with either corticotro cortisone was given at a constant daily dosage.

The results are consistent with the hypothesis adrenal cortex plays a "permissive" rôle in me and indicate that postoperative metabolic not depend solely on changes in adrenal cortical

I wish to thank Mr Hermon Taylor, Mr D W C field, Mr E C Butler, and Mr J R Richardson for me to conduct these investigations on their p for their unfailing coöperation and interest study

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MYASTHENIA GRAVIS

RESULTS OF MEDICAL MANAGEMENT

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Myasthenia gravis is, by general standard disease, but the special problems of diagnosis hazards of management are such that certain have tended to accumulate relatively large cases At such centres it has been possible to natural history of the condition, and attempt the possible benefits of various forms of treatment these studies there has now emerged the crucial of the place and value of thymectomy

It might appear a simple matter to give a opinion on the results of operative treatment, ment of the clinical evolution of the disease is considerable difficulties Kennedy and Moer in reviewing 87 cases, followed for an average years, at a time when neostigmine was not

tomy not practised noted complete spontaneous
ns in 27 patients. These remissions ranged in
from one month to fifteen years with an average
ears. These figures are indeed impressive and
(1948) was led to conclude that treatment with
mine actually reduced the frequency and the
of spontaneous remissions Clearly very careful
tion and analysis is required in evaluating any
treatment

ious of these difficulties, Eaton and Clagett
ttempted a statistical comparison of the results
al and medical treatment of 211 cases seen at the
linic From these 211 cases, they selected 56
and 62 surgical cases of which it could be said
, duration severity and course before treatment
om truly comparable After excluding immediate
ative deaths they concluded that there was no
n that thymectomy influenced beneficially the
f myasthenia gravis Grob (1953) in contrasting
ults of thymectomy in 44 cases with those of
on in 40 and medical treatment in 118 arrived at
t conclusion More recently however Eaton
1952) reviewed the results in 374 patients and
d that there is clinical evidence of a relationship
the thymus and myasthenia gravis This
of their earlier view is modified to some extent
expressed doubts as to the efficacy of removal
ymus, and they suggest that ' it is possible that
ation itself stimulates certain endocrine metabolic
within the patient that account for the
ally) favourable results of thymectomy They
their statistical advisor refuses to concede that
ures prove beyond doubt the value of thymectomy
country Keynes (1949) with an extensive personal
ce, has emerged as the chief advocate of operative
t ; and comparison of the results of thymectomy
Keynes s series with the recorded results of three
y treated groups—Kennedy and Moersch (1937)
(1936) and Eaton et al (1949)—led Ross (1952)
ide that thymectomy was undoubtedly beneficial
be recalled however that the two earlier groups
cites did not have the benefit of neostigmine in
atment

54 Keynes reviewed the existing evidence upon
ct and in so doing remarked that " no physician
untry has ever recorded the results in a series of
treated patients at all comparable with the
y extensive series that has now been submitted to
It so happens that of the 85 cases of myas
en in the neurological clinic at the Manchester Royal Infirmary during the past twenty two years, only 10 were submitted to surgery , so there is a group of 75 cases under medical treatment available for comparison Strict scientific comparison with a larger surgical series cannot be made, but this particular group followed for an average period of more than ten years, indicates what can be expected from a conservative policy

Observations on the Series

The General Picture (table I)

These 85 cases were seen during the period 1932–54 though no case of less than two years' standing in the clinic is included Medical treatment comprised the administration of the optimal dose of neostigmine with the occasional addition of ephedrine guanidine, and potassium chloride. More recently pyridostigmine has been used in a small number of patients and has been found of very definite use in two circumstances

TABLE I—THE SERIES OF 85 CASES

Operated	10
Untraced	6
Dead	9
Surviving	60
Follow up period	
Maximum 22 years	
Minimum 2 years.	

1 In the rare instances of neostigmine intolerance treatment could be maintained with pyridostigmine which is less productive of intestinal colic

2 Pyridostigmine with its prolonged action has been of value in controlling the early morning weakness which may be so troublesome in patients with generalised weakness.

Of the 75 medically treated cases, 60 survivors were re-examined in 1954, 6 could not be traced, and 9 were dead

49 of the cases were female and 26 male The average age at onset was 34 years, but the range was from the first day of life to 71 years The age-distribution curve indicates a maximal incidence in the second third, and fourth decades

Deaths and Survival Periods

Table II gives the causes of death in the fatal cases The duration of their illnesses ranged up to sixteen years. 3 of the patients died of independent disorders, 3 died of definite myasthenic affection, 2 had thymomata and in 1 case we have been unable to secure information on the mode of death

Ocular Myasthenia

It has long been recognised that myasthenia may restrict itself to the ocular muscles, and Grob (1953)

rse of illness in
presenting with
ar signs of myas-

= remained
ly (27)
d = general
ce to thirteen
= generalised

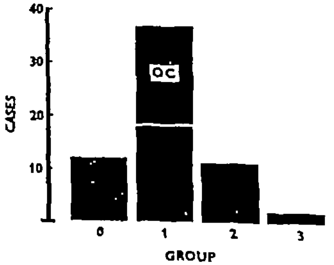

Fig 2—Functional state of 60 medically treated survivors

Group 0 Complete remission (12)
Group 1 Minimal symptoms (17)
Group 1 (oc.) Ocular myasthenia (18)
Group 2 Moderate disability helped by neostigmine (11)
Group 3 Critical condition despite neostigmine (2)

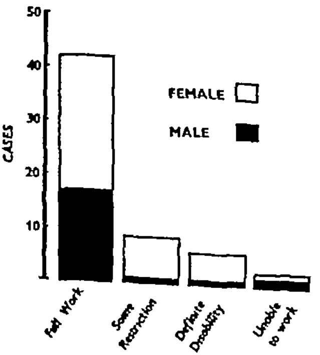

Fig 3—Capacity for work in 60 medically treated survivors.

has drawn attention to the need to segregate the ocular group for purposes of assessment This is done by Eaton et al (1952), but Keynes's figures do not seem to take this factor into account, for the functional grading by Ross includes no reference to it

In 44 of our 75 cases the onset was signalled by ocular symptoms only (fig 1) In 27 of these the disorder has remained confined to the ocular muscles, and only 1 of these patients has died—of carcinoma of the tongue at 71 Grob took the view that, when the ocular form persists for more than two years, extension to the generalised form is unlikely But in 7 of our cases a picture primarily ocular extended to other muscles after intervals ranging from three to thirteen years from the first symptoms Our remaining 10 patients with ocular onset developed signs of generalisation within the two-year limit mentioned by Grob Comparable survival figures for thymectomised patients in whom the disorder was ocular in type are not available

TABLE II—CAUSE OF DEATH IN 9 CASES

Age	Duration of myasthenia at death (years)	Cause
72	2	Carcinoma of tongue
40	11	Carcinoma of breast
68	16	Gastric neoplasm
38	3	Thymomata
44	2	
40	10	No trace
32	3	Myasthenia
40	7	Myasthenia
71	3½	Myasthenia

It seems to us that, in assessing clinical progress, patients with this benign ocular myasthenia—in which any method of treatment will give good results—should always be separated from patients with the generalised type There is, unfortunately, no clinical means of differentiating the purely ocular from the remainder

Present Functional Status of the Survivors

39 of the survivors are women and 21 men The average follow up to date has been 9 0 years for the men and 10 2 years for the women, and the longest duration 22 years

The difficulties of assessing function are well recognised in particular the grading of function or remission according to changes in neostigmine dosage is far from satisfactory No system is likely to be perfect, but the one employed by Eaton et al (1952) is perhaps of the greatest practical value Its application to our series is shown in fig 2, from which it will be seen that 47 of the 60 survivors are in group 1 or above This classification requires acceptance of the idea that ocular myasthenia, though locally severe, is not a serious functional handicap, and that ptosis or even diplopia do not gravely incapacitate patients

As an extension of this working approach to the status of these patients we drew up a different system of functional grading based on the patient's ability to perform what he or she considered to be normal work, and we made this assessment independently of neostigmine dosage The results of this pragmatic classification are depicted in fig 3, which indicates that 42 of the original 75 are performing full work For the women this implies active housework including washing and spring cleaning or occupations in offices or as school teachers The occupations followed by the 17 men in full work include those of foundryman and police inspector The 8 women who regard themselves as suffering from some restriction illustrate this by saying that they need help with heavy work in the home, and that their husbands wring out the wash. Those definitely disabled require help for household duties more energetic than dusting, though cooking is within their range of action

TABLE III—REMISSIONS IN MEDICALLY TREATED

—	Present series
Total no of patients	[illegible]
Patients remitting	[illegible]
Total remissions	81
Average sum of duration of remissions	4 9 yr

The man who is definitely disabled is aged has severe bronchitis One of the two men work is 64 and also belongs to the thymoma the other has now suffered from myasthenia for years This man was at full work as a mark until four years ago

Remissions

Harvey (1948) held that administration of reduced both the frequency and the duration taneous remissions The figures for our series of mine-treated cases can be compared with Kennedy and Moersch (1937) in which neo not given (Only *complete* remissions exceeding in duration are included, because the assessment of remissions is attended by many difficulties and largely on the subjective observations of the Table III shows that in our neostigmine treated larger proportion of the patients had remission remissions were more frequent and lasted those in Kennedy and Moersch's series. It the support to Harvey's contention It seems neostigmine affects adversely neither the rate duration of remissions

Cases undergoing Thymectomy

No conclusions can be drawn from the small 10 cases treated surgically, and the details table IV are included only to complete the 6 of these patients are dead, and the manner of was myasthenic with either respiratory crises syncope The functional grading of the rem on the Eaton scale

Conclusions

We are not attempting to compare the thymectomy and of medical treatment, for insufficient for such a comparison We believe, that the following conclusions are permissible

1 Although 9 of our 85 patients have died further 6 have not been traced, the survival whom 42 are in full work, suggests that the gravis is not applicable to all cases of

2 The diagnosis of myasthenia need not be as an automatic indication for thymectomy saving or urgent procedure A period of with treatment with neostigmine, may indeed correct and safest form of management for many,

3 If the condition is initially ocular in and remains so for two or three years, then chance that the disorder will remain local

TABLE IV—10 CASES TREATED BY THYMECTOMY 6 DEAD)

Sex	Age	Duration of myasthenia (years)		Outco
		Before operation	After operation	
M	42	18	8	Died of myasthen
M	18	1	1½	" " "
F	24	2	4	" " "
F	41	2	3	" " "
F	24	2	0	Enema produced thenic crisis
F	24	1	0	
F	30	2	4½	Alive functionally
F	31	1	10	" "
F	41	1	11	" "
M	45	2½	7	"

little or no disability In such cases thymectomy be justified

lecision to advise thymectomy may be made if ition is generalised at an early stage and cannot trolled adequately with neostigmine The 1 of the ocular form to the generalised type lso appear to be an indication for operative it

stigmine (Mestinon) was supplied to us by Roche Ltd.

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IE GASTRIC MUCOSA IN IRON-DEFICIENCY ANÆMIA

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ssociation of achlorhydria and iron deficiency nas long been known (Witts 1930) Faber (1927) d that achlorhydria was the result of inflamma he mucosa which if sufficiently severe could ndular atrophy Failure of hydrochloric acid however was shown to develop before the stage y These facts and also the well known gastric of pernicious anæmia suggest that the gastric n iron-deficiency anæmia may be abnormal

gical study of the gastric mucosa on a large ing life had to await the development of the vacuum biopsy tube by Wood et al (1949) s a result of their studies and those of Palmer uch information has been obtained about the he gastric mucosa in pernicious anæmia and in gastritis. Little is known however about n the gastric mucosa in iron-deficiency anæmia 1 and Richards (1953) found gastritic changes in s with iron deficiency anæmia and achlorhydria enoch (1954) reported briefly 24 cases of hypo anæmia all with achlorhydria These workers variable picture 6 patients showed gross atrophy and in 1 the changes were indistin from those found in pernicious anæmia.

esent investigation was designed primarily to histology of the gastric mucosa in patients with iency anæmia and to determine whether or not ges which might be present were restricted to with achlorhydria To assess the significance ndings it was considered necessary to study It was also hoped to provide at least a partial the problem of whether achlorhydria precedes opment of iron-deficiency anæmia or follows it

Methods

vestigation included 42 patients with iron anæmia In 18 of these there was known to 1 some loss of blood (menorrhagia 15 melæna 1 hæmoptysis 1 carcinoma of œsophagus 1) s were selected from inpatients with miscellaneous other than alimentary disorders or anæmia In he influence of age on gastric secretion patients cted for the control group so as to match approximately the age distribution of the iron deficiency anæmia group They agreed to the procedure in the interests of the investigation

The resting gastric juice was withdrawn from the patients who had been fasting overnight By the method of Kay (1953) mepyramine maleate 200 mg was injected intramuscularly, and half an hour later histamine 2 mg was injected subcutaneously Subsequently samples of gastric juice were withdrawn over a period of one and a half hours at fifteen minute intervals After removal of the last sample the patient was given an amethocaine lozenge to suck and a Wood's biopsy tube was passed into the stomach A fragment of mucosa was removed fixed and stained with hæmatoxylin and eosin X ray screening of the patients during the procedure proved unnecessary

Results

The histological appearances of the biopsy specimens indicated that the gastric mucosa in both groups of patients could be conveniently classified in the following categories, as described by Doig and Wood (1952)

(1) *Normal Mucosa* (fig 1)

The following criteria constitute a normal mucosa for the purpose of this paper: (*a*) the surface epithelium and foveolæ consist of tall columnar epithelium and the lamina propria is scanty (*b*) the tubules of the glands are long regular and closely packed with well-staining cells (*c*) the muscularis mucosæ is thin and regular with no fibrous strands extending into the mucosa (*d*) no infiltration of acute or chronic inflammatory cells is present in the lamina propria or between the tubules of the glands, but small inflammatory foci at the necks of the glands, consisting of three or four polymorphs only and not more than two per section are accepted as normal, provided that the other criteria are fulfilled If there were more than that number of inflammatory foci, the specimen was placed in the following category of superficial gastritis.

(2) *Superficial Gastritis* (figs 2 and 3)

This group includes the types classified as acute gastritis and chronic degenerative gastritis by Palmer (1954) This class is distinguished by the infiltration of acute or chronic inflammatory cells into the superficial layer of the mucosa with the result that the lamina propria may be distended by inflammatory cells. The surface epithelium is often shortened and atypical and may very occasionally show small areas of intestinal *metaplasia*. There may be an absence of any glandular atrophy but usually there is slight atrophy If the degree of atrophy exceeded about 20% of the glandular tissue the specimen was not classified in this group but was placed in the following class of atrophic gastritis.

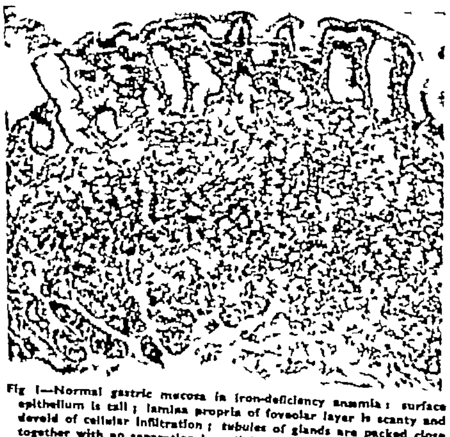


Fig 1—Normal gastric mucosa in iron-deficiency anæmia: surface epithelium is tall; lamina propria of foveolar layer is scanty and devoid of cellular infiltration; tubules of glands are packed close together with no separation by cellular infiltration. (Hæmatoxylin and eosin. ×90.)

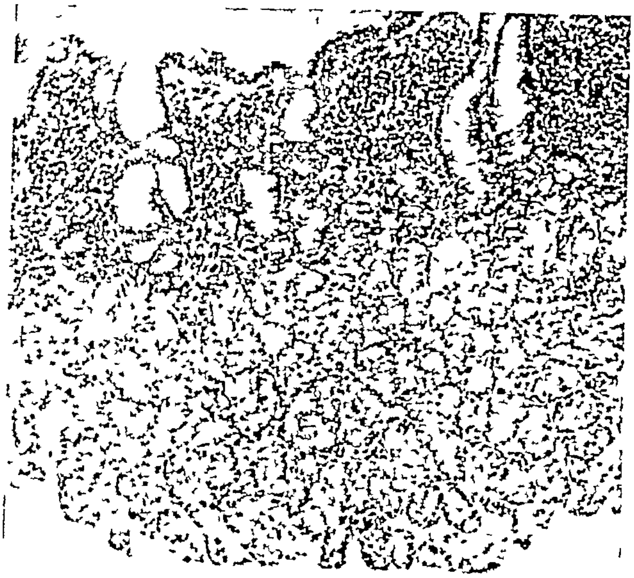


Fig 2—Superficial gastritis in iron deficiency anæmia: lamina propria of foveolar layer is distended by inflammatory cells which, however, have not spread down to muscularis mucosa. (Hæmatoxylin and eosin ×90)

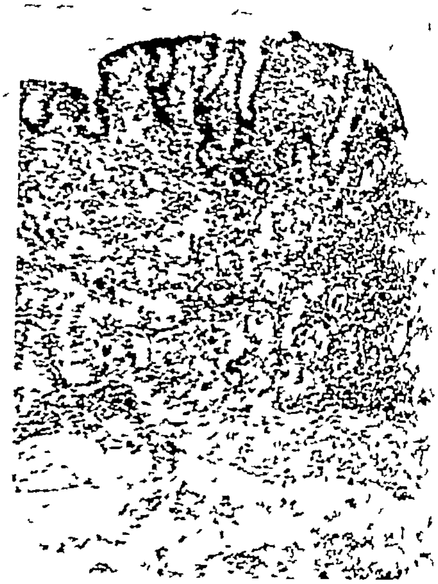


Fig 3—Advanced superficial gastritis in iron mation still fairly superficial, but a broad band is muscularis mucosa with some atrophy of glandular tiss toxylin and eosin ×90)

(3) *Atrophic Gastritis* (fig 4)

In this group the inflammation is usually chronic with sometimes some acute foci in the more superficial part of the mucosa The inflammation, unlike the previous group, spreads down to the muscularis mucosa with the result that the tubules of the glands may be widely separated Severe atrophy of the glands is common, but may be patchy Intestinal metaplasia, with numerous Paneth cells, is often present and may be very widespread, usually, however, it is present in small areas only The muscularis mucosa is often thickened and irregular owing to hyperplasia and fibrosis Any lymphoid foci present are greatly enlarged and hyperplastic

(4) *Gastric atrophy* (figs 5 and 6)

The atrophy in this group is like that in advanced cases of the previous category, and very little glandular tissue is present Inflammation of the previous type, however, is absent or minimal, there being only a slight lymphocyte infiltration between the glandular remnants Intestinal metaplasia may be absent but more commonly is widespread and may affect all the surviving glands throughout the biopsy specimen Fibrous strands and areas of fibros extending from the thickened muscularis mucosa times surrounding remnants of the glands.

In the last three groups there were inevi borderline cases having an intermediate type logical appearance which caused difficulty in tion In particular, difficulty was sometimes e in distinguishing between atrophic gastritis a atrophy in sections which showed advanced at slight inflammation Such sections were cl gastric atrophy

Table I shows that the age distribution of groups is roughly comparable, there being a greater proportion of elderly patients in the c

Details of the histological findings are shown Only 26% of patients with iron deficiency an normal mucosa, compared with 71% of the

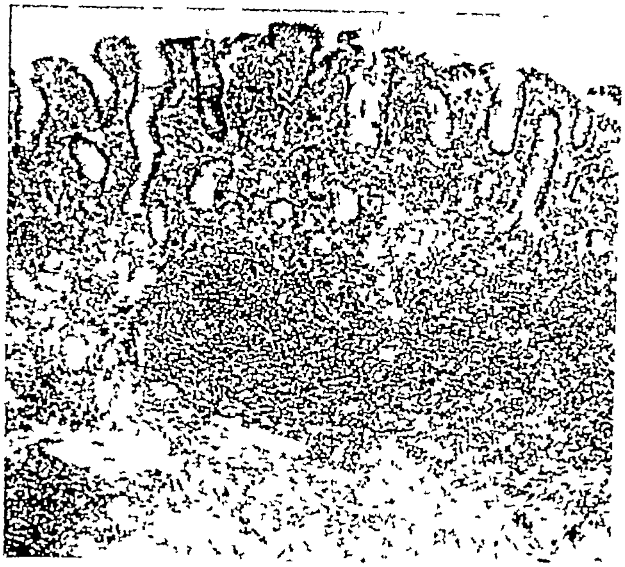


Fig 4—Atrophic gastritis in iron-deficiency anæmia extensive inflammation in all layers, severe atrophy of glands and some thickening of muscularis mucosa. (Hæmatoxylin and eosin ×90)

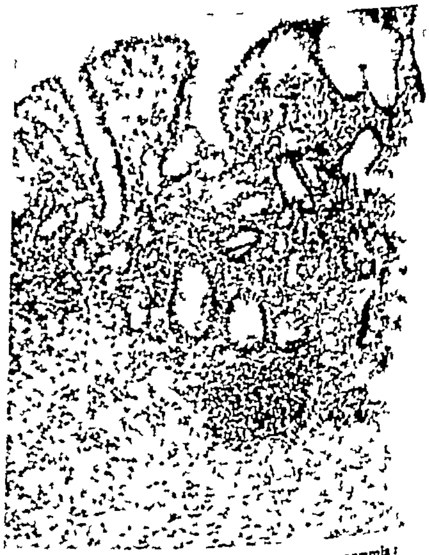


Fig 5—Gastric atrophy in iron-deficiency anæmia: of glands, with fibrous tissue growing muscularis mucosa, a small area of intestinal metapl in centre of field with a little cellular infiltration aroun toxylin and eosin ×90)

TABLE I—AGE INCIDENCE

(yr)	No of patients (%)	
	Iron-deficiency anæmia (42 cases)	Control (31 cases)
)-29	1	13
-39	31	10
)-49	36	23
)-59	12	25
)-69	2	19
) or more	9	10

ial gastritis was found in 31% of patients with ciency anæmia, and atrophic gastritis in 33%, res for the controls being 6% and 10% respec- The incidence of gastric atrophy was 10% in the ciency anæmia group and 13% in the control The degree of atrophy varied and it was seen in me form in 5 cases of iron deficiency anæmia and the controls In these cases the histological nces were identical with those considered to be ristic of pernicious anæmia

ship of Histology of Gastric Mucosa to Achlorhydria

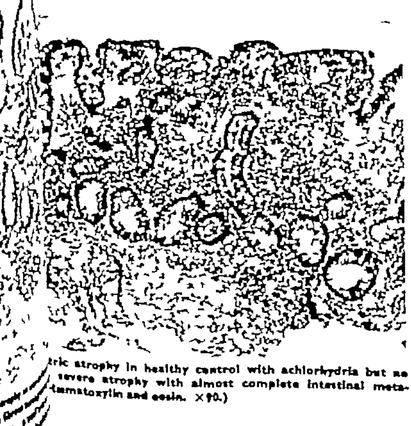
III shows that histamine-fast achlorhydria was 48% of patients with iron deficiency anæmia 3% of the controls Table IV shows the relation he mucosal histology to achlorhydria.

e patients with iron-deficiency anæmia, only 1 th achlorhydria had normal mucosa whereas 60% in whom free hydrochloric acid was present had mucosa Superficial gastritis was found in 32%

—HISTOLOGY OF GASTRIC MUCOSA IN IRON DEFICIENCY ANÆMIA AND CONTROLS

sification	Iron-deficiency anæmia (42 cases)	Controls (31 cases)
mucosa	26 %	71 %
l gastritis	31 %	6 %
gastritis	33 %	10 %
rophy	10 %	13 %

its with free hydrochloric acid and in 25% with dria atrophic gastritis was found in 14% of with free hydrochloric acid and in 55% with dria. Gastric atrophy was present in 4% of with free hydrochloric acid and in 15% with dria Thus although the mucosa was often l in the presence of free hydrochloric acid it ost invariably abnormal when histamine fast achlorhydria was present The main reason for the difference was the greatly increased incidence of atrophic gastritis in the achlorhydric group



tric atrophy in healthy control with achlorhydria but no
severe atrophy with almost complete intestinal meta-
tamatoxylin and eosin. ×90.)

Of the controls 82% of patients with free hydrochloric acid had normal mucosa, the remainder showing changes of superficial or atrophic gastritis. All four biopsy specimens from the patients with achlorhydria showed gastric atrophy

Table V summarises the biopsy findings in the patients in whom achlorhydria was absent Fully 50% of patients with iron deficiency anæmia without achlorhydria had abnormal mucosa compared with 18% of non achlorhydric controls

TABLE III—INCIDENCE OF ACHLORHYDRIA IN IRON DEFICIENCY ANÆMIA PATIENTS AND IN CONTROLS

Iron-deficiency anæmia (42 cases)		Controls (31 cases)	
Free HCl	Achlorhydria	Free HCl	Achlorhydria
52	18 %	87 %	13 %

TABLE IV—HISTOLOGY OF GASTRIC MUCOSA IN RELATION TO PRESENCE OR ABSENCE OF FREE HCL

—	Iron-deficiency anæmia		Controls	
	Free HCl	Achlor hydria	Free HCl	Achlor hydria
Normal mucosa	60 %	5 %	82 %	0
Superficial gastritis	32 %	25 %	7 %	0
Atrophic gastritis	14 %	55 %	11 %	0
Gastric atrophy	4 %	15 %	0	100 %

Thus the incidence of mucosal abnormalities was significantly higher in the iron-deficiency anæmia group than in the controls; the changes were most frequent and severe in the presence of achlorhydria but were also found in half the patients in whom free hydrochloric acid was present

TABLE V—INCIDENCE OF GASTRIC MUCOSA ABNORMALITIES IN PATIENTS WITHOUT ACHLORHYDRIA

—	No of patients without achlorhydria	Normal mucosa (%)	Abnormal mucosa (%)
Iron deficiency anæmia	22	50	50
Controls	27	82	18

Effect of Treatment

Gastric analysis and mucosal biopsy were repeated in 5 patients in whom the hæmoglobin level had been restored to normal after iron therapy 4 of these had achlorhydria, the histology showing atrophic gastritis in 2 and superficial gastritis in 2 Free hydrochloric acid reappeared in the gastric juice of both patients with superficial gastritis The fifth patient, a man aged 20 had severe iron deficiency anæmia with abundant hydrochloric acid in the gastric juice The gastric mucosa showed the appearances of superficial *gastritis*. In none of these 5 patients did the second biopsy show any improvement in the mucosal histology

Influence of Severity of Anæmia on Gastric Mucosa

No relationship was found between the degree of anæmia and mucosal changes. Normal mucosa was found in association with a hæmoglobin level as low as 2 7 g per 100 ml whereas atrophic gastritis was present when the hæmoglobin level was as high as 10 4 g per 100 ml The duration of the anæmia could not be estimated

Glossitis

The cases of iron deficiency anæmia have been analysed to determine whether any relation could be established between the changes in the gastric mucosa and the presence of glossitis 17 patients had glossitis, 4 of whom (24%) had normal mucosa, and 13 (76%) histological evidence of gastritis Of the 25 patients without glossitis 8 (32%) had normal mucosa, and 17 (68%) had gastritic changes There is no significant difference between the two groups

Discussion

It is clear from these findings that the gastric mucosa was abnormal in three quarters of the patients with iron-deficiency anæmia, and that, when histamine fast achlorhydria was present in this condition, the mucosa was abnormal in 95% The histological abnormalities were chronic superficial gastritis, atrophic gastritis, or gastric atrophy, and there was no specific picture associated with iron deficiency anæmia Similar histological appearances were present in the controls, the only difference being that the incidence was considerably lower

The close association between iron deficiency anæmia and histamine fast achlorhydria has again been demonstrated in this series, the incidence of achlorhydria being significantly higher than in the controls The greater incidence of histamine fast achlorhydria in the iron-deficiency-anæmia group is clearly not due to any age difference between this and the controls, since it has already been pointed out that a slightly greater proportion of elderly patients was found among the controls In all but 1 of our achlorhydric patients gross pathological changes were evident in the biopsy sample

The relationship between chronic gastritis and achlorhydria is already well established (Faber 1927, Doig and Wood 1952), and it seems more reasonable to attribute the achlorhydria in our patients with iron deficiency anæmia to these abnormalities in the gastric mucosa than to a depressant effect of the anæmia on the secretion of hydrochloric acid In most cases the lesion was atrophic gastritis, and in a smaller number superficial gastritis or atrophy without significant inflammatory exudate was present Of the controls all 4 patients with histamine fast achlorhydria showed histological changes of gastric atrophy Since, however, atrophic gastritis was found in 10% of the controls, it seems probable that either of these lesions may be responsible for achlorhydria in a similar group of non anæmic patients

The presence of mucosal abnormalities in the comparatively high proportion of 29% of controls is probably explained by the fact that the controls comprised not healthy young adults but patients with miscellaneous disorders, some of them debilitating This selection was intentional, since it was considered that such a series would provide more satisfactory controls to the patients with iron-deficiency anæmia than would a similar number of healthy young adults Our findings emphasise the non specificity of the lesions observed in the gastric mucosa, which are not uncommon in patients with the symptoms of chronic gastritis and in patients in poor health for other reasons In iron-deficiency anæmia, however, their incidence is especially high It is noteworthy that, although Doig and Wood (1952) describe characteristic symptoms in their patients in whom chronic gastritis was diagnosed by gastric biopsy, a similar histological picture was not associated with dyspeptic symptoms in our cases The cause of this discrepancy is not clear

It has long been a controversial question whether achlorhydria precedes the anæmia, as was maintained by Oliver and Wilkinson (1933) and by Hartfall and Witts (1933), or the anæmia precedes the achlorhydria The rôle of hydrochloric acid in connection with the absorption of iron is generally considered to be the reduction of ferric to ferrous ions, and absence of hydrochloric acid
from the gastric juice is believed to precede
pose to the development of iron-deficien
(Wintrobe 1951) On the other hand, hydro
may reappear in the gastric juice after corre
anæmia by iron (Leonard 1954)

We have also observed the reappearance
chloric acid, but we have not been able to
improvement in the histological appear
mucosa in the few cases in which a second
men was obtained after iron therapy Our ob
however, are too few to permit conclusions
One would not expect an atrophic mu
improvement other than, perhaps, regr
inflammatory reaction Superficial gastr
may regress (Doig and Wood 1952), and i
in our cases biopsy was carried out too soo
tion of the anæmia Follow up gastric bio
a large number of patients treated for i
anæmia would be highly desirable

More definite evidence of the order of
finding that superficial or atrophic gastriti
in 50% of the 22 patients with iron defic
in whom there was no achlorhydria If it is
achlorhydria results from progressive
changes in the gastric mucosa, it appe
findings that about half those patients wi
ency anæmia and without achlorhydria
changes which may progress to achlorhydr
circumstances, therefore, the anæmia woul
disappearance of free hydrochloric acid fro
juice

It is possible to assume from these data
gastric lesion to develop in iron deficienc
superficial gastritis, which may proceed
gastritis, with severe glandular atrophy F
secretion of hydrochloric acid results from
matory changes and may be apparent at
superficial gastritis Achlorhydria would th
be a result of the gastritis caused by the ir
anæmia rather than antecedent to it Gland
once developed, is permanent, and achlorhy
despite treatment of the anæmia At the st
ficial gastritis, however, restoration of
levels may lead to the return of free hydr
and, possibly, to the regression of the
changes The frequency with which gastric
been found in iron deficiency anæmia, moreo
that, at the stage of atrophic gastritis, the
reaction may regress, leaving a state of sin
mucosa which, in its most extreme form, is
that found in classical pernicious anæmia.
tion of gastric atrophy as a late result of
was held by Faber (1927) and has been re
Palmer (1954)

It seems probable that iron deficiency
direct cause of the changes in the mucosa An
explanation is that patients with superficial
gastritis, even before the secretion of hydro
has failed, are especially liable to develop
anæmia If this is so, the high incidence of
in this anæmia would then be due to its frequ
ment in these abnormalities of the gast
Alternatively, when mucosal lesions are
deficiency anæmia may be related to dimin
of hydrochloric acid and not exclusively to
We feel, however, that the facts more
hypothesis that the mucosal changes result
from the iron deficiency anæmia

No substantial difference, as regards gast
was apparent between patients whose anæ
to blood loss, and those in whom no such
detected Thus of the 15 cases with a
menorrhagia 9 (60%) had an abnormal
and 6 (40%) had histamine fast achlorhydri

ains to be considered whether the tiny fragments ic mucosa obtained by biopsy are representative mucosa of the body of the stomach as a whole the possibility of patchy changes cannot be on the numerous occasions on which we have l two biopsy specimens from widely separated histological appearances have been essentially Furthermore there is a consistently close correla tween the histological evidence of atrophic or gastric atrophy in the biopsy specimen and sence of histamine fast achlorhydria Lastly, h (1954) has shown a similar correlation with the of pepsinogen

Summary

o biopsy specimens were obtained from 42 with iron-deficiency anæmia and from 31

astric mucosa was histologically abnormal in 74% nts with iron deficiency anæmia and in 29% of

esions found in iron deficiency anæmia were not and could be conveniently classified as superficial , atrophic gastritis, and gastric atrophy These ilities occurred respectively in 31% 33% and the group with iron-deficiency anæmia and in % and 13% respectively in the controls.

astric mucosa was abnormal in all but 1 patient lorhydria

of patients with iron-deficiency anæmia but with orhydria had abnormal mucosa, compared with controls. This finding suggests that achlorhydria after iron deficiency anæmia has become ed

h to thank Dr J B Rennie for help in the prepara is paper and for granting us facilities to study patients rds; and Mr P S Waldie medical photographer General Hospital for the photomicrographs.

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FFECT OF REPEATED TUBERCULIN STING ON POST-VACCINATION ALLERGY

A PRELIMINARY NOTE

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revious paper we have reported that the intensity induced tuberculin sensitivity remains constant east five years after vaccination with Danish (W H O Tuberculosis Research Office 1955) her workers, however have reported that post ion allergy does not persist but wanes and even ppear in several years. In considering the possible or such discrepancies the question was raised systematic periodic post vaccination tuberculin as practised by us could be a relevant factor the material available for examination is limited dings are sufficiently suggestive to warrant ion

TABLE I—MEAN SIZE OF INDURATION OF REACTIONS TO THE INTRADERMAL 10 T U TEST THREE AND FOUR YEARS AFTER VACCINATION AMONG CHILDREN IN SPECIAL STUDIES

—	First study (three years after vaccination)		Second study (four years after vaccination)	
	Tested for first time after vaccination	Tested annually after vaccination	Tested for first time after vaccination	Tested annually after vaccination
Number	4	116	6	207
Mean (mm)	7 8	20 9	6 5	16 7

To investigate the possible effect of repeated tuberculin testing on the intensity and persistence of post vaccination tuberculin sensitivity, we searched among the children in our special B C G studies for those who were tested for the first time several years after vaccination The allergy in these children was to be compared with the allergy in those who had been tested at regular yearly intervals after vaccination For this purpose we selected two studies in which large numbers of school children had been vaccinated with Danish standard strength vaccine and tested three and four years after vaccination Unfortunately for the present purpose the coverage at the annual retestings had been so complete that only 4 children in the first study were tested for the first time three years after vaccination and 6 children in the second study four years after vaccination Most of these 10 children had previously refused to be tested

In table I the allergy at the three year or four year post vaccination examination is compared in the groups with and without interim tuberculin tests.

All the children were tested intradermally with 10 T U of the P P D product RT XIX XX XXI 0·0002 mg per 0 1 ml. The 4 children in the first study who were tested for the first time after vaccination at the three year examination had reactions which on the average were 13 mm smaller than those in children retested annually for three years (The reactions in those 4 children measured 4 6 7 and 14 mm in diameter) In the second study the 6 children not previously tested had reactions which on the average were 10 mm smaller than the rest of the group (and their reactions were 4 5 5 6 9 and 10 mm. in diameter) Despite the small numbers the results are very suggestive because in our material, reactions of less than 10 mm to 10 T U are extremely rare after vaccination with standard strength vaccine

These findings gave rise to a similar comparison of the post vaccination allergy of children vaccinated in the Danish mass campaign and retested afterwards in the schools along with our study groups

Accordingly mass campaign children were selected from two districts—district A, where the vaccinations had been given three years previously and district B where the vaccinations had been given four years previously Within each district the children were

TABLE II—MEAN SIZE OF INDURATION OF REACTIONS TO THE INTRADERMAL 10 T U TEST THREE AND FOUR YEARS AFTER VACCINATION AMONG CHILDREN VACCINATED IN MASS CAMPAIGN IN TWO DISTRICTS

—	District A (three years after vaccination)		District B (four years after vaccination)	
	Tested for first time after vaccination	Tested annually after vaccination	Tested for first time after vaccination	Tested annually after vaccination
Number	114	54	138	102
Mean (mm.)	12 0	18 6	9·5	17 7

separated into two groups (1) those who had been tuberculin tested annually since vaccination, and (2) those who had their first post vaccination tuberculin test three or four years after vaccination The results are given in table II, which shows the number of children in each subgroup and the average size of their reactions to the intradermal 10 T U tuberculin test Children tested for the first time three years after vaccination had reactions averaging 12 0 mm of induration, those who had been tested during the three year interval had, on the average, reactions measuring 18 6 mm —a difference of 6 6 mm between the two groups Corresponding results for the groups tested four years after vaccination showed a larger difference 8 2 mm

The material is deficient in several respects it is not extensive and, more important, it is not the result of a systematic trial However, the consistent trend in the results would seem to indicate that repeated tuberculin testing may influence the intensity and persistence of post-vaccination tuberculin allergy What is needed now, to rule out the possibility of some kind of selection or bias, is a controlled study in which children in the groups to be compared are allocated at random

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ON EXPELLING TAPEWORMS WITH MEPACRINE

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AMONG the most nauseous of the galenicals surviving in the pharmacopœia is extract of male fern, traditionally used for dislodging tapeworms Little has been written in its favour in recent years, and probably few persons with experience of its use have reason to be satisfied with its efficiency, though Asher (1953) cured 12 out of 13 patients at his first attempt—an exceptional record of success, which does him much credit In my hands male fern has been thoroughly unsatisfactory, and since 1946 in only 12 of 38 cases of infection with *Tænia saginata* was the patient cured by a single course of treatment, whether the male fern was given in capsules, as a draught, or by duodenal tube, in each case after forty eight hours' starvation and purging

In 1952, being weary of the frequent failures attending the use of male fern, I made trial of mepacrine, which, as a remedy for tapeworms, has since 1946 been the

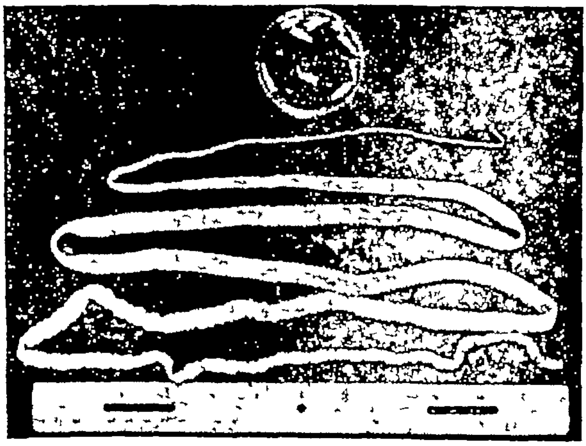

Fig 1—A highly contracted *T saginata* photographed half an hour after its evacuation Relaxation of the hinder segments has begun

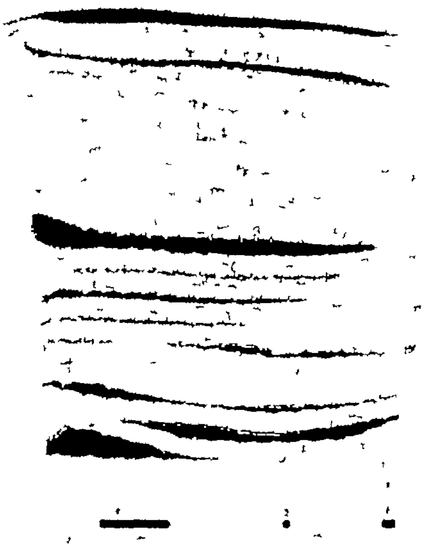

Fig 2—The same worm as in fig 1 photographed Relaxation is complete.

subject of favourable reports in foreign jour
ingly, three women infected with *T sagin*
days' abstinence from solid food, were give
of mepacrine (each of 0 1 g) by mouth,
saline purge In the first patient the tr
successful, but the other two vomited the m
continued to vomit for a day, for which
constrained to revert to male fern, which,
the cause of vomiting, seemed to be less
this respect than mepacrine

Six consecutive failures with male fern
ever, were so depressing that at the begin
I decided to use mepacrine again, but
solution through a duodenal tube, with the
pose of *avoiding vomiting* from gastric irri
delivering a sudden large concentration of
the neighbourhood of the attachment of th
recommended by Hornbostel and Dörken (
Details of the treatment are as follows

The patient is kept at rest and given liquids
On each day a saline aperient is given, and on th
enema On the 2nd evening 'Sodium amytal' gr
a Ryle's tube is passed By the morning of the
end of the tube has usually passed well beyon
(as can be shown by radiography) Mepacrine 1 g
100 ml of warm water is then *gently* squirted d
with a syringe 15–30 minutes later 1½–2 oz. o
sulphate in 100 ml of warm water is given in th
The tube is then withdrawn, and the patient is
drink Purging usually begins within the hour,
are collected and examined. The parasite come
stained with mepacrine, tightly contracted, and
single piece (fig 1) Relaxation of the worm
dimensions begins at the *hinder* end and is comp
few hours (fig 2)

Results

Fifteen patients (six men, nine women)
treated by this method during the past 18 m
were infected with *T saginata* The worms w
in all cases save one, a butcher, who harbour
twelve patients (four men, eight women) th
worm was passed In two others (both men)
failure the worms were expelled at the secon
In the remaining patient (a woman) there w
in passing a sufficient length of the Ryle's
vomiting caused the treatment to fail

Comment

These results are much better than tho
obtained by any other method, and mean th

w be given a reasonable assurance that he can be his worm at the expense of 3 days moderate dis rt in hospital—a price which most are willing to pay ain points call for further comment. The published s show that the best results are obtained when the t is carefully prepared—preliminary starvation s success Adequate purging is essential after the rine has been given to sweep the worm from the ne before it has recovered from the effects of pacrine One of the initial failures was due to mis kindness in the matter of Epsom salts. The remain tial failure was possibly due to the immaturity of rm, of which a considerable length had been passed treatment There were no untoward effects other occasional faintness during the operation of the

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UIRED RENAL DISEASE SIMULATING DIABETES INSIPIDUS

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term "water losing nephritis" was applied by k and Oleesky (1954) to chronic renal disease in damage to the distal tubules leads to constant henuria.* The clinical picture is dominated by and polyuria, and superficially simulates diabetes us Of their two patients one had myelomatosis necropsy the distal convoluted and collecting were found to be atrophic: the other had pro obstruction with hydronephrosis, but after pro omy recovered from his diabetes insipidus like

ilar clinical picture with fixed hyposthenuria was ed by Dyggve and Samsoe-Jensen (1947) in a 12 year-old boy with thirst and polyuria from about the age of 2 years He had low urea and inulin clearances and a fixed urinary specific gravity of 1 004 Referring to this patient, Homer Smith (1951) comments "From the data one may suspect severe injury of the distal tubules with possibly some impairment of proximal reabsorption."

A fourth case (Darmady et al 1955) is that of a woman, aged 31, with a short history of polyuria and polydipsia The persistent hypotonicity of her urine was hardly altered by rate of solute output or by 'Pitressin' given during a 'rapid infusion of 1 8% saline The blood urea level was not raised Balance studies showed an excessive urinary loss of water sodium and chloride At necropsy renal polyarteritis nodosa with widespread infarction was found, with damage both to proximal and distal tubules in the non infarcted areas

We report here two further cases of renal disease in which the clinical picture simulated diabetes insipidus.

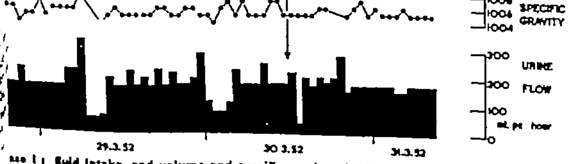
Case-reports

FIRST CASE

A man, aged 65 was admitted to Dundee Royal Infirmary on March 26, 1952 He had had difficulty in micturition since 1947 and during the last month had had excessive thirst and polyuria, passing large quantities of urine almost hourly by day and night Moderate prostatic enlargement was the only noteworthy clinical finding A 24-hour collection of urine measured 3 6 litres, the corresponding fluid intake being 3 4 litres The urine contained a 'trace of protein, and no sugar The blood urea level was raised (86 mg per 100 ml.) the plasma acid phosphatase level was 3 King Armstrong units per 100 ml. and plasma chloride level 98 m.eq per litre The blood sugar levels were normal. Intravenous pyelography on March 31 1952 indicated very poor renal function, no dye appearing until 75 minutes after injection and then only outlining a left-sided hydronephrosis and hydro ureter The pituitary fossa was radiologically normal and the visual fields were unrestricted The precipitation test for syphilis was negative

Investigation

During a study period of 72 hours urine was collected hourly the patient being allowed to drink as much as he wished until the last 12 hours, when all fluids were withheld. Fig 1 shows the fluid intake urine volume, and urinary specific gravity (hydrometer) During most of the period the urinary volume was between 150 and 250 ml. per hour The urine-chloride varied between 2 and 4 g per litre and the specificity gravity of the urine between 1·004 and 1 007 On the 3rd day neither 20 units of intramuscular pitressin (Parke Davis) nor the subsequent 12 hour period of fluid deprivation caused any significant change in the urine-chloride level or in the specific gravity although there was a reduced rate of urine flow in the 2nd hour after pitressin had been given



ure 1 : fluid intake and volume and specific gravity of urine during 72-hr period of study All samples of urine contained 2–4 g of chloride per litre (Fantus's method)

Effects of Cystostomy

Suprapubic cystostomy was performed on May 10 1952 There was immediate and progressive reduction of thirst and polyuria, and the patient was soon allowed to go home When he was readmitted 2 months later on July 9 he was quite free from thirst and polyuria. The specific gravity of random samples of his urine was 1 002–1·014, the highest urine urea level 1800 mg per 100 ml and the blood urea level normal (31 mg per 100 ml) Intravenous pyelography now showed normally functioning kidneys with neither hydronephrosis nor hydro-ureter

Prostatectomy was attempted on July 19 1952 by the suprapubic route, but the prostate was hard and fixed and biopsy showed adenocarcinoma. Stilbœstrol therapy was begun and the patient was discharged home with a permanent

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nt hyposthenuria means that on all occasions the ne is of lower osmolarity than the plasma (which is mally over 300 milli-osmoles per litre) and the urinary cific gravity is fixed at a level below 1 010

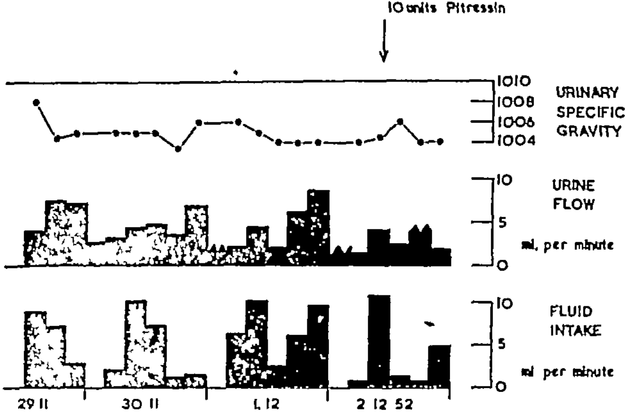

Fig 2—Case 2 fluid intake, and volume and specific gravity of urine During three 4-hr periods of study patient was incontinent and volume of urine could not be measured

suprapubic cystostomy A year later he was in good general health, still free from thirst and polyuria, and able to enjoy a fairly happy retirement with daily outdoor exercise

SECOND CASE

A girl, aged 14, was admitted to Dundee Royal Infirmary on Nov 19, 1952, for investigation of thirst, polyuria, and bedwetting dating from early childhood She had had dimness of vision for 6 weeks, frequent headaches for 3 years, and major epileptic fits from the age of 2 years, though these had been very infrequent during the past 5 years It was impossible, however, to correlate the frequency of fits with the state of hydration The fact that none of her 11 siblings or her parents had thirst or polyuria seemed to exclude the congenital and usually familial form of renal diabetes insipidus

She was rather thin, weighed 98 lb, and was cheerful and active She had severe hypertension (blood pressure 240/170 mm Hg), hypertensive retinopathy with papillœdema, and cardiac enlargement There was no glucosuria, she had a proteinuria of about 0 3 g per litre, and the urinary specific gravity ranged from 1 000 to 1 008 (ward hydrometer)

Investigations

Ward measurements of daily urinary volume varied between 1230 and 6500 ml, the average being about 3000 ml Accurate measurement was difficult because of nocturnal bedwetting An attempt to demonstrate the kidneys by intravenous pyelography failed The blood urea level was 105 mg per 100 ml on Nov 22, 1952 Radiographs of pituitary fossa, chest, and abdomen were normal During a the specific gravity of the urine ranged from 1·0 and the urinary urea from 150 to 850 mg per 100 was a normochromic normocytic anæmia, Hb 1 and white cell count 6500 per c.mm. Electro showed the pattern of left ventricular hyper Dec 2, 1952, the plasma sodium level was 118 m.eq the plasma chloride 97 m eq per litre, the plasma 4 3 m eq per litre, and the blood urea 115 mg The Wassermann test was negative

During a 3 day period (fig 2) the daily fluid in 7412, 6220, and 6986 ml and the correspondin volumes 6674, 5112 +, and 5330 + ml, the last tions being incomplete because of nocturnal The specific gravities of all the specimens of estimated with a sensitive urinometer,† with freq metric check, and correction for temperature, th proteinuria, which stayed in the region of 0·3 g was insignificant The urinary specific gravity 1 008, urinary sodium 17–34 m.eq per litre, potassium 10 0–23 5 m eq per litre, urinary chlori m eq per litre, and urinary urea 300–700 mg The urinary osmolarity was estimated approxima the chemical estimations by calculating urea ammonium) + 2 (sodium and potassium) express osmoles, and was constantly hyposthenuric in a 110 to 243 milli osmoles per litre

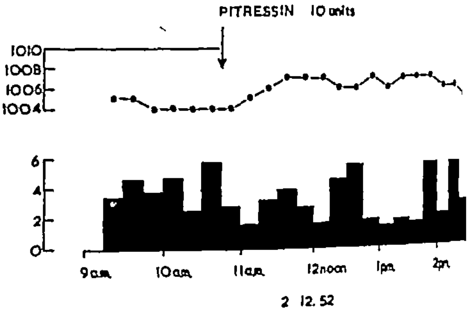

Fig 3—Case 2 response of volume and specific intramuscular pitressin 10 units.

For 6 hours on the 3rd day of the study peri urine was collected at 15 minute intervals by ca the end of 1½ hours 10 units of pitressin was inje muscularly This raised the urinary specific gra 1 004 to 1 007 and brought the urine close to with the plasma, estimated as described above chemical composition. sequent period of fluid tion could not be beyond 6 hours, because thirst During this specific gravity of the not rise above 1 00 estimated urinary osmolar 150 milli osmoles per litre

Progress

The patient's condition unchanged until Dec when she had an epilep during the next 6 weeks, steadily downhill, her level rising to a terminal 534 mg per 100 ml. week of life she had intake and became Nevertheless the spec of her urine remained until near the end, th

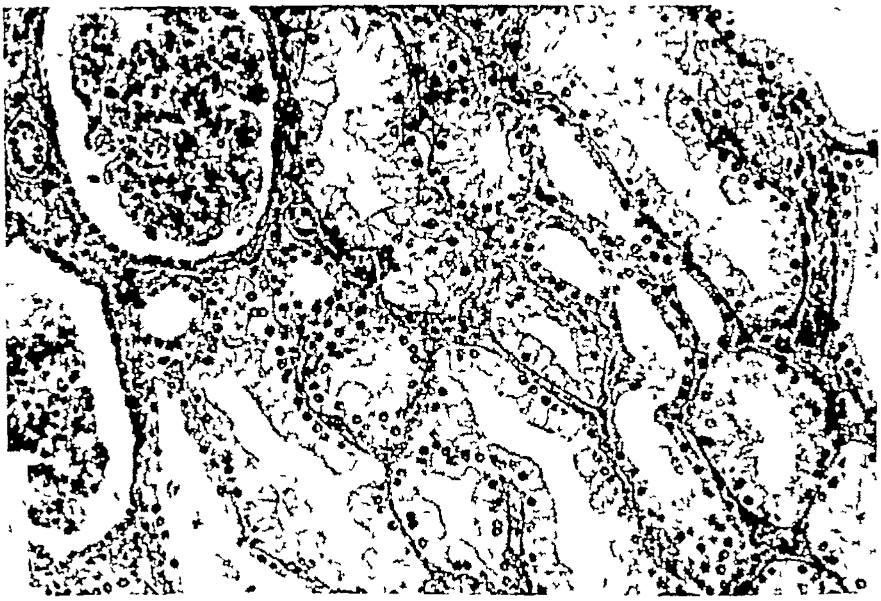

Fig 4—Case 2 non fibrotic area of renal cortex showing fine hydropic vacuolation of proximal tubules which resembles "sucrose nephrosis" No infusion had been given to patient. (Van Gieson × 198.)

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† Made by Messrs. T (Sykes Hydrometer 25 Bellevue Terr N W 4 (wholesal This model is grad 1 000 to 1·030 and more accurate and than the usual urinometer

on Jan 31 1953 and to 1 011 in the last few hours of Feb 2. The calculated osmolarities corresponding to st two specific gravities were 105 and 285 milli osmoles e Fluids were not forced nor infusions given. There rminal signs of bronchopneumonia and pericarditis.

sy

opsy three hours after death showed acute tuberculous opneumonia in the right upper lobe and generalised ic bronchopneumonia. The heart was enlarged (410 g) eft ventricular hypertrophy and pericarditis. The s were small (45 g and 84 g) with adherent capsules g irregular cortical scarring and narrowing There was ious infection of the urinary tract and no gross hydro sis or nephrocalcinosis. The pituitary gland hypo us, adrenal glands, and parathyroid glands appeared

gy

smaller kidney is merely a shell of fibrous tissue In tex of the larger kidney areas with prominent widely tubules and variable amounts of interstitial fibrosis erspersed with relatively dense scar tissue containing trically obliterated glomeruli a few atrophic tubules, terstitial lymphocytic infiltrate The glomeruli show s varying from early pericapsular fibrosis to concentric ition, without crescent formation only a few are rophic *The tubule diameter varies enormously up to* 0·5 mm. In large numbers of the dilated tubules, proximal but also possibly sometimes distal the lining ium is prominent the cells are tall pale and very acuolated or hydropic (fig 4) and this hydropic change at times also in the cells lining Bowman s capsule In ıbules the cells are either uniformly strongly eosinophil tain obvious hyaline droplets" of eosinophil (and phloxinophil) material. However some dilated have flattened or cuboidal dark-staining epithelium every tubule contains protein In the medulla nal tubules contain polymorphs and more contain r debris and red cells no calcification is seen and the um shows no distinctive abnormality The renal es show medial hypertrophy and in one section d changes are common

gnificant changes were detected in sections of hypo us pituitary gland, myocardium liver spleen, or a.

this case advanced chronic pyelonephritis and ension were diagnosed The changes in the cells convoluted tubules chiefly proximal, closely led those seen in the kidney in the condition ed by Allen (1952) as osmotic nephrosis in this on usually associated with infusion of hypertonic ns of sugars, there is presumed to be imbibition l by the tubular cells Hydropic changes occur tubule cells immersed in hypotonic solutions in (Opie 1947) and Bracey (1950) suggests over ion in vivo as a possible cause In our patient er fluids were never forced nor was any sugar ntravenously and no explanation of these tubular s can be offered The level of potassium in her dial fluid 3 hours after death was only 1 5 m.eq re but the tubule changes described as possibly potassium deficiency are very gross vacuolation (1952) rather than the very fine hydropic changes t here

the clinically similar cases only two came to sy : one was a myeloma (case 2 of Roussak and y 1954) and the other polyarteritis nodosa ady et al 1955) lesions were found on micro ion in the distal and collecting tubules, but only latter case was damage to proximal tubules ed

Discussion

oth patients severe thirst and polyuria suggested s insipidus However failure to show the anti c and urine-concentrating effect of pitressin ed abnormal renal function and suggested that the disease which was clinically obvious in both cases e explanation of the polyuria The low upper of the specific gravity suggested fairly constant hyposthenuria, but absolute proof of an obligatory constant hyposthenuria in these uræmic patients is lacking because our investigations were incomplete We were unable to estimate the ranges of urinary osmolarity and urine/plasma ratios for osmolarity under sufficiently varied conditions such as loading or restriction of water, nitrogen or electrolytes

Our first patient s illness was very similar to that of Roussak and Oleesky's second patient in that both had partial obstruction to urine flow with back pressure leading to bilateral hydronephrosis, azotæmia, and hyposthenuria surgical relief of the obstruction largely restored function including the ability to vary the concentration of the urine Although cases such as this are probably rare in general medical and surgical wards the fact that in two out of the six reported cases the patient had prostatic obstruction suggests that the syndrome might well be sought in urological clinics These cases also show that the tubular dysfunction presumed to underly this form of diabetes may be reversible

Our second patient had severe chronic atrophic pyelonephritis In addition the histological examination revealed a remarkable abnormality in many of the tubular cells this resembles the change described in ' sucrose nephrosis, but whether this is a significant part of the morbid anatomy will not be known till further cases have been examined Although antidiuretic hormone is generally believed to act on the distal tubule in none of the three cases examined post mortem was it possible to define clearly and specifically the part of the tubular system at fault

Summary

Two patients are described in whom diabetes insipidus was simulated by chronic renal failure, with severe thirst, polyuria and constant hyposthenuria

The fatal case had chronic atrophic pyelonephritis with hydropic changes in the renal tubules the other patient had prostatic obstruction and hydronephrosis but recovered after relief of urinary obstruction

We are grateful to Mr F R Brown and Dr J M Morgan for permission to investigate these cases to Dr J Barrie Brown for help in following up case 1 and to Prof. A C Londrum and Prof I G W Hill for help with our report

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PALLIATIVE INTUBATION IN CARCINOMA OF ŒSOPHAGUS *

ALEXANDER COYAS
M.B Athens
E.N.T SENIOR HOUSE-OFFICER, SALISBURY GROUP OF HOSPITALS WILTS

THE *feeding of* patients who have stenosing neoplasms of the œsophagus is very difficult particularly where poor morale aggravates poor health.

Metal tubes are not always well tolerated and their insertion causes trauma We have therefore used a plastic tube, which has proved more satisfactory

Methods

The Apparatus

The apparatus consists of a plastic tube, a bougie, and an introducer (figs 1 and 2)

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* Abridged from a paper read at a congress of the International Broncho-Œsophagological Society at Lisbon in October 1954 in collaboration with Dr J TRIBOULET PITON (Paris)

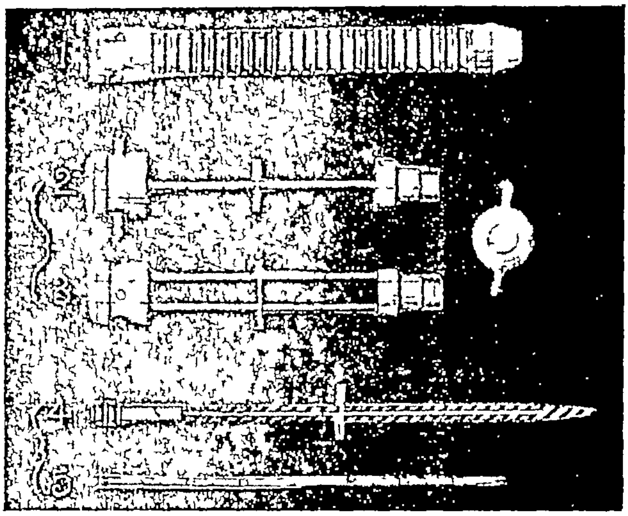

Fig 1—The apparatus 1, tube, showing interior construction of upper part, 2 and 3, introducer (plan, lateral, and section), 4, bougie, and 5, metal rod

The tube is made of polyvinyl chloride containing about 35% of pliable material The length is 13 cm, the internal diameter 10 mm, and the external diameter 14 mm, At each end the wall is thickened for a length of 2 cm to form a collar, cylindrical above and conical below, which projects 1 5 mm so as to diminish the risk of slipping up or down The wall of this collar contains a small metal ring, so that the tube can be localised by radiography The metal ring in the upper end bears a thread, to which the introducer is screwed To keep the tube immobile in the tumour once it is in position, its external surface is moulded into rings (fig 1) The plastic material, being thermolabile at body temperature, is remoulded to the shape of the tumour, which holds it tightly within the stenosis

The bougie (fig 1) is both for exploring and for dilating It is 80 cm long and made of gum elastic, and its diameter corresponds to the internal diameter of the tube, with just enough play to avoid jamming Its surface is graduated in 5 cm Inside is a fine metal rod, 70 cm long, leaving the distal end free and flexible This central rod is essential to the rigidity necessary to explore the stenosis

The introducer (fig 1) is 70 cm long and made up of two parallel metal bars joined and fixed at each end by a ring The distal ring bears a screw thread corresponding to that on the upper end of the tube, allowing one to be attached to the other

Technique

The insertion of the tube involves a dangerous manipulation, and the operator must exercise extreme care and gentleness He must learn to recognise and admit failure, and must never force a passage

We insert the tube under general anæsthesia The poor condition of these patients necessitates careful premedication We usually give pentobarbitone sodium 60–120 mg per rectum the night before, and pentobarbitone, atropine, and promethazine hydrochloride an hour before Anæsthesia induced with a 2 5% solution of thiopentone and suxamethonium chloride produces complete muscle relaxation, which greatly helps the passage of the œsophagoscope through the cricopharyngeal sphincter

There are five steps in intubation (1) œsophagoscopy, (2) exploration of the stenosis, (3) introduction of the tube, (4) withdrawal of the bougie, and (5) verification

(1) *Œsophagoscopy* is done by the usual technique, but the particularly wide diameter of the œsophagoscope (Souttar's or Resano's) which we use necessitates accurate manipulation to avoid damaging the upper teeth, the posterior wall of the hypopharynx, and the crico-

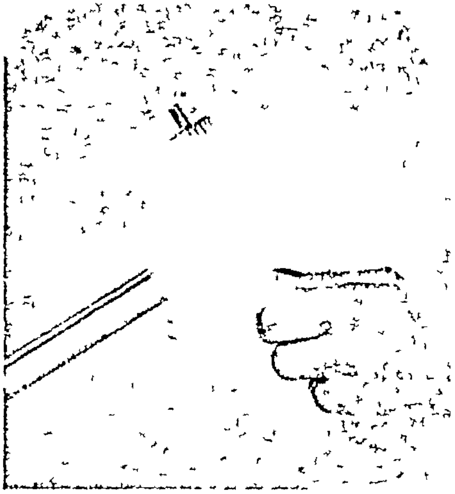

Fig 2—Apparatus assembled ready for intubati

pharyngeal sphincter The œsophagoscope is as far as the upper level of the tumour

(2) *Exploration of the stenosis* is done with th which must be well lubricated with liquid prevent friction One must search carefull opening of the remaining lumen, often masked plastic outgrowths The bougie is introduced continuous pressure to overcome resistance The graduations on the bougie allow one to position at any time Sometimes the boug progress Another passage must then be sough if the lumen is very narrow, one should proceed This exploration is most important if well done, tates intubation, but if badly done it leads to

(3) *Introduction of tube*—After careful lubr the screw thread, the introducer is attached. is then threaded over the bougie, which acts as and directs the tube to the upper level of the Firm and continuous pressure is applied until th collar of the tube is in contact with the lesio again the graduations on the bougie help one the position If the resistance appears too great, introduction should not be risked

(4) *Withdrawal of the bougie* is done after the has been unscrewed from the tube To avoid placement, the tube must be kept in position bougie is being withdrawn

(5) *Verification*—Satisfactory positioning of is verified, and gentle aspiration will establish there is any obstruction

Postoperative Management

Antibiotics are given for four or five days. is given for forty eight hours, and then normal gradually introduced The patient should be to chew all his food carefully and to drink wate meals Sedatives are given for dorsal or ret pain or for severe fits of coughing which displace the tube

On the day following intubation chest radiogr a barium swallow must be done to confirm th and the patency of the tube

Results

I started trials with this tube in February the Broussais Hospital, Paris, in the clinic of de Gaudard d'Allaines, under the guidance of Professor Lortat Jacob I was enabled to patients affected by inoperable neoplastic sten œsophagus

We failed in 4 cases in 3 the stenosis was and in 1 œsophagoscopy was impossible beca aortic aneurysm tion proved possible in 12 patients aged 60–65 46 and 72) The average length of their survival g 1 patient who died on the fourteenth day) months 3 patients were still living after three lf months.

haps were evident during operation, but secon foration and œsophago tracheal fistula were d by radiography on the second postoperative e patient aged 72 In 2 cases the tube slipped passed per rectum Obstruction occurred in 2 ie patient swallowed a piece of meat which was and in another the tumour grew into the lumen 20

Comments

lications contra indications, and possible com are the same as for intubation with a metal

vantages of this method of intubation are as

tube is malleable on warming and moulds itself he tumour and, if it slips into the stomach passes e intestine

tube weighs less than a metal tube

tube has a conical extremity which makes introduc and lessens the risk of trauma.

bougie which both dilates and explores is

introducer being incorporated with the tube makes of the latter accurate

ty to appreciate the benefit to morale afforded alliative treatment to patients otherwise con o a gastrostomy—an operation which besides considerable risk causes more trauma

JAL CAUSE OF RAPID DEATH

A CASE REPORT

W D Foster

B.A M.B Camb

GISTRAR IN PATHOLOGY PORTSMOUTH AND ISLE OF A PATHOLOGICAL SERVICE CENTRAL LABORATORY PORTSMOUTH

f sudden death in which necropsy reveals two her of which could have been fatal seem to be a Reports of single cases by Morris (1950) and h (1951) in the correspondence columns of this id not evoke similar reports from any other it Before this Wenger (1943) had reported one pson (1947) in his review of 6267 cases of sudden s not quote any with a dual cause.

Case report

nurse aged 61 and in good health, suddenly col e was examined within 10 minutes and was found ked and vomiting, with a rapid forceful pulse. t hemiplegia and deviation of head and eyes to the thin 2 hours of the onset he was dead without y significant change in his clinical condition except deterioration

y was that of a rather obese man with no external y

Cavity —There was a large cerebral hæmorrhage in of the internal capsule on the right The blood had nto the cerebral ventricles and out into the sub pace on the inferior aspect of the cerebellum The teries appeared to be normal. There were no berry of the cerebral arteries and almost no atheroma.

—There was a dissecting aneurysm of the aorta n a split in the intima of the arch The blood had proximally to just above the aortic valve and nost to the diaphragm. The dissection had also for about 1 cm up the right common carotid artery nominate artery The aorta had ruptured some he mediastinum filling the space with blood and bursting through into the left pleural cavity There was much hypertrophy of the myocardium of the left ventricle but the heart was otherwise normal. The coronary arteries were unusually free from atheroma

The left lung was somewhat compressed by the blood in the pleural cavity and was congested and œdematous. This contrasted with the right lung which, apart from slight congestion, was normal

Abdomen —The abdominal organs were normal

Histology

The aorta showed moderate atheroma and some degenerative changes in the media consisting in patchy hyalinisation and streaking with blue-staining material (hæmatoxylin and eosin) the so-called mucoid change No cystic spaces were present There was only slight atheroma of the cerebral arteries The kidneys showed arteriosclerotic change

Discussion

The table shows the main features of the previously reported cases and the present one.

—	Age	Sex	Lesion 1	Lesion 2
Morris	63	F	Left cerebral hæmorrhage	Hæmopericardium due to rupture of aorta just above the aortic valve
Mackintosh	32	F	Left cerebral hæmorrhage	Rupture of the wall of the right ventricle with hæmopericardium
Wenger	70	F	Right cerebral hæmorrhage	Rupture of the aorta with hæmopericardium
Foster	61	M	Right cerebral hæmorrhage	Dissecting aneurysm of the aorta with rupture into the mediastinum

In the present case the duration of the terminal illness was two hours In the other cases the precise duration was not known but the patients had been in good health 4–5 hours previously The possible natural causes of death within this short period are not numerous and indeed to cerebral hæmorrhage and rupture of the heart or great vessel probably only coronary occlusion, sub arachnoid hæmorrhage, pulmonary embolus and cerebral embolus could be added Although four cases with dual lesions is a small number from which to draw conclusions it is perhaps significant that all have shown two hæmorrhages This suggests that the ætiological factors are either a weakness of blood vessels or heart wall, or an excessive pressure within them, or both Mackintosh's case hardly supports the possibility that weakness of the wall is the primary factor, for he reports that the ruptured right ventricle was otherwise healthy It is a little difficult to accept this in the absence of trauma, the most likely precipitating lesion being a miliary infarction

With regard to which lesion occurs first in Wenger's case it was the cerebral hæmorrhage; in the other two (which were in persons found dead) it was unknown In the present case the patient was examined almost immediately and found to have unequivocal signs of a cerebral hæmorrhage The rupture of the aorta cannot have occurred before the cerebral hæmorrhage, and must therefore have occurred at the same moment or later If the two ruptures were *simultaneous*, what could have caused them?

It is perhaps more likely that in all the cases the cerebral hæmorrhage occurred first and that the consequent rise in the intracranial pressure led to a reflex rise of the blood pressure which resulted in rupture at another point in the circulatory system where there was also structural weakness—in the present case mucoid degeneration in the aortic wall

I am indebted to Dr J L. Pinniger for criticism of the manuscript.

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New Inventions

A LARYNGOSCOPE FOR BRONCHOGRAPHY

This laryngoscope is an adaptation of an instrument developed by Dr C Gianturco, of the Carle Hospital Clinic, Urbana, Illinois, U S A , to facilitate passing a catheter when using the oral-intubation method of bronchography * The working part of this device has been adapted in this country as a blade to fit the standard Macintosh laryngoscope handle

The instrument consists essentially of an L-section blade whose lower face is a flat tongue-depressor The upright face is curved at the free edge, and a groove along the curve carries and directs a no 6 Jaques rubber catheter The mirror is fixed to the upright face and is illuminated by a bulb and carrier placed in the angle of the blade The whole blade is mounted and hinged on the handle containing the batteries The mirror is adjusted so that when the tip of the catheter projects one inch from the distal end of the groove it is seen at the centre of the mirror

Adequate anæsthesia has been obtained with a lozenge containing amethocaine 100 mg sucked for ten minutes, and by anæsthetisation of the pyriform fossæ and epiglottis with 2 % amethocaine 1 5–2 ml If necessary, a further 1 5 ml of amethocaine can be given through the catheter immediately after it has been passed

The instrument is best passed with the patient sitting upright facing directly forwards The laryngoscope is introduced by sliding it over the dorsum of the tongue in the midline while depressing the handle The laryngeal orifice is usually seen in the mirror to the right tip of the epiglottis The catheter, already threaded along the groove of the instrument, is gently introduced until its tip passes over the epiglottis , it then usually enters the laryngeal orifice The catheter should be advanced 3 inches, and the buccal end should be strapped to the side of the face after removal of the laryngoscope The patient should be asked to phonate or to cough while gently grasping the catheter between his lips, and the change in voice or the blowing of air through proves its continued presence in the larynx

It is essential that a fairly new and stiff cath be used because, after frequent boiling becomes too soft and is inclined to curl pharynx

In young adolescents difficulty is some enced in seeing the laryngeal orifice, owing angle between the laryngeal orifice and the tongue Elevation of the handle of the producing forward displacement of the tongue, will bring the laryngeal orifice into the correct position for introduc catheter

This technique is quicker and pleasant patients than are others in common use, occasions bronchograms have been easily in patients who had previously not to methods

I thank the medical staff of Yardley Gr Birmingham, for their coöperation and advice instrument I am most grateful to Messrs and Messrs Longworth, who provided the clinical trial, and have undertaken subsequent The instrument can be obtained from the Longw Instrument Co , Ltd , Thames Street, Abingdo Berks

BARBARA J S
London W 8 M B Lond

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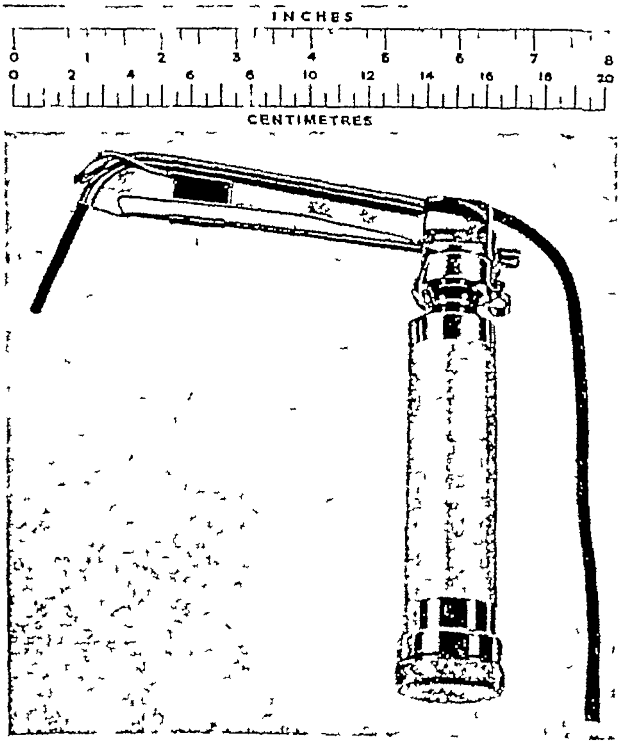
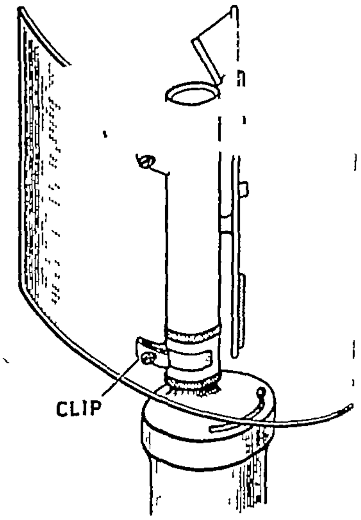
* Dr Gianturco demonstrated the original device at the annual meeting of the Radiological Society of North America in December, 1954



A BREATH SHIELD FOR OPHTHALMO

The advantages of shielding the breath moscopy are obvious , but condensation of on the glass must be avoided, and some p to wearing a mask at consultations.

Using the breath shield described below, patient's and the examiner's breath are from the instrument I made it from a sheet of 6 × 3 × ¹/₈ in curved to a diameter of



is achieved by softening the sheet of persp and then moulding it over a 7 in biscu size-1 Terry clips, with the tips cut off and at the base, are then bolted to the midline of ¹/₄ in and ¹/₂ in from the edge, with screws and bolts The shield is now ready clipped on to the head of a *Lister Morton* scope as shown in the figure

For those who use the ophthalmoscope the perspex sheet will have to be larger 9 in square, with one side cut down to 3 of a shallow V, and with a curve of about 10 The clips can be adapted to suit oth ophthalmoscopes

M Su
M.B. Perth

Oxford

Reviews of Books

xuality

Wrst m d d p m London Duckworth 1955 145 15s

us like to believe that our judgments depend veight of evidence When, therefore a subject in immediate response we should be doubly

the factors which keep the discussion of this r sexual problem firmly in the field of anger, l emotion, ignorance is the chief Perhaps the t damaging misconceptions are that ' homo- are an identifiable group 'the queers g impulses which we the normal citizens, do re, and that those who show homosexual s are likely to molest children For clearing the ese ideas, and of the concept of homosexuality atural and therefore magical Dr West s book hard to better It is humane factual, and best of all) accessible and intelligible to anyone leeply disturbed by the subject to read it

ture of the facts is this All mammals, and probably beings, possess the capacity to respond sexually to of their own as well as the opposite sex In human which permit or tolerate it or under conditions where segregated such expression may be widespread or though this is no argument for its desirability In society the degree to which this response is evident dely from individual to individual, and there are whom it largely or wholly replaces response to the There is overwhelming evidence that the main determining this predominance is upbringing in t sense Homosexuals are not distinguished by opometric characters the direction of their impulse y unaffected by hormones, though its intensity can od; and in physical intersexes the direction of determined not by the chromosomal sex but by the ing as a male or a female. The biological invert uthors is almost certainly a figment of self justifying and legal measures based on his existence would der of the first order

inant homosexuality could well be a disability lture, and in one which exposes the subject to nd contempt it is a grave disability To this constitutes a psychiatric problem—though not ently graver one than many similar but less disabilities in sociosexual relations Is this its portance? That in essence is the problem e Royal Commission, and before public opinion one which can be—though it rarely is—discussed of fact. To this discussion Dr West s book tributes admirably He says that there is no that even exclusively homosexual persons ildren more commonly than heterosexual and n they do much of the mischief which arises ult of the ensuing uproar rather than of the ce per se More important to the present y however is the fact that the attitude which will adopt to the question of punishing homo- haviour like his attitude toward capital nt, is so predictable in terms of his personality n be used as a marker for test purposes. In fact the psychology of anti homosexualism bears emblance to the psychology of anti-semitism ileter opinion there are those for whom the belief disgusting practices which corrupt the life of nunity merit savage punishment is axiomatic, uestion their deep moral importance is in itself For others homosexual behaviour is at worst and at best an idiosyncrasy whose social ce stems entirely from the reaction of fear and hich it evokes. Dr West offers no attempt to the irreconcilables though he himself clearly the second view His book however, shows that the present situation is unsatisfactory in both arguments. If the continuance of homo- haviour in private is a threat to the community present law even with the backing of public r the convicted wholly fails to prevent its wide- ecurrence If it is not then we have a good nswer for

The Nucleic Acids

Chemistry and Biology Vols I and II Editors Erwin Chargaff department of biochemistry Columbia University New York J N Davidson *department of* biochemistry University of Glasgow New York and London Academic Press. 1955 Vol I pp 692 $16 80 Vol II pp 576 $14 50

THERE has been no comprehensive treatise on the nucleic acids for some little time and within recent years there have been great advances in our knowledge of the chemistry and biological significance of these substances. Chargaff and Davidson have set out to bring together into a two-volume work as much as possible of the knowledge which has recently been acquired This they have done by getting a considerable number of experts to participate in writing a planned series of articles each dealing with a specific part of the subject.

Vol. I contains 15 chapters (by 19 authors and co-authors, all but 1 of them working in Britain or the United States) They deal in turn with the historical aspects of the subject, the chemistry of the carbohydrates and bases set free by hydrolysis and their separation and estimation. Then follow two long chapters on the isolation and composition of deoxy pentose and pentose nucleic acids and of the corresponding nucleoproteins. The nature of the chemical bonding in the acids and their physical and optical properties are then dealt with in turn, and the volume concludes with another long chapter on the nucleases and other enzymes which attack the nucleic acids and their derivatives.

It is well that the second volume has followed hard on the heels of the first, for the two volumes make an integrated whole of which the joint organisers may feel justly proud

Volume II arranged in exactly the same way as volume I deals with the biological aspects and opens with a chapter *on the nucleic acid content of tissues and cells by* I Leslie Chapters follow on cytochemical techniques, the isolation of cell nuclei (by A. L. Dounce who has himself done so much to make this practicable) the deoxyribonucleic acid content of the nucleus the behaviour of the nucleic acids in mitosis the cytoplasm the biosynthesis of pentoses and of purines and pyrimidines nucleosides and nucleotides, and nucleic acids. The last three chapters are on the metabolism of the nucleic acids and the biological rôle of the *two nucleic acids*.

The subject matter is so arranged that it works up to a really physiological finish and the authors are a representative international crew hailing from France, Belgium Sweden England, Scotland, and the United States. In reviewing their efforts it is hard to improve on Ouida s classic statement: All rowed fast, but none so fast as stroke We look forward to second and third editions of this work and hope the editors will not find the task of keeping themselves and their contributors up to date too onerous They have made a fine start

Cancer Race and Geography

P E Steiner, m d professor of pathology University of Chicago Baltimore: Williams & Wilkins. London Baillière Tindall & Cox 1955 Pp 364 38s 6d

THE distribution of malignant disease among the different races of the world and in various geographical *areas provides* problems of very considerable interest about which too little is known Dr Steiner has made a survey of necropsy material in the Los Angeles County Hospital between 1918 and 1947 He has analysed 35,203 necropsies in which 17 21% or 6072 showed malignant disease He claims that his series *has* a particular advantage for a study of geographical and racial distribution since the patients attending the Los Angeles County Hospital show a wide variety of racial difference The cases with tumours have been divided into four main groups which have been given the titles Caucasoid (a general mixture of European races) 5120 cases; Negroid (Afro-Americans) 284 cases Mexicans (including Spanish Americans and immigrants from Mexico), 590 cases and Mongoloids (including Japanese Chinese and Philippinos) 78 cases. The tumours are classified according to type and listed under 53 headings in order of frequency From group 20 onwards fewer than 20 cases appear in each subdivision and groups 48–53 include only 1 example of each variety Professor Steiner analyses the first 20 groups, which make up 91 2% of the total, and attempts to compare and contrast the incidence of tumours in the different groups with the racial and geographical background of the patients He admits that often no dogmatic statements can be made, but his main conclusion is that morphological differences in malignant disease depend on environmental rather than on hereditary factors in ætiology

Much careful work has gone into the preparation of this book, and it possesses the advantage that diagnosis of the malignant conditions is made from necropsy findings Its great disadvantage, however, is that the groups into which the cases are split up are too small to provide significant evidence for the many suggestions put forward By far the greater part of Professor Steiner s material is obtained from mixed European stock, and it seems doubtful whether the cases from other races are numerous enough to support the elaborate analysis he has attempted

Les gastrites

FRANÇOIS MOUTIER, président d'honneur de la Société nationale française de Gastro Entérologie, ANDRÉ CORNET, médecin assistant des hôpitaux de Paris Paris Masson. 1955 Pp 404 Fr 4400

IN France gastritis has always been a subject of interest and study, and a new major work on this condition coming from that country is of particular importance Professor Moutier was one of the earliest gastroscopists, and he and his colleagues have based their conclusions very largely upon endoscopic findings

These, together with histological sections, make up a considerable part of the book, and on these criteria gastritis is classified into acute, subacute, and chronic The large subacute group is divided into (1) superficial (catarrhal, congestive, and œdematous), (2) ulcerative, of many varieties, and (3) *boutonneuse* Chronic gastritis is fully treated, including long chapters on the *apogastrites*—a name given by Moutier in 1935 to gastritis occurring in the course of diseases outside the gastro intestinal tract, such as skin and blood disorders The authors do not recognise any special precancerous type of gastritis, but take the view that any chronic gastritis may prepare the soil for the development of cancer

This volume includes a great mass of personal observations on very many cases, as well as some 600 references to other works and over 100 fine coloured and plain illustrations of gastroscopic appearances and microscopic sections Some may think that the types of gastritis are here almost too sharply defined, but they will none the less be grateful for the careful observations and the care with which they are described

Pelvo-Spondylitis Ossificans

RAGNAR ROMANUS, M D, associate professor of general surgery and chief of the surgical outpatient department, Karolinska Sjukhuset, Stockholm, SVEN YDÉN, M D, roentgenologist, Karolinska Sjukhuset Copenhagen Munksgaard 1955 Pp 161 Dan kr 45

THE authors review this puzzling disease (usually known in Great Britain as ankylosing spondylitis), largely on a personal series of 250 cases They have little to say that is new, but give a balanced account of the clinical features, emphasising the importance of the initial sacro-iliac arthritis, the eye changes, and the genito-urinary accompaniments There are about 70 pages of text and over 70 pages of illustrations, including 229 pictures Most of these are from X-ray films, and the majority are of attractive clarity The printing and illustrations show an unusually high standard in book production

Correlative Neurosurgery

EDGAR A KAHN, ROBERT C BASSETT, RICHARD C SCHNEIDER, ELIZABETH CAROLINE CROSBY, neurosurgical clinic, University of Michigan Medical School. Springfield, Ill Charles C Thomas Oxford Blackwell Scientific Publications 1955 Pp 413 £7

THIS book describes the teaching and practice of the neurosurgical clinic of the University of Michigan medical school The authors were pupils of the late Dr Max M Peet, and his influence is reflected in ther have not attempted to write a formal rather to emphasise the clinical features found useful, and to outline the treatm There are, for example, two interesting and on cerebral abscess from the pen of the As the title suggests, a particular feature the fuller discussion of such ancillary subj encephalography, the use of radioactive endocrinology, and these articles are well give a good account of the present sections on related neuro anatomy are Elizabeth Crosby, and the young neurosurg these particularly useful Their value by the particularly large, clear, and illustrations

Segmental Anatomy of the Lungs

A Study of the Patterns of the Segmental Related Pulmonary Vessels EDWARD A. professor emeritus of anatomy, Medical of Minnesota New York and London 1955 Pp 276 112*s* 6*d*

Professor Boyden has contributed much to ledge of the anatomy of the human lung satisfying to see this work collected under a comprehensive analysis of the vascular and patterns The beautiful illustrations testify careful labours over a very long period If not come up to the same high standard, this because his use of terminology which is at that recommended by the International Oto-Rhino-Laryngology and the Thoracic most readers a hindrance to understanding on minor points the international nom be improved, but its terms have become well and their replacement by a numerical syst fear, lead only to confusion

Surgeon at War

Lieut Colonel J C WATTS M C., F.R.C.S., R.A. Allen & Unwin 1955 Pp 165 12*s* 6*d*.

Colonel Watts has written a straight interesting account of his life as a war surgeon had an unusually varied experience which Palestine in 1938, the Western Desert, France, and Germany during the war, and book reads as though he had written up a diary emphasis on making it understandable to a perhaps accounts for the occasional irritat at his simplified explanations of technical situations Those who served in the R.A. theatres which Colonel Watts describes will and incidents recalled with pleasure, and it the non-medical reader an interesting glimpse methods and aims of the surgery of warfare Watts does not philosophise over his work gives it to us straight, and one's only regret learns less about Colonel Watts himself than But he did and where he found himself enjoyed nearly all of his war and so will readers

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New and Non-official Remedies 1955 Council on Pharmacy and Chemistry of the Amer Association Philadelphia and London J B Pp 653 30*s*)—The council's annual revision reference book follows the general pattern of in the preface they give warning that future list the proprietary names of drugs. This made in conformity with the council's decision work of awarding seals to accepted products more time to the evaluation of drugs (see *Ass* 1955, **157**, 664)

British Encyclopædia of Medical Practice London Butterworth 1955) *Cumulative S* 195 25*s*) *Medical Progress* (Pp 311 together cost 55*s*)—Adherents of this encyclopædia more welcome these useful reviews of medical research The two volumes appear under the ship of the late Lord Horder

THE LANCET

NDON SATURDAY, SEPT 24, 1955

Carcinoma of the Œsophagus

he first thirty years of this century many s attempted the removal of neoplasms of the gus From time to time isolated successes ported, among the most notable were TOREK s[1] who survived for thirteen years after the ul construction of an antethoracic gullet, and URNER s[2] case in which the œsophagus was l by a pull through method without opening st But modern surgery of malignant disease œsophagus may be said to date from 1938, oth MARSHALL[3] and ADAMS and PHEMISTER[4] l a case of carcinoma of the lower third of the gus successfully resected via a left thoracic h, with restoration of continuity by œsophago omy In the same year GARLOCK[5] reported 3 excision of the thoracic œsophagus by Torek s hio Torek s operation was soon abandoned, er before had more than a single success been l, and this work provided the crucial stimulus er advances

at time it was believed largely on the basis psy studies, that carcinoma of the œsophagus slowly spreading growth which commonly ie patient by manition before distant meta iad arisen and consequently that the main in treatment was to devise satisfactory of removing the growth and re-establishing wallowing This problem has now been largely By 1942 GARLOCK[6] was able to report 9 cases noma of the lower œsophagus and cardia by partial œsophagogastrectomy through a left oracotomy This operation is now a standard re though today it is usually performed an abdominothoracic incision, and is often l to include removal of the spleen and tail of icreas as recommended by ALLISON and [7] For carcinoma of the mid thoracic œso- SWEET[8] devised high œsophagogastrectomy the left chest with an anastomosis above the the aortic arch LEWIS[9] pointed out the ges of a right-sided approach to this portion œsophagus through the right chest, after ary mobilisation of the stomach through an ic incision. Today this is the commonest ic but GARLOCK[10] still recommends left omy for mid thoracic growths

tunately the early concept of carcinoma of phagus as a relatively slow growing tumour orrect at the time of diagnosis local and tic spread is usually more advanced than was formerly believed BURGESS et al[11] showed that in squamous cell tumours there is microscopical evidence of spread in the œsophageal wall for up to 4 cm beyond the macroscopic edge of the tumour and GARLOCK and KLEIN[10] suggest that, in order to get clear of this spread, practically all patients with squamous growths require a supra aortic anastomosis The frequency of direct spread into adjacent viscera is largely reflected in the low operability rates, but it is perhaps the high prevalence of lymphatic involvement that most gravely affects the outcome SWEET[12] studied the lymphatic involvement in 174 operation specimens and found lymph gland involvement in 57 5%, the five-year survival rate in these cases was only 13 5% compared with 40% in those without lymphatic metastases Similarly, CAREY and CLAGETT[13] found that of 96 operation specimens of adenocarcinoma of the cardia 70 (73%) showed involvement of lymph glands, and of their 11 patients who survived three years or more after resection, only 2 had lymphatic metastases Further, these lymphatic metastases are often distant from the primary tumour, SWEET[8] found at necropsy of 32 cases of carcinoma of the mid thoracic œsophagus that in 11 there were deposits in the glands around the left gastric artery In the light of these facts, and of the anatomical difficulties of really wide excision it is not surprising that the results of surgical treatment are rather disappointing Recent reports from three large American centres, while not presenting strictly comparable figures show that resection of growths of the lower œsophagus and cardia is accompanied by a mortality of about 15% and that of those surviving operation about 20% live for five years or more, while for growths of the mid thoracic œsophagus the operation mortality is nearer 25% and the five year survival rate only about 5% These approximations take no account of the operability rate, which varied from 25 to 40% in the different series but they give a fairly accurate idea of the trend of results

GARLOCK and KLEIN[10] have reviewed 457 cases seen by them since 1936 Of these, 451 were submitted to operation but, except in a few patients with growths of the cardia, resection was undertaken only when it seemed that all growth present could be removed 214 patients presented with squamous-cell growths; in 91 (42 0%) resection was completed with 35 postoperative deaths (38%) Of those surviving resection 27 2% survived for five or more years without sign of recurrence, but none of those in whom a supra aortic anastomosis was performed survived for so long Resection was carried out in 89 (45 4%) of 187 patients with carcinoma of the cardia, with an operation mortality of 24 7% 33 resections were performed via a thoracotomy incision with 16 deaths (48·4%) whereas in 56 cases an abdomino-thoracic incision was made, with only 6 deaths (10·7%) Of the 67 patients who survived resection only 32 were operated on more than five years ago, and of these 5 survived for five years.

In reviewing his material SWEET[14] divides the cases, not by the type of tumour but by its site Exploration was undertaken in 182 cases of growth of the mid thoracic œsophagus and in 120 resection was performed with anastomosis usually above the aortic arch, in many cases the operation was purely palliative Of these 120 patients, 30 died as a result of the operation, and 4% survived for five years or more of those in whom at the time the operation was deemed curative, 14% survived for five years Exploration was carried

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F Surg Gynec Obstet 1913 16 614
Turner G Lancet, 1933 ii 1315
all S F Surg Clin N Amer 1938 18 643
s W E, Phemister D B J thorac Surg 1938 7 621
k J H Surg Gynec Obstet 1938 66 534
k J H Ibid 1942 74, 555
n P R, Borrie J Brit J Surg 1949 37 1
R H New Engl J Med 1945 233 1
I Brit J Surg 1946 34 18
k J H Klein, S H Ann Surg 1954 139 19

[11] Burgess H M, Baggenstoss A H, Moersch H J, Clagett O T Surg Clin N Amer 1951 31 965
[12] Sweet R H Surg Gynec Obstet 1952 94 46
[13] Carey J M, Clagett O T Ann Surg 1955 142 2.
[14] Sweet R H J Amer med Ass 1954 155 422.

out in 242 cases of carcinoma of the lower œsophagus or cardia In 167 of these resection was performed, with 20 (12%) postoperative deaths and 17% five-year survivals, the five-year survival-rate after “curative” (as opposed to “palliative”) resection was 34%

CAREY and CLAGETT[13] have reported on 475 patients with malignant disease of the lower œsophagus and cardia seen at the Mayo Clinic since January, 1945 Of these 219 were, for various reasons, considered inoperable on clinical grounds Exploration was carried out in 256 cases, with resection, sometimes only palliative, in 131 instances Of these 131 patients, 22 (16 7%) died after operation, the commonest cause of death being an anastomotic leak Of the 45 patients who underwent resection more than five years ago 11 survived In this series the results were better in patients with squamous-cell tumours of the lower œsophagus than in those with adenocarcinoma of the cardia, whereas SWEET[14] found that there was no significant difference in the prognosis of these two conditions

It would be unrealistic to judge the success of resection solely by the proportion of patients who survive for five or more years without recurrence note must also be taken of the extent to which distressing symptoms are relieved In its terminal stages untreated carcinoma of the gullet is a terrible disease, the patient being unable to swallow even his own saliva DICKISON[15] reported on 50 cases of carcinoma of the œsophagus treated by palliative gastrostomy Of these, 23 died in hospital, and the average survival-time of the whole group was a hundred and twenty days, during which time their distress was, if anything, greater than before operation Similarly CAREY and CLAGETT[13] report that of their patients who had inoperable growths at exploration, 88% died within a year, and 97% within eighteen months In comparison with this, patients who survive even a palliative resection can usually swallow in comfort until distant metastases bring about their death, and many of them survive in comfort for many months SWEET[14] reports that of 90 patients who survived resection for neoplasms of the mid-thoracic œsophagus, 58% were alive at twelve months and 26% at two years, while of 147 patients who survived resection of growths of the lower œsophagus and cardia, 87% were alive at twelve months, 63% at two years, 47% at three years, and 36% at four years Thus, resection of an œsophageal neoplasm with œsophagogastric or œsophagojejunal anastomosis, even if it does not lead to cure, provides useful palliation But the operation is severe and technically exacting the published mortality-rates reflect the efforts of experts, not of the average surgeon In addition, some—probably most—of those who survive the operation suffer discomfort from reflux œsophagitis, and unfortunately accurate information about this complication is scarce In the light of these considerations BERMAN[16] concludes that the aim of surgery should be to enable the patient to swallow comfortably by the simplest possible method. For the palliation of stenosing carcinoma of the œsophagus Dr COYAS, whose article appears on p 647 of this issue, introduces a ‘Polythene’ tube under general anæsthesia BERMAN[16] excises the affected portion of œsophagus and replaces it with a polythene tube, which becomes surrounded by a fibrous sheath later lined by epithelium growing in from each end He describes 60 cases treated in this way 5 patients died after the operation, but the remaining 55 were enabled comfortably and peptic œsophagitis de none This operation has the great that it is simple and can be applied to levels in the œsophagus It is too early true worth, but it may be found to palliation than resection and anastomosis. the palliative value of radiotherapy may underestimated in the enthusiasm for surge BUSCHKE[17] has reviewed the results of carcinoma of the œsophagus From his probable that for mid-thoracic growths, when large, radiotherapy gives at palliative results as surgery For upper thoracic and cervical œsophagus— situation—radiotherapy may be the choice, for surgical extirpation of such necessarily very restricted and involves procedures to restore continuity There hope that the diagnosis will be made at stage than at present Though have unusual presenting symptoms,[18] in dysphagia is the first and main possible significance of dysphagia or in swallowing is now widely recognised, as to investigate patients with these barium-swallow and œsophagoscopy, often by the time the patient consults disease has spread beyond the limits for

At present resection and anastomosis the treatment of choice for growths in the lower thoracic œsophagus For growths in the mid-thoracic œsophagus, gastrectomy with œsophagogastric probably best, but with more advanced this region it seems that the insertion of tube or, alternatively, radiotherapy least as strong a palliative effect

Sexing Nuclei

IN the past year there has been steady the application of BARR's[19] discovery that can be determined by examination of the skin biopsy[20] Many centres are now method, in this country alone at least seven have described observations on it

Its practical value has been best of doubtful sex, and most of all in the the adult there are many important besides the true sex often enough the is too well established to be disturbed, and to leave well, or even moderately ill, alone befall But the newborn infant whose genitalia are equivocal presents the where it is still simple enough for the to be sought and acted on. It is not so problem A wrong decision may be

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15 Dickison, J C *Canad med Ass J* 1951, 65, 35

16 Berman, E F *Surgery*, 1954, 35, 822

17 Buschke F *Amer J Rœntgenol* 1954 71 9

18 Wohl, G T, Pastor, B H, Karr, S. L
1955 **252**, 702

19 Moore K L Grahame, M A, Barr, M L
Obstet 1953, 96, 641 Barr, M L *Ibid*, 1954,

20 See *Lancet*, 1954, ii, 638

21 Polani P, Lennox, B, Hunter, W F *Ibid* p.

22 Emery, J L McMillan, M *J Path Bact* 1954

23 Rannie, I, Erskine, C A *Lancet*, 1954 ii,

24 Russell, A, Levin, B, France, N E *Proc*
48, 318

25 Cruickshank, D B *Lancet*, 1955, i, 953

26 Bromwich, A F *Brit med J* 1955, i 393

27 Armstrong, C N *Ibid*, p 1173

ess so There is not only that straw in an ill he wrong naming of the child, and the long social and psychological evils of which it is inger, but the more immediate risk of missing al adrenal virilism, for such a child may be to normality or near normality with cortisone out it may die in an adrenal crisis

past the diagnosis was commonly sought by my, but this is a large undertaking and it e equivocal results[26] Estimation of urinary oids may reveal the adrenal cases but because unt of steroid is small the technical difficulties iderable Nuclear sexing disturbs the patient l gives an answer which is, or should be, clear quivocal. In some cases maladjustment will t declare itself later but probably the damage f newborn intersexes are treated at once and ally as necessary according to their nuclear here is one group of intersexes to which this apply In males in whom there is gross early f the embryonic testis, development proceeds the direction of a feminoid structure that no for suspicion of the sex exist at birth By the e condition is far enough advanced to be d (usually not before puberty, and never so know, before the age of seven or eight years) s of the concomitant stigmata of Turner's e, the feminine status is so far established ould be foolhardy to alter it The status in n Turner's syndrome (feminine dwarfs with ecks and cubitus valgus "ovarian" agenesis bout half the cases, coarctation of the aorta) l doubt Since the first observation last year[31] en confirmed from several sources,[24 28 29] and nd Lennox reported to the Medical Research in March further confirmation based on a sixteen cases in all. Some confusion exists points the "webbing syndrome (status -Ullrich) can occur without gonadal agenesis patients may be ordinary males or females[24] ut[28] suggests that the females can be dis- ed from cases of Turner's syndrome even uberty by their normal-sized chests (other distinction is impossible without skin biopsy otomy) Further gonadal agenesis can occur the other stigmata of Turner's syndrome In gonadal agenesis might be expected to be requent in genetic females and genetic males, he phenotype in each case will be feminine ale ovarian agenesis seems, however, to be mon than might be expected Rannie and [22] describe a case Wilkins et al. and t both mention cases but give so little detail ssment is impossible, Polani and Lennox n none

and his school have continued to enlarge our ge of the scope of the method of sexing argaret Grahame (one of the workers who ed the subject to clinicians in 1953) has shown al studies in the cat[30] that the sex chromatin ecognised in the early embryo, before gonads rentiated Besides its obvious use in sexing (a similar method has apparently already been used for this purpose in insect larvæ) this adds more evidence, if any were needed, that the sex chromatin is a genetic marking independent of the hormonal status at the earliest phase—though no one has yet sought it in the ovum and the fertilised egg or its first-division products There are also brief reports from the same school on freemartins,[31] on pseudohermaphrodites[32] (enlarging the original series[19]), and on benign tumours[33 34] Emery and McMillan[22] (who appear to have been the first to use the method in this country) have contributed useful data on the possibility of sexing post-mortem tissues Polani and Magnus[35] have compared the nuclear sex with the cholinesterase content of skin The observation by Hunter and Lennox[36] on the occurrence of female nuclei in some teratomas in males has been confirmed by Cruickshank,[35] Tavares,[37] and Moore and Barr.[34] Cruickshank reported one case and Tavares four cases of teratomas with female nuclei in male patients Tavares points out that the ratio of male to female teratomas in published cases in man is very nearly 50 50 If this is confirmed by further series we shall have a firm basis for speculation on the origin of the teratomas, but it would perhaps be wise to be patient for a little longer before committing ourselves here

The latest contribution, which may be of great importance in practice, is Moore and Barr's description[38] of a method of sexing depending on scrapings of the oral mucosa, which provides a film of cells similar to those so familiar to the exfoliative cytologist in vaginal smears Even the minor discomfort of a biopsy is worth avoiding if possible, but hitherto it has been avoidable only by Davidson and Smith's[39] polymorph method using blood films This requires much experience of the vagaries of polymorph nuclei before it can be practised with any confidence, and though it has proved highly reliable in the hands of its originators no-one else has yet adopted it with equal success The oral mucosa method, though probably it will be found to have drawbacks of its own, is at the very least a valuable alternative

The clinician, considering which method to turn to, will be well advised to regulate himself according to his microscopist None of the methods is really easy each demands a high level of staining technique, skilful use of the optical resources of the microscope, and some experience The histopathologist or histologist will be happiest with the biopsy technique, the hæmatologist with the blood film, the exfoliative cytologist with smears of oral mucosa. Those whose command of all three disciplines is good enough for them to be reliable exponents of three methods will be rare—and perhaps too busy to practise this somewhat exasperating art That different microscopists should practise different methods is of value, for it enables the clinician to obtain a cross check in cases where the decision as to sex is particularly important.

L, Grumbach, M. M. Van Wyk J J *J clin Endocrin* 14 1270

ut W *Münch. med Wschr* 1955 97 102

ne, M. A *Nature Lond* 1954 173, 310 *Anat Rec* 119 460

31 Moore K L Graham M A, Barr M. L *Anat Rec.* 1955 121 448

32 Barr M. L *Ibid* p 387

33 Moore K. L. *Ibid*, p 409

34 Moore K. L Barr M. L *Brit J Cancer* 1955 9 246

35 Polani P E Magnus, H A *Lancet* 1955 i 1209

36 Hunter W F Lennox, B *Ibid* 1954 ii 633

37 Tavares, S *Ibid*, p 948

38 Moore K L, Barr M. L *Ibid* July 9 1955, p 57 See also Marberger E, Boccabella R. A., Nelson W O *Proc. Soc exp Biol.* N Y 1955 89 488

39 Davidson, W M. Smith D R. *Brit. med J* 1954 i 1379

Annotations

PITFALLS IN THE CARE OF THE CARDIAC PATIENT

SOME of the common mistakes in managing cases of heart disease have been set out by Dr Samuel Levine,[1] of Boston Levine remarks that three main questions have to be answered has the patient organic heart-disease if he has organic heart-disease, has he cardiac failure, and is there something unusual about the type of heart disease that calls for special or specific treatment beyond the routine use of digitalis and mercurial diuretics?

Whether organic disease is present is learnt from the history and from clinical examination supported by special investigations Much devolves on the patient's account, because the reliable signs in the heart which indicate organic disease are limited to abnormalities in the volume of the pulse, diastolic murmurs, cardiac enlargement, and definite changes in the contour of the heart on fluoroscopy and in the electrocardiogram, systolic murmurs and almost all the arrhythmias may occur without a significant organic lesion Breathlessness is a common symptom of heart disease but must be distinguished from functional dyspnœa and that caused by emphysema and chronic bronchitis In functional dyspnœa respiration usually has a "sighing" quality, and the patient complains of inability to get enough air into the lungs despite having inhaled three or four times the amount he needs Functional dyspnœa also occurs characteristically when the patient is at rest Dyspnœa due to emphysema and chronic bronchitis is worse in the winter, is aggravated by foggy weather, is often associated with small repeated hæmoptyses, and is accompanied by prolonged expiration and squeaking disseminated râles without signs of heart-disease Pain or discomfort in the chest poses many diagnostic problems, and much help is derived from analysing this symptom according to Ryle's[2] ten points situation, localisation, radiation, character, duration, frequency, aggravating factors, relieving factors, special times of occurrence, and associated symptoms Applied unhurriedly and with sympathy this catechism will almost always distinguish between pain due to functional causes and that due to organic causes, and between pain due to ischæmic heart disease, hiatus hernia, gall bladder disease, pulmonary embolism, and dissection of the aorta (in which the pain is often felt between the scapulæ and in the centre of the back of the throat and radiates up the back of the neck) Not infrequently ischæmic heart disease and gall bladder disease or hiatus hernia are combined in the same patient treatment of the abdominal condition may lessen the severity of the angina, but it will seldom, if ever, dispel it

In deciding whether a patient has cardiac failure, except for a presystolic gallop-rhythm (equivalent in rhythm to Tĕnnĕs sēē) little is to be learnt from examination of the heart itself More reliable evidence is given by the presence of pulsus alternans, increased jugular venous pressure, basal crepitations, hepatomegaly, and dependent œdema of sacrum or ankles (not forgetting that enlargement of the liver or œdema may be due to many conditions other than heart failure) Radiography of the lungs may show hilar congestion, indicating left sided heart failure, in the absence of adventitious signs in the lungs, the circulation time may be prolonged (as it may be also in the absence of failure if the heart is enlarged), and the vital capacity of the lungs is reduced A history of shortness of breath on lying down at night, or of insomnia relieved by sleeping in an armchair, indicates left sided heart failure, just as heaviness or tightness under the right costal margin on exercise may signify hepatic congestion due to right sided failure In the absence of heart failure, restrictions and of digitalis often make the patient ph mentally worse, and may engender a card more disabling than the underlying organ

Because of recent advances it is more essential that uncommon forms of cardiac d not be overlooked Conditions now amenab include patent ductus, coarctation of the aorta of the femoral arteries should be part of examination), septal defects, pulmonary stenos venous fistulæ, and constrictive pericarditis older patients is liable to be misdiagnosed heart disease and should be suspected if the equivocal and there is gross elevation of venous pressure, a diastolic thrust at the disproportion between the amount of ascites degree of ankle œdema) Medical condition heart failure which may be cured by spec treatment include hyperthyroidism (which is looked in older patients whose only clinical ma of thyroid over-activity may be heart failure fibrillation), severe anæmia (the significance of not be sufficiently appreciated if the patie addition some other more common cause failure), beriberi (which is rare in Great Bri found more often in food faddists than in and cardiac arrhythmia in an otherwise (in such cases normal rhythm and compens restored by procainamide or quinidine)

Finally Levine reminds us that œdema to mercurial diuretics may be eliminated by addition ammonium and potassium chloride— to correct the hypochloræmic alkalosis wh undesirable side effect of mercurial diuretics, potassium to correct the potassium depletion failure which also increases the liability to effects from digitalis Responsiveness to diuretics may also be restored after para ascites or acupuncture of the legs Levine's for the avoidance of bed rest in the treatment patients, unless they are shocked or so lig weak that they cannot sit up The work of diseased hearts is 23% greater when the patie than when he is in a chair with his feet do down the patient is mentally and physically and is exposed to increased liability to thromb

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[1] Levine, S A *Ann intern Med* 1955, **42**, 1270

[2] Ryle, J A. Natural History of Disease London, 1948

INVESTIGATIONS ON THE PROSTA

IT is twenty years since Rich[1] and Mo attention to the fact that the prostate elderly men, examined at necropsy or afte removal, show histological evidence of carcin has caused no apparent harmful effects The of such a finding depends very largely on the which the tissues are examined Baron and studied two series of cases In the first, cutting one and occasionally more random se found 54 examples of cancer among 364 case they examined a further 50 cases by cutting sections they demonstrated cancer in 22 Mor Franks,[4] also by means of step sections carcinomas in a series of 178 cases

The existence of this surprisingly high p histologically demonstrable carcinomas in old accepted by most observers But the know proved of little practical value to clinicians the prostate remains in situ all is well, for has no symptoms of malignant disease Sho covery be made after surgical removal the somewhat different The surgeon will prob is patient with œstrogens and for this reason ntal work by Lasnitzki[5] showing the effect of n mouse prostate is of some interest

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[1] Rich, A R *J Urol* 1935, 33 215

[2] Moore, R. A *Ibid*, p 224

[3] Baron, E , Angrist, A *Arch Path (Lab Med)* 19

[4] Franks L M *J Path Bact* 1954, 68 603
ii, 1064

found that with explants of prostate tissue from imals (6 weeks) small doses of œstrone stimu helial growth with hyperplasia in some acini se was increased atrophy and squamous meta sulted Œstrone applied to prostatic organ rom older animals (6 months) always produced f epithelial elements with considerable stromal ia. The picture closely resembled the hyper f the fibromuscular stroma in elderly men suggests that the alteration in response with y be due to the higher level of androgen present nimals It has been shown[6,7] that the inter androgen and œstrogen may be antagonistic gistic according to the relative amounts of present Thus it seems possible that in older n exposure to androgens has been continued for eriod there may be an antagonistic response to causing atrophy of epithelium and prolifera roma, whereas in young mice a similar dosage oke a synergistic effect with stimulation of growth

TION OF CHORIONIC GONADOTROPHIN

xcretion of chorionic gonadotrophin even in pregnancy varies considerably between one nd another and this accounts mainly for the of recognising abnormal levels Hobson,[8] niversity of Edinburgh pregnancy diagnosis y has estimated urinary excretion of chorionic ophin by the Hogben dilution test

utions most commonly used were 1 in 10 and Positive reactions with these dilutions corres a concentration of chorionic gonadotrophin of han 30 000 and 300 000 I.U. per litre Positive th a dilution of 1 in 10 were obtained in normal es right up to term though the proportion vas very much lower in the second than in the of pregnancy Between the 5th and 14th week ncy it was not uncommon for the tests to be ith 1 in 100 dilution even when the pregnancy normal but in only 3 out of 632 normal es was the result positive with a dilution of and 2 of these 3 were multiple pregnancies

t half of 67 cases of hydatidiform mole excretion nic gonadotrophin fell within the range for regnancy In half of the remaining cases (that rter of the total cases of hydatidiform mole before evacuation of the mole) the result was with dilutions of 1 in 100 In the remaining f the 67 cases the result was positive with a f 1 in 200 or higher—dilutions at which the s positive in no normal case It would seem that particularly after the 14th week of preg positive reaction with a dilution of 1 in 200 or dicates hydatidiform mole Positivity with a of 1 in 10 is of no diagnostic value because und in a small proportion of normal pregnancies to term Tests positive with a dilution of 1 in quivocal for now and then and particularly st three months of pregnancy such a positive y be obtained even though the pregnancy is mal.

the clinician should be wary about diagnosing orm mole from this test where it is positive only ns under 1 in 200 lest he terminate a normal In such cases he must rely on careful ion, which should include bimanual examination parts and radiography with the patient so positioned that any fœtal shadow is cast clear of the bony pelvis—perhaps through the greater sciatic notch In some cases repeated radiographic examination is required Even when the clinician is convinced of the diagnosis a further check is still possible before the hydatidiform mole is evacuated once the cervix has been carefully dilated a further bimanual examination can be made, this time with a finger through the cervix allowing direct palpation of the lower pole of the uterine contents. In at least one case where hydatidiform mole had been mistakenly diagnosed the error was discovered in this way by palpating the membranes and through them the fœtal parts In this case the operation was stopped and the pregnancy continued to term

PSEUDOMEMBRANOUS ENTEROCOLITIS

Dawson Edwards and Morrissey[1] observe that in clinical practice the diagnosis of pseudomembranous enterocolitis is only presumptive for the diagnosis can be confirmed only from necropsy appearances unless shreds of membrane or necrotic mucosa are found in the fæces. They review 35 cases of severe diarrhœa starting in the first eight days after partial gastrectomy These cases arose among 1700 patients submitted to this operation in a seven year period more patients had diarrhœa, but analysis of these further cases proved impossible because the records were incomplete. In 22 of the 35 the disease was classified as mild since no systemic upset ensued Of the remainder 8 were severely ill and 5 died the diagnosis was confirmed at necropsy in these 5 and clinically in a further patient who recovered after passing greyish white membrane. Diagnostic difficulty is greatest in the ' mild " group for post gastrectomy steatorrhœa may give rise to acute diarrhœa towards the end of the first postoperative week (by which time the patient is already taking appreciable amounts of fat owing to the prevalence of milk in the diet at this stage) Dawson Edwards and Morrissey indicate that gastro enteritis from bacterial contamination of food is a further possible cause of diarrhœa after the operation

That the evidence suggesting infective causes of pseudomembranous enterocolitis[2] is not more abundant may be due to the fact that most hospital laboratories are not equipped to search for unusual organisms or their toxins. How many hospital laboratories for instance, could undertake agglutination tests for the epsilon toxin of *Clostridium welchii* type D in a patient s serum ? To demonstrate the presence of staphylococci pathogenic within the gut, Dearing and Heilman[3] needed to enrich their media with 0 25% phenylethyl alcohol so as to discourage the growth of other organisms Are the proper selective media always to hand ? Dack who has done much to incriminate the staphylococcus in cases of food poisoning has now taken up the cudgels as regards enterocolitis[4] In staphylococcal food poisoning death is rare, as is systemic collapse could the micrococci there fore be responsible also for a condition as severe as this ? Working on the hypothesis that staphylococcal food poisoning is due mainly to a limited dose of enterotoxin, since the bacteria do not appear to multiply after inges tion in contrast to enterocolitis when there may be continuing production of toxin due to active growth of the organisms in the gut, Surgalla and Dack set out to prove that staphylococci obtained from the fæces of 32 patients with diarrhœa during a course of antibiotic produced enterotoxin Fluid from cultures was fed to rhesus monkeys if for each sample 2 out of 4 monkeys were provoked to vomit, toxin was considered to be present By this criterion staphylococci capable of

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ach, S L *Ned Tijdschr Geneesk*, 1934 78 489
ar L *Arch Sci biol Napoli* 1933 18 220
on B M *J Obstet Gynæc Brit Emp* 1955 62 3

[1] Dawson Edwards P Morrissey D M. *Brit J Surg* 1955 42 613.
[2] *Lancet*, 1951 ii, 238 *Ibid* 1955 i 300
[3] Dearing W H Heilman, F R *Proc Mayo Clin* 1953 28 121
[4] Surgalla M J Dack G M *J Amer med Ass* 1955 158 610

producing enterotoxin were found in 30 of the 32 patients Surgalla and Dack conclude that, whereas in food-poisoning toxin is developed in the food before ingestion and not afterwards, in enterocolitis toxin production persists within the body as long as competing members of the gut flora are suppressed by continued antibiotic therapy

RENAL COMPLICATIONS OF BATTLE INJURIES

CHANGES in renal function are part of the normal reaction to severe injury and result in oliguria with temporarily increased excretion of potassium, nitrogen, phosphorus, and sulphur, and reduced excretion of sodium and chloride True renal failure is, however, a rare complication of injury, and it is seldom diagnosed at an early stage, possibly because its most obvious early indication—reduction in the volume of urine—coincides in time with the oliguria which normally follows severe injury True renal failure after injury is very commonly fatal Beecher[1] reported a mortality-rate of 65% in 78 patients with this complication Only 47% of those with oliguria died, compared with 91% of those with anuria, in this series 94% of the deaths occurred within ten days of the injury Of 100 fatal cases reported by Lucké,[2] 74 of the deaths occurred within eight days of injury With improved understanding of the disorders which accompany acute renal failure the futility of attempts to bring about diuresis by massive intravenous infusions has been recognised, and accordingly the incidence of waterlogging has been reduced In addition, potassium intoxication is now recognised as the commonest single factor in bringing about death, and measures to remove potassium from the extracellular fluid are widely, though not always successfully, practised

The management of the primary injury is greatly impeded by acute renal failure This is well illustrated by Balch et al,[3] who discuss the surgical care of 37 patients admitted to a renal centre established in Korea in 1953 2 of their patients had been injured in road accidents, 1 was severely burned, and the remainder had suffered wounds due to various types of missile Resuscitation and primary operation had been carried out in other surgical units, and the patients were evacuated by air to the renal centre when renal failure was suspected because urinary output had fallen below 500 ml per twenty four hours although the systolic blood-pressure exceeded 90 mm Hg In the renal centre fluid intake (excluding transfused blood) was restricted to 500–800 ml per day beyond a volume equal to the fluid output It was found that the plasma potassium level tended to fall when a sodium deficit was made good, or after the administration of hypertonic glucose solution with insulin, administration of calcium reduced the clinical effects of a high extracellular potassium level without altering the plasma potassium level Dialysis was employed when these measures failed In 18 of the 24 oliguric patients dialysis was applied, usually more than once, and 6 survived Balch et al emphasise that such special treatment for acute renal failure will not avail in the presence of other complications such as infection, especially of dead muscle Of 16 patients in whom the plasma-potassium level exceeded 6 m eq per litre 11 were submitted to dialysis and only 2 survived, but Balch et al believe that the elimination of the renal factor by dialysis reduced the mortality-rate and may have prolonged survival in some who died When dialysis corrected the biochemical alterations in the extracellular fluid but the clinical manifestations of "uræmia" persisted, it was found that some other cause, such as sepsis, was responsible for the persisting symptoms and clinical disturbance Of the 37 patients, 24 were oliguric
and 18 (75%) of these died, of 13 who wer
8 (62%) died The average day of death w
oliguric group and 6 in the non oliguric pat
et al make clear the initial difficulty of early d
renal failure and emphasise that the general p
avoid moving hypotensive patients from
to the renal centre Nevertheless 9 patient
sistent hypotension were evacuated to the ce
of oliguria, oliguria persisted after resuscita
these, and 2 others could not be resuscitated
3 of these 9 patients survived for more tha
and only 2 recovered is some indication of
condition of the patients, but also raises the
whether they should have been moved at all
had sustained extensive abdominal injuries.

In this series the primary cause of death
lished in 21 out of 26 cases In 11 this was
some kind, and in 7 of these cases there wa
more or less extensive myositis Myositis
of the 37 patients, and the need to reamputat
extensive areas of necrotic muscle in both the
cases cited in the report implies that
treatment was inadequate

The kind of severe bodily disturbance desc
report is not uncommon also in civilian inju
treatment demands a high degree of surgical
knowledge That such patients survive at a
the efforts of those responsible for the primary
Balch et al emphasise that their studies h
new light on ætiology, but they note the
the high incidence of infection The early
excision of all dead and damaged tissue
quivering bleeding muscle remains, and the de
of through-and-through limb wounds by
fascia and the removal of foreign bodies, ha
foundations of successful early surgery in
wars, the part played by the antibiotics is
secondary A significant infection occurred
the oliguric and in 63% of the non-oliguric
this series Severe infection may have a
on the circulatory system as well as on

COMICS

IN *British Comics an Appraisal*[1]
Campaign Council examines the
"comics" and puts forward some useful
their future development The council
sympathy nor insight "If," it says, "
are studied, certain recurring themes ca
children having adventures on their own, c
to the rescue of adults, adults making erroneous
adults who are unkind to children meeting d
so on Adults enjoy a funny picture of a tire
children enjoy funny pictures of tiresome a
more Children have to put up with so
from adults, we should not forget the burden
tion which we have to put upon them Ir
situations in comics are as improbable as dar
this does not bother the children any more
improbabilities of an adult cartoon bother th
Something like 350 million comics are bought
by our children, and it is believed that on
each comic bought is seen by eight chil-
council does not hazard an estimate of the
adult readers

THE Fédération Internationale Pharma
holding its 16th general assembly in London
under the presidency of Sir Hugh Linstead, M
opening meeting on Monday Mr Iain Macleod,
of the Government, and Mr H. Steinman, c
the Pharmaceutical Society of Great Britain,
over 1000 delegates from 46 countries.

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[1] Beecher H K The Physiologic Effects of Wounds Washington, D C, Office of the Surgeon-General, Department of the Army, 1952

[2] Lucké, B *Milit Surg* 1946, 99, 371

[3] Balch, H M., Meroney, W H, Sako, Y *Surg Gynec Obstet* 1955, 100, 439

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[1] Edited by Miss P M. Pickard Obtainable fro
of the council, Dr S Yudkin, 23, Tillingh
London, N 3 Pp 32 1s 7½d post free

Special Articles

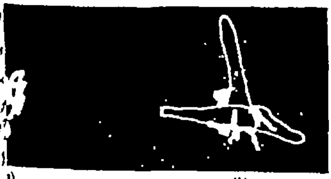
(CHOSOMATIC PROBLEMS IN OSTURAL RE-EDUCATION *

WILFRED BARLOW
B M Oxfd
DEPARTMENT OF PHYSICAL MEDICINE WEMBLEY SPITAL (CHARING CROSS HOSPITAL GROUP)

us, I think are thoroughly dissatisfied with of posture training whether it be carried physical educationists or as remedial work nce of defects in so-called normals is The White House Conference put it as % of adolescents my own figure, based on udents and members of the Armed Services, emale, is higher than this. Of those who do initial improvement during the usual posture ery few seem to want to maintain it after has been stopped This is partly because *things are taught* and partly because of a g conception of the actual training process— usually being on *instructing* the patient, n how he is to *learn* something new It is one instructed quite another to change habits

Postural Homœostasis

of the undoubtedly unsatisfactory results re-education I suggested a few years ago 52) that we should try to get rid of the usual sture as being some fixed static position, d either be good or bad right or wrong l and wrong then caused by weakness of scles, which needed strengthening through static holdings, and stretching and ng exercises Instead I suggested the term homœostasis,' in order to give the idea of


) (b)

ing of a pin-point of light fixed to the top of the head ostural sway in (a) a normal person and (b) a neurotic.

lack of fixity I should like to elaborate this tural homœostasis on which my approach re-education is based

static system is one which returns to a resting uilibrium when it is disturbed and postural is a homœostatic mechanism which is largely tary control provided that the right amount on about errors finds its way back from the ne cortex

ows two recordings of a pin point of light top of the head and photographed from above rdinated people (*a*) there is always a slight nd a resting mid point never excessive however show very great sway (*b*) that is llation away from the resting state Owing lty postural awareness, certain *muscles* are ually in an over tense condition thereby he homœostatic equilibrium Owing to the mbalance oscillations tend to be excessive.

Fig 2 is an electromyogram (E.M.G.) of the right and left erector spinæ muscles in someone suffering from a slight lateral curvature In A the left side of the back shows considerably more activity than the right, although the patient, who is sitting comfortably at rest, is unaware of this fact The detection of error is not accurate, and this is responsible for the postural deformity When the patient moves as in B, there is much activity on the left side. In C when the patient is adjusted in a manner which I will describe later the undue tension in the left side disappears. This example is a prototype for postural defects showing the association of faulty posture with maldistributed tension The patient is unaware of the *increased* muscle tension, possibly (as I have suggested elsewhere Barlow 1954) because over-contraction of a muscle diminishes muscle-spindle activity so that, in current jargon there is an absence of feed back —i.e information about the degree of postural error is not fed back to the brain Fig 9 (p 662) is another example of this inability to recognise errors of tension and to return to a balanced resting state.

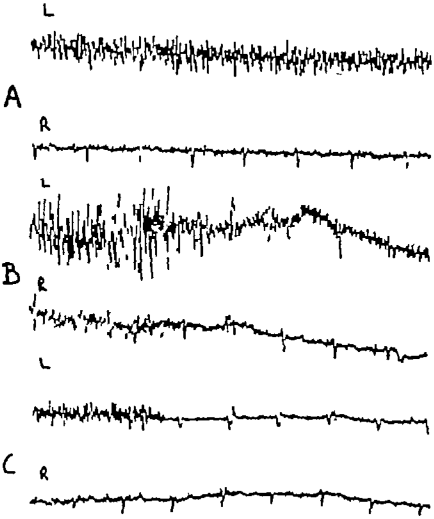


Fig 2—Electromyogram of right and left erector spinæ muscles in subject suffering from slight lateral curvature of the spine.

The E.M.G. there illustrated was taken from the trapezius muscle of a violinist who consulted me because the muscles of

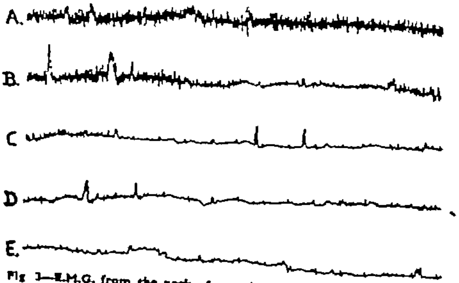


Fig 3—E.M.G. from the neck of a patient who habitually tensed his muscles even at rest. Explanation in text (p. 662)

his shoulder and upper arm tended to go into spasm when playing a fast passage This spasm was connected with a habit of pulling his head over towards his right shoulder, a habit of which he was quite unconscious when he became engrossed in his playing In A the patient has been adjusted until there is a freedom from tension in the neck and shoulder in B he raises and lowers the elbow as in bowing in C he does the same thing again, but now it will be seen that the muscle has not returned to its original resting state The new resting state, which is associated with a postural deformity of pulling the head to one side, is one of greatly increased tension, and it is not until I adjust the head and release the muscle that it returns to its original resting state (D) The patient in this case was not detecting the error, and his homœostatic mechanism was not functioning at its best

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* ddress given to the Chartered Society of Physio at the Cowdray Hall, London in March 1955

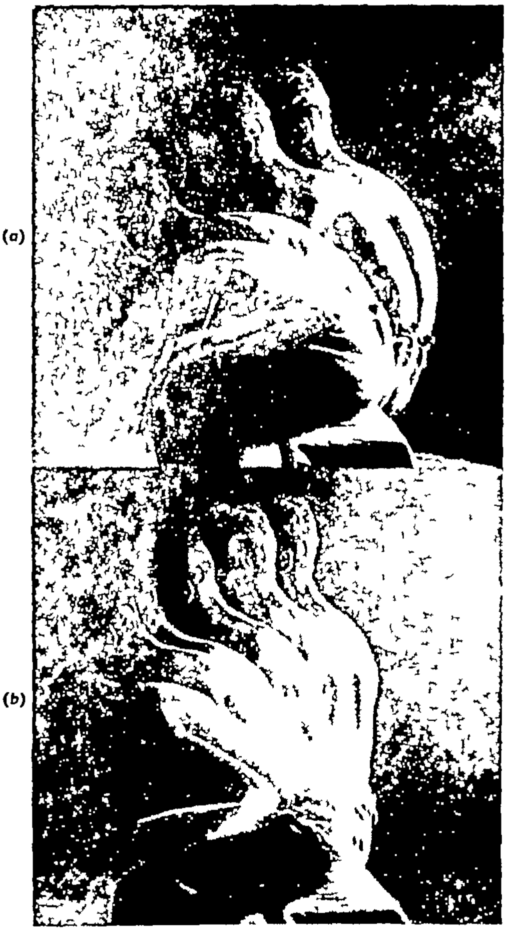


Fig 4—Stroboscopic picture of subject bending forward (a) with the dorsal and lumbar spine curved, and (b) keeping his back straight and moving from the hip-joint. Note that in (a) he pulls the head further and further back.

Here then is the crux of the problem of postural re education—how to make such errors as conspicuous as possible to the patient, so that he can recognise them as they occur and return at will to a resting state in which the tension is distributed properly through the body

Disposition of the Body

Before, however, I deal with the problem of postural re education, I want to say something about the anatomical conditions in which there will be a minimum of interference with a balanced resting state, and which predispose to the most efficient functioning of the body I am not so much concerned with *attitudes* (that is to say, temporary postures and gestures), as with the basic *disposition* of the body, compounded as it is at any given time of the patterns which we have inherited and the patterns we have learned

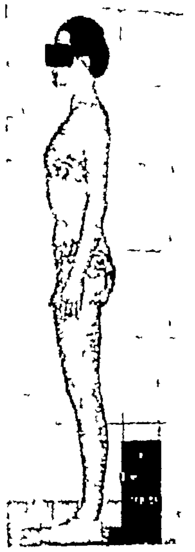


Fig 5—The standing positi
posture. (b) As

Head neck Relationship.—The primary defect in postural disorders is usually in the region of the head and neck If the body is to move and to develop in an integrated manner, it should do it in such a way that the head leads and the body follows Although there are a tremendous number of ways in which the head neck equilibrium can be disturbed, the most common fault is a retraction of the head backwards and downwards Fig 4 shows this in a stroboscopic picture of som
forward from the hip joint with a curved sp
seen that the head gradually pulls further a
Below, he is shown bending forward from the h
his back straight, and this time there is not in
ference with the head A similar head retrac
clearly in figs 11 and 12 during the act of s

There are good anatomical reasons why
such difficulty with the correct use of their
muscles which control the head mostly in
occiput, and there is a great disparity in
strength, and size of the anterior flexor m
head, and the posterior extensor group (
In the pronograde "monkey" position w
we have developed, strong flexors are n
but in the upright orthograde position, the hea
if they are unduly contracted, tend to pu
backwards and downwards, and when th
the sternomastoids, instead of acting a
become additional retractors

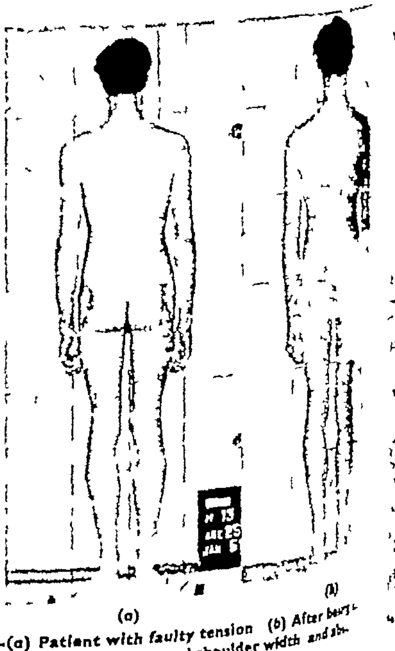


Fig 6—(a) Patient with faulty tension (b) After
Note increase in height and shoulder width and sh
neck and buttocks

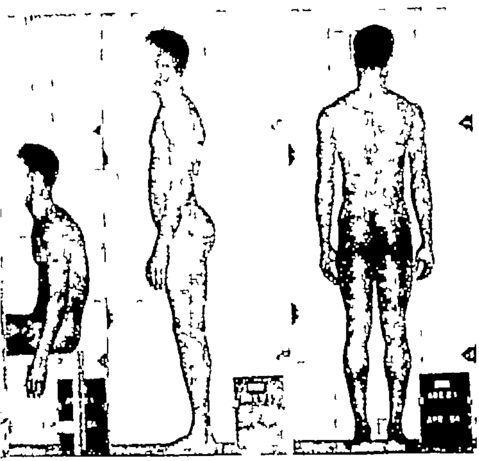


Fig 7—Bad sitting and standing positions in an athlete.

of Joint Surfaces

ct fundamental principle in the disposition ty is that joint surfaces in the resting state ver be pulled together but should tend to way from each other Thus contraction and of the back muscles should be replaced by a of the back to lengthen so that the vertebræ arate instead of to squash together similarly us should lengthen out from the shoulder forearm from the elbow the hand from the femoral head should not be contracted into int This probably sounds obvious but in care to find people being taught to separate es apart instead of contracting them together example occurs in the case of the shoulders ws, on the right the posture taught in the ntal standing position —chin tucked in wn out shoulders braced back There are eople who have not at one time or en given this pernicious instruction he shoulders back which contrasts h the posture on the left I cannot of me see why this anachronism is lated with Perhaps the spurious hich it gives to the shoulders looks and I have heard it said that this is to correct a thoracic kyphosis It accentuated too strongly that round with a thoracic kyphosis are lue to a faulty use of the head and

the most important malfunctioning ng back of the shoulders produces is e with the act of breathing Fig 6 tient who has been taught to release tension which retracted his head his thorax and which pulled the ogether It will be seen that when n is released his stature has and with the widening apart of the he best conditions are present for ansion during breathing

houlder Girdles

the next most important primary lunder is the habit of using the part of the legs thereby making a false joint in the lumbar spine, instead of integrating the pelvis with the rest of the back during moving This was shown in fig 4 and is demonstrated again in fig 7, which shows a coloured athlete, a sprinter, in the sitting and standing positions He works in an office and tells me he always sits like that yet his standing position is just as bad in the opposite direction in this position there is excessive tension in his erector spinæ muscles, and quite obviously it would be no solution to his slumped sitting position to give him strengthening exercises He should think of his pelvis as being part of his back and when he wishes to avoid slumping, he should lengthen the whole trunk off the hip joint not just from the lumbar spine.

Another common postural fault is adduction and internal rotation of the femur The crossed legs position though it may be ladylike and comfortable is fatal to the coördination Crossing of the ankles is less damaging because it allows the knees to be directed outwards

Slightly more complicated but very common distortions are the rotary twists of shoulders and pelvis fig 8 shows three glaring examples in people who were quite unaware of their deformity These rotary twists are extremely difficult to sort out and are important causes of back pain The patient often finds it difficult to locate his pain accurately and may even feel that it is arising in his thorax or abdominal cavity One finds patients of this kind travelling round from specialist to specialist in order to exclude disorder in some abdominal organ—kidneys appendix gall bladder or stomach—until many of them develop secondary neurotic symptoms because no one believes in their very real pain Many obscure pains which the patient finds difficulty in locating exactly are associated with rotary twists in the dorsal or lumbar spine

Bodily Behaviour

One basic point is being overlooked in a great deal of remedial work—that it is *behaviour* rather than *structure*

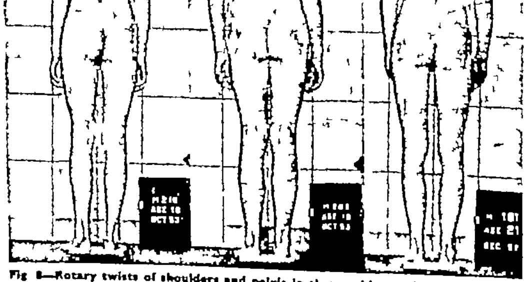


Fig 8—Rotary twists of shoulders and pelvis in three subjects who were unaware of their deformity

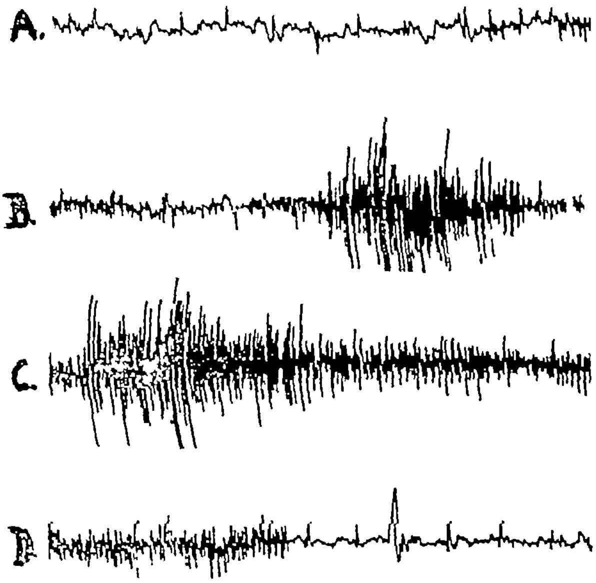


Fig 9—Electromyogram of trapezius of a violinist whose shoulder and upper arm muscles tended to go into spasm (see pp 659-60)

which determines the mechanics of the body By behaviour I mean *all* the habitual motor responses with which we react to the outside world, and by means of which we adapt ourselves to its various stresses The behaviour pattern, of course, can take place only within a certain anatomical and physiological framework, but, just as in a game of chess, which has certain fixed laws, an almost infinite number of variations of behaviour is possible

Although it may be helpful for some purposes to view the body as a machine, an affair of muscles and levers, the human organism is a very rare type of machine, a motor-car which not only travels along, but carries out its own repair and maintenance work, provides a driver, and on occasion reproduces itself But if the driver insists on putting on the brakes on the front wheels whilst he accelerates with the rear wheels, it is no solution to provide new brake linings the driver needs to learn how to integrate his performance so that he breaks or accelerates at the right time How did the patient illustrated in fig 6 learn to undo his faulty tension? It was no good trying to influence him at the symbolic level—in other words, verbal or pictorial instructions are no good by themselves It is no good telling a child to "sit up" or "stand up straight," until he has been shown how There are a number of methods for re educating postural awareness the one which I have used for over 15 years is the method put forward by Matthias Alexander (1932) Fig 3 (p 659) is an E M G from the neck of a patient who habitually tensed his muscles even when at rest (like the patient in fig 6), and thereby disturbed the mechanics of the head In A is shown his habitual resting state, which is one of greatly increased tension In B, I adjust the head manually until the tension releases When I stop the adjustment, the tension returns In C and D I repeat the procedure In E I repeat it, but when I remove my hands, he now maintains the free state (This is a continuous record, split up for convenience)

By itself this procedure is not enough to link up the "raw experience" which with the patient's conscious brain, with a model, so that he can evoke the "resting All learning involves an element of co if we wish to teach a child what a cat is, every time we show one to him until ev the two together In the same way, a shown the raw experience of the correct and this he is taught to associate with a use the words "head forward and up" being the opposite of retracting back, and the opposite of pulling the head, like a thorax When this primary order has been patient is then given the experience of tensional balance in the back I use the and widen the back" It will be noticed "forward and up," "lengthen and contrary adjustments If the head goes it will pull down in front If it goes will pull back And if the back l will be at the expense of width if much, it will be at the expense of length static equilibrium takes place between pulls

An example of this procedure, in a shown in fig 10

This child has been familiarised with the sequence of directions to herself, and was not the procedure In the first picture she is lordosis, a habit into which she readily falls or over reactive While she consciously dir forward and up, and lengthens and widens the the knees forward Still giving the directions, forward from the hips

The position now is one of the greatest value provided that the patient has first been famil directions to the head and the back. Here fundamental homœostatic equilibrium of *the head going forward*, the knees going forward *coming back* One can visualise arrows forward, the knees forward, but *a contrary* lower back comes back, lengthening to surfaces

In this position, most of the joints are in the flexor and extensor pulls are balanced. This by integrating the pelvis with the back, rather legs In this position the patient receives at first, quite tiring experiences If the are maintained, the *erect posture* can be maintaining those contrary pulls. In fact, the quite straighten her knees *sufficiently*, but it the lumbar lordosis has been corrected.

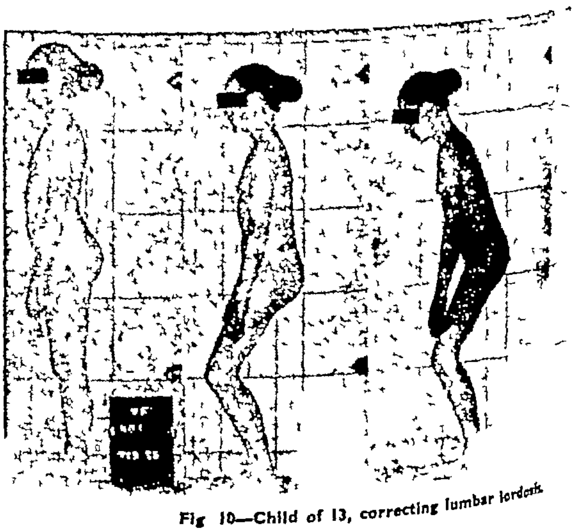


Fig 10—Child of 13, correcting lumbar lordosis

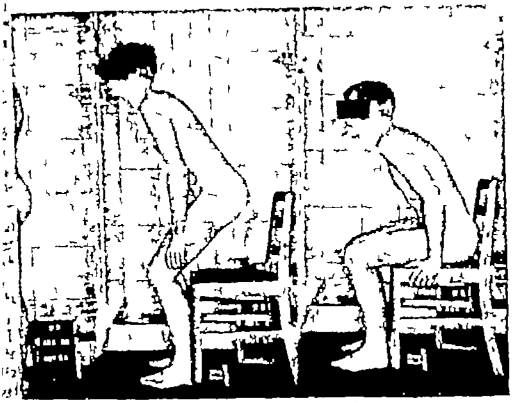


Fig 11—Patient pulling head back as he sits down.

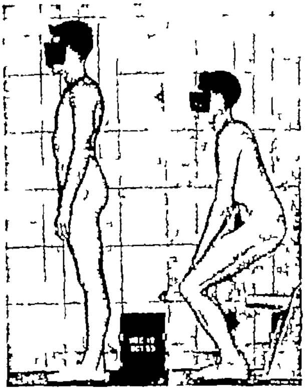


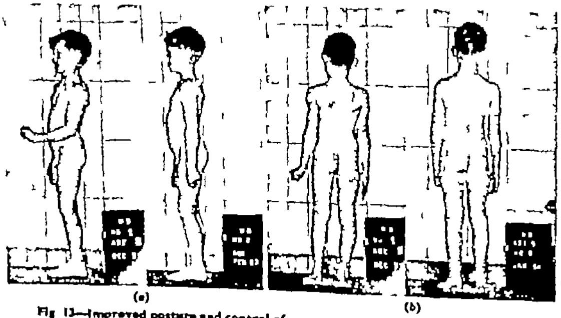
Fig 12—Kyphotic deformity accentuated by movement.

Patterns of Behaviour

and Davenport Hooker (Herrick 1949) have
iat in the vertebrate embryo or fœtus there is
attern of integration which they call the ' total
of integration In the embryonic stage when
l legs have not yet developed a stimulus any
the body produces a total pattern response
arts at the head and works down through the
ie head leads and the body follows. Even when
d legs develop, a total pattern response
ars if they are stimulated It is only at a later
it stimulation of the limbs produces partial
esponses Behaviour in fact develops as a
tern sequence which should dominate partial
movements A response say of moving an
is first to be canalised into the total pattern—
neck and then the back *if there is to be proper*
tion. If the child in fig 10 is to move the arms
n integrated manner there must be no inter
ith the total pattern of the head neck *and*
ie guiding directions which she has been taught
that her *intention* is integrated. This way of
n improved use of the body applies, in principle
rection of the various other defects, and as each
as his own difficulties all the skill and ingenuity
son training him is required in order to achieve
d resting state.

however one thing to learn something in this
quite a different thing to apply it in the hurly
the day s activities. If what has been learned
applied the crucial point always
hen a patient reacts to a

he patient in fig 11 reacts to
of sitting down by pulling his
, thereby losing his total pattern
ion By continually reacting in
there will be a slow hardening
course of the years of habits of
which eventually become the
osition—in this case a kyphosis.
nately instinctive reactions
nditions of civilisation are not
ppropriate or reliable Unless we
we receive a stimulus, we shall
ontrol over our reaction Fig 12
had kyphotic deformity in a
n which he accentuates when he
im showing him because he is one
p who have been given much *verbal* instruction over a period of 12 months, in a training college about the need to avoid head retraction However when he *reacts instinctively to the idea of sitting down* he immediately pulls his head back In spite of his verbal teaching he has not learnt to stop his instinctive habit *Until* he does this he will go on churning out his old faulty behaviour pattern ad infinitum If however, he does stop—and this soon becomes second nature—he will have time to integrate his thoughts and his intention so that he releases his reaction in the right order he will in fact see that he maintains his total pattern of reaction so that his deviations from the resting state will be slight, and he will return to a state of rest when his actions are completed This procedure applied to a young tension athetoid is seen in fig 13 The athetosis was almost constant and became pronounced whenever he attempted to use the hand By teaching him first to direct his attention to his head and then to his back and only then to the movement of his arm, his reaction became, *after 2 months* integrated and controlled Fig 13(*a*) shows the patient in lateral view before treatment and after 2 months treatment Fig *13(b) shows a back view of the same patient on* the left before treatment and on the right after a year It will be seen that his back is growing somewhat straighter and he now attends an ordinary primary school to which he walks by himself every day This child again illustrates the principle of teaching a patient to canalise his energy his response first into the total pattern and only then into the partial pattern reactions.



(*a*) (*b*)

Fig 13—Improved posture and control of movement in a patient with athetosis.

In a recent review of the relationship between anxiety and muscle tension (Barlow 1955) I have pointed out that a patient's muscular tensions are a fundamental part of his defence against the world When his tension state is removed, he may for a time feel naked, defenceless, and "wrong" as he copes with his affairs This is one of the greatest difficulties in teaching him new habits He rapidly reverts to his old tension state and to the old posture associated with it—the posture, say, of submission to authority by slight cringing, the feeling of the tall girl that she must pull herself down to be smaller, the feeling of a child that she will get what she wants if she is pert and wears her head cocked on one side—a little girl attitude that often persists well on past middle age Then again there are all the instinctive fear reactions which lead to a misuse of the body A mountaineer patient of mine tells me that when he is training novice climbers the impulse of fear is always associated with a retraction of the head and a stiffening of the arms and legs into the body—the very thing which destroys coordination and leads to falling These reactions are infinite in number and are deeply ingrained

Conflict of opinion on the subject of low back pain will be with us for ever unless we realise that it is *behaviour* which disturbs the mechanics of the back, all day and every day, and that it is only through a re education of behavioural attitudes that we will alter these mechanical faults If I were asked to sum it up in one phrase, I would say that what is wanted in order to restore a balanced equilibrium to the body is not a strengthening of muscle, but an *integration of intention*

The patient in fig 13 is shown by kind permission of Mr D Price Williams

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THE HEALTH SERVICE IN 1954

THE Ministry of Health's annual reports are invaluable guides to long-term trends Part 1 of the report for 1954[1] underlines several heartening trends in the National Health Service, including a reduction in waiting-lists at general hospitals (due to increasingly prudent use of beds) and at sanatoria (due mainly to a decline in notifications and to therapeutic advances) But the report has more sombre aspects for instance, the mental hospitals remain grossly overcrowded

USE OF HOSPITAL BEDS

About 40% of patients admitted to hospitals (excluding mental and mental deficiency hospitals) come in after *some period on a waiting-list Waiting lists reached a* peak in 1950, thereafter there was a sharp decline, followed by a further peak in 1953 Between the end of 1953 and the end of 1954 the total fell by no less than 49,000 (52,000 including mental and mental deficiency hospitals) to 465,000 (474,000 including mental and mental deficiency hospitals) This reduction is not spread evenly throughout the country or throughout the different specialties (table I) The number of inpatients and outpatients continues to increase (the number of inpatients increased in 1954 by about 87,000) It follows that the reduction in waiting lists results the increased ability of the hospital service demands on it This step forward has partly by an increase in the number of in 1954 the average total was 476,523 and mental deficiency hospitals), compared the previous year But largely it is due turnover (table II)

TABLE I—HOSPITAL WAITING LISTS, BY SPECIALTY 1953 AND 1954

Specialty	Year	
	1953	1954
General medicine	10 0[illegible]	[illegible]
General surgery	135 112	[illegible]
E N T	175 015	[illegible]
Gynæcology	59,071	[illegible]
Tuberculosis	5299	[illegible]
All non mental specialties	514,109	[illegible]

"The increase in every case may appear pressive but its smallness is itself significant, between 12 8 and 13 1—three in every ten taking up one extra patient each during the *room for upwards of 70,000 additional patients*

Percentage bed occupancy—the ratio of occupied to average beds available during receded from 90 in 1953 to 89 8 in 1954. include mental and mental deficiency improved bed usage was due mainly to average length of stay (table III)

Such an improvement, as the report achieved in several ways,[2] including more use of outpatient and domiciliary services, in the interval between the discharge of and the admission of the next," arrangements sions to accord, where necessary, with the specialised investigation and operating and mobilisation of the services for rehabilitation so as to avoid unnecessary discharge

CAPITAL DEVELOPMENT IN THE HOSPITAL SERVICE

In the *financial* year 1953–54 £10 million to the hospital service for capital development capital expenditure from the start of the to the end of March, 1954, amounted to million The distribution by category and hospital is shown in tables IV and V

During the year a programme of special financed *outside* normal allocations to hospitals was drawn up These schemes included in 1954 of an initial £1 million for mental and mental deficiency hospitals started on a mental deficiency hospital

TABLE II—TURNOVER (NUMBER OF PATIENTS DISCHARGED OR DIED PER ALLOCATED BED), 1953 and 1954

Group of patients	Non teaching hospitals		Provincial teaching hospitals		[illegible]
	1953	1954	1953	1954	[illegible]
Other than mental and mental deficiency	12 1	12 3	21 7	[illegible]	[illegible]
"Acute" (i e other than mental, mental deficiency, chronic, and chest)	17 4	17 7	[illegible]	[illegible]	[illegible]
All	6 7	6 8	21 7	[illegible]	[illegible]

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[1] Report of the Ministry of Health for the Year Ended Dec 31 1954 Part 1 1 The National Health Service 2 Welfare Food and Drugs Civil Defence Cmd 9566 H M Stationery Office Pp 242 8s

[2] H M (54)89 See *Lancet*, 1954, ii, [illegible]

—AVERAGE DURATION OF STAY IN HOSPITAL (DAYS), 1953 AND 1954

Specialty	1953	1954
dicine	22 8	22 8
gery	14 3	13 8
	11 7	11 5
	18 6	18 4
and orthopædic surgery	28 2	26 7
the chest	138 2	161 7
n tonsils and adenoids	8 5	8 1
id adenoids	1 0	4 2
gery	32 2	32 0

Southport This was the first large hospital inpatient accommodation to be started since

MENTAL HEALTH SERVICES

ntal and mental deficiency hospitals remained overcrowded At the end of the year the l mental hospitals excluding the former sistance institutions, had bed-space on author lards in use for 121 656 patients There were atients in residence so the accommodation s overcrowded by 15 6% The corresponding r 1953 were 120 212 139 135 and 15 7% sion rate continued to rise in 1954 admissions 1,690 compared with 67 422 in 1953

ital-deficiency hospitals the accommodation ised standards in use at the end of 1954 was ompared with 45 657 at the end of 1953—e of 987 There were 52 240 patients in resi the accommodation in use was overcrowded At the end of the year there were 7033 mental on hospital waiting lists, compared with 8442 l of 1953 This encouraging reduction in the those awaiting admission springs mainly from sed proportion of capital resources made avail this purpose the effects of which are now to be felt

end of 1954 the average number of staffed urse was 6 6 in mental hospitals and 7 0 in iciency hospitals

—HOSPITAL CAPITAL EXPENDITURE, 1948–54 BY CATEGORY

Category	Percentage of total
ls and major extensions	10 1
modation	*0 8
lical departments (including operating nd diagnostic departments)	10 1
and casualty departments	0 7
tion for staff including nurse training	16 2
	1
ns	2 6
services	13 4
are general developments	0 5
ion (hospitals)	1 5
s	7·0

TUBERCULOSIS

notifications of tuberculosis decreased despite gnostic facilities. The improvement in the rs from 1948 is indicated by the figures in

HEARING AIDS

end of 1954 the number of people in England s fitted with Medresco hearing aids since f the service had risen to over 412 000 Except areas the waiting period had been almost Fresh applications numbered less than 5000

BLOOD TRANSFUSION SERVICE

e blood-donors reached a total of 540,380 rose from 659 074 in 1953 to 700 202 in 1954—an increase of over 6% The attendance rate which varied with the seasons and the weather averaged about 40% of those called It is estimated that to meet the probable growth in demand the effective donor panel should be increased by about 25%

USE OF SPECIAL DEPARTMENTS

The national average of the percentage of work done in hospital X ray departments on behalf of general practitioners rose from 8 3 in 1953 to 8 7 in 1954 In hospital pathological departments the corresponding figures were 4% in 1953 and 4 3% in 1954 The total number of units of work done at hospital X ray departments in 1954 was about 20,250,000 compared with about 18 260,000 in 1953—an increase of 10 9% The corresponding figures for pathological departments were 42 750 000, 37,750 000, and 13 2%

TABLE V—HOSPITAL CAPITAL EXPENDITURE 1948–54 BY TYPE OF HOSPITAL

Type of hospital	Percentage of total
General	53·2
Mental and mental deficiency	16·0
Chronic	4 2
Convalescent	0 3
Infectious diseases	0 5
Maternity	3 3
Orthopædic	1 7
Tuberculosis	4 8
Tuberculosis and infectious diseases	1 4
Children	3 0
Other special	0·0
Other establishments (clinics &c)	1 9
H.M.C offices and board services	1 5

VISITS TO CHILDREN IN HOSPITAL

In 1953 on the advice of the Central Health Services Council, the Minister urged hospital authorities to allow the daily visiting of children in hospital by their parents.[3] Previous inquiry had shown that in mid 1952 of some 1235 non teaching hospitals taking children only 271 allowed daily visiting while 141 prohibited all visiting except in emergencies. Since then the position has improved The number of hospitals at which daily visiting is allowed has roughly trebled while only 28 hospitals do not normally allow visiting

" General experience seems to have been that daily visiting has in practice worked smoothly and beneficially and that it does not have the harmful effects—in particular emotional disturbances to the children and the introduction of infection

TABLE VI—TUBERCULOSIS STATISTICS 1948–54 (FIGURES IN PARENTHESES RELATE TO RESPIRATORY TUBERCULOSIS ONLY)

Year	Mortality	Notifications	Hospital beds at Dec 31		Nursing staff at Dec 31		Waiting list at Dec 31
			Allocated	Occupied	Whole time	Part time	
1948	21 993 (19 088)	52,676 (43 971)					
1949	19 008 (17,539)	5? 041 (44 480)	31 273 (27 286)	26 115 (?? 767)	4781	984	10 980
1950	15 969 (14 070)	49,358 (42 435)	33 098 (29 207)	27 782 (24 411)	5333	1004	9578
1951	13,866 (12 031)	49 440 (42 998)	34 120 (30,581)	29 408 (26,397)	565	1173	7096
1952	10,585 (9335)	48 093 (41 901)	35 ?03 (31 063)	29 737 (27 156)	6040	1185	6126
1953	8902 (7913)	46,646 (40 917)	35 118 (32 418)	30 412† (28 190†)	6692	1615	5999
1954	7897 (7069)	42,348 (36 073)	35 069 (32 593)	30 142† (28 088†)	7302	1755	3017

Excluding 1300 beds outside the National Health Service
† Average daily number of beds occupied during whole year

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[3] B.H.B.(53)18 See *Lancet* 1953 i, 531 539

—which were at one time feared in some quarters There have been very few instances indeed of a hospital trying daily visiting and then abandoning it "

ACTIONS FOR NEGLIGENCE AGAINST HOSPITALS

After 1948 there was a considerable increase in the number of claims and legal proceedings against hospitals and their staff, principally medical staff, alleging negligence in the treatment of patients No figures are available for the exact number of these cases, because they are handled by the hospital authorities themselves and no central records are required or kept There was, however, some evidence that by the end of 1954 the peak had been reached or even passed

Compensation payments of all kinds made by N H S hospitals in England and Wales rose from £7560 in the period July 5, 1948, to March 31, 1949, to £159,047 in the year ended March 31, 1954

" Although the number of claims has unquestionably increased it has probably not increased in the same proportion as the amounts paid by way of compensation This is because the Courts have tended, in view of the altered value of money, to make higher awards of damages in the first nine months of the National Health Service the highest compensation payment was £1000, in 1949/50 it was £3375, in 1952/53 it was £11,740, and in 1953/54 it was nearly £12,500

" There is no evidence whatever that there has been any deterioration in the standard of service provided which might account for the increase in the number of claims Several factors have probably contributed to it Firstly it has now to be accepted, in the light of recent Court decisions, that in law a hospital authority is responsible for the negligence of all its agents and servants, including the medical staff Secondly, the Legal Aid and Advice Act, 1949, has made it possible for many people, who would formerly have been deterred by their inability to afford it, to pursue their real, and sometimes their imagined, grievances in the Courts (There have been one or two sharp comments from the Bench recently on frivolous actions against the hospital service) The old feeling of forbearance towards the hospitals, even where real damage had been done, seems to be disappearing Thirdly, it must be borne in mind that a great many of the actions heard in recent years have arisen from causes occurring before the beginning of the National Health Service

" It is true that the Limitation Act, 1939, provided that no action should be brought against a public authority unless commenced within one year of the event about which the complaint was being made But in accordance with general Government policy in this matter and by an administrative act of the Minister, hospital authorities were allowed to plead this provision in defence only with the Minister's prior approval This was in practice given only where the delay had been quite unreasonable or had seriously prejudiced the defence through, for example the disappearance in the mean time of essential witnesses The result has been the initiation of proceedings in an appreciable number of cases where the grounds for the action occurred some time before 1948 The Law Reform (Limitation of Actions, &c) Act, 1954, has now changed the position, putting public authorities on precisely the same footing as private persons as regards the period within which actions may be brought against them In the case of actions for damages for negligence the period is now three years and, subject to certain transitional provisions, hospital authorities may now automatically plead the statutory period of limitation in their defence

" Another change in the handling of actions against the Service was introduced during the year through an administrative agreement with the medical profession and their defence societies Claims against hospital authorities are often made in respect of the alleged negligence of doctors on their staff and, where the claims were successful, it had been the practice, up to the early part of 1954, to claim by legal process a contribution towards the damages and costs awarded against the hospital from the doctor or doctors responsible This often meant a subsidiary Court action between the hospital and the doctor under the Law Reform (Married Women and Tortfeasors) Act, 1935, which was heard side by side with the main action and benefited neither the hospital nor the doctor Indeed, owing to the fact that it was in the interest of both the hospital as defendant and the doctor as witness or co defendant to throw blame as possible each on the other, it was cases in which there had been no true nevertheless be lost through ill coördinated

" By agreement between the Minister and and medical defence societies, therefore ceedings against doctors are no longer brought Tortfeasors Act Instead, the hospital and the acting for the doctor (whether or not he defendant in the action) try to agree privately if possible before the case comes to Court, of whatever sum may have to be paid to they cannot agree, a 50 50 apportionment is early to assess the effects of this new been working smoothly and has made the both by the hospitals and the doctors, A similar arrangement has been agreed profession."

STRUCTURE OF GENERAL PRACTIC

In 1954 the number of admissions to 1176, and the number of deletions 782— of 394 Of those admitted 678 entered into including 320 assistants who joined their cipals, and 175 were doctors who had applied

TABLE VII—DISTRIBUTION OF PARTNERS BY PARTNERSHIP

No of doctors in partnership	1953	1954
2	6146	6414
3	2898	3199
4	1168	1303
5	410	445
6	241	98

single handed practices The number of included 12 arising from exchanges of practi

On July 1, 1954, there were 6899 doctors single handed and providing unrestricted med The corresponding figure in July, 1953 was

In the year from July 1, 1953, to Jan doctors practising in partnership increased 11,583 The increase in the total number of was only a little more than half that in the but the distribution between the various constant (table VII) " It seems fair to the report " that there is still a trend practise in partnership and that there is ment away from single handed practice of doctors who have already been in principals "

In 1954 the total number of firms employ was 1451, compared with 1514 in 1953, number of assistants was 1504 (compared Whereas in 1953 there were 729 assistants or less, in 1954 there were 668

The numbers of assistants in the various in the years 1952–54 are shown in table

TABLE VIII—DISTRIBUTION OF ASSISTANTS

Age (yr)	1952	1953	1954	Age (yr)
30 and under	748	729	668	51–55
31–35	398	538	444	56–60
36–40	211	172	149	61–65
41–45	92	68	68	66–70
46–50	67	39	42	71–75
				76 and over

changes in the age groups between " remarkable In the age group 36 to decrease of 28 4 per cent and in the to 55 a decrease of 41 4 per cent suggest that a considerable movement during the last two years from assistant status "

Conferences and Congresses

TERNATIONAL CONGRESS OF NEUROPATHOLOGY

start of the second International Congress of ology, held in London on Sept 12–17 Dr NFIELD took over as president from Dr Mario Rome) Opening the congress Sir HENRY DALE remarked on its truly international character variety of the programme 00 members were present, and some 180 papers A few of these are summarised here

Pathology of Involuntary Movement

ugural session Dr GREENFIELD in his presidential d tribute to the memory of James Parkinson ntenary is being celebrated this year Although ad no definite pathological evidence as to the site f the disease said Dr Greenfield he was clearly nion that it should be studied by pathological or he exhorted the contemporary pathologists to example of Morgagni, John Hunter and Matthew r Greenfield reviewed the historical landmarks wed the publication *of Parkinson's monograph* in

a (Madrid) dealt with the physiological and patho siderations of myoclonus and was followed by ORDEN (Giessen) on the basal ganglia with special the extrapyramidal disorders, J NEGRIN (New arkinsonism and choreo-athetosis in supratentorial HASSLER (Freiburg) *on the pathological basis of* parkinsonism, and J N CUMINGS (London) on the of Wilson's disease J PURDON MARTIN (London) he findings in 3 cases of hemichorea where the e in parts of the brain other than the corpora showed their importance in corroboration of the al work of Whittier and Mettler on the relationship dies to the globus pallidus.

Mental Disorders

TICAL BIOPSY IN DIAGNOSIS OF DEMENTIA

KWOOD (*London*) *described the results of 30 cortical* elucidate or confirm the clinical diagnosis in h progressive dementia. In about half the biopsies sible to indicate the pathological process, and in ird to give an exact diagnosis. The conditions ded subacute encephalitis (Dawson's inclusion body and van Bogaert's subacute sclerosing leuco) cerebral lipoidosis, metachromatic *leuco* ence and progressive fibrinoid degeneration of fibrillary (hyaline pan neuropathy)

IC CEREBRAL DEGENERATION WITH MYOCLONIC EPILEPSY

McMENEMEY and S NEVIN (London) reported 5 tances of a disorder *described in 1954* by Jones characterised by the onset in late adult life of romal symptoms leading to signs of focal cerebral ich as hemiplegia, severe mental disturbance with f consciousness, and myoclonic epilepsy The as progressive *and fatal* over three to four months. encephalographic changes were distinctive—con periodically recurring generalised sharp and slow lexes. The pathological changes were also distinc ising widespread cortical degeneration, a tendency pongiosus and widespread glial reaction especially er cortical layers where some of the neuroglial led *gemästete* glia. Jones and Nevin *had suggested* yndrome was due to vascular insufficiency but n and Heidenhain had concluded that it was enerative Examples of this disease were to be ng the reported instances of the Jakob-Creutzfeldt

TEIN and G A JERVIS (Montrose N Y) reviewed pathological findings in 25 reported cases of the tzfeldt disease and described 2 fresh instances extreme varieties within the syndrome: the 1st months duration with a clinical diagnosis of amyotrophic lateral sclerosis, and the 2nd of fourteen months duration with symptoms of severe dementia accompanied by *twitchings of the extremities on falling asleep* In order to identify cases according to the preponderance of involvement the terms spinal strio-cortical and strio-cortico-spinal degeneration were favoured. A toxic effect of unknown nature appeared to underlie the disorder

PARALYSIS AGITANS AND CEREBRAL AGEING

W RIESE (Richmond Va) had sought signs of cerebral ageing in 6 cases of paralysis agitans. At necropsy the brain weight varied from 1000 to 1370 g Convolutional atrophy was found in only 2 cases, senile plaques in only 1 and neurofibrillary changes in 2 Cellular changes in Nissl stained cortical sections, consisting mainly of shrinkage were seen in all cases. Glial reaction was either absent or insignificant except in 1 case.

Temporal lobe Epilepsy

J B CAVANAGH and A. MEYER (London) had examined the morphological changes in 40 resected temporal lobes. In about a quarter of the cases there were single focal lesions due to tumours vascular malformation, or gross trauma with a striking predilection for inferomedial structures, including the amygdaloid complex In most of the remainder definite and substantial *lesions* were *found* but these were quite diffuse or disseminated and their significance in ætiology was often uncertain Typical sequelæ of circulatory *disturbances* and anoxia (laminary cortical sclerosis sclerosis of Ammon's horn extending into the uncus and amygdaloid nucleus) were common The possibility of birth injury in some cases could not be excluded but the status epilepticus that commonly occurred *at the onset of the disease* (often as a complication of some childhood malady) was a likely cause of these lesions.

K. SCHARENBERG (Ann Arbor Mich.) remarked that the histopathological picture of psychomotor epilepsy examined by the silver-carbonate technique included amœboid degeneration of the astroglia (which was not as some had suggested *a post mortem change*); *degeneration* of the satellite systems of the neurons; and extensive necrosis in the grey and white matter The silver-carbonate technique *revealed in living* tissue a histological picture which was as characteristic of temporal lobe epilepsy as were the histological changes associated with general paresis.

Encephalitis

INFANTILE SUBACUTE NECROTISING ENCEPHALOPATHY

R. B RICHTER (Chicago) reported 3 cases of infants who presented with symptoms and signs of widespread devastating disease of the brain *for which* no source was found elsewhere in the body The clinical features included the early appearance and persistence of feeding difficulties associated with dysphagia inadequate sucking and regurgitation; slowness or lack of behavioural development with failure to support the head to sit up or stand, or even to turn over from the recumbent position; eventual deterioration of simple sensory motor and postural behaviour; *impaired* or absent pupillary light reflexes blindness and deafness very brisk tendon reflexes (extensor plantar responses; and *convulsions* late in the course of the disease The infants died in acute respiratory failure In each case the salient pathological changes *were foci of* necrosis in the brain-stem affecting the ground-substance primarily without special selection for grey or white matter; this change was *restricted* to the tectum and tegmentum of the mid brain the tegmentum of the pons, and the central grey and reticular formation of the medulla *oblongata*. The disorder possibly arose from endogenous toxæmia or an inherent metabolic defect possibly enzymatic

ACUTE HÆMORRHAGIC ENCEPHALITIS

K. KRISTIANSEN W HARKMARK, and M COHEN (Oslo) had found that acute hæmorrhagic encephalitis was not necessarily fatal. The diagnosis might be established in life by the presence in biopsy material of necrosis, cellular infiltration hæmorrhage and demyelination. Of their 6 cases 3 had survived. In 1 recovery was complete; the other 2 survivors had mental symptoms. These 6 cases had appeared over the relatively short period of seven months whereas no such cases had been observed in the previous two years. This apparently increasing incidence was consistent with causation either by infection or by a toxic agent

TUBERCULOUS ENCEPHALITIS

M Gozzano, V Floris, D Merigliano, and C Morocutti (Rome) had investigated the efficacy of streptomycin therapy in tuberculous encephalitis by inoculating the brains of guineapigs with living virulent tubercle bacilli Control animals, to which streptomycin was not administered, died within a week, the cerebral changes were those of hæmorrhagic encephalitis and meningitis A second group was treated with intramuscular streptomycin 30 mg daily These animals died fifteen to thirty days after inoculation, the brains showed a granulomatous type of leptomeningitis and widespread œdema A third group was treated with streptomycin 30 mg daily along with brain tissue intramuscularly This group survived on average some three to six months The brains contained granulomatous lesions in the region of the vessels and the perivascular parenchyma, together with small hæmorrhages It was not clear how the efficacy of the the drug was enhanced by concomitant administration of brain tissue

Blood-brain Barrier

D H M Woollam and J W Millen (Cambridge) said that the concept of a blood brain barrier had been derived from observations that some aniline dyes, toxins, viruses, and drugs circulating freely in the blood stream did not appear in the nervous tissue proper A similar barrier existed between the blood and the cerebrospinal fluid (C.S F), and some confusion still existed because it was once believed that the C S F was the nutrient fluid of the central nervous system, and that the exchange of substances between the blood stream and the central nervous system took place entirely through the C S F Various possible sites of the blood brain barrier had been excluded There remained four possible loci—the capillary endothelium, the neuroglia, the ground substance, and the neuron itself—and much further work would be needed to determine which of these was the site of the barrier

C E Lumsden (London) declared that the problem of the blood brain barrier was the problem of molecular transport between the lumen of the cerebral capillaries and the neuronal structures It was suggested that interstitial fluid channels were absent or less readily created in the depths of brain tissue than in other organs, and that thus more use had to be made of bulk transport (to the perivascular spaces) of the products of cell damage and foreign particles by an extensive scavenger system of amœboid cells Brain tissue approximated much more than other organs to the homogeneous cell structure which living tissue was generally said to possess In the brain the transport of water and other molecules might depend more on diffusion through the cytoplasm of the neuroglia cells, aided by protoplasmic streaming and molecular exchange at the cell interface, than on intercellular percolation In this sense the neuroglial " barrier " would be, not a specific membrane or architectural layer, but the whole width of the gel like matrix separating the neurone from the blood-capillary Dr Lumsden illustrated his remarks with cultured astrocytes one of which measured 1270 μ from " wing tip to wing tip " Fibre forming propensities of fœtal neuroglia were evident even in the 14–16 week human embryo, and movements and phasic refractility had been observed He suggested that the ground substance of the brain might consist of no more than glial cytoplasm.

G Boschi (Modena, Italy) concluded that (1) the anatomical relations of the blood C S F barrier were different from the relations of the blood brain (neuraxis) barrier, (2) there was no obvious parallelism between the blood C S F barrier and the blood-brain barrier, and (3) the most important barrier from the clinician's standpoint was the blood brain barrier It was incorrect to assume that where there was a breach of the blood C S F barrier there was also a concomitant breach of the blood brain barrier

O Gröntoft (Gothenburg) had found that in rabbits the permeability of the blood brain barrier to trypan blue and P^{32} was no greater in fœtuses and the newborn than in adults

J E Gruner (Paris) said that studies with radioactive isotopes had shown that different substances passed through the blood brain barrier at a variable speed, there was no all or-nothing law Water, oxygen, and anæsthetics passed through so quickly that exact measurement had so far proved impossible Large molecules and toxins seemed not to pass at all The velocity and intensity of passage varied with the region of the brain they were greater plexuses, the posterior hypophysis, the epiphy ependymal organs—in short, the areas of tous junction Topographically passage quicker in the cortex than in the white matter regards sodium and phosphorus The blood could not be studied without taking into blood C S F barrier

H Becker (Würzburg) declared that both the barrier and the blood C.S F barrier consisted of frame with a stable electric charge There were quantitative differences between these two might be located in the endothelium of the and/or the *Endothelgrundhäutchen* Any altera blood or brain changed the electric charge molecular structure General alkalosis as well the brain tissue severely impaired the barrier, acidosis and/or rise of pH in the brain the barrier

Trauma

Sabina J Strich (Oxford) described 5 cases of which the patients became severely demented so until death five to fifteen months later The was " uncomplicated " (i e , there was no clinical profound shock at the time of the accident intracranial pressure later, or of fracture of the cranial hæmatoma, or laceration of the brain) weeks after the injury cough and swallowing returned, and the patients had begun to But they remained immobile with severe bilateral hemiplegia, incontinent, aphasic, and necropsy the brain and its coverings looked normal The macroscopic abnormalities were slight to moderate dilatation of the lateral, and the 3rd, ventricles , a few small old hæmorrhages matter and basal ganglia , and occasional small contusions and cortical infarcts Microscopic showed an unsuspected degree of damage, which similar in the 5 cases The main lesion was and widespread degeneration of the white matter hemispheres There was incomplete loss of which were replaced by a large number of compound corpuscles and a few plump astrocytes, but very gliosis There was no evidence of progressive changes Degeneration of the white matter large areas of cerebral cortex from each other lower centres , in addition, there was secondary the thalamus and more or less severe main sensory pathways This work had shown of head injury the white matter as well as the be examined microscopically

R Lindenberg, R S Fisher, S H. Durl Lovitt, jun , and E Freytag (Baltimore, Md) pathological findings in 57 cases of blunt head infants and children The frequency of contu low in infant brains and steadily increased in the age of 3 years In the soft brains of infants multiple small hæmorrhagic tears were sometimes subcortical white matter in predilection areas centrecoup foci. Death was usually caused increased intracranial pressure, which reached fifteen to twenty minutes after the accident was survived for several hours or days extensive developed in certain areas of predilection, pression of blood vessels, and this often proved significance for the development of the post-tr than did the primary lesions

A Christie Loken (Oslo) described the findings in a youth who succumbed after hav a state of decerebration for a period of four following an obstruction of the respiratory tract body The parieto occipital lobes and the fr the most severely damaged parts of the cortex were small and shrunken, being replaced by tissue, but the striatum and globus pallidus spared There was a centripetal reduction of folia with loss of granular cells the Purkinje cells hand were mostly normal

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Abstracts of addresses at the congress are publ *Medica* (section 8, neurology, 1955, 8, no 9).

WORLD CONGRESS OF ANESTHESIOLOGISTS

d Congress of Anesthesiologists, organised by rlands Society of Anæsthesiologists was held ningen Holland on Sept 5–10 Over 800 from all parts of the world attended and 127 re presented At the end of the congress a deration of Societies of Anesthesiologists was ed with 26 countries participating Dr H R Montreal) was elected first president of the and Dr G S W Organe (London) secretary

owing is a brief account of some of the papers

Hypothermia

W Virtue (Denver) discussed some experi d clinical aspects of hypothermia He had found that neostigmine was of value for preventing ing ventricular fibrillation provided it was hat it reached the coronary circulation This achieved by injection into the aorta above a eed at the base of this vessel Electrical stimu he vagus had a similar beneficial effect Pro tue described a patient who had had the to one side of the brain clamped for half an r hypothermia without ill effect

C Slocum (Washington) showed how the nd pentobarbitone decrease the risk of ven brillation in the hypothermic dog's heart ne was more effective than pentobarbitone

Gray (Liverpool) thought that hypothermia f benefit in general surgery by conserving the ponses to stress for the recovery period rather ing them to be exhausted during the operation. s colleagues had tried to measure in dogs this afforded by hypothermia by assay of adreno eroid activity and electrolyte changes. Their wed that the changes normally associated with d anæsthesia were held in abeyance throughout of hypothermia

G B Lucas (London) drew attention to the between œsophageal and rectal temperature during clinical hypothermia. The former gave ccurate measurement of the body temperature usually a degree or two lower than the latter

Muscle Relaxants

Bovet (Rome) reviewed the history of the relaxant drugs with particular emphasis on sis of succinylcholine

D M Paton (London) described how the ent of end plate potentials had revealed the of action of the depolarising agents at muscular junction He thought that further n about abnormal response to these drugs from investigation of the ionic state and local t the end plate and he showed how potassium from muscle after the use of both deca and succinylcholine The increased con f this ion coupled perhaps with changes in ght well affect motor end plate reaction A t to consider was the interreaction of drugs

itale (Naples) had measured the serum during several operations and found a r the level to rise after administration of rugs and during muscular relaxation He at this indicated an attempt on the part of to combat the effect of the relaxant

W Mushin (Cardiff) described a technique g the contraction of a muscle (action potential) to submaximal electrical stimulation This urate method for assessing and comparing the laxants and the degree of relaxation Groups of muscles were affected in varying degrees, and could be allotted specific frequencies

Prof E A Pask (Newcastle) described a method of dissociating the peripheral and possible central effects of muscle relaxants Some clinical observations had suggested that succinylcholine might have a depressant effect on the respiratory centre, but his results did not substantiate this.

Dr F F Foldes (Pittsburg) discussed the fate of muscle relaxants in the body Under physiological conditions the course of muscular block depended on the size of the dose and the deposition of the relaxant in the body After the intravenous injection of moderate doses redistribution from the end plate into inactive tissue depots was primarily responsible for the termination of the neuromuscular block After administration of single large doses or repeated smaller doses the tissue depots became saturated and termination of the block depended mainly on the metabolic transformation and excretion of the agent

Dr R Frey (Heidelberg) gave details of a new short acting muscle relaxant belonging to the curare group—Prestonal' It took sixty seconds to work after intravenous injection was effective for five to seven minutes and could be antagonised by neostigmine There was evidence that this agent released histamine but any effects due to this could be avoided if the injection was made slowly Dr Frey said that clinical trials had shown that the drug might prove useful in anæsthetic practice.

Dr T Gordh (Stockholm) had made a statistical study of surgical mortality under general anæsthesia in the University Hospital of Stockholm From 1946 to 1954 the percentage of cases in which muscle relaxants were used had risen from 0 to 35% but there had been no change in gross surgical mortality Up to 1951 *d* tubocurarine chloride was the relaxant of choice, but since then succinylcholine had been used entirely

Teaching of Anæsthesia

Dr H R Griffith (Montreal) stressed the lack of enough adequately trained anæsthetists to cover the needs of the world He suggested that proper postgraduate education in the specialty was probably the most important necessity in present-day anæsthesia Clinical training was of greater value at the moment than research into new drugs or methods. He expressed the hope that international standards of training in anæsthesia might be achieved through the World Federation of Societies of Anesthesiologists.

Dr N R James (Melbourne) also made a plea for the teaching of simple methods in anæsthesia and of the basic care of the unconscious patient In his country techniques such as the open-drop administration of ether were of greater value for the general practitioner than complicated combinations involving apparatus.

Dr O Secher (Copenhagen) spoke of the anæsthesiology centre in Copenhagen sponsored by the World Health Organisation and the Danish government. Since 1950 five courses each lasting a year of practical and theoretical training in anæsthesia had taken place Instruction had been given by Danish anæsthetists and by visiting consultants from other countries the latter being largely drawn from the U.S A and Great Britain Twenty four countries, including Denmark had sent doctors to be trained at this centre.

Other Papers

Dr V Guardagni (Los Angeles) described clinical experiences of an entirely new intravenous agent in anæsthesia This drug 21 hydroxy pregnanedione sodium succinate (Viadril) is a steroid and has been shown in animals to be safe for anæsthesia. In 200 clinical administrations Dr Guardagni and his colleagues had noted several factors which differentiated it from the barbiturates By comparison with such drugs as thiopentone there was a noticeable lack of respiratory depression, while tracheal and laryngeal reflexes were almost selectively obtunded Accordingly it was possible to intubate under the effects of the steroid alone and without the risk of more than slight and temporary glottic spasm There appeared to be a true synergism between this agent and the opiates Viadril was probably not just a hypnotic, but a true anæsthetic, and unlike the barbiturates it had analgesic powers On the debit side it was an irritant, and phlebitis was likely to develop unless the injection was made via an intravenous drip so that the vein was irrigated, and a slight, transient fall in blood-pressure sometimes occurred Investigations were still in progress but there seemed to be a place for this drug in surgery of the head and neck

Dr M SWERDLOW (Manchester) commented favourably on 'Nisentil,' a new synthetic analgesic, as a supplement to nitrous oxide/oxygen anæsthesia Given in repeated doses it was less cumulative than pethidine

Dr J S CRAWFORD (London), in a paper read by Dr R D LEVIS, described an investigation into the passage of thiopentone and some muscle relaxants across the placenta in humans The fœtal serum level of thiopentone was greatest at the onset of anæsthesia and then fell exponentially In view of this Dr Crawford considered that the use of thiopentone in obstetrical anæsthesia was safe for the infant and should not necessitate a speedy delivery *d* Tubocurarine chloride and gallamine triethiodide had been estimated in cord serum after administration to the mother, an appreciable quantity of gallamine had been found, the level approached clinical significance, but nevertheless in none of the cases investigated was there evidence of fœtal paralysis The quantity of *d*-tubocurarine was just assayable and was not of clinical significance Dr Crawford concluded that gallamine should not be used in obstetrics

Dr H C CHURCHILL DAVIDSON (London) described a case of acute massive collapse of the lungs in which there was no evidence at necropsy of bronchial obstruction from a mucous plug or other mechanical factor He thought such cases might be explained on the basis of an acute reflex bronchiolar spasm leading to secondary venous congestion in the bronchiolar submucosa and perhaps glandular secretions

Prof J ZAITSEV (Moscow) discussed the practice of anæsthesia in the U S S R About 75% of all operations were carried out under local infiltration analgesia, usually with procaine hydrochloride Spinal analgesia was also used If general anæsthesia was necessary open ether was administered, often over an endotracheal tube Intravenous thiopentone was also given for minor operations lasting less than half an hour, but a total dose of 1 g was never exceeded Professor PSCHENITSCHNIKOV (Moscow) described a technique of local analgesia with procaine for pneumonectomy The action persisted long enough since the operation took about an hour

INTERNATIONAL CONGRESS OF CRIMINOLOGY

THIS congress, opened in London on Sept 14 by the Home Secretary, was the third of its kind, and had more than 400 participants from 44 countries These were drawn from many sciences, disciplines, and techniques, and, though assiduous in their attendance, they achieved informal and sociable relationships which made the gathering outstandingly successful Its main topic was Recidivism, but time was found for lectures and communications on a wide range of criminological topics

In his presidential address Dr DENIS CARROLL described the congress as concerned with the criminal habitus—the tendency that some human beings show of persisting in crime, whether their crimes be detected or not Preventive programmes, he said, must endeavour to take into account the very real need to
number of crimes that are never brought to
as those whose perpetrators are never d
those where the criminal is discovered and p
with This aspect of the problem has long b
to the mental scientist, because, in his ord
work, he is called upon not only to deal with
criminal but also to deal with a wide variety
tially delinquent, and predelinquent, children
adults He probably knows more accurately th
else the number of crimes—detected and u
that those whom he examines have comm
such knowledge is of great value when prescri
ment and in judging the likelihood of
committing another crime

Yet it must be acknowledged that the
and psychologist do not know anything
about the significance, for prognosis and tr
all the facts they are able to discover One
English studies has shown that only [illegible]
recidivists have official records of convictions
Similarly, many juvenile recidivists do not
develop into adult recidivists No-one has s
the problem of complete records "we n
know, for certain, whether the unofficial recor
individuals would show the same story as
records"

In prediction, Dr Carroll continued, we s
the kinds of facts about a criminal's care
cedents that can be observed fairly easily a
and we are tending more and more to rel
accurately observable facts which have been
demonstrated to be of significance for the
Correspondingly we are tending to depend
upon the variety of causal factors which we
to be at work in the criminal In the pre
knowledge, the known characteristics of the
are certainly of more value in prediction th
causal factors But this does not hold tru
field of our endeavour "when we do re
causes our attitude becomes inevitably re

"The dramatic results that have been achieved
tion studies have momentarily overshadowed oth
to the study of prognosis Similarly, the great a
has taken place in the application of statistica
to criminological research, has partially eclipsed
qualitative research But I think it is still
emphasise that, in the last resort, it is the qualit
that will reveal the true meaning of the probab
the statistician reveals"

To the clinician—whether he be a penol
worker, or a mental scientist—the implicati
use of prediction tables that an individual
a high probability of a recidivist career
regarded as a therapeutic challenge

In the forefront of modern treatment is th
treat the criminal by an all round attack o
known causal factors by all necessary biolog
logical, and social methods, including afterca
study, and ambulant treatment No longer
to think of the term "treatment" as impl
or psychological, or social, or penal, trea
Group therapy is used more and more in
in clinics in the treatment of offenders of al
though it is superficial as compared wit
psychological treatment, it is often su
individual treatment fails Research into
between the individual members of a gr
the tensions between groups of people have
understand why this is so These research
to new methods in the therapy of psychop
have also given insight into the extre
problems of morale in prisoners and prison

"I cannot help feeling that, in time they
to solve some of the vexatious problems of the

term sentence is so frequently unsatisfactory that rank high on any list of necessary researches. Such would surely result in reform; but not in the of the short sentence

fitting moment (concluded Dr Carroll) to recall trend of modern penology is towards leniency, nd prolonged aftercare

ably mistakes must occur and avoidable crimes be l. But such incidents are comparatively few What they are fewer than they would be in a harsher But it is not surprising that public anxiety is om time to time It is well to have a wise adminis at is also capable when necessary of withstanding ure of such anxiety Public over anxiety is the xcessive preventive action The remedy for public that the public be well *informed There is a need* education and ever more education in our science r practice Yet we must be ever mindful of the social security We must keep in mind, too the spect human rights

d in all these matters affecting our treatment of persons we must ensure that our efforts to reform ler do not offend against humanity Nor must zeal n lead us to outrage our sense of justice

Glueck (Harvard) and Mrs Glueck produced in favour of their view that criminal tendencies ed to physical type Compared with controls om the same under privileged areas of Boston of persistent delinquents showed twice as many phs.

Marshall B Clinard said that as a group cannot be distinguished from non-criminals terms of sociology or of mental or physical s. He advocated studies of the relationships of th urbanisation and with class structure and hat future criminological research should cover tion of contracts over a far wider field than the law[1]

RLD FEDERATION FOR MENTAL HEALTH

nnual conference opened at Istanbul on Aug 22 e presidency of Dr Frank Fremont Smith, director of the Josiah Macy jun Foundation k The aim of the federation he said, was to among all peoples and nations the highest level of mental health in its broadest biological, al, and social aspects—in short to ensure the use of human power This was a herculean t the success of the conferences held in many since the federation was founded in London under the presidency of Dr J R Rees, showed d wide and growing interest in it Fear pre ostility, or excessive nationalism were deeply d in human personality; but happily the social had also come to recognise the plasticity of ehaviour and of social institutions, as well as istance to change. Change could be possible it was handled wisely and suited to the various development of different peoples Principles l health could only be established in a society ere was progressive acceptance of the concept citizenship To be effective, programmes for ange required the joint efforts of psychiatrists l scientists working with statesmen and adminis and others in positions of responsibility— y those concerned with human relations. It ntial to strengthen the scientific basis of the l not merely to remain as well meaning amateurs ld of mental health

ing on Mental Health and the Upbringing of hildren Dr Kenneth Soddy (London) laid the importance of the right kind of love relation ween the very young child and its mother this relationship the child became apathetic and depressed, seemed to lack any incentive to develop or even to go on living and usually failed to make a satisfactory emotional adjustment to life It was also extremely important that there should be a father figure in the child s life, so that it should have an opportunity of sharing its love and also of adapting to both the male and female personality pattern Harmony between the parents themselves was essential since quarrelling parents not only created a conflict of loyalties for the child but also made it learn to distrust its parents and lose its respect for them He spoke of the small child s great fear of being abandoned or of losing its mother and discussed the question of admitting small children to hospital Behaviour difficulties and scholastic retardation were often an expression of emotional maladjustment due to disturbed relationships between the child and the mother or the family group generally Since the foundations of mental and emotional stability had been proved to lie in the home background and in the child s earliest months and years of life this should be the focus both of research and of practical measures

Dr René Spitz (New York) presented his latest film on the effects of emotional stress on small children His investigations in a foundling home provided dramatic evidence of the mental and physical damage resulting from failure to establish a personal love relationship

Dr Pacheco e Silva (Brazil) pointed out that sexual harmony was the master key to a happy marriage and that many alleged reasons for broken marriages were really concealing the fact that sexual conflict was a the base of it. He advocated a full physical and [illegible] logical investigation of couples about to marry

Dr André Repond (Switzerland) spoke of the [illegible] feelings of the parents who have an abnormal [illegible] This frequently expressed itself either in over-[illegible] and possessiveness, by way of compensation, [illegible] repugnance and rejection In particular he [illegible] that the maladjustment of the mental [illegible] often largely due to the family reaction

Dr Doris Odlum (London) referred to the [illegible] tion for Parents of Backward Children [illegible] in the United Kingdom, largely under the [illegible] the National Association for Mental He[illegible] helping parents to realise that they [illegible] their problems and helping to relieve [illegible] feelings of isolation and social rejection [illegible] had also been started where [illegible] children could go for five or six [illegible] parents and afford them a valuable [illegible]

EUROPEAN LEAGUE [illegible]

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[1] *Times* Sept. 17 1955 p 4

personal development and often made it possible for her to fulfil both her maternal responsibilities and her rôle as a married woman more satisfactorily But the rapid evolution of this new social rôle demanded an effort of adaptation, for which the nervous constitution of many women was at present ill-equipped In the opinion of the working party, this showed itself in the higher incidence of nervous disorders in female than in male workers The greater absenteeism among women was largely due to the competing demands of the family, but even more to the fact that the woman was often doing uninteresting work without any training Among those in skilled and professional occupations absenteeism was very much less The mother's rôle in the family could be helped by better education in housewifery and in the use of modern techniques and also in her functions as a mother, and also by development of the home help system and of the homely type of small day nursery Social legislation should ensure for her an adequate period of rest before and after childbirth, and employers should be encouraged to rearrange work schedules so that she could work for a limited number of hours a day or spread her work over hours that would be compatible with her duties as a mother

There was no evidence that the wife's work outside the home was a factor in the break-up of marriage In many cases the marriage relationships were better than in those of the non-working woman Some 22% of French women were working, and 19% of married women, so marriage did not seem to prevent women working There was considerable evidence that the absence of the mother from the home for a certain number of hours a day was not damaging to the child, provided that her personal relationships with it were good This seemed to be the key factor There was on the contrary much evidence that the home keeping women had not necessarily better relations with their children and that they tended on the whole to be more possessive and more irritable with the children, as shown by the number of punishments inflicted

Public Health

Poliomyelitis

UNCORRECTED notifications of poliomyelitis in England and Wales during the week ended Sept 10 (36th week) were as follows paralytic 206 (206), non-paralytic 252 (192), total 458 (398) (Figures for the previous week in parentheses')

In the six years since 1950 notifications, and the proportion of paralytic cases, in the 36th week have been as follows 1950, 519 (63 7%), 1951, 86 (54 7%), 1952, 187 (61 2%), 1953, 173 (53 2%), 1954, 78 (60 3%), 1955, 458 (45 0%)

The proportion of non-paralytic cases in the week ended Sept 10 was the highest recorded in any week this year, and, except for one week in 1951, it was the highest in any week since 1950 when the two types were first notified separately In Middlesex and Essex, and to a lesser extent in London and some sixteen other counties, non-paralytic cases materially exceeded paralytic.

During this week there were notable increases in the London and South Eastern regions—mainly in Greater London—and in the Southern, South Western, and Midland regions There were decreases in the East and West Ridings, the Northern region, and Wales

Hitherto this year the approximate incidence in England and Wales has been 7 8 per 100,000 The following counties have had the highest rates (approximate figures per 100,000) London, 16 9, Essex, 14 4, Middlesex, 14 0, West Riding, 14 0, Isle of Ely, 13 5, and Bucks, 12 2 In London the following boroughs have had incidences of over 25 per 100,000 Stepney, Southwark, Poplar, Lewisham, Shoreditch, and Hammersmith

The Ministry of Health suggests that "a seasonable fall in the next week or two can be hoped for"

In England Now

A Running Commentary by Peripatetic C

THE OUTCAST

I'm not like other people are,
I'm bad
I'm worse than other sinners, far
I shall go mad

I'm wicked and I want to die,
I'm evil and I don't know why,
I've done a wrong, I don't know now
What I have done, it's such a sin
I can't explain, I can't begin
I'm much too vile for you to know,
I know I'm wicked, tell me so,
Tell me to leave, don't let me stay,
Punish me, send me right away
But oh, oh, oh,
Don't let me go

I wish I could remember
There was something important that I had t
Something that happened last December,
Something
Are you fond of cats?
Please, please say that you like cats too
You do?
I had a kitten once, I called it Cherry
What was I going to say just now
Before I forgot?
If only I could be just a little happy now and
I would like to dance and be merry,
And dance, dance, anything used to make
once, everything
You don't hate me, do you? You ought to
Why I shall have to tell you, only when
I do, you'll never speak to me again,
And—I love you such a lot

The river is so bright and deep,
I long to drown myself and sleep
I cannot sleep, I get no peace,
My thoughts go round, they never cease,
I think and think, I can't forget
I'm bad, so bad Oh, please don't let
Me come again I oughtn't to
But I've got no one, only you
To talk to Punish me, I'm bad,
Send me away, please, I'd be glad
But oh, oh, oh,
Don't let me go

* * *

In North America no-one ever walks now rests on the idea that everyone has a car, and prefers to stay in it The chief shopping built out in the suburban countryside and centre of the town, so that plenty of spac for the parking of the hundreds of cars of Cinemas, too, are large screens set in the fiel drive in, are attached, in your own car, to a relaying the sound track, and there you the film This drive-in principle has now restaurants, banks, and churches, and V building a new general post office that will to drive in to deal with your postal problem place where anyone seems to walk is the golf even there I am sure that a fortune awaits could mechanise the golfer's trolley so that carry the golfer as well as his clubs

* * *

It's simple enough to cure car-sickness patients, a pill before starting, a few apprehensive mother, and as often as not acidotic of infants will guzzle cream cakes, sandwiches, crystallised fruit, and what ha Land's End to John o' Groats with no It may be faith, it may be the pill, but it never works with relations.

The resources of the whole of the *British Pl* threats of orange juice only for breakfast, to suck, wireless at full blast, sitting in the

ck, standing on the seats with heads through
hine roof—all these efforts only resulted in
d passengers and a fibrositic driver Some-
l to be done; and if medicine couldn t cure,
nst. A chain was suspended from the back
he near side and left to drag along the ground
, and with it went our troubles. It may be some-
do with static electricity, it may be pure
out now we can drive from the town to the
n the *coast to the common*, with *contented*
s merely demanding more food when before
anded more basins. True, my expenditure on
s, *chips, and the like is well above average*,
proved to the family that sometimes I can
them

* * *

st thing I do when I get my copy of *The Lancet*
ly the contents page It fascinates me to see
clever *types have dreamed up even though*
ope with the actual articles Take Aug 13
ple "Spectral Phonocardiography" Who on
uld have thought of *taking a phonocardiogram*
tre? Perhaps nobody on earth. *The Lancet*
e to *alter its subtitle to* "*a Journal of British*,
and Extra terrestial Medicine" I suppose the
which moan would have interesting chest sounds,
heoretical grounds I would not have expected
interest a cardiologist. Their well recognised
o confirms this point. If I am wrong though
uld be much of circulatory interest in the region
ck, especially in those who have their heads
nder their arms.
w silly of me. It can t mean that at all It
too difficult to fix the leads on a spectre
the *annotation deals with the experiences of*
ogist in private practice who was called to see
ng nobleman in his decaying castle Bizarre
peared on the machine. Hastily clapping his
pe onto the noble chest, the cardiologist was
to hear not lub-dupah but ancestral voices full
ding As the Influences became stronger so
ograph began to rattle, its pen tracing out
s like a planchette. Yes, that would be it.

* * *

g (if we were) of grateful patients, here is the
got to my second appeal to Mrs. X to bring
ring to the premature-baby follow up clinic:

er to your note yes, I received the note last week
have no intention of bringing my daughter to——
answer But anyway she is strong and healthy no
the hospital but due to the care my mother and I
when she came home We did not go by the diet
s sent home with her but put her on a proper diet
ded her and she made headway fast and another
was a full time baby not premature Another
ould never have come to the hospital if we had
nursing home staff were going to send her after
d her because they would not change her diet,
er without our consent. We should have had her
d also I should like to say I think she must have
et bed all *the time she was there It took a lot*
t and baby powder to get her alright also you
rite again as I shall not answer She has never
of these so-called clinics and never will.

Yours, (Mrs.) X.

* * *

d is a more civilised place than I had realised—
ought from my first reading of p 404 of *The*
Sept. 3

s also been great political *advancement* and
is to play away matches with outside teams
league Members of borstal *staffs* are more
than they would have been thirty years ago

who spent half an hour looking for the extra
the observer error example (Paris in the
it was *all too easy to invent* the word is
l to notice the *horizontal line separating* The
rld from the preceding article on the narrower
our prisons.

Johnson M. L *Lancet* Aug 27 1955 p 42

Letters to the Editor

PROFESSIONAL RESPONSIBILITY

SIR,—Your leader last week and Dr Sherwood s letter in the same issue, deal with a question of great importance but I *do not think that your leader fully* explores it nor that the alternative solutions you propose are either of them practicable Even if it were possible to persuade Parliament to pass a statute removing the liability for a doctor s negligence from the hospital authority and fixing it solely upon the doctor, I am advised that *the doctor would then probably be held* legally responsible for the acts of nurses and others working under his direction And it is surely *most* unlikely that any political party would agree to a proposal to pay doctors through a professional guild, which was canvassed and rejected in the discussions before the Health Service was set up

The difficulty arises from the fact that the hospital doctor has two obligations—his professional duty to his patient, and another to the hospital he serves which you somewhat lightly dismiss by saying that *doctors* regard themselves as nobody s agent and nobody s servant but their patients Even before the Health Service was *introduced a* doctor holding an honorary appointment surely felt that he was in the best sense the servant of his hospital. The question is whether these two obligations are as you think mutually incompatible I believe they are not, provided, first that each is clearly defined and secondly, that the distinction is accepted by the Minister of Health *and* his agents in a form that can be applied to any particular case

What then is the distinction? Surely it is clear enough A doctor s professional duty to his patient *is to treat him to the best of his own judgment*—subject only if he holds a subordinate post to the direction of his professional chief—and to observe the standards of professional ethics. In neither of these spheres has the Minister or any regional or hospital authority, the *moral right to interfere* and the Hospital Management Committee quoted by Dr Sherwood offended in both respects

A doctor's obligation to his hospital *authority* is to carry out faithfully and competently the work for which he *is paid* but even if his competence is called in question this is a *matter for medical* inquiry

The Joint Consultants Committee, in approving the arrangement by which the hospital authorities share with the doctor the defence against a charge of negligence, did not consider that this involved the professional direction of doctors by the authorities and I am advised that there is no legal basis for such a view The risk if indeed it exists, would be obviated by the Minister s acceptance of the distinction between the doctor s duty to his patient and his obligation to his hospital authority which I have outlined in this letter

W RUSSELL BRAIN
Chairman
Joint Consultants Committee

London, W 1

REGISTRARS

SIR,—Surely the time has come to take a definite step towards solving the registrar problem In last week s letter by Ex Registrar a plea is made once more for easier entry into general practice or other specialties but why not give these *men* a chance to prove their worth within their own field?

If the consultant service cannot be expanded to accommodate the excess of senior registrars, surely to counter the present shortage of junior staff *many could* be employed as assistant surgeons or physicians Such posts need not require *any* more salary than the present top grade of senior registrar, but they should entail a few beds, a small outpatient session and most important of all, the right to private practice I realise that these conditions could not apply in all cases, but they would certainly be possible in most peripheral hospitals I am sure that such "assistant consultants" would eagerly accept the responsibility for emergency surgery, &c , in return for the advantages of security of tenure, promise for the future in joining the senior staff as their senior colleagues retire, and, more important, the opportunity to augment their income by private practice If these men are as good as they imply, this would be their chance to prove it If not, then at least they can have no cause for complaint

It seems to me that this arrangement would not only satisfy the present unfulfilled demand of many hospitals for skilled men to do the routine work but at the same time, by providing adequate inducement, would attract more recently qualified doctors of suitable calibre to take up the major specialties This in turn would be reflected in a rise in the number of applications for house officer posts in smaller hospitals which at present have difficulty in filling their establishments

From the Government's point of view this plan would surely be welcome since it would solve at least some of the Ministry's problems without costing more money

Stoke on Trent W SEWELL

SIR,—"Ex-Registrar's" letter last week touches only one facet of the problems confronting the "trainee specialist" It is a discouraging fact that registrar posts are of strictly limited tenure, thus every two or three years one faces the upheaval of a move (particularly so if married, nor is there a disturbance allowance or free removal of effects), and the sordid and unpleasant task of applying for jobs Why is it that the desirable posts always fall vacant at the wrong time ?

This does not make sense from the hospitals' viewpoint, as time goes by a registrar becomes progressively more useful It should be left to the individual to decide when the time is ripe for him to move on he is best equipped to judge A possible solution would be a flexible system of semipermanent appointments to the more junior posts, with promotion prospects within a region if not in any one hospital Ideally this should be combined with "time off" to attend courses for higher degrees, as a corollary, the present full-time diploma courses should be extended to include part-time students (I am thinking particularly of such diplomas as the DIP BACT and the D P H) This is already the case in enlightened industry

Discussion often takes no account of the fact that the fundamental reason for specialisation is (or should be) a desire to work in a particular field of medicine, and not an ambition to attain a certain arbitrary status Hence S H M O or a similar grade is a logical and necessary stepping-stone to consultant rank, and not a blind alley Time spent in such a post is not wasted, for valuable experience is gained Promotions to consultant should normally be made from the S H M O ranks This would solve many problems and redress many grievances

REGISTRAR PATHOLOGIST

SLIPPED FEMORAL EPIPHYSIS

SIR,—I should like to associate myself with Mr Newman's remarks (Sept 10) on your annotation of July 30

From the point of view of treatment, cases may be separated into two groups the acute slip and the chronic slow one

The acute slip resembles an acute fracture and is treated as such Reduction by gentle manipulation and then fixation with Austin Moore pins is probably the best form of treatment I also do not favour the Smith-Petersen nail on account of its bulk and because sometimes it is not easy to drive in

It is the chronic slow type of slip that g most difficulty in treatment If the degree not marked, and pressure is possible, I am accept the position and fix it with Austin If it is more than this I favour subtrochanter My colleagues and I have encountered avas following cervical wedge osteotomy often realise that it is not a remote possibility this has been the experience in other centre

Exeter P C

MORPHINE AND PROPANTHELINE INTRAVENOUS CHOLECYSTOGRA

SIR,—I read with interest Dr Sangster's Sept 10 Since the introduction of workers have tried various techniques for the sphincter of Oddi I feel that in patie post cholecystectomy syndrome it is important gate the function of the sphincter of Oddi A aimed at closing the sphincter seems to me When the initial examination is made, if th rapid drainage of the biliary tree the exami be repeated using pethidine or morphine in to close the sphincter If, on the other hand no drainage through the sphincter, this can be initiated by inhalation of amyl nitrite later to report the results with this method have so far used in only a few cases.

In view of the severe reaction which I ob patient to whom 30 ml of biligrafin was in common with most other English workers only 20 ml, and have found this quite

Harrogate M W P

THE DEATH PENALTY

SIR,—May I reply to the points made by Dr W. B Gough ?

(1) He states that it is right to execute because the alternative of long term inhuman This argument is obviously false true, one wonders why anybody should thought of the system of reprieve. Why is th always an effort to secure a reprieve once has been convicted ? Why does not the Home order an especially quick execution in any mercy is indicated rather than recommend followed by the cruelty of a long Obviously it is because prison is rightly preferable to death

(2) Dr Gough mentions "the degrading of warding the prison population" But it thought that the most degrading work in connected with the grim rigmarole of the cell and the execution—"to give attention inevitable measure of sympathy to a tra creature for weeks and then one morning, in reduce him to a corpse," as Margery Fry has

(3) On an average in this country about 1 a year are executed, if they were impr Gough thinks that "large numbers of creatures" would be needed to stand guard But it is hard to understand why one more a month in our crowded prisons poses any extr Indeed the very contrary was indicated in th in the House of Commons on Feb 10 this Mr Chuter Ede said, referring to the pre Secretary

> "I hope that his experience will agree with ordinary murderer who is reprieved is among mannered and best behaved inhabitants of H prisons and presents very little difficulty indeed falls in fairly well with prison routine, is rea and can generally be regarded as a person who of punishment that is, in his case, probably than reformative, can be released on society to give us any further trouble"

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[1] Ward, M W P *Lancet* 1954, i, 5

eems extremely ill advised to call those who are at the spectacle of executions "silly people' reflects that this includes the inhabitants of ty countries who have safely abolished the ialty (and regard it as a barbarous survival in ry) and well over 200 M P s here with growing ipport

n Herts CONRAD ASCHER.

Ir Kisch (Sept 10) asks Is Dr Whitty One might very well reply 'Is Mr Kisch If as he says, the primary objects of the alty are (1) to punish the criminal, and (2) to ie culprit from repeating the offence the death iould logically be extended to all serious forms and perhaps to less serious forms as well The ould be nearly empty and the community saved lous expense However, I doubt whether even would advocate this return to the justice of e Ages

, Switzerland A M WOOLMAN

ERMITTENT POSITIVE-PRESSURE RESPIRATION

INFORMATION WANTED

Vhile the introduction of I P P R. (intermittent ressure respiration) has saved the lives of many hopeless cases of bulbar poliomyelitis it has ne apparent that the use of this method should e mortality of diseases such as acute poly id tetanus (with curare) to almost nil Cases of y insufficiency after chest operations, respiratory er anæsthesia, and drug poisoning have also led with benefit by this method.

r to collect information regarding the type of i responds to I.P P R. those in charge of such invited to exchange with us particulars of ated.

m Unit
firmary
rd.

W RITCHIE RUSSELL
A CRAMPTON SMITH
J M K SPALDING

SEQUELS TO ANÆSTHESIA

Bedford is to be sincerely congratulated on l article (Aug 6) I believe this paper should l as a classic in anæsthesia literature to be eread by every practising surgeon and anæs- every trainee in these disciplines.

e however two points in this paper on which Bedford had not made quite such dogmatic . Nitrous oxide and its relation to adverse fects is one and his total condemnation of potension is another

of the voluminous correspondence which has ared in these columns with regard to the deleterious effects on cerebral function of ide in the presence of adequate oxygen I sh to dwell upon this, other than to say holeheartedly support the views expressed any colleagues who have written on this

would dispute that induced hypotension, by ethod it may be achieved carries an increased ie patient of which adverse cerebral effects bly some of the most important Hence, d must be reserved for those patients where the are compelling and where the risk of potential njury is far outweighed by the advantages by the risks incurred in not inducing hypo- have stressed this again and again in publica I have also said that in elderly patients ypotension is quite rarely if ever, indicated however cases in all age groups where it is justifiable to use hypotension being fully aware of the inherent risk The indiscriminate use of this technique is never justified

May I in conclusion heartily endorse Dr Bedford's views on the dangers of narcotics and barbiturates in these old people they are dangerous agents indeed

Department of Anæsthesia
University of Saskatchewan,
Saskatoon, Canada

GORDON M WYANT

SIR —May I make a plea for a return to sanity with regard to nitrous-oxide and oxygen anæsthesia? Much has been written in these pages about its shortcomings, and few of us would deny these However many thousands of gases are given each week in this country many by inexperienced administrators, yet Dr Bourne has to "advertise' for information on its adverse effects

It cannot be denied that cyclopropane and oxygen gives smoother and more satisfactory conditions for the operation in the hands of the expert, but the expert anæsthetist is not usually available to carry out the daily routine anæsthetics in the dental chair The virtue of nitrous oxide has always been its safety and the simplicity of the apparatus required for its administration If the more dangerous cyclopropane is to be used routinely instead of gas Dr Bourne will not have to hunt so diligently for evidence of its ill effects

Fmsworth Hants P F M MACDONAGH

TIEMANN'S CATHETER FOR BLADDER DRAINAGE

SIR,—I would agree with Dr Lakin (Sept 10) about the value of Tiemann's catheter for bladder drainage. His modifications to hold the catheter in place are ingenious

We have overcome the difficulties he describes by having an inflatable balloon placed near the eye of the Tiemann's catheter to make it self retaining as in Foley's catheter We have found this of great value

This modified Tiemann's catheter was made for us by Willi Rusch, whose agents are Willen Brothers of 44, New Cavendish Street London W 1

Department of Urology
Newcastle General Hospital

JOHN SWINNEY

TOXIC PSYCHOSIS WITH NEUROLOGICAL FEATURES DUE TO METHYLPENTYNOL

SIR,—In his interesting article on this subject (Sept. 10) Dr Marley describes the case of a female patient presenting with the features of a toxic psychosis combined with neurological signs, caused by methylpentynol and clearing up rapidly after discontinuation of this drug

Most of the features observed in this patient were also present in a number of alcohol addicts who while refraining from taking alcohol, had taken methylpentynol in grossly excessive doses (e g 20–30 250 mg capsules per day) for several days.[1]

The 15 patients included several women. Most commonly they showed (or described) a syndrome consisting in gradually increasing confusion with lack of concentration and attention, tearfulness, depression speech difficulties and ataxia and finally complete inability to walk or stand proceeding to increasing drowsiness 1 patient stated that he had seen double before admission visual hallucinations were described by another man; nystagmus was noticed in 1 female patient and slight ptosis in another male

As Dr Marley remarks, some of these cases resembled chronic barbiturate intoxication (which was seen by us in several other alcoholics who had given up drinking) As far as drowsiness ataxia, and slurred speech are concerned our cases correspond to those mentioned by May and Ebaugh[2] On the other hand no patient mentioned or showed any skin lesions of the sort recorded by DeLamater[3]

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1 Glatt M. M *Lancet* 1955 i 308
2 May P R A Ebaugh F G *Amer J Psychiat* 1953 109 881
3 DeLamater J N *Calif Med* 1952 77 339

Apart from the cases, already mentioned, of overdosage continued over a number of days, there were a number of others in which the patients had taken an acute overdose (usually 25 capsules) One man, an obese alcoholic psychopath, took three bottles of a methylpentynol elixir (containing altogether 18 75 g) at the same time, having taken capsules for some months All of these patients made a spontaneous recovery, as in the case described by Dr Marley

Warlingham, Surrey M M GLATT

SIR,—I was interested in Dr Marley's article on Toxic Psychosis with Neurological Features due to Methylpentynol I saw a similar case in a patient who had inadvertently ingested 10 g of methylpentynol during a period of two days, in addition he had had phenobarbitone gr 2 nocte for twelve days

When seen one day after stopping the drugs the patient complained of double vision and unsteadiness on walking On examination there was rhythmic nystagmus on conjugate lateral gaze, right ptosis, increased deep reflexes, positive Hoffmann's and Wartenberg's signs, plantar responses equivocal, heel to shin sign positive, Romberg's sign negative, cerebellar ataxic gait, no dysarthria Urine normal

He was over talkative and excited, and during the night of his second day on the drug he had disturbed the house by noisy behaviour

Thornton Heath *GEOFFREY HIRST*

THROMBOPHLEBITIS AFTER INFUSIONS

SIR,—Your leading article of Sept 10 will be of great benefit to all patients needing venepuncture if the basic principle is generally adopted In 1947, when a house surgeon, I saw a young man who in the mill of much thoracic surgery had gained 27 scars of cutdowns

You remark that no one vein should be used for an infusion for more than 8 hours (I myself observe a limit of 12 hours) Ringing the changes in this way has the great advantage, which you do not mention, that after an interval of 18–24 hours the same vein can be used again So if three veins are mapped out the infusion may be kept going indefinitely

Another important point is the size of needle I would say that 23 B W G is quite large enough for most purposes

Stratford on Avon M H F COIGLEY

SIR,—I read your leading article with much interest

Fashions change, not always for the better In my operating days I always gave two pints or more of subpectoral saline in operations for abdominal emergencies and in severe pelvic operations The needle was inserted as the patient lay anæsthetised and the infusion was continued during the operation I never had any complications from this practice and must have used it hundreds of times Still more archaically we used rectal salines

Great Yarmouth LEONARD LEY

POLISHED FLOORS

SIR,—I was glad to read the letter last week from Mrs Haslewood, writing apparently from the patient's viewpoint I wrote on this subject in the *British Medical Journal* on Feb 25 of this year, but I fear that the medical profession accept the slippery floor menace with complete apathy—mainly I suppose because most of them are able bodied and can recover from a slip without damage I have this year had two cases of convalescent pulmonary tuberculosis transferred to the orthopædic unit at this hospital, both of them having the femur through slipping on ward floors.

It seems that unless doctors take some matter, hospital architects and ward-cleaners continue to provide us with dangerous flo in a regular flow of limb fractures.

Colindale Hospital,
London N W 9 W L

ILIO-INGUINAL BLOCK DISSECTI

SIR,—*Circumspect though* the minor spe be in the presence of the major consultant, I theless perturbed at Mr Downie's "correct Stanley Lee's interpretation of the cause of sk in ilio-inguinal block dissection

I pass through the saphenous opening on occasions each week, dividing two of Mr D spokes—the superficial external pudendal and epigastric arteries—on my way to the saphe junction and yet the resulting groin w perfectly in seven days with no more aid afforded by a subcuticular suture

But if the skin adjacent to the wound "very thinly dissected from the underlying story would be very different Surely Mr Le tion is the correct one

London, W 1 STANLEY

TRACHEOTOMY IN ACUTE RESP EMBARRASSMENT

SIR,—Dr Pitman and Dr Wilson are t gratulated on their article (Sept 10) prop use of tracheotomy

The following corroborative case, which o 1948, may be of interest

A stout, short necked man of 28 had been op a colleague for primary toxic goitre Three had a large reactionary hæmorrhage and was ta R S O to the theatre, where the wound was ope an hour attempts were made to stop the bleed

I was summoned urgently and found the patient moribund, still bleeding from the right upper pol placed suture stopped the bleeding and the removed his endotracheal tube, nothing but o been given for some time The patient immedia the appearance described in the article his for his lower jaw sagged, a tracheal tug was pres pulse was imperceptible Clearly more than the was required, so I performed a tracheotomy

The patient's subsequent progress was factory I consider that but for the tracheot have died of a combination of operati exsanguination, and thyrotoxicosis

ALEXANDE

Salisbury

TONSILLECTOMY WITHOUT TE

SIR,—I shall not enter into this discussion humane preparation by our anæsthetist c children for tonsillectomy It is their business to explore the field of premedication wh patients they have done with great patience But I should like to join Dr Belfrage in his week about proceeding afterwards to anæsthesia

I believe the modified double bladed tonsillectome of La Force to be the most ment for tonsil removal in the child, and so to dispense with the intratracheal tube wh the mouth open with a rubber-cushioned applied carefully between the molar teeth.

Where dissection of the child's usually mo tonsil is preferred I should like to think that

o employ a combination of the Boyle Davis
c intratracheal tube

plaints of sore throat after operations outside
y in adults I need not go beyond my own
friends. It may be difficult for the child to
o between laryngeal and post tonsillectomy
ut an alteration in the voice would of course
tle

H V FORSTER

ESISTANT TUBERCLE BACILLI

e report in your last issue by Dr Murdoch
rant of a case of pulmonary tuberculosis due
resistant to streptomycin and isoniazid is of
est particularly since the bacilli were of low
or the guineapig Unfortunately, however
s provide no definite evidence that the
responsible were tubercle bacilli

e reasons to believe [1] that chromogenic and
cal mycobacteria may occasionally be patho
n Such strains are of low virulence in guinea
ay sometimes be difficult to distinguish from
cilli, particularly when grown on the usual
We have found them usually about as
soniazid and streptomycin as those reported
h and Grant but they are frequently also
p aminosalicylic acid It is a pity that the
cal identification was not completed for
y subsidiary studies on the colonial morpho
r medium cord formation catalase production
te requirements for growth and Mantoux
he guineapigs

te Medical School
ndon W 12

D A MITCHISON
J B SELKON

CTRAL PHONOCARDIOGRAPHY

ur annotation of Aug 13 did a good job of
the principle of spectral phonocardiography
ang the type of information supplied by it
n of the usefulness of the technique is justifi
and with equal justification it is pointed out
ethod is still young—less than two years old
A preliminary report [2] from the group in
using the same method was overlooked,
cause of the use of an unfortunate designation
trograms which provides no indication of
to conventional oscillographic phonocardio

her publications [3,4] by the Johns Hopkins
rate applications of the method Certain
ures of the technique not mentioned by your
e comment

y reported in July [3] this basic method of
yal and analysis was applied to *respiratory*
nalyses of breath sounds (vesicular broncho
onchial tracheal) of various types of râles
o musical ones of bronchial asthma and of
whispered and spoken voice sounds display
d features of these sounds more graphically
eviously been possible As has already been
d in connection with instruction in physical
this medical school these displays of respira
will be very useful pædagogical devices It
stated in that publication [3] that few if any
clusions are original and most have been
e established previously on the basis of other
study The analyses of the E to A change and of ægophony are of particular interest The operation of the thorax (or hemithorax) as a specific acoustic filter attenuator, and resonator in these situations is well demonstrated To some extent definition of the physical differences of various types of râles has been possible.

The entire subject of *musical murmurs* is reviewed in a publication in August [4] The spectral phonocardiogram does display the quality (*timbre Klangfarbe*) of cardio vascular sound a feature which has previously escaped either precise verbal description or graphic presentation That quality is displayed is not surprising since all dimensions of the sound—time, frequency spectrum and intensity—are incorporated in reasonable detail The analysis by the instrument resembles the operation of the auditory mechanism on these sounds and in general the pictures obtained resemble the mental image of heart sounds and murmurs.

Because of the display of timbre this method is uniquely competent in the study of musical murmurs.[4] Details are revealed which can be related to hæmo dynamic and anatomical variations at the generator A classification of the many varieties of musical murmurs is possible.

Other virtues of the method seem to be the following

(1) Demonstration of individual components of the heart sounds proper is facilitated—i.e. fine ' splitting is well demonstrated [5] In conventional phonocardiography the high intensity of the components at some levels of frequency tends to result in their merging By spreading out ' frequency separation of components at some levels of low intensity even if not at other or all frequencies, is accomplished Artificial splitting because of peculiarities of filter design must be guarded against

(2) Very faint sounds can be better demonstrated in the same recording with much more intense sounds. In other words the effective dynamic range of the spectral phono cardiogram is greater than that of the conventional phono cardiogram For example with an intense murmur of aortic stenosis followed by a faint whiff of aortic regurgitation, the regular phonocardiographic record of the systolic murmur might need to be ten feet high in its extreme excursions in order for the diastolic murmur to be demonstrated and for the two to be displayed in their true relative proportions Filtering will not solve the problem in most such cases. Again by spreading out ' frequency the total intensity is spread out and although in a given area the display medium (electro sensitive paper photographic film or paper) may permit representation of only 15–30 decibels of intensity as density range the total intensity of the sound is spread over an appreciable range of frequency The ear is marvellously competent in the range of sounds from loudest to faintest which it is capable of handling without overloading from loud sounds or missing sounds of low intensity The spectral phonocardiogram comes closer to matching this competence of the ear

(3) Artefacts, such as non-cardiovascular body noise ambient noise and electrical interference are more easily recognised and disregarded in the analysis of cardiovascular sound.

As mentioned above in connection with respiratory sound, the teaching value of the spectral phonocardiogram is considerable One can expect a change of face of textbooks of physical diagnosis through the use of this new type of illustrative material.

I am told by friends of etymological inclination that since fœtal phonocardiography involves study of cardio vascular sound in the fœtus, ghosts must be the object of study in spectral phonocardiography We persist in the use of the latter term because spectrophonocardio graphy is such a tongue twister Thus far none of our patients have objected to the implications of the term

Johns Hopkins Hospital
Baltimore, 5 Maryland
U.S.A

VICTOR A MCKUSICK

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[1] Runyon E H J Lab clin Med 1954 44 20

[2] D Ilkoff W Mason D Rikaz R R Wirth C H
art J 1954 48 189

[3] V A Jenkins J T Webb G N Amer Rev
955 72 1

[4] V A Murray G F Peeler R G Webb G N
ns Hopk Hosp 1955 97 130

[5] McKusick, V A Reagan, W P Santos G W Webb G N Amer J Med (in the press)

Medicine and the Law

Dangerous Drugs

SIX summonses against a doctor for unlawful possession of a drug, contrary to regulation 9 of the Dangerous Drugs Regulations, were dismissed at a London magistrate's court recently [1]

It was alleged that Dr A had issued a Nigerian named Walker with prescriptions for heroin while Walker was receiving what was considered to be the maximum safe dosage from another doctor Walker later died from heroin poisoning There was no record of Walker ever having been a N H S patient of Dr A.

Dr A said that he had never treated Walker by prescribing dangerous drugs other than for addiction He might have informed the N H.S of the transfer, but he never received Walker's card He never received any remuneration from the N H S for his services

The magistrate said that Dr A was charged with being in unauthorised possession of dangerous drugs contrary to regulation 9 It was not alleged that Dr A was himself in possession of the drug, but for this purpose the prosecution evoked the Act which provided that whoever aided, abetted, counselled, or procured the commission of an offence was liable to be treated as a principal offender It was therefore necessary first of all to see whether an offence had been established against Walker Prima facie a person in possession of a drug supplied on prescription by a duly qualified doctor was deemed to be a person authorised to be in possession. Such a person committed an offence only if he failed to disclose to the second doctor the fact that he was then being supplied with a drug by another doctor

"It may well be" said the magistrate "that the patient committed an offence here It is not for me to decide one way or another, but to my mind it would make nonsense of these regulations, which are designed to give duly qualified medical practitioners absolute discretion as to how they treat their patients and the quantities of drugs they shall prescribe, if I were to hold that these facts amounted to an infringement of these regulations by this defendant"

Obituary

WILLIAM ERNEST BOYD

M.A., M D Glasg, F F Hom, M Brit I R E

Dr Boyd, who died on Sept 8, was until recently senior physician to the Glasgow Homœopathic Hospital and first consultant to the hospital under the National Health Service

He was born in 1891 in Glasgow, and educated at Glasgow Academy and Glasgow University After graduating M B in 1915 he served in the Navy during the first world war After demobilisation he practised medicine in Glasgow, and in 1920 he joined the staff of Glasgow Homœopathic Hospital, first as radiologist and later as physician His researches into the nature and action of homœopathic remedies ranged over electronics, biophysics, and biochemistry In one of his last papers, published in the *British Homœopathic Journal* (1954), he described the electronic apparatus which he had designed to show physiological effects of extremely dilute solutions The Boyd Medical Research Trust, of which he was founder and honorary director, is being carried on under the directorship of one of his sons

Dr Boyd did much work for boys' clubs In 1909 he was largely responsible for founding the Glasgow Sunday meetings, which later joined with the Scottish Schoolboys' Camps to form the Scottish Schoolboys' Club He maintained an active interest in the movement as vice-chairman throughout his life "It may have been these contacts with youth," T D R writes, "that gave him a boyish sense of humour and charm, pleasant foils to his serious and exacting scientific outlook His life was dedicated to medicine and research in humanity's service and he brought great gifts to these high aims All who knew him were impressed by his statesmanlike grasp of the essentials of a problem whether in
administration, by his common-sense und
possible, and by his rare gift of seeing furthe
most of us"

Dr Boyd is survived by his wife, two da
two sons who are doctors

Dr HOWARD GRAY

THE warm friendship, prodigious hospitalit
kindness of Dr and Mrs Gray is remembered
by a host of British visitors to the Mayo Cli
who stayed with them only a few months ago,

"It was a singular pleasure to watch 'Howie
to see how much he was respected and loved by
He was a real saint and his example was a tr
He always seemed to find time to inform and
visitors on all aspects of the life and work of
and one never ceased to be astonished by h
humility, tolerance, and true Christianity It was
experience to live in the Gray household
sound judgment and sanity in clinical matters
by similar qualities in other aspects of his life
delightful sense of humour and a delicious fu
which were always wonderfully told It was his
to take his British visitors aboard his motor cr
lovely stretch of the Mississippi near Lake Cit
and it is all the more tragic for us to hear of
there To have known him was a rare ex
experience"

MANY in our profession will have been
the death of Miss WINIFREDE THOMPSON, wh
her lively intellect in the service of medicine
the late John Tatham Thompson, ophthalmic
Royal Infirmary, Cardiff, she was born in 1891,
as a teacher On her father's death in 1911, she
household of her uncle, Prof Silvanus P Th
the physicist, and about this time she joined
Friends, of which he was a leading member In
appointed assistant secretary to the newly founde
of Scientific Workers, and later, in various
Continent, often interrupted by illness, she gai
ledge of languages which was so useful when
1939, she was general secretary of the Internat
Medical Hydrology In this capacity she will be
for her large share both in organising the so
conferences abroad and, when conditions in Ce
deteriorated, in helping those of its members
sanctuary here In a different field she earned
individual medical men by her work from 1944 t
medical department of Messrs Butterworth, th
for whom she continued to do occasional writing
weeks before her death on Aug 24 A woman
always find it easy to reconcile exceptional
with exceptional sharpness of mind, she had
the years

Diary of the Week

SEPT 25 TO OCT 1

Tuesday, 27th

ROYAL ARMY MEDICAL COLLEGE, Millbank, S W 1
5 P.M. Sir Philip Manson Bahr Wild Life in Eas
Parks

QUEEN'S COLLEGE, DUNDEE
5 P M Prof A A Liebow (Yale) Teaching of
Human Biology

Appointments

ATKINS, ENID, M B Leeds, D C.H school M O., Ph

MARTIN, PATRICIA L M B Punjab, D OBST., D.P.H
health department, London County Council

MATHIE, W E, M B Glasg D A whole-time ast
Stobhill General Hospital, Glasgow

O'DEA, MARGARET M. J, L.R C.P I school M.O., F

RAMSAY, ROBERT, M B Glasg deputy medical
Stobhill General Hospital, Glasgow

ROBINSON, H D H, M R C.S D P.H M O.H., Ar
U D.S Notts

SIMPSON W A, M B Edin, D P H asst M.O.H F

SWINSON, A E P M.B Belf, D.P M physician
Powsoy Mental Deficiency Hospital

ZUTSHI, R N, M.B Lucknow senior casualty off
Infirmary

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[1] *Times* Sept 9 1955

Notes and News

MEMORIAL TO JAMES PARKINSON

Parkinson of Hoxton, to whom international fame dical world came posthumously through his *Essay on g Palsy* has been remembered in his own parish sh in which he lived the whole of the 69 years of nd in the parish church in which he was buried. day a memorial plaque subscribed for by the nursing Leonard's Hospital was unveiled in the church of d's Shoreditch

nemorial service, which attracted a large congrega Vicar of St Leonard's Church in a moving address, James Parkinson was a man of many parts, who own profession was interested in geology and in nd social reform. In his writings he had expressed e to life as a hopeful and enthusiastic seeker after rkinson had remarkable ability in understanding hought simplifying it, and presenting it in plain is political thought expressed itself in Socialism his sense of social justice The thought of men in hildren suffering of slums and starvation drove ve anger and to positive action. We should give God for such a character feel strengthened and his example and have faith in the future of man mmemorative plaque was unveiled by Dr A. D rmerly medical superintendent of St. Leonard's whose paper on Parkinson we published on April 9 ar The commemorative plaque he said was a morial to replace James Parkinson's tombstone been swept away Parkinson needed no ostentatious since his monument was already made—made of which neither man nor time nor tempests could roy Dr Morris hoped that in the years to come d's Church would become a place of pilgrimage o learned to revere and respect the memory of inson.

ns were read by Miss Bell matron of St. Leonard's d Mr Thomas Noel the hospital secretary Among t were two descendants of James Parkinson, Dr Robert nd Mr Herman Saunders, the Mayor and Mayoress of Sir Allen Daley Sir Zachary Cope Sir John Nicholson Hunter Dr Macdonald Critchley Dr George Graham Wright and Mr V A. Eyles

CANCER IN BIRMINGHAM

ond volume of the annual cancer reports of the mingham Hospitals deals with the larynx, bronchus, hra, and scrotum.[1] Cancer reports can be dull When much detailed and tedious work has been ting the figures there is a great temptation to all up in one immense indigestible dish. The of Melville Arnott and Mr B N Brooke have temptation, and their report like the earlier one d interesting But the very thoroughness of the raise a question. Under the cancer registration the General Register Office the aim is, in time, to basic facts of the illness, treatment, and death of with cancer in England and Wales. To what egional schemes duplicate the national one?

iently organised regional scheme such as that ningham area, can indeed lighten the work of the hospitals in their coöperation in the national lut if the regional organisation called for no more n than is needed by the General Register Office come simply a collecting and clearing house; and would be small and relatively unimportant chapters onal book. If this were to be the only function ional cancer organisations it is doubtful whether e and hard work they entail could be justified. f the experience of cancer patients in a particular ht as easily be obtained—though certainly more rough the national organisation and regional could be studied much better from uniformly ecords than from separate and inevitably different ports.

er report of the United Birmingham Hospitals is, o the preface to the first volume[2] published for the he staff of the coöperating hospitals. The reports re clearly of more than domestic importance and provide widely useful information unobtainable under the national scheme National statistics can, for instance, provide yearly survival rates of patients with lung cancer treated by radiotherapy; but the statistical organisation is too remote to take account of the changing policies that determine which patients should be treated; and the rates have little practical value The regional schemes, on the other hand can attempt though still imperfectly to allow for such immeasurable factors; for the local conditions, personalities, and fashions are well known. They can for the same reason deal with such subjective assessments as the symptomatic results after radiotherapy and this is included in the Birmingham reports for lung cancer

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[1] ancer Report United Birmingham Hospitals vol. II

[2] ancer Report United Birmingham Hospitals vol I

FOOD CONSUMPTION IN 1953

IN 1953 the nutritional level of the national diet was well maintained (according to the annual report of the National Food Survey Committee[1]) and the energy value of the diet continued to increase over former years. The deterioration in the balance-of payments position, which led to a reduction in the food-supplies in 1952 was arrested later in that year, and was reversed in 1953 this was reflected in a 13% increase in the volume of imports of food drink, and tobacco Part of this increase was used to build up stocks.

The Ministry of Labour's statistics show that the index of average weekly earnings, which had been keeping closely in step with the index of retail prices for the three years previously, went ahead in 1953 Food prices however had risen more than prices generally, and this, together with the greater availability and variety of supplies, caused domestic consumers to devote a large part of their increased purchasing power to food Domestic expenditure on food was 10% or nearly 2*s* 1*d* per head per week higher than in 1952

The controls and rationing of some commodities were relaxed or abolished, and the year saw an increase compared with 1952 in the consumption of meat bacon, dairy products, sugar and fresh fruit, and a large increase in the consumption of tea. As meat and dairy products became more plentiful, there was less demand for potatoes, cereal products, and fish From August, 1953 white bread was put on sale again but the demand for it was very limited—no doubt largely because of its relatively high price (6 9*d*. per lb compared with 4 6*d* per lb for the subsidised National loaf)—and some bakers soon discontinued baking white bread

The report says that most of the changes between 1952 and 1953 reflected a tendency for the national diet to revert to the pre-war position. But it adds that "some of the remaining differences between the pre-war and post war diet may be expected to persist, particularly the higher consumption of milk, the lower consumption of fish and the partial replacement of butter by margarine.'

THE SUICIDAL PATIENT

THE first time a student mental nurse is given the responsibility of safeguarding a suicidal patient she is bound to feel some self-doubt and alarm This is the central theme of a new Ministry of Health film, *Continuous Observation* intended mainly for the training of mental nurses and nursing assistants. The young nurse, textbook instructions and stories of successful attempts at suicide running through her head is handicapped by her own anxiety in dealing with Mrs. Reed her depressed patient She fumbles miserably in her attempts to interest her and get her to talk. Mrs. Reed is distressed at the thought that her 'children' will not be able to visit her and the nurse does not think quickly enough of the crucial question 'How old are your children?" The sister however (splendidly played by Miss Rosalie Crutchley) asks this question at once and is able to assure Mrs. Reed that her eldest boy already out at work, will certainly be able to visit her In a small case-conference with her nurses the sister shows that the textbook rules are no more than a working basis; the nurse by using her sympathy and imagination, can gain insight into the patient's troubles reassure her and distract her from painful thoughts. Later in the film the young nurse is seen to have profited by what she has learnt, and to have gained in confidence

The film is well written well constructed and well photographed Were it not for the sequence showing the ugly types of suicide of which the young nurse has heard, it might serve for a recruiting as well as a teaching film. Those unfamiliar with mental hospitals may be struck by the youth of the student nurses, between whom and the mature sister there seems to be no intermediate grade but that is a true picture in a nursing field where staff nurses are few and student wastage high *Mental nursing—that "subtle and interesting job,"* as the Ministry put it—is being learnt thoroughly and practised only by the few

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[1] Ministry of Food Domestic Food Consumption and Expenditure 1953 Annual report of the National Food Survey Committee H.M. Stationery Office 1955 Pp 104 4*s*

Basic Films Ltd, have made the film for the Ministry It has been written and directed by Margaret Thomson, and runs for 25 minutes It may be hired at reasonable charges from the Central Film Library, Central Office of Information, Government Building, Bromyard Avenue, Acton, London, W 3

RADIOLOGY EXHIBITION

A SCIENTIFIC exhibition was staged in association with the fourth Symposium Neuroradiologicum, held in London last week The presentation of large numbers of radiographs has always been difficult, but this difficulty has apparently been overcome by the design of a new illuminator unit[1] This is double sided and is designed to display eight 14 in × 17 in panels on each face, the presentation is more uniform than with other methods, and exhibitors coöperated well in preparing their material to a standard format, with all letterpress as transparencies Viewing is easy, and the reduction in ambient light reveals the radiographs at full brilliance

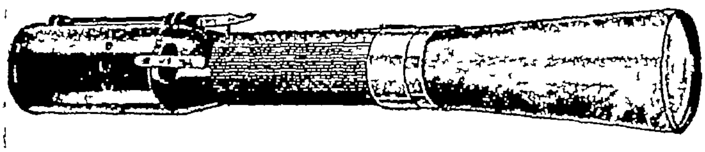
A collection of some 300 panels represented current work in this country and in America, Canada, Czechoslovakia, France, Holland, Italy Norway, and Sweden The devices shown included a stereotaxic machine from the Royal Aircraft Establishment, Farnborough, and an instrument for applying ultrasonic "echo sounding" to the location of intracranial lesions Perhaps because of their topicality a set of radiographs of the Swanscombe skull attracted much attention, and many visitors commented on a somewhat complementary exhibit on the infant skull Several applications of stereoscopy were shown—notably the results of an investigation of the cerebral blood supply, from Chicago Two exhibits from Manchester were noticed for the clarity of their presentation, and stood out from the monochrome surrounding by the discrete application of colour

The display units are going to various medical schools and hospitals, and the British Institute of Radiology is maintaining a register of their location, so that they may be available for borrowing by the organisers of future conferences

ARROW PROJECTION TORCH

Mr P M G RUSSELL, F.R.C.O.G, writes Those who have used the arrow projection torch at the Royal Society of Medicine or while lecturing elsewhere may be glad to know that an instrument of this type is now available in this country

Messrs Rayner & Keeler have produced a torch of suitable dimensions which throws a bright arrow on the screen for demonstrating the details of any photograph, illumination being by a 6 V 30 W bulb via a transformer The instrument, having regard to its power, is handy, and it remains cool in use To minimise the risk of breakage, there should be a shelf or ledge, near the screen, on which the lecturer can lay the instrument when it is not needed, while the transformer (to which the torch is attached by a light electric cable) can be fixed in some suitable spot such as just below the shelf The illustration gives some impression of the instrument, which is beautifully made and finished



The instrument should be useful in hospitals, medical schools, and colleges generally

Historical Exhibition of Pharmacy

An exhibition illustrating the Story of Pharmacy has been set up by the Wellcome Historical Medical Museum at the Wellcome Building, Euston Road, London, N W 1 The exhibition was opened by Sir Hugh Linstead, M P, on Monday, Sept 19, after he had given his presidential address to the assembly of the International Pharmaceutical Federation The exhibition will remain open to the public for several months

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1 Ollerenshaw, R *Brit J Radiol* 1955 28, 514

University of Birmingham

Prof Thomas Bodkin will give the address of the new session on Monday, Oct 3, at 3 P.M. Elizabeth Hospital

West End Hospital for Neurology and Neuro-

A course of clinical demonstrations in neuro held at the hospital on Tuesdays at 5 30 P.M. from Dec 13 Further particulars may be had from the of the postgraduate school, 91, Dean Street, Lond

Royal Institute of Public Health and Hygie

The Bengué lecture will be given by Prof G P the institute, 28, Portland Place, London, W 1 Oct 18, at 5 P M His subject will be envi affecting comfort, health, and working capacity

Physiological Effects of Hot Climates

The medical section of the Royal Statistical S discuss this subject on Tuesday, Sept 27, at 5 Westminster Medical School, Horseferry Road S W 1 The speaker will be Mr J O Irwin, D.S particulars may be had from the hon. secretary Curwen, St Bartholomew's Hospital, London. E.C

Middlesex Hospital, London

The annual dinner of past and present students will take place at the Savoy Hotel London, W.C.2 Sept 30, at 7 30 P M Sir Harold Graham Hodson the chair A refresher course for old Middlesex held at the hospital from Sept 30 to Oct 2

Ophthalmological Society of the United

The annual congress of this society will be held in London from April 26 to 28 The programme a discussion on the early diagnosis of glaucoma symposium on herpetic infections of the outer particulars may be had from the hon. secr society, 45, Lincoln's Inn Fields, London, W C 2

Association of Clinical Pathologists

Prof S P Bedson, F.R.S, will deliver a le *association in honour of the late* Sir Philip P Royal College of Surgeons, Lincoln's Inn Fie W C 2, at 2 P M, on Thursday, Sept 29 He Viral Multiplication and the Chemotherapy of Vi All who are interested are invited to attend

Aids for the Disabled

The British Red Cross Society is holding an these aids, showing the needs of a disabled getting up in the morning, through various occup the day, to recreation in the evening, at the Re of Public Health and Hygiene, 28, Portland Pl W 1, on Wednesday and Thursday, Oct 12 2 30 P M to 7 30 P M

Ilford Medical Society

This society is celebrating its golden jubilee under the presidency of Dr J Arthur Moody The of the new session will be held, jointly with the Counties Faculty, of the College of General Pra Tuesday, Sept 27, at 8 45 P M, at the King Ge Ilford, when Dr G O Baker, Dr Stephen Ta J Stanley Thomas will speak on the Futur Practice

Institute of Diseases of the Chest, London

Clinical demonstrations will be given by Dr stone and Sir Clement Price Thomas at the grounds of the Brompton Hospital Fulham on Fridays from Sept 30 to Dec 16 Open F H Young, Mr T Holmes Sellors, Dr Mr O S Tubbs, Mr D Barlow, Mr J R Be Russell Brock will be given on Wednesdays, Dec 7 All the meetings are open to doctors and will be held at 5 P M

Births, Marriages, and Deaths

DEATHS

LEIGHTON —On Sept 16 at St Ives, Dorridge, Simon Reuben Leighton, M D, beloved husband of

E SCOPE AND DEVELOPMENT OF NERAL PRACTICE IN RELATION OTHER BRANCHES OF MEDICINE

A CONSTRUCTIVE REVIEW *

J H Hunt
M.A. D.M. Oxfd, M.R C P
GENERAL PRACTITIONER LONDON

> have to decide what the general practitioner should
> ng and then—whatever it is—enable him to do it
> y —*The Lancet* March 25 1950

publication of the Collings report (1950)—a
econnaissance of 55 English practices—may well
d upon by medical historians as a turning point
velopment of general practice in Great Britain
enge has been accepted and much is being done
hings right In this present review five years
veral matters of importance for the future of
practice are examined (the opinions expressed
rely personal) in an attempt to be constructive
stimulate further *experiment* before irrevocable
are made. The need has never been greater
ully planned investigations into the aspects of
practice discussed in the following pages.

tant changes are about to take place which will
a closer integration of general practitioner and
services Crowded outpatient departments and
of hospital junior medical staff might be reme
enlisting the help of family doctors in the work
tient departments The same result would be
hieved, however, by giving general practitioners
p and encouragement to diagnose and treat their
ents themselves before sending them to hospital,
increasing the number of general practitioner
these two remedies reasons are put forward for
that the second is far more important than the
ause a family doctor's first duty is to care for
patients at home, in the surgery and sometimes
tal before he does specialised work or helps
nts in outpatient departments to treat the
of other doctors

anges in the Scope of General Practice

neral practice of medicine or family doctoring,"
nearly as old as man himself For thousands
nearly all physicians were general practitioners
the great figures in medical history have been
doctors and many of the best traditions of our
m have developed around them With the
rend towards specialisation these facts may
es have been forgotten but the pendulum
as swung so far towards the specialties during
fifty years has now begun to swing back again
general practice

llings pointed out, we cannot expect to recap
20th-century concept of a 19th-century family
n—benign bewhiskered and beloved with his
and frock coat, leisurely driving round his
treating most of his sick patients himself and
few to hospital. That way of life had many
d enviable points; but the telephone, motor
ratory bench, X rays taxation, and the National
Service have inevitably changed many of them.
tus of family doctors was at its height in this
about a hundred years ago when their power
their patients, through knowledge based on
e fact, was far less than that of practitioners
Why were many of them so highly regarded at that time? It was largely because of their strength of character, kindliness, clinical acumen, and wisdom in applying their often empirical knowledge The deep insight into family life and character given by the work of the general practitioner remains paramount to this day, so that his rôle as friend and adviser may still far outweigh, in importance to some families, his purely medical responsibilities

A century ago there were few specialists, medicine altered little from year to year and it was comparatively easy for a doctor to keep up to date. Now it is very different Thirty or more different specialties make it difficult for him to keep pace with even major changes, yet he should have a broad understanding of them all and be ready to transmit to his patients the benefit of every important advance How much he needs to know about each development varies with different types of practice and with the different specialties. The doctor of a boys public school, for instance, must be up to date in epidemiology but can forget his gynæcology Advances in dermatology in the treatment of allergic diseases, and in ear, nose, and throat work, play a larger part in the average general practitioner's life than do those in thoracic surgery, plastic surgery, or radiotherapy

Nowadays it is essential for the family doctor to look at his own task carefully and define his own sphere of useful activity so that he may refer to others work that he should not attempt, while making sure that what he decides to do himself he does well. For this he needs certain indispensable personal qualities—so well described by Ronald Gibson (1955) in his recent delightful paper—and also knowledge skill, enthusiasm, equipment, and time How many of these has he in full measure now?

There are about two hundred and fifty common disorders which an ordinary general practitioner may expect to meet on an average at least once a year They do not cover the whole of medicine but they include a significant and important part of it, and they are the diseases which he should be sure that he can diagnose as far as possible himself, and treat efficiently, with the minimum of specialist assistance. Modern remedies enable him to treat in a patient's home in the surgery or in a general practitioner bed in hospital, many major illnesses which he was powerless to alleviate a few years ago Under present conditions more patients have to be sent into hospital for specialist investigation and treatment than formerly but the family doctor's obligation does not end there he must see and treat them before they go and after they return and over the years he is responsible for most of their medical care

It is not always easy to appreciate what general practice, interpreted in its widest sense comprises, or how many different types there are. In isolated places far from consultants, some general practitioners may have to do their own emergency medicine and surgery—treating a patient who has had a hæmatemesis or a fractured femur performing an appendicectomy (perhaps even resection of gut when the "acute appendix" turns out to be something else) or a cæsarean section At the other end of the scale doctors in industrial areas, who see dozens of patients in their consulting rooms each morning may find it difficult to carry out any time-consuming investigations or treatment themselves, even those that are well within their competence they may indeed, have to send all their minor surgery to the local hospital. There are school doctors; factory doctors; Army Navy and Air Force doctors; ships' doctors prison doctors; doctors in the Colonial Medical Service missionary doctors and many others—all "family doctors" of some sort or another, *in direct touch with patients* and with some period of *continuing*

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ed on a paper read in Belfast on April 23 1955 *responsibility for their medical care*—the two outstanding characteristics of general practice

The Training of General Practitioners

Before long the profession and the medical schools will have to decide whether they take the advice of the Goodenough Committee or that of the Cohen Committee on the *training of medical students*, or whether, as seems likely, they will compromise and try to make the best use of both

The Goodenough Committee (1944) said about *undergraduate* medical education

> "In deciding the importance that should be attached to the various subjects and the type of instruction that should be given, the bias should be towards the needs of the future general practitioner"

If this is agreed, it seems reasonable that some general practitioners should help in the teaching of medical students (*British Medical Journal* 1953a) The General Medical Council is now considering this matter in its deliberations on the medical curriculum

On the other hand, the Cohen Committee (British Medical Association 1950) laid stress on *postgraduate* education for future general practitioners

> "General Practice is a special form of practice which must be founded on general basic principles and appropriate postgraduate study"

If that is agreed, and the vocational training for general practice is to be left to the postgraduate period, general practitioners will have an even greater part to play in teaching the "trainee practitioner"

Departments of general practice in medical schools might be developed to advise upon and coordinate the teaching of those subjects which are important to family doctors, arrange lectures by general practitioners, and organise visits of students to general practices Such a department could ensure that medical schools are kept in touch with modern trends in general practice, it could advise the newly qualified on the problems of the preregistration year and trainee practitioner schemes, it could help in the planning of postgraduate courses and in general-practitioner research, it could assist in the selection of medical students, keep old students in touch with their medical schools, and help them to find appointments in general practice and, later on, suitable assistants or partners There would be a great deal of useful work for such departments of general practice in teaching hospitals, to ensure that the right men and women are chosen for family doctoring and that they are trained in such a way that they will be able to carry out efficiently, throughout their careers, anything that future general practitioners may be asked to do The patterns of such departments would be different from those that are being developed in the U S A (American Academy of General Practice 1954, Truman 1955) or in Canada (Pollach and Solursh 1955) Details would need careful planning, and several experiments could be carried out by medical schools

Good use could be made of more *general-practice teaching units*, like the one directed by Richard Scott (1950, 1953) in Edinburgh, which already does many of the things mentioned in the last paragraph

Entry into General Practice

There has been considerable discussion lately about the difficulties which young men and women find when they try to enter general practice, especially those who have worked as registrars in hospitals and have gained higher qualifications It has been said indeed that a higher qualification may prove a disadvantage, because to work for an examination in the sheltered atmosphere of a hospital is not the most effective training for family doctoring This is not really so Practitioners often welcome those with higher qualifications *so long as they know about general practice* as w knowledge is best gained as a "trainee (trainee assistant) or as an assistant A fi looking for a partner wants someone who in his day-to day (and night-to night) routi visiting patients, prescribing, taking resp accidents and emergencies (bandaging, dre other first aid), delivering babies, dealing wi relatives, and treating the many minor which so much is seen in practice Of two with equal experience of general practice th qualified is generally successful, of two with unequal experience, the one who knows family doctoring is usually chosen

Some registrar appointments provide good training for general practice, especially those medicine, infectious diseases, dermatology, casualty surgery, pædiatrics, midwifery, and logy Encouragement should be given to y and women, who can afford the time, to sp extra years in hospital learning one or more well The plan to provide married doctors in hospitals will help a few

It may be difficult, financially and oth those who have been qualified for a while and been doing a registrar appointment in t spend a further year in practice as a trainee (trainee assistant) In Inverness a scheme tried under which senior house-officers spend their time assisting in general practice. Th Regional Hospital Board is providing ships, at senior-house officer or registrar level to fit the recently qualified for general practice them experience in a number of specialties. S mew's Hospital in London is making a simil two senior house officer appointments

If more ways can be found by which registrars, and senior hospital medical off some experience of general practice while they in hospital, perhaps by spending one or two week with a family doctor, and if such exp officially recognised, the entry into general these men and women with hospital experien made easier

Group Practice

Group practice is on the increase, and it to remind ourselves occasionally how a group partnership differs from an ordinary p three or more doctors, and what are its advan limitations Doctors in ordinary p surgeries in separate houses, perhaps scatte a district those in group practice work a single, central practice building (Oll There are many advantages in this concen surgeries it is easier to provide ancillary help receptionist, secretarial, nursing, dispensing phone cover, and even a small laboratory to one or more of the partners, it is easier for to take the surgery of another who is off d for one of the group to run an antenatal or clinic, and for an assistant to help several when surgeries are heavy, partners can frequently and consult with each other cases, they can more readily find time for authority clinics or hospitals, or become tioner specialists, and many a doctor's wife surgery away from home The practice b advantageously be placed near local-autho or a general practitioner hospital

Many districts are unsuitable, however concentration of surgeries, because patient to travel too far to reach their doctors, and th must be the first consideration In future th to be travelled by patients may largely surgeries are scattered or centralised or whether ay not be a need for both in a large partnership a wide area. Personality differences are more occur when all partners are working under f and if the temptation to 'pool' lists or work is not resisted, group practice may become nore impersonal than an ordinary partnership urces of few, if any group practices in Great an provide for a laboratory doing more than the pathological investigations an X ray apparatus radiographer, or a minor operations theatre equipped and staffed. Group practice is by s the answer to all our problems

Health Centres

ational Health Service was partly based on the health centres. Since the start of this service ars ago, only five new health centres have been in England and Wales, and they are used by ian thirty general practitioners Three others ided by the Nuffield Provincial Hospitals Trust nt a dozen are in various stages of development. and there are two

ong delay in the development of health centres several causes. As defined by the National ervice Act they are too rigid They have proved oly expensive to build and difficult to staff the larger centres cost £180 000 and even the serves only a few general practitioners. The who join a centre and have consulting rooms in ding cannot always be sure that the premises ve vacated may not be taken over by other ners, who will thus annex some of their patients. tors who do not join but continue to work nearby feel that those in the centre have special ges and privileges. Another drawback is that entres in England and Wales must be owned ntrolled by local health authorities many ners believe that if they enter such a centre ll endanger their professional liberty they will le say in choosing their future partners, and that ople will control their destinies.

isappointment is a warning that careful thought eriment, along the lines of the farsighted and investigations of the Nuffield Provincial Hos rust, will be necessary in future before big are made about general practice. There is nt need, now to develop something rather from the health centre.

nostic and Treatment Centres for General Practitioners

'FAMILY MEDICAL CENTRES

g family doctors in this country there is a of skill and craftsmanship which is being only d Capable men and women, willing to take bility are in many places unable to do so because k ready access to a few simple aids which would them to diagnose and treat their patients them The diagnostic and therapeutic needs of even t junior doctors working in hospitals have been ed and provided for Similar needs exist among in general practice Direct access to diagnostic ents in hospitals only, perhaps several miles a great help but it does not solve the problem ely

believe that a better service could be rendered ly doctors in some places in this *country if* they se diagnostic *and* treatment units open to *all* oners in the district *working from their own* (whether they be single handed in partner in group practice) Such a unit would be situated ntral point convenient to patients and doctors near the local shops; it would contain a *room* essings, injections, diagnostic catheterisations, and all other nursing help; a minor operations theatre and recovery room a pathological laboratory, and a room for consultation with local authority workers (health visitors, district nurses, midwives, &c) The size of the centre would depend on the number of doctors and patients needing it If no doctor had his surgery in the building, no one would be favoured and the centre would be used more readily by all

In the larger centres there could also be an X ray plant, an electrocardiograph accommodation for maternity and child welfare and other clinics school medical and dental services, physiotherapy, rehabilitation chiropody, and a room in which consultants could see patients by *invitation*

In some towns general practitioner hospitals (cottage hospitals) provide a happy solution to the problem of coördinating the medical services of the district In others some of this diagnostic and therapeutic help is already given to family doctors (or could be given *to them) in a general* hospital, or perhaps in a general practitioner branch or annexe of such a hospital In places far from a hospital however, a family medical centre," with its integration of general practitioner regional hospital board, and local authority services would be invaluable Its staffing administration and finance have been discussed elsewhere (Ollerenshaw and Hunt 1954)

At least one diagnostic unit for general practitioners was in use in England before the introduction of the National Health Service (Hunt 1951) It has now been working satisfactorily for ten years, and its pathological laboratory and X ray department have been used by many practitioners in the neighbourhood More recently the centre at Corby (*Lancet* 1954), which has been developed under the auspices of the Nuffield Provincial Hospitals Trust, was opened in April 1954 It has many of the characteristics of the family medical centres described above, except that the local authority health services are not as yet, incorporated in it This centre is running successfully and those who are interested in this problem should visit it.

Should family doctors perform minor surgical operations? As Stephen Hadfield (1953) and Stephen Taylor (1954) have pointed out in their surveys only a few general practitioners seem to wish to do so under present conditions. Family doctors should not treat serious whitlows without specialist help if there are surgeons within reach nor should any but the fully experienced perform major operations. The Walker report said, however

> "The habitual transfer of minor surgery to the hospitals is neither necessary *nor* desirable The training of the doctor has included instruction in this work and in the view of the Committee, it is part *of* general practice" (*British Medical Journal* 1953c.)

Students are taught minor surgery all house-surgeons perform minor *operations* so do casualty officers and surgical registrars in the theatres provided for them Many of these enter general practice, yet only a small *proportion of* family doctors in the British Isles have access at present to a properly equipped minor-operations theatre or are helped by anæsthetists The *more* surgical experience a doctor has had, the less anxious will he be to operate without proper equipment. In an area in South London there are eighty seven general practitioners working within five square miles *so* far as can be ascertained not one of them has entry to a minor operations theatre The risk of litigation may discourage some doctors from doing this work This risk applies, however to almost everything a doctor does For those who are properly trained conscientious and skilled in that which they undertake, it is less of a deterrent than is sometimes supposed It may be necessary to find some method of rewarding general practitioners for minor surgery, as we do those who are responsible for midwifery

The general practitioner's need for access to pathological and radiological departments is now being increasingly recognised, and an attempt has been made to satisfy it in hospitals throughout the country The use of these hospital departments by practitioners, however, is less enthusiastic than might have been expected (Ministry of Health 1953, p 25) What is not always realised is that a hospital department several miles away is not nearly as valuable to a family doctor as a smaller laboratory or X-ray apparatus near by There he can drop in to see the slides and X-ray films, chat with the technician or radiographer, or consult with the clinical pathologist or radiologist who can attend once or twice a week and supervise the department *Personal contact* is the crux of the matter *Supervision* is essential every laboratory should be visited at regular intervals by a pathologist, and every X-ray film should be reported upon by a radiologist, but the family doctor will often wish to see the slides or the X-ray films, in the first instance himself, to help him decide on immediate treatment

At present the number of these small laboratories might be limited by lack of technicians, but more could be trained Much of this work is being done all over the world by girls of secretarial status, it does not take much longer to teach an intelligent girl how to do a blood count, a blood-urea, and a blood sugar test, than it takes to teach her to become an efficient and fast shorthand typist Each technician could be on the extramural staff of the nearest hospital, and could keep up to date by doing part-time work in the hospital laboratory or X-ray department, or by returning to full time work in the hospital at intervals

The development, in future, of diagnostic and treatment centres for the use of general practitioners near their surgeries would meet a real need in many areas far from hospitals In few hospitals, even, at present can a family doctor drop in with a swab and see the smear himself under the microscope, talk with the pathological technician or pathologist, watch a dressing being done by a nurse on one of his patients, do a minor operation himself, look at an X-ray film with the radiographer or radiologist, and discuss a point with a health visitor or another with a practitioner colleague—all at one visit This is the type of personal contact and cooperation, of such real value and which saves so much time, which could be fostered so easily in a family medical centre Many practical difficulties in the development of such centres will be met, but none of these should be insurmountable Further experiments on the lines of those sponsored by the Nuffield Provincial Hospitals Trust at Corby, Harlow, and Manchester, with modifications to suit local requirements, should prove well worth while

General Practitioners in the Outpatient Departments of Hospitals

There has been controversy lately about general practitioners doing work in the outpatient departments of hospitals, and whether they should be encouraged to do so A recent increase in outpatient attendances and shortage of hospital junior medical staff have brought this matter to the fore The latest published figures show that there are over 38 million hospital outpatient and casualty attendances yearly in this country (Ministry of Health 1953) and that more than eight hundred house-officer and registrar appointments are vacant (*British Medical Journal* 1955)

Can general practitioners find time to work in hospitals? The primary responsibility of a family doctor is that he should help his own patients in any trouble at any time, day or night To fulfil this obligation, many doctors in the past have had to be on duty in their practices twenty-four hours a day, six or seven days a week, for about forty eight weeks a year times been bad for their efficiency, their family life, their recreation, or their co The modern attempt to solve this problem development of larger partnerships, group p rota systems, to satisfy the patients, the science, his wife, his children, his golfing friends allow him time to keep up to date by reading medical meetings and doing a little work colleagues in hospital

Are practitioners capable of helping in the departments of hospitals? There are man ments in the outpatient departments of family doctors, apart from those who are as "general-practitioner specialists" (see fill for their own benefit and postgraduate well as to help the hospitals, and in which they some degree of responsibility—such as in infant feeding, antenatal and postnatal diseases, diabetes, allergic diseases, rheumatic geriatrics, and dietetics There are general p who like this type of outpatient work and it, when they have gained experience their soon recognise and respect their special know are willing to make use of it In teaching students and house officers help in outpatient ments, in other hospitals, there is no reason practitioners should not do the same as part of their continuing education, in with consultants, so long as they are prepared conscientiously and deputising arrangements practices allow them to attend regularly and

There are two main difficulties Firstly, practice do not like being left too often of a partner or assistant Secondly, when doctor sends a patient up to hospital for an he may not want a general practitioner colleague a competitor from an opposing partnership recognised as a general practitioner specialist) on the case and perhaps point out an omission This does not often happen, but it seems to frequently in general medical and surgical departments than in special departments. W occur it is, admittedly, a real objection which overcome

Many practitioners in this country are alre useful part time work in the outpatient dep of hospitals as clinical assistants (voluntary or in other appointments, without necessarily ing themselves as "specialists" There are gradations and as little difference in status the truly "general" practitioner and the practitioner specialist, as there are between the consultant (medical or surgical) and the specialist (a consultant in a single specialty).

Hospitals, family doctors, and all their pat benefit if these part time appointments of general tioners to outpatient departments of hos extended in the right way General practitioners from general practitioner specialists) will co apply eagerly for these posts in future if the responsibility, title, status, and remunerat attractive and if they are restricted to one two, sessions a week If some of these app are "rotating" so that doctors work in different ments of the hospital, changing perhaps once this will help them to gain experience and to date in many fields, though it may not be to the departments concerned as appointm longer term

It must be remembered, however, that in o departments general practitioners see most doctors' patients and not their own This work in hospitals must not be allowed to with a doctor's practice neither must it any way the development of diagnostic and centres outside hospitals nor the provision general practitioner beds, both of which are ded to help family doctors look after their nts better.

General practitioner Specialists

l need is to produce more good general practi d to make the good ones better still. If there ugh consultants and specialists throughout ain and the Commonwealth to do all the work ecial departments of all the hospitals, the actitioner specialist might not be required. neral practitioner could then aim at being a ral doctor as many would prefer. There are not enough consultant and specialist appoint this, and it is unlikely that there ever will be; ne family doctors whether they want to or not e to continue to do a certain amount of t work. For this reason the borderline between ractice and specialist practice may never be

past certain general practitioners who by study and practice have developed particular have become recognised as "general practi cialists" in medicine, surgery, anæsthetics, pædiatrics, public health, and so on. Like in hospitals, they have been looked upon as rather than consultants. How many of them needed in a partnership has depended largely mber of consultants within range. In parts of ow especially in the cities, they are not needed s they were; in other parts of the country emote from large centres and in places abroad still essential and are doing excellent work nerships in Canada, Australia, Africa, and the largely made up of them.

aining needs to be somewhat different from eir partners. Many of them acquire a post liploma. It is helpful for those doing surgery or midwifery to hold the diplomas of F.R.C.S. r D.OBST., and for those doing anæsthetics health, the D.A. or D.P.H.; this applies to aduate diplomas that are within the reach practitioners. To ensure a high standard it e necessary later on to make such a post diploma obligatory for those who wish to be as general practitioner specialists.

me "general practitioner specialist" is, in , a contradiction in terms, yet it is useful eaning is clear. General practice remains his sibility but he voluntarily takes up in special subject which can be mentioned in in his title—general practitioner (surgeon),), (anæsthetist) (pædiatrician) and so on. ly doctor is achieving more responsibility my in his own subject—general practice. o on playing his part in the specialties (as a ther than as a consultant) it should be as a team of which the more senior members will nts to whom he may turn for help and advice m he can refer difficult or unusual cases. The members will be the house officers and other ior medical staff. In the past the need for ork was not always fully realised or properly r, and the troubles that sometimes arose out k of general practitioner specialists were due rking alone out of touch with those who could ed them. Nowadays this team work and should be easy to plan in most parts of the many regional hospital boards have indeed ranged it. Even in isolated parts of the ealth air travel and other forms of transport ke it feasible.

The Specialist Team

The duties of the various members of this specialist team will differ. The *general-practitioner specialist*, living perhaps in a small town, will limit the scope of his special work, give what time to it that he can spare from his general practice (perhaps four sessions or so a week) and attempt only that part of a specialty that he can do well. If he does this strictly, he will be able to keep within his capacity and will make few mistakes. Further experiments are needed on possible ways of ensuring not only this limitation of his special work, but also adequate supervision. His special cases will come to him outside hospital largely from his own partnership or group, with maybe 10,000–20,000 patients between them. In hospital they may also come from other doctors in the neighbourhood; ways will have to be found to prevent the patients of these other doctors transferring themselves to his practice. In a large group practice, made up of several general practitioner specialists, some patients may find difficulty in obtaining specialist advice outside the group; this, too, must be overcome. The success of a more widespread general practitioner specialist scheme will depend upon a satisfactory solution of these problems.

The special interests of the *general consultant* (physician, surgeon, or obstetrician gynæcologist), from the larger town, will cover a much wider range. He will never be replaced by general practitioner specialists or by those working in narrow specialised fields. If the number of general practitioner specialists is increased, more general consultants will be needed and more will be asked of them.

The work of the *consultant specialist*, in the largest town and cities, will encompass the whole field of a single specialty such as ophthalmology, dermatology, orthopædics, neurosurgery, chest surgery, anæsthetics, oto-rhino-laryngology, psychiatry, pathology, radio-diagnosis, radiotherapy, and so on.

In many districts there will be need for all three types of "specialist" working together in close coöperation, helping each other. Their duties must necessarily merge into one another and overlap to some extent; it is important that this unavoidable overlap should be recognised, and that allowance for it be made on all sides when delicate situations arise.

It is possible that general practitioners will be invited before long to do more special work in hospitals as general practitioner specialists. Apart from relieving the hard-pressed outpatient departments, this arrangement will help to solve the "registrar problem" by enabling registrars and senior hospital medical officers to continue in their chosen specialties should they enter general practice. It will provide a stepping-stone from general practice to consulting work, which is now lacking. It will encourage some of those who intend to go into general practice to spend additional years in hospital after qualification, and to acquire postgraduate diplomas, thus helping to fill the vacancies in hospital junior medical staffs.

General practitioner Beds in Hospitals

The report of the General Practice Review Committee of the British Medical Association said:

> "It is part of the Association's hospital policy that beds in local hospitals should be available to general practitioners for the treatment by them of their own patients for conditions which are within the province of general practice." (*British Medical Journal* 1953c.)

The leading article in that issue of the *British Medical Journal* (1953b) said:

> "The views expressed by the G.P. Review Committee, by Sir Heneage Ogilvie (1953), by Dr. Hamilton (1953), and by the Representative Body of the B.M.A. all point strongly to one greatly needed reform—the widespread provision of beds for general practitioners where they may give continuous care

to patients under their charge and in so doing gain the satisfaction and instruction that come from responsible clinical work under good conditions "

That general practitioners, and especially general-practitioner specialists, should be able to treat some of their patients in hospital beds is just as important as for them to work in outpatient departments Once again we must remind ourselves that a family doctor's first concern should be with his own patients, to supervise their comfort and their medical care, and to follow them up wherever they are When they have to go to hospital because social factors prevent proper care in bed at home, with illnesses which do not need continuing consultant investigation or treatment, it is often right for their own family doctor to look after them On an average, at present, each general practitioner in this country has rather less than a one-third share in one hospital bed (Ministry of Health 1953)

Those in charge of general practitioner beds in hospitals should treat not only minor disabilities There are many major illnesses—pneumonia, cerebral thrombosis, cardiac failure, pyelitis, salpingitis, prolapsed lumbar discs, generalised carcinoma, and so on—during which a patient may wish to be looked after by his family doctor in bed in a hospital The same principle applies also to many maternity cases The more serious or hopeless a disease, the more often does a patient appreciate being looked after by someone he knows Consultants should be attached to these hospitals and be invited to see many of these patients, they should take over into consultant beds, in their own wards, those who require continuing special investigation or treatment With many patients, however, the routine work could well be done in a general-practitioner bed by the patient's family doctor, taking full responsibility himself, with consultant advice from time to time, and perhaps with a resident to help him in hospitals large enough to have a house officer

The revised Strachan report on Hospital Medical Staffing (para 11) states

> "Another aspect of the problem is the almost complete breakdown of the old custom whereby a practitioner combined an appointment on the staff of his local hospital with a general practice This has deprived the hospital service of a source of medical man power which it can ill afford to lose" (*British Medical Journal* 1955)

In the past, many general practitioners have done splendid work caring for their own patients in hospital beds, and even now, the breakdown in the old system is not everywhere quite as complete as the Strachan report suggests There are 6525 general practitioner beds for about 20,000 family doctors (Ministry of Health 1953) In the four Metropolitan regional areas there are 123 hospitals with general practitioners on their staffs, but in by no means all of them have family doctors charge of beds, and none are in Central London *There is an urgent need to increase the number of general practitioner beds—for country districts in general-practitioner hospitals, for urban districts in branches or annexes of general hospitals*

The Strachan report recommends (para 31) that the responsibility for the treatment of *all* hospital patients must remain in the hands of those of consultant status This recommendation may not always be necessary or practicable Consultants may not be able, or wish, to see every patient who is being treated in a general practitioner bed, and it will be unwise for them to be held responsible for patients they never examine It is doubtful whether general practitioners will be pleased for their beds to be supervised or controlled by consultants from a distance

Research in General Practice

The growing points of medicine touch on a great deal of a family doctor's work, and there is a potential contribution to knowledge to be made by general practitioners in a wide variety of subjects—in in the prevention, diagnosis, prognosis, or t almost every illness, in the genetics of circumscribed or isolated communities, in natural history of illnesses which do not reach in the planning and design of new equipm mises, in the use of new materials (such as nylon), in testing new apparatus, in record-keeping, in many administrative in certain aspects of special subjects such as medicine, social medicine, public health, trics, medical statistics and so on There is administrative problem, or special subject some general practitioner may not have an unusual experience which is worth following which he may not now be dealing in a way th than has been tried before There is need to and coördinate these experiments and to those who are doing this work Prof. J M. (1955) and others (*Lancet* 1955) have recently in detail how best this may be done.

The College of General Practitioners

This college, founded in 1952 (*British Med* 1952), is now firmly established in its attempt to the efficiency and good name of general pr help is being sought by many individuals and academic groups and organisations (*Practit* 1954) Some people suggested that its foun merely a symptom of general practitioner in Great Britain at that time Rather should now, that the American Academy of General (with its 19,000 members), our own college, of General Practice of Canada and similar in Africa, Australia, and New Zealand are own way, symbols of a rejuvenation of g the world over which should bring nothing but future of our profession

Summary

There is need for further bold experiment matters concerning general practitioners, more in the development of departments of g in medical schools, in the trial of diagnostic ment centres as an alternative to health ce work of family doctors in hospital outpatient and in the provision of more general practit beds Possible lines on which such ex be conducted are discussed

With the overcrowding, at present, of patient departments, and the shortage of ju staff, it is likely that more general practit asked before long to help in the work of possible place for the general practitioner in a team of specialists is described

The needs of hospitals must be met, and will no doubt play their full part in this, but the equally urgent needs of the family doc must not be overlooked His first duty patients, for whom he alone is fundamentally It is just as important that he should be given help and encouragement to diagnose and efficiently himself, in their homes *and* in hos to invite him to assist consultants in hosp the patients of other doctors

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References continued at foot of next

NSENSITIVITY TO VITAMIN D OPING DURING THE TREATMENT OF POSTOPERATIVE TETANY

PECIFICITY AS REGARDS THE FORM OF VITAMIN D TAKEN

E Dent
M.D Lond

Christine M. Harper
B Sc. Lond

RET E Morgans
Lond., M R C P

G R Philpot
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atment of choice for permanent postoperative hyroidism is oral vitamin D in one of its l most workers who have written on the subject quite satisfied with their results (Holtz 1941 and Reifenstein 1948, Stucki 1950)

s clear from the literature that there is little to ween the various preparations used A T 10 ' shall regard here as a form of vitamin D) erol are those most commonly used They have identical actions, although A T 10 exerts to exert, its action rather more quickly which makes it a little easier to use in controlling A disadvantage in using A T 10 is its much st compared with calciferol The dose of as been variously reported as 1–5 mg (40 000– its) a day The only other commonly available vitamin D—namely A T 10 and vitamin D_2 be active in a similar dose (weight basis) when lly (Schultzer and Christensen 1946 Stucki serer and Blaclzek 1951) McLean (1941) tated that 2 mg a day of calciferol is equivalent of A.T 10 He was emphatic that patients do op tolerance to calciferol or A T 10 on long administration

uthors, however have noted variations in to the vitamin since they have remarked on the need to vary the dose from time to time A case unusually resistant to therapy with both A T 10 and calciferol has been described by Blohm et al. (1953), and occasional acquired insensitivity to either calciferol or A T 10 has been discussed briefly by Howard and Connor (1954)

In the last few years we too have occasionally noticed that patients may become exceedingly insensitive to the action of calciferol After they have responded well at first to normal doses we have had to increase the dose considerably, until perhaps they were having as much as 12 mg a day without relieving the tetany We found that this happened with calciferol given both in a proprietary form and as the pure substance mixed only with lactose

While these difficulties were being experienced in patients with postoperative tetany, we encountered a similar phenomenon in the metabolic ward where patients were being treated with large doses of calciferol for various metabolic forms of rickets and osteomalacia In these cases, however, there seemed to be an increasing insensitivity to the antirachitic and other metabolic effects of the vitamin We wondered how specific this reaction might be and noted that such patients who had become insensitive to calciferol might be normally sensitive still to A T 10 whether crude or as pure crystalline dihydrotachysterol These particular researches are being continued and will be published later in more detail They led to the investigations on patients with postoperative tetany, and we are reporting these now because they involve a simpler problem with a more immediate practical application

Methods

Calcium was determined by permanganate titration of the precipitated oxalate, in plasma by the method of Clark and Collip (1925) in urine by that of Shohl and Pedley (1922) Plasma phosphorus was determined by the method of Fiske and Subbarow (1925) Creatinine in urine was determined by alkaline picrate according to the method of Folin (1914)

The calcium balance studies were all done in our metabolic ward using the general principles laid down by Reifenstein et al (1945) The patients were given a diet which was maintained unaltered throughout the period of the balance study but was in the first instance, composed so as to accord with their own preferences and with our requirement of mineral intake After six days for equilibration collections of urine and stools were begun Carmine markers were used, the stools being bulked and analysed in six-day periods A complete day's diet was analysed several times during each balance study

All blood samples for chemical analysis were taken at 9 A.M with the patient fasting (breakfast being delayed)

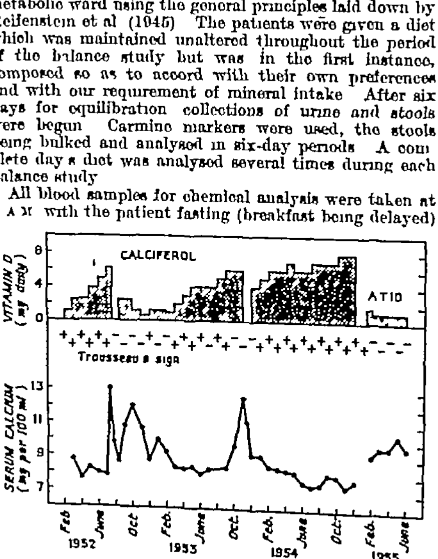

Fig 1—Case 1: outpatient data.

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* pt of a grant from the Sir Halley Stewart Fund.

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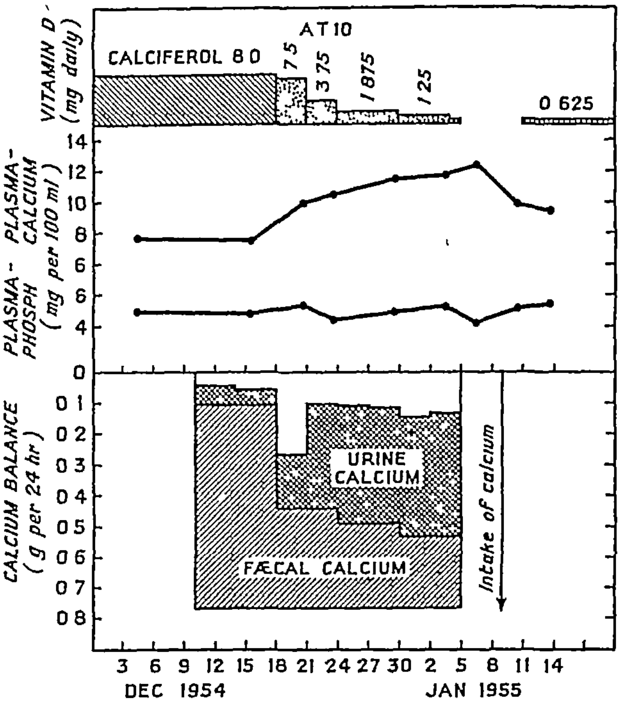

Fig 2—Case 1 : metabolic data.

so as to standardise diurnal and other causes of variation The blood was heparinised and quickly centrifuged, and the plasma was used for analysis Hæmolysed specimens were rejected

Determinations of urine creatinine were used as a check on accuracy of urine collection The results will not be given here

The vitamin-D compounds were given (unless otherwise stated) as pure calciferol (ergocalciferol, vitamin D_2) or pure vitamin D_3 (cholecalciferol, natural vitamin D), or as A T 10 solutions in oil (1 capsule or 0 5 ml being equivalent to 0 625 mg of pure dihydrotachysterol) A T 10 is a crude preparation from irradiated ergosterol, biologically standardised It was obtained from Farbenfabriken Bayer, Leverkusen

Case-reports

Case 1 —A woman, now aged 39, was first seen in February, 1952 In December, 1950, she had undergone subtotal thyroidectomy at another hospital Symptoms of tetany had started on the day after the operation She was treated with calciferol and, when we saw her, was taking 1 2 mg on alternate days During this period her serum calcium level was 8 2–10 0 mg per 100 ml , and she appears to have been free from symptoms However, when we fir *gave a strongly positive* Trousseau's sign, and increased to 1 2 mg daily

Her subsequent progress is shown in fig 1 hypercalcæmia, with thirst and vomiting, (ex pectedly in July, 1952, the dose at that tim raised to 6 mg The same symptoms recurr calcæmia in October, 1952, and November, 19 last of these bouts she remained resistant to calc admitted to the metabolic ward in December, 19

Treatment and Progress —On admission she w at first on her previous dose of calciferol 8 mg control biochemical determinations were undert this time she continued to have signs and sympt On Dec 18, 1954, she was given A.T 10 7 5 mg of the calciferol Next day she suddenly beca her symptoms had disappeared, and we noted th and Chvostek's signs were now negative He was gradually reduced in the next four days bu enough to prevent a few symptoms of hyperca metabolic data are summarised in fig 2

Follow up —As an outpatient she has been maintained on small doses of A.T 10 (fig 1)

Case 2 —A woman, now aged 68, under thyroidectomy in 1924 for what was probably a The goitre recurred in 1946, and a second thyro performed in April of that year Tetany devel after the operation She was treated with gluconate and calciferol by mouth The calc to have been continued, but the dosage is November, 1946

The patient's progress from then on is shown shows that, after a period of apparent ins ferol in doses of up to 5 mg , hypercalcæmia sudde in August, 1953, accompanied by thirst and this episode she was again apparently insensitive except for a brief period in November and De In March, 1955, she was admitted to the meta

Treatment and Progress —On admission she w at first on her previous dose of 8 mg of calc control biochemical determinations were un this time she continued to have signs and tetany On April 13, 1955, her calciferol wa she was given instead the same weight (8 mg) o In the next two or three days she lost her symp and felt much better Chvostek's sign, howe positive for a week or two On April 28 she rep *feelings of depression*, which we interpreted as d ing intoxication, especially as by then her urine calcium had increased considerably Her dose D_3 was therefore reduced to 2 mg a day, and entirely well and was sent home on this dose on metabolic data are summarised in fig 4

Her *follow up* is shown in fig 3

Case 3 —A woman, now aged 70, was first s In 1940 she had undergone partial thyroidectom hospital. Two months later she became bloated, fell out, and treatment with thyroid extract was did not spontaneously complain of cramps, bu

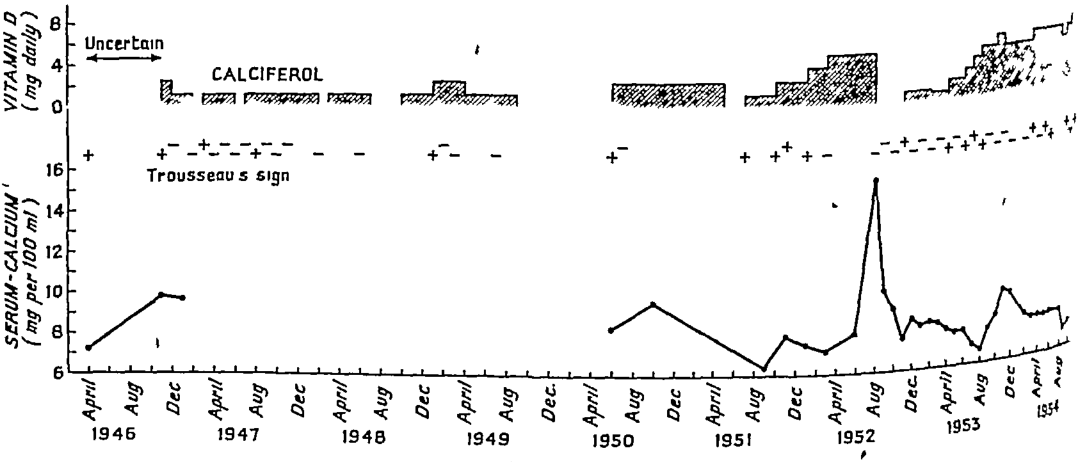

Fig 3—Case 2 : outpatient data

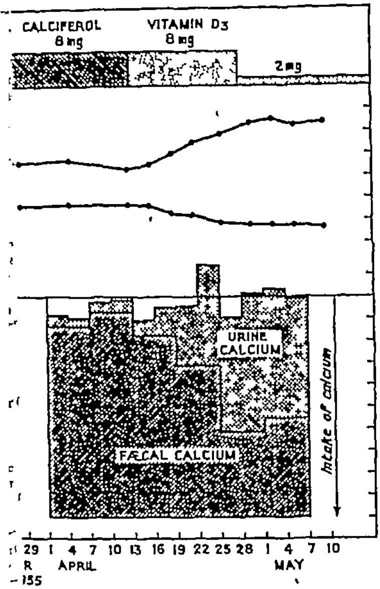

Fig 4—Case 2: metabolic data.

rongly positive and her serum-calcium level was r 100 ml.

t and Progress.—Treatment with calciferol was d she was also given sodium L-thyroxine 0·1 mg dose being maintained unchanged throughout the bservation. Her subsequent progress is shown in episode of hypercalcæmia occurred in November mpanied by thirst. By March, 1955 she seemed some resistant to calciferol even on the dose which ously intoxicated her A T 10 was accordingly and she was immediately sensitive to a much age

—A woman now aged 46 underwent partial my for thyrotoxicosis in 1933 Enlargement and y of the thyroid recurred in 1938 and a second yroidectomy was performed The symptoms gain in 1942 when further thyroid tissue was Since then the patient has remained euthyroid noticed eight days after the third operation, the ium level being 6 8 mg per 100 ml.

t and Progress.—She was treated for two weeks venous calcium gluconate parathyroid extract mono) and cal etany was rapidly and she afterwards ymptom free while ciferol alone. Her progress is shown n episode of hyper developed in July mpanied by malaise ng From January ards she became resistant but the of tetany did not unduly However 10 was substituted rol in April 1955 of tetany dis and she said she than she had done 1 years.

All four patients at one time or another showed sudden striking increases in sensitivity to calciferol—usually sufficient, indeed, to cause signs and symptoms of intoxication Curiously enough, these appeared to coincide in time All the three patients taking calciferol in July and August, 1952 developed hypercalcæmia (figs. 1 3 and 5) and of the three patients taking calciferol in November, 1953 one developed hypercalcæmia (fig 1) while the remaining two showed a sharp rise in blood-calcium level (figs 3 and 6) We cannot explain these events they did not seem to be related to a change in the source or batch number of the preparation used.

Discussion

We have described four cases in which after accidental surgical removal of their parathyroid glands during operations on the thyroid gland the patient had chronic hypocalcæmic tetany All showed a greatly increasing insensitivity to the hypercalcæmic action of calciferol, even though the patient had been symptom free and normocalcæmic before on smaller doses. When the same or smaller doses of A T 10 (three cases) or of vitamin D_2 (one case) were substituted for the calciferol the symptoms of tetany were rapidly relieved and the plasma calcium level rose to normal All four patients are now well maintained on relatively small doses of the substituted substances

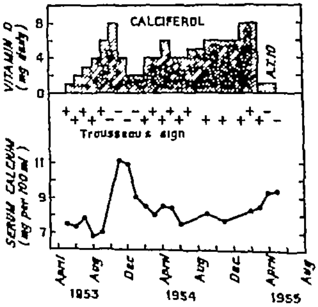

Fig 5—Case 3: outpatient data.

The calcium balance and other data obtained in cases 1 and 2 at the time of the change of the vitamin D preparation showed that both patients in the phase of insensitivity to vitamin D appeared to show no response at all to the action of their large dose of calciferol They had poor absorption of calcium from the gut and a low urinary excretion of calcium besides having low plasma calcium and raised plasma phosphorus levels. It thus appeared that the calciferol had ceased to exert any appreciable effect on their metabolism. However, as soon as the form of administered vitamin D was changed, all the actions of vitamin D were immediately manifest—namely improved absorption of calcium from the gut, decreased renal threshold for calcium raised plasma

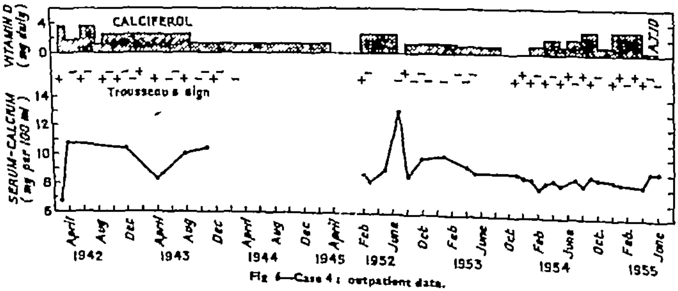

Fig 6—Case 4: outpatient data.

calcium levels, and (in one of the two cases) a fall in the plasma-phosphorus level A further action of vitamin D can also be implied from the timing of the rise in plasma-calcium level In both cases this rise preceded changes in calcium absorption sufficient in themselves to produce such rises These were offset by the approximately equal rise in urinary calcium , hence the over-all calcium balance remained unchanged It seems clear that this was due to the direct action of the vitamin D on bone

All our evidence suggests, therefore, that the patients who had been previously sensitive to calciferol in small doses had become completely insensitive to it even in large doses, but that this insensitivity at that time was to calciferol alone and not to normal doses of the closely related substances A T 10 and vitamin D_3

To this factual matter we can add a few words which illustrate our present view This is based on evidence not yet convincing enough to be published in proper form, as well as on evidence already in the literature

We suspect now that insensitivity to vitamin D is likely to develop in any patient given large doses of vitamin D We think this may happen with any of the preparations of vitamin D, and that, as shown here only for calciferol, it will be specific for the preparation in question We also think that in each case the insensitivity may disappear many months after the particular form of vitamin D therapy has been discontinued We thus envisage a treatment of postoperative tetany in which any preparation of vitamin D will be used at first but will be replaced by one of the other preparations if insensitivity seems to be impending

The theoretical implications of this rather curious situation, which we think is unique as regards vitamins, require much further study We are also studying the occurrence or otherwise of insensitivity in our cases of metabolic bone disease—e g , steatorrhœa, renal osteodystrophy, idiopathic osteomalacia, and resistant rickets —treated with large doses of a form of vitamin D We hope to publish soon the fact that they, too, often benefit by a change from one preparation to another It now looks as though some cases of resistant rickets and osteo malacia respond at first to relatively small doses of vitamin D but very rapidly develop a very severe insensitivity to its various metabolic effects Perhaps, therefore, this phenomenon, which in many cases appears to be determined by genetic factors, is similar in kind to, but different in degree from, the more slowly acquired insensitivity described here in our patients with tetany

The opposite situation of oversensitivity to vitamin D also appears to develop in some patients with sarcoidosis (Anderson et al 1954) and perhaps also in infants with "idiopathic hypercalcæmia of infancy with failure to thrive" (Bonham Carter, Dent, Fowler, and Harper 1955) It may be necessary to explore the possibility that this state of oversensitivity may involve only one or other preparation of vitamin D

Summary

Some patients with postoperative tetany, when taking a dose of calciferol that has been sufficient to maintain their plasma calcium levels, may for no apparent reason become insensitive to this dose and remain insensitive even when the dosage is greatly increased

Two patients taking large doses of calciferol, were closely studied while they were in the calciferol insensitive phase None of the metabolic actions of calciferol was manifest

In four patients who had become calciferol insensitive a change from large doses of calciferol to normal doses of A.T 10 or of pure vitamin D_3 produced a rapid disappearance of the tetany and a return to normal of their plasma-calcium and plasma phosphorus levels In two patients the change from calciferol to A T 10 and from calciferol to vitamin D_3 was undertaken under full metabolic control This showed that the change of vitamin-D preparation coincided with the onset of action

It seems probable that the future operative tetany will comprise changes, from one form of vitamin D to another

This curious phenomenon is likely to have also on the pathogenesis and treatment of forms of bone disease which include so-called to vitamin D " as one of their features.

We wish to thank Sister K. Buck for patients and supervision of the metabolic Mrs B Dewing, who supervised the diets , and Prof M. Maizels for the outpatient determinations

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RELATION OF BLOOD-COAGULA LIPÆMIA

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An impressive volume of evidence, recently (*British Medical Journal* 1954), suggests ingestion of fat may increase the liability to Macfarlane et al (1941) showed that lipoids an important part in in vitro blood-coag Fullerton et al (1953) and Vandenbroucke that after a large fatty meal the clotting-ti ficantly shortened

I report here some of the effects on clott healthy volunteers a standard breakfast various quantities of fat I also tried to particulate fat (chylomicra) or soluble fat responsible for the changes observed

First Experiment

Methods

The volunteers were healthy working men between the ages of 20 and 52 All of them to fast after 8 P.M on the preceding day fasting sample of blood was taken into syringe Twenty minutes later a second was taken The volunteers then ate the which contained 50 g of animal fat. Two furth called lipæmic samples, were taken apart about the end of the fourth hour, when was usually at its peak

Coagulation tests were made on each of the The results of the first two samples were called fasting clotting times, and those of two were averaged and called lipæmic clott

Four small silicone coated (D C.1107) test warmed to 37°C were each filled immediately puncture with 1 ml of blood from the "silicone clotting time" of each was recorded. In the case of some of the volunteers a furthe siliconed tubes containing a knife-point of

TABLE I—RESULTS OF FIRST EXPERIMENT

Age (yr)	Blood		Platelet poor plasma						Fat			
	Silicone clotting time (min)		Clotting-time (min.)		T G T (min.)		Fibrinogen		Total		Non particulate increase	Chylomicra increase
	F	L	F	L	F	L	F	L	F	L		
38	17	10 1/4	7·20	1·43	11 1/4	11 1/4	2·28	2·00	325	417	31	58
38	20 1/4	19 1/2	6·45	0·30	13 1/4	13 1/	1·54	2·23	370	405	0	35
23	19 1/2	16	6·47	5·16	15	11	1·56	[illegible]	276	200		
43	[illegible]	16 1/2	7·32	6·38	12 1/2	10 1/	2·20	1·53	270	333	48	9
33	17	16	5·53	3·31	[illegible]	12 1/4	2·39	1·28	319	440	45	76
33	19 1/2	17 1/4	9·50	7·22	13 1/4	10 1/4	2·18	1·35	335	401		
33	19		6·38	3·11	11 1/4	7 1/4	1·30	1·08	406	408	41	16
35	18 1/4	16	8·13	6·15	11 1/4	1	2·21	2·02	251	400		
35	18	18	6·45	5·15	12 /	11	2·07	1·20	300	130	00	40
28	15	16	7·20	5·30	14 1/2	12 1/4	2·08	2·01	200	230	21	23
34	16	20	6·38	5·05	[illegible]	10 1/4	33	2·10	470	676		
52	31 1/2	21 1/2	4·15	3·52	10	10 /4	1·34	1·05	405	600	202	−7
52	17 1/2	14	5·30	5·15	10 1/2	10 1/4	1·37	1·52	370	407	59	61
48	20	13	7·23	6·15	13 1/4	11 1/4	2·16	2·17	300	410	11	30
45	18	13 1/2	8·11	6·50	13 1/4	14 1/4	1·41	1·28				
45	31	19	0·04	3·40	12	9 1/2	2·12	1·07	315	345	−58	58†
48	17 /2	18	8·00	4·51	14 1/2	10	2·20	1·10	270	480	107	43
38	26	23	0·53	7·30	14 1/2	12 1/	1·33	1·52	297	500	18	171
20	27 1/2	21 1/2	7·11	9·38	11 1/4	13 1/4	2·11	2·16	300	310	0	18
35	20 1/	19 1/4	7·23	5·20	12	10	2·03	1·21	340	435	00	5

sma repeatedly contained chylomicra fasting total fat 405 lipæmic total fat 690 fasting chylomicra fat 61 lipæmic chylomicra

apparently a decrease in non particulate fat after the meal

increase that proportion (mg per 100 ml) of the lipæmic increase removable by seitz filtration—i.e., particulate fat

late increase, increase (mg per 100 ml. of plasma) of non particulate ether-extractable plasma lipoids 4 hr after the meal

rombin generation time (minutes)

filled with 1 ml. of blood and the clotting times led.

of the blood was mixed with 0·4 ml of isotonic ution and centrifuged at 1000 r.p.m. for seven The supernatant fluid is called platelet rich plasma, duplicate thrombin generation tests were made To warmed plasma 0·4 ml. of M/40 calcium chloride d, and the plasma clotting time of this reacting as recorded Thereafter at intervals, 0·1 ml. from g tube was transferred to a subsample tube con ml. of a 2·0% solution of fibrinogen The shortest ne in any of these subsamples is called the *time* and the interval between the recalcification ma and the filling of the fibrinogen time subsample be called the thrombin generation time The sults are the average of the 4 estimations (2 from two samples, either fasting or lipæmic)

poor plasma was obtained by centrifuging another trated blood at 3000 r.p.m for fifteen minutes. le of supernatant plasma was tested in duplicate r thrombin generation test

ion of plasma fat —The rest of the blood from uncture was transferred to a tube containing sium oxalate

lated blood was centrifuged at 3000 r.p.m for utes, and its optical density was measured at once am spectrophotometer at 1000 Å.

estimated by a modification of the fæcal fat method Kamer et al. (1949) The plasma was saponified hydrolysed The fatty acids were extracted with ether and eventually dissolved in 95% ethyl d titrated with sodium hydroxide The two clear sma samples were mixed and the fat was estimated; poids in the lipæmic plasma were similarly estimated.

r moiety of the pooled opaque lipæmic plasma filtered This produced a completely clear which I call chylomicra poor plasma. The fat- of this was estimated. Some samples were d at 9000 r.p.m for 120 minutes this also a clear plasma and the fat was estimated rence between the total fat in the lipæmic nd the estimable fat after seitz filtration was to be due to fat in the form of particulate fat micra The increased amount of fat in the red lipæmic plasma above the fasting fat s assumed to be due to an increase in the culate or soluble fat.

Results

Preliminary —Preliminary observations showed that in the absence of ingestion of fat, there were no significant changes in the blood lipoids or in the clotting times so it seems likely that the ingestion of fat is in some way responsible for any changes found after a fatty meal

The fasting platelet poor plasma was nearly always practically clear, and seitz filtration did not cause a decrease in the estimable fat so these observations were not continued for the whole series The clotting times in the presence of powdered glass and the thrombin generation results of platelet-rich plasma in the first 11 cases showed no appreciable changes after the meal, compared with the fasting results; so these observations were not continued The fat-content of the seitz filtered plasma and that of the plasma centrifuged at high speed were the same so the estimation of centrifuged samples was discontinued The possibility remains that both methods did not in fact remove all the particulate fat

Coagulation —The main series comprised 20 investigations on thirteen volunteers and is presented in table I. Not all the investigations were made in every experiment. and those made show considerable variation (However the lipæmic silicone clotting times were usually shorter than the fasting silicone clotting times, and for the whole series the difference was significant at a 0·1% level of confidence The difference between the lipæmic and starved plasma as regards thrombin generation times was significant at a 5·0% level of confidence, and as regards fibrinogen at a 1·0% level. The statistical test used was Fisher's (1935) modification of Student's (1908) t test

Lipæmia

There was considerable variation between individuals both in the *fasting blood fat level*, which was fairly constant for each individual and in the postcibal increase, which was variously distributed between non particulate and particulate fat. There was no relation between the opacity measurements and any of the estimations of plasma-fat

Relation of coagulation to lipæmia —To compare the changes in the clotting times with the changes in the fat-content the difference between the shorter lipæmic clotting time and the fasting clotting time was expressed as a percentage of the fasting clotting time , this enabled the degree of change in all the four clotting times (silicone clotting-time, plasma clotting time, thrombin generation time, and fibrinogen time) to be averaged to present an over-all average estimate of the acceleration of the clotting mechanism

If the observed postcibal acceleration of the clotting-times is related to the lipæmia, it should probably be possible to show some proportionality between some or all (using the over-all average) of the percentage acceleration of the clotting-times and the percentage increase in the total, or the particulate or the soluble fat, or in the opacity in each case All these possibilities were investigated, and none showed any significant correlation

Second Experiment

A further attempt was made to see if the postcibal acceleration of clotting was proportional to either or both the particulate or non-particulate plasma fat

Method

Four healthy male or female volunteers aged 55–70 were used Two samples of blood were taken immediately before breakfast The meal consisted of 60 g of animal fat Blood was collected 1, 2, 3, and 4½ hours after the meal. Thrombin-generation tests were made on some samples 'Stypven' times were estimated on all the samples as follows

To 0 1 ml. of warmed plasma was added 0 1 ml of stypven (Russell's viper venom) Immediately after, 0 1 ml of calcium chloride was added, and the clotting-time was recorded The average of two or more observations was taken as the stypven time

The total ether extractable lipoids before and after seitz-filtration were estimated on all samples

Results

An acceleration of clotting-times and an increase in particulate and non-particulate lipoid were usually observed In no case did the increase in the lipoid, particulate, or non-particulate, vary even approximately in proportion to the acceleration of various clotting-times Indeed in several one hour periods there was a considerable change in these two measurements, but in opposite directions—e g, an increase in both forms of fat and a lengthening of the clotting-times Again it must be concluded that there is no direct relation between the total increase in particulate or non-particulate ether-extractable plasma-lipoid and the acceleration of the clotting-times

Third Experiment

The absence of a quantitative correlation between the changes in plasma-fat and the changes in coagulation does not necessarily imply that chylomicra play no part in the acceleration of coagulation The following experiment was designed to investigate further their activity The clotting times of fasting and lipæmic platelet poor plasma were compared with similar observations on the same two plasmas largely freed from chylomicra Lastly, chylomicra were added back to the sample of chylomicra-poor plasma, enabling a direct comparison to be made between chylomicra-rich and chylomicra poor plasma

Method

Two venepunctures were made on the fasting volunteer, who then ate as much animal fat for breakfast as possible This was usually about 70 g About three and a half hours later two further venepunctures were made Each of these 4 samples was treated identically Each sample was centrifuged at 3000 r p m for twenty minutes to produce platelet-poor plasma Some of this plasma was used in the coagulation tests The rest was divided equally between two centrifuge tubes, which were centrifuged at 9000 r p m for two hours This produced a small deposit with clear supernatant plasma and a scum of chylomicra on the surface From one tube some of the clear plasma was carefully removed with minimal disturbance of the scum, this is the "chylomicra poor plasma" The plasma and fat scum of the second

TABLE II—RESULTS OF THIRD EXPER

—	T E		F T	
	Fasting	Lipæmic	Fasting	Lipæ
Platelet poor plasma	12 0	12 0	91	7
% acceleration	0		5	
Chylomicra poor plasma	12 7	11 6	165	1
% acceleration	9		19	
Chylomicra rich plasma	12 6	11 6	13	1
% acceleration	8		19	

F T, average shortest clotting time (sec) of any
subsample tubes
Stypven average stypven time (sec)
T E, average time elapsed (minutes) between add
to reacting mixture and taking of shortest sub

tube were mixed and poured into another
the deposit, if any, in the centrifuge tube
plasma sample thus contained resuspended
is called chylomicra rich plasma The coag
made in duplicate on each sample, were the
generation test described above and a styp

Results

The average figures from seven volunteers
in table II Several comparisons can be mad
will be seen that the degree of change (%
of the stypven times gave results very
degree of change in the fibrinogen times,
under these conditions the stypven time wa
the same phenomenon as the fibrinogen
contention was supported by a similar
tionality in each case

A comparison of the results obtained with
plasma and those obtained with chylomicra-
shows that the degree of difference between
and the postcibal samples is not altered by
different treatments of the plasma, nor is the
removed by adding back an excess of chylom
chylomicra-rich samples It can probably be
that most of the chylomicra play little
difference in coagulation between the fastin
postcibal samples of plasma

However, high-speed centrifuging to prod
micra-poor plasma did lengthen all the
This was probably partly, but not necessa
explained by a more complete removal of
since the minute deposit was shown to be
and platelets are known to improve the perf
the thrombin generation test and the stypven

The adding back of excess chylomicra slightly
the clotting-times, which fact is of doubtful
Poole (1955) has shown that the clotting of
freed from chylomicra by very high speed
can be greatly accelerated by the addition of
chyle—i e, chylomicra free from platele
concluded that chylomicra can play an
blood coagulation, whereas my results so
show that, under the given experimental
they play any part These apparently discrep
may be explained if centrifuging human
about 9000 r p m does not free plasma comp
all chylomicra, and if the activity of chylom
on the presence of only small numbers of
It should be repeated that a very large propor
particulate fat was in fact removed, th
difference in the fat content of lipæmic pl
chylomicra poor by high speed centrifugat
seitz-filtration and the plasma was in both cas
completely clear

An attempt was made to prove the
Various kinds of platelet poor plasma were

ed centrifuge at 20,000 r p m for up to two
l some of the plasma was removed through the
plastic centrifuge tube, so that no contamina
the supernatant chylomicra was possible The
hylomicra was then mixed with a small amount
isma These two plasmas and the untreated
vere compared by the stypven accelerated
mes, and gave the following results which
erages of eight experiments:

ated	*Chylomicra-poor*	*Chylomicra rich*
sec	23 8 sec	10 7 sec

ndings are in agreement with Poole's observa-
rats, and indicate that, if the chylomicra are
y thoroughly removed the stypven time is
d and can be restored to normal by the addition
iicra The results from this very high speed
ıg were inexplicably erratic, and it was felt
extended series was unlikely to give more
ın

os that the more complete the removal of
a the more emphatic is their effect on being
ck to plasma. Since there is no quantitative
etween the quantity of fat as chylomicra and
eration of the postcibal clotting time, and
acceleration persists in spite of the removal
of the chylomicra, it seems unlikely that the
a are solely responsible for the acceleration of
m after a fatty meal

Conclusions and Summary

presence of platelets and a water wettable
ere is no detectable difference in the clotting
emic blood after a meal of 50 g of fat compared
from the same patient starving When the
are largely removed or unable to act (silicone
emic blood clots faster than the equivalent
ample and apparently more thrombin is
Gross variations were observed between
ls in the fasting blood fat level and in the
increase in particulate and non particulate fat,
ehaviour of each individual was fairly constant
eration of the clotting time shows no significant
nality to the increase in particulate or non
e fat In the second experiment when all
ges were studied hourly after a large fatty meal
relationship was shown between the increase
particulate or non particulate fat and the
on of the clotting times In these circumstances
es in the one stage stypven times seem to vary
n proportion to the fibrinogen times of the
generation tests

third experiment most of the chylomicra were
and, although all the times were prolonged by
edure the degree of postcibal acceleration of the
times was unaffected With even faster centri
when the chylomicra were presumably more
ly removed the stypven time was prolonged
d be returned to normal by the addition of the
ra serum

ly had we been able to devise a reproducible
for removing all the chylomicra we might
und that the postcibal acceleration of clotting
ished which would indicate that the chylomicra
ponsible for the postcibal acceleration but
vidence available this seems unlikely At least
ibilities remain The observed acceleration may
a fraction of the ether-extractable lipoids, small
ity but highly active which does not increase in
on to the total lipoids Alternatively, the
of fat may bring into play some independent
sm for example it is conceivable that the
like clearing activity (Jeffries 1951) incidentally
e clotting mechanism

My thanks are due to the Medical Research Council for a grant enabling this work to be done I am most grateful to Mrs. J B Cheator, A I M L T who carried out the technical work. I also wish to thank Dr J Poole for much help in this work and for the statistical analysis.

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PENICILLIN IN MEGALOBLASTIC ANÆMIAS OF AFRICANS

EFFECT ON SERUM-VITAMIN B_{12} LEVELS AND ABSORPTION OF RADIOACTIVE VITAMIN B_{12}

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The non pernicious megaloblastic anæmias of Africans can be classified according to their response to treatment (Foy et al. 1951 1952a b, and c Foy and Kondi 1953a and b) One group responds to 200 000 units of penicillin by mouth, or 400 000 units by intramuscular injection daily for 6–12 days or to a single dose of 80 µg of vitamin B_{12} by mouth The other group does not respond at all to penicillin or to 80 µg of vitamin B_{12} (either oral or intramuscular) but does respond to oral folic acid 5–10 mg daily for 5–10 days

We have suggested that the responses to penicillin are probably due to (1) changes in the intestinal flora by which more vitamin B_{12} becomes available to the host (2) intestinal changes favouring absorption, or (3) metabolic changes in the host leading to better utilisation of hæmopoietic substances

We have now determined the serum vitamin B_{12} levels and the excretion of radioactive vitamin B_{12} labelled with ^{60}Co, in both these groups of cases before during, and up to four weeks after the start of penicillin treatment

Of the cases studied all those that responded to penicillin had very low serum B_{12} levels which rose after the administration of penicillin whereas those responding to folic acid but not to penicillin had serum B_{12} levels ranging from normal to very high Cases with serum B_{12} levels below 700 µµg per ml showed some increase in these levels after penicillin but this was not associated with any increase in red cells or hæmoglobin although sometimes the reticulocytes increased slightly Cases with serum B_{12} levels above 700 µµg per ml showed no rise after treatment with penicillin and no increase in reticulocytes, red cells or hæmoglobin The excretion of radioactive vitamin B_{12} was of the normal pattern in all patients indicating that intrinsic factor was present These results are we think in conformity with the view that changes in the intestinal flora are the important factor in the response to penicillin but it is too early to decide whether this is the only factor

We also estimated the serum B_{12} levels in non megaloblastic microcytic iron responding anæmias of Africans and found that they ranged from normal to high

Material

The cases were typical megaloblastic anæmias, such as we have previously described in Africans, with red cell counts of 600,000–2,000,000 per c mm, and reticulocytes about 1% on admission to hospital The hæmatological examinations were made by the methods previously described (Foy et al 1952b) and will not be dealt with in detail here All the patients (except one with pernicious anæmia) had either normal gastric acidity or hypochlorhydria after the administration of intramuscular histamine 1 mg, and none had gastric atrophy, glossitis, or nervous symptoms No patient had any evidence of sprue, and the fat analysis was normal The heart and lungs showed nothing incompatible with the extreme anæmia No patient had malaria parasites in the blood or gave any recent history of malaria, but the spleen was enlarged in one The stools contained no pathogens or parasites A few of the patients had œdema of the ankles and/or eyelids, none had positive Wassermann or Kahn reactions Three patients had watery diarrhœa, which, however, cleared up with the anti-anæmia treatment, no sulphonamides being necessary The bone marrow was active and contained either typical megaloblasts or the intermediate forms and giant stab cells such as we have previously described

The cases were kept under observation 3–10 days before the commencement of any treatment Previous experience in a large number of cases, as well as experience in the cases we report below, indicates that hospital diet and rest in bed have no effect whatever on the hæmatological picture of these anæmias patients remaining in hospital without treatment always show a decrease in the amount of hæmoglobin and in the numbers of red cells, and reticulocytes

Treatment with the appropriate substances was followed in all cases by the maximal expected reticulocytosis, regeneration of the blood, and a return of the marrow to its normal picture

Methods

Serum B_{12} levels —The serum B_{12} was estimated using *Euglena gracilis* with the technique of Ross (1952), who kindly cross checked some of our estimations The values given for the various periods are the means of several estimations made at intervals of hours or days to exclude the effect of substances that promote the growth of euglena but are hæmopoietically inactive (Ross et al 1954)

Excretion of radioactive vitamin B_{12} was estimated by a modification of the methods of Heinle et al (1952),

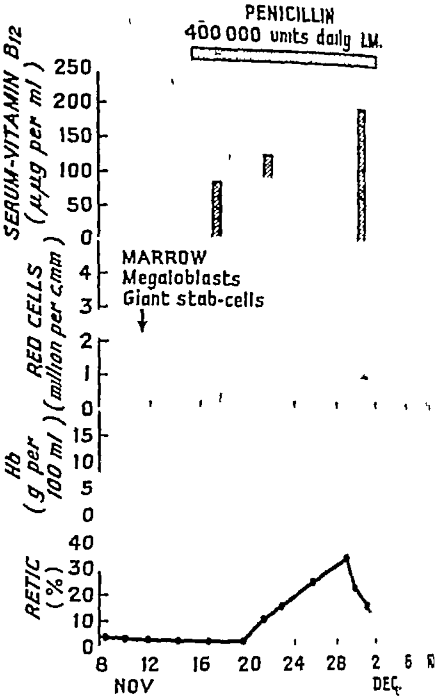

Fig 1—Case 1 response to penicillin

Halsted et al (1954), and Callender et al (195 active vitamin B_{12} 0 5 μg, having an activit μC, was taken up in 100 ml of water and fasting patient at 10 A M Complete stools daily until no further radioactivity was pres patients were constipated, cascara was give activity was measured with a scintillation checked for us either by Dr S T Baker, graduate Medical School of London, or by Dr and Dr F Harrison at Harwell

Drug therapy —Our usual method of first to give the patients penicillin 400,000 for 6–10 days, if there was no response, in vitamin B_{12} 80 μg was given Finally, if the produce a response, folic acid was given by m think it important to follow this routine in because all cases will respond to folic acid, of them to intramuscular or oral vitamin penicillin

SUMMARY OF SEVEN REPRESENTATIVE CASES

		Before treatment								After intramuscular penicillin							
Case no	Sex	Hb (g per 100 ml)	Red cells (million per c mm)	P C V (%)	Bilirubin (mg per 100 ml)	White cells (per c mm)	Serum B_{12} ($\mu\mu g$ per ml)	Sickling	Marrow	Hb (g per 100 ml)	Red cells (million per c mm.)	P C V (%)	Bilirubin (mg per 100 ml)	White cells (per c mm)	Serum B_{12} ($\mu\mu g$ per ml)	Stool B_{12} (°Co %)	Max retic (%)
1	M	5 3	1 35	14 0	3 0	2350	100	Sickle-cell trait	Megal G S C	15 0	4 12	40 0	0 8	3 600	276	42	37·0
2	F lactating	5 2	0 80	9 0	1 5	8000	80	None	,,	11 8	4 02	40 0	0 4	3 150	98	52	49·0
3	F	6 8	1 61		1 5	3060	20	None	,,	8 8	2 52				98	54	11·0
4	F pregnant	3 0	1 16	8 0	1 5	3120	353	Sickle-cell trait	,,	2 2	1 00		2 0		1000	44	6·0
5	F pregnant	4 8	1 19	11 0	3 0	3300	1300	None	,,	3 8	0 90				1200	51	0 8
6	M	4 6	1 07	10 0	3 0	2350	1150	None	,,	2 4	0 60				1100	54	0·1
7	F	5 0	1 20		0 2	4400	550	None	,,	5 0	1 15				950	56	9 0

Megal = megaloblasts G S C = giant stab-cells Max retic = maximum reticulocytosis

Representative Case histories

(fig 1 and table).—Typical megaloblastic anæmia kept under observation for a week, during which no reticulocyte response and the red cell count from 2,200 000 to 1 350 000 per c mm and the n from 10·0 g to 5 3 g per 100 ml From this muscular penicillin *a 400 000 units was given daily* s. There was a complete blood response with a of the marrow to normal. The serum B_{12} level rose *treatment level of 100 μμg per ml to 300 μμg* the administered dose of radioactive vitamin B_{12} ed.

(fig 2 and table)—Megaloblastic anæmia in a woman giving full response to intramuscular serum B_{12} level 80 μμg per ml. before treatment g 96 hours after the first dose of penicillin. No he blood had been taken more than 96 hours after lose of penicillin a greater rise in the serum B_{12} *e been found.* the administered dose of radioactive vitamin B_{12} ed

(fig 3 and table)—Typical megaloblastic anæmia regnant girl of 18 with histamine-fast achlorhydria. e definite signs of combined lesions of the posterior and pyramidal tracts characteristic of subacute degeneration of the cord the gait was spastic and jerks were exaggerated both plantar responses nsor; complete absence of vibration sense in both ugh it was present in the arms. Pupils cranial nal field and abdominal reflexes normal Tongue smooth *Gastroscopy showed a normal mucosa* gastric atrophy (Dr G C Dockeray) Serum B_{12} μμg per ml. before treatment rising to 98 μμg *inistration of penicillin but falling again to 40 μμg* g once more to 132 μμg after administration of B_{12} 80 μg by mouth There was a submaximal n the reticulocytes, the red-cell count and the in after administration of penicillin, followed by a After administration of vitamin B_{12} 80 μg by reticulocytes increased to the expected maximum red cells and hæmoglobin to 4 020 000 per c mm. per 100 ml respectively

ponses to penicillin and to vitamin B_{12} 80 mg indicate the presence of intrinsic factor although n diminished amounts. The megaloblastic anæmia, mine-fast achlorhydria the definite but early signs involvement and the *high excretion of radioactive* B_{12} (78% of the administered dose) all suggest a anæmia in its very early stages The absence of rophy *as shown* by gastroscopy could also be on the assumption that the disease was in its early Perhaps a gastric biopsy would have shown some The patient is being followed and the biopsy will be months. The amount of vitamin B_{12} made available inistration of penicillin was probably insufficient, with the *diminished amount of intrinsic factor to maintain* blood regeneration whereas the greater quantity of vitamin B_{12} available after administration of vitamin B_{12} 80 μg led to a higher rise in the serum B_{12} level and a more sustained blood regeneration

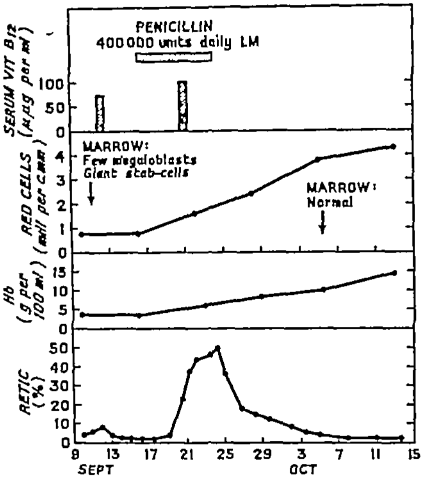

Fig 2—Case 2 : response to penicillin.

Case 4 (fig 4 and table)—Characteristic megaloblastic anæmia in a pregnant woman with a long history of watery diarrhœa but no pathogens in the stools and normal fat-content. Gave a submaximal reticulocyte response to intra*muscular penicillin, but no blood regeneration. Maximal* and typical reticulocytosis and blood regeneration followed the administration of folic acid. Serum B_{12} level 350 μμg per ml. before treatment rising to 1000 μμg 2 weeks *after* the start of penicillin therapy

44% of the administered dose of radioactive vitamin B_{12} was excreted in the fæces

Case 5 (fig 5 and table)—Typical megaloblastic anæmia in a pregnant woman with a history of 15 days watery *diarrhœa with no pathogens in stools and normal fats.* There was no response to either penicillin or vitamin B_{12} 80 μg by intramuscular injection in fact the blood picture seriously deteriorated during treatment with *penicillin and intra*muscular vitamin B_{12} Complete blood response to oral folic acid. Serum B_{12} level 1300 μμg per ml. before treatment,

SUMMARY OF SEVEN REPRESENTATIVE CASES

	After vitamin B_{12} 80 μg				After folic acid						
	Red cells (million per c mm.)	Serum B_{12} (μμg per ml)	Max retic. (%)	Marrow	Hb (g per 100 ml.)	Red cells (million per c mm)	Bilirubin (mg per 100 ml.)	White cells (per c.mm.)	Serum B_{12} (μμg per ml)	Max. retic (%)	Marrow
	4 00	132	15 0	Normal							
ain B_{12} not given					6 8	3 01	1·0	3 450		47	Normal
	0 05	1100	0·7		8 8	3 28	0 6	5·250	1300	50	
	0 0	1200	0 1		8 5	3 07			1100	46	
nin B_{12} not given					13·0	4 80		6 800		38	,,

Max. retic. = maximum reticulocytosis.

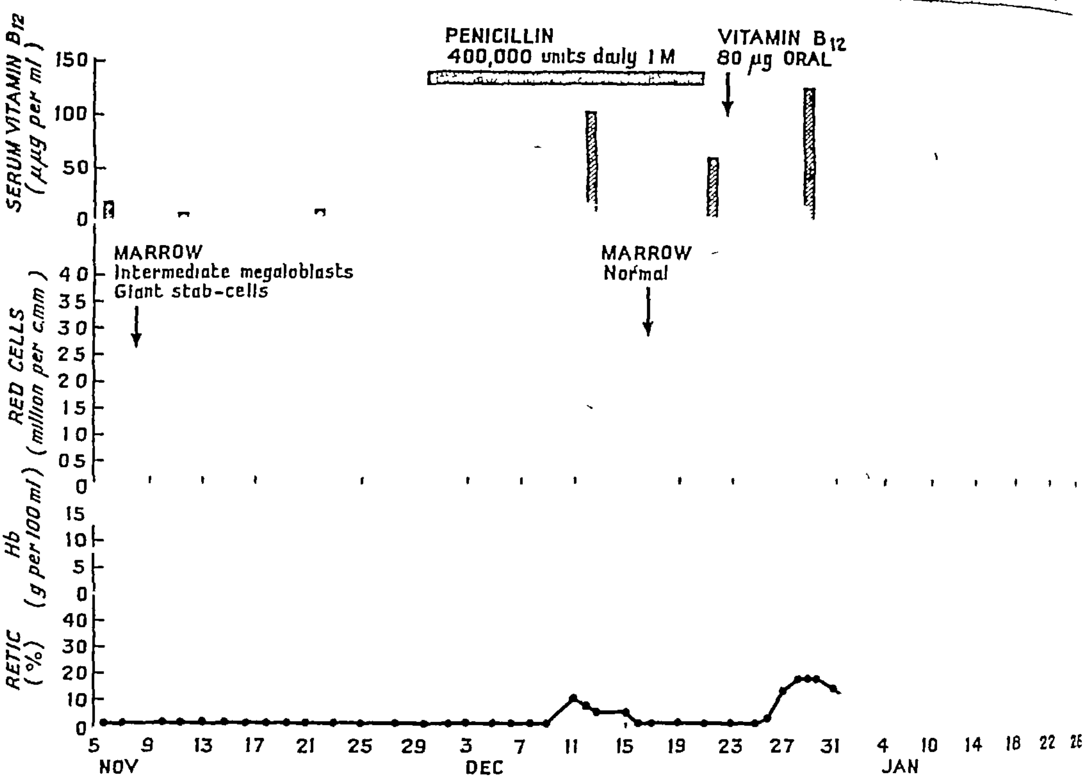

Fig 3—Case 3 partial response to penicillin

showing no increase after administration of penicillin or of vitamin B_{12}

51% of the administered dose of radioactive vitamin B_{12} was excreted in the fæces

Case 6 (fig 6 and table)—Megaloblastic anæmia in a male that did not respond to either penicillin or intramuscular vitamin B_{12} 80 μg and red cell count and hæmoglobin dropped during treatment with these substances Maximal reticulocytosis and blood response to folic acid Serum B_{12} 1150 $\mu\mu g$ per ml before treatment, not influenced by either penicillin or vitamin B_{12}

54% of the administered dose of radioactive vitamin B_{12} was excreted in the fæces

Case 7 (fig 7 and table)—Megaloblastic anæmia in a non-pregnant woman with a long standing history of watery diarrhœa without pathogens in the stools and with normal fats Emaciated patient No response to penicillin, but maximum reticulocytosis and blood regeneration followed administration of folic acid Serum B_{12} 500 $\mu\mu g$ per ml, rising to 950 $\mu\mu g$ 10 days after commencement of penicillin treatment

56% of the administered dose of radioactive vitamin B_{12} was excreted in the fæces

Discussion

Cases Responding to Penicillin

Figs 1–3 show that the patients with megaloblastic anæmia who responded to penicillin all had low pre treatment serum-B_{12} levels (20–100 $\mu\mu g$ per ml) After the administration of penicillin the reticulocytes increased to the maximum for the related blood count in 6–12 days, and red cells and hæmoglobin doubled in 14–21 days from the start of treatment (Foy and Kondi 1953a and b) The marrow returned to the normoblastic picture, and the patients usually left hospital with normal red cell counts and hæmoglobin From 10 to 21 days after the start of treatment the serum-B_{12} level rose to twice or thrice its height but did not reach very high levels during the time we had our cases under observation Perhaps this was because the tissues were depleted of vitamin B_{12} or because we did not allow enough time to elapse from the start of treatment to our estimation of the serum B_{12}

The excretion of radioactive vitamin B_{12} administration of penicillin in these cases penicillin was of the normal pattern, only being excreted in the stools Meyer et al. shown that there is great variability in the radioactive vitamin B_{12} in the fæces of the tested at different times, both in pernicious

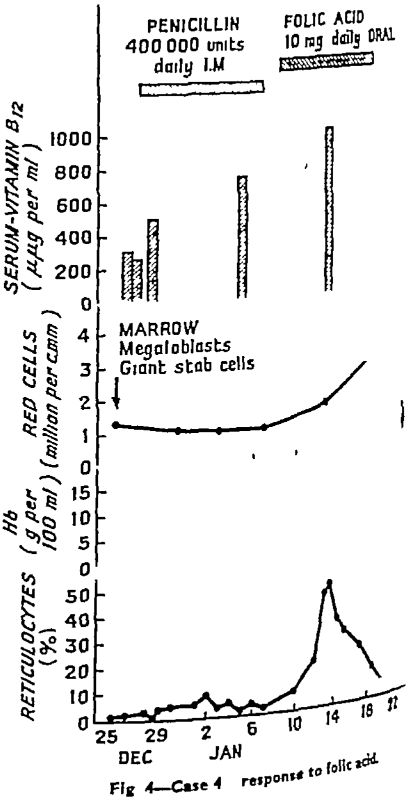

Fig 4—Case 4 response to folic acid

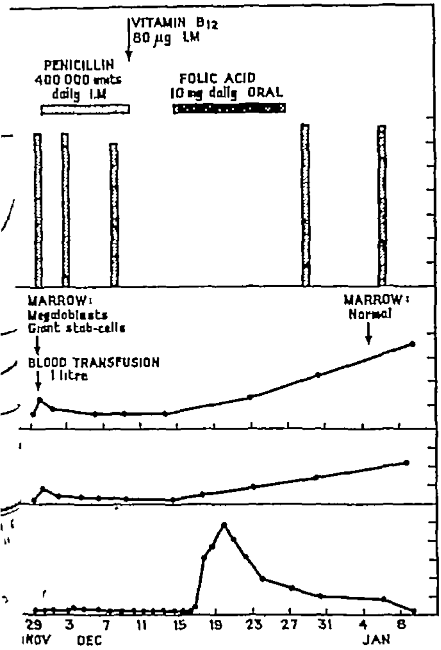

Fig 5—Case 5 : response to folic acid

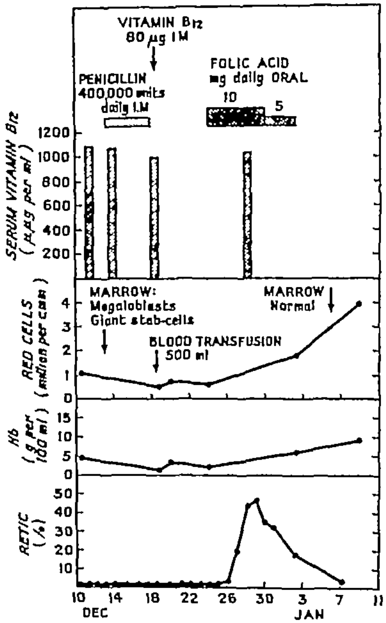

Fig 6—Case 6 : response to folic acid

patients, and they regard the excretion pattern nable to permit of any critical comparisons. Halsted et al (1954) Heinle et al (1052) and et al (1954) hold that a high fæcal excretion adioactive vitamin B_{12} indicates diminished due to either absence of or reduction in it of intrinsic factor If this interpreta rect, the excretion pattern of radioactive B_{12} seems to indicate that in the non megaloblastic anæmias of Africans the of vitamin B_{12} is normal, showing the of intrinsic factor This view is sub by the clinical picture and the response in or to 80 µg of oral vitamin B_{12}

cretion of radioactive vitamin B_{12} was in all our cases after the administration in or of folic acid. Possibly this affected ion levels by increasing absorption from of the gut a view that would fit in with the serum B_{12} level after administration substances It has been found that in re are changes in the intestinal mucosa ministration of penicillin and similar ay occur in these anæmias, particularly remembers the effect that folic acid has rrhœa in the cases that respond to folic

hese results it is clear that antibiotics he serum B_{12} levels but whether this is due to improved absorption or to of the organisms competing for vitamin metabolic changes in the host is not yet None of the present patients had sore nervous symptoms gastric atrophy, or na

Cases Responding to Folic Acid

The cases responding to folic acid (figs 4–7) were in sharp contrast to those which responded to penicillin They gave no response to either penicillin or to intra muscular vitamin B_{12} After the administration of oral

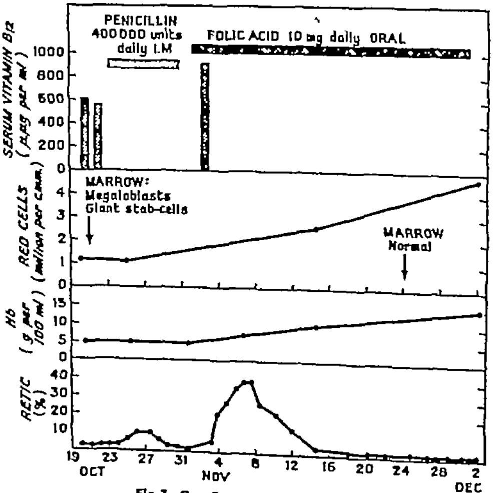

Fig 7—Case 7 : response to folic acid

folic acid there was, however, an increase in the reticulocytes to the expected maximum in 5–8 days, a doubling of the red cells and hæmoglobin in 14–21 days, and a return of the marrow to normal. The serum B_{12} level was always high (300–1300 µµg. per ml.). Patients with levels below 700 µµg. showed a rise in the level and a slight reticulocytosis after penicillin, but there was no increase in the red cells or in the hæmoglobin. Those with serum B_{12} levels above 700 µµg. per ml. showed no rise in the level and no reticulocytosis after penicillin.

The excretion of radioactive vitamin B_{12} was of the normal pattern, indicating the presence of intrinsic factor and normal absorption of vitamin B_{12}. This group had no nervous involvement, sore tongue, or gastric atrophy; some had hypochlorhydria.

A few of our patients responding to folic acid had watery diarrhœa, sometimes of many weeks' duration; no pathogens were present in the fæces, and the diarrhœa nearly always cleared up on treatment with folic acid. In those cases where it did not do so, kaolin was always effective; we never found it necessary to give sulphonamides.

Pernicious Anæmia

The patient with pernicious anæmia (fig. 3) had the usual pernicious-anæmia blood picture with histamine-fast achlorhydria, sore tongue, and definite signs of early nervous involvement. The serum B_{12} level was low (20 µµg. per ml.). Gastroscopy showed no signs of gastric atrophy; but it is known that gastroscopy alone is not an infallible means of diagnosis, and it may well be that gastric biopsy would have revealed gastric atrophy in its early stages.

This patient gave a submaximal response to penicillin, with a rise in the serum-B_{12} level from 20 µµg. per ml. to 98 µµg. followed by a submaximal increase in red cells and hæmoglobin. The first test of excretion of radioactive vitamin B_{12} gave a value of 54%, and the second one, after treatment with penicillin and vitamin B_{12}, a value of 78%. We think that this was an early case of pernicious anæmia with some intrinsic factor, which gradually decreased in hospital.

We have previously described a case similar to this (Foy and Kondi 1953a and b) with histamine-fast achlorhydria but no gastric atrophy and giving a submaximal response to penicillin; this patient later developed typical gastric atrophy and then did not respond to penicillin but responded to intramuscular vitamin B_{12}. Evidently the presence of intrinsic factor is not an all or none phenomenon, and such cases usually pass into typical pernicious anæmia.

Diet

The high incidence of megaloblastic anæmias in countries like India, Africa, and Macedonia is of considerable interest. The diet in these countries is generally admitted to be low in animal protein and rich in bulky carbohydrates. Whether this type of diet is deficient in vitamin B_{12} and/or folic acid is not yet known. Since diet is a factor in the production of such syndromes as sprue (Frazer 1949, 1953) and affects the bacterial flora of the gut, it may well be that the type of diet consumed in countries where megaloblastic anæmias are common encourages the growth of competitors for vitamin B_{12}.

Intestinal bacteria are known to produce a wide range of essential vitamins, many of which are utilised by the host. Perhaps the diet of the countries in which we have been working is low in folic acid and/or vitamin B_{12} and the inhabitants depend more on the vitamin B_{12} synthesised by their intestinal flora than do those on a better diet.

These anæmias are seasonal: at some times of the year the types that respond to folic acid are numerous, and at other periods those that respond to vitamin B_{12} are commoner. We have observed this seasonal incidence in Macedonia, Africa, and the Fiji Islands likely that it is associated with dietary de

The low serum-B_{12} levels in the anæmias to penicillin may be due to deficiency of in the diet, or to the presence of competitors B_{12} in the gut, or to failure in absorption of

In the non-megaloblastic microcytic anæmias, the serum B_{12} level is always high. These patients presumably eat the diet, and the implication seems to be that lack vitamin B_{12}. Further, the stools of with megaloblastic anæmia contain 50–80 B_{12}; but we do not know whether this origin or synthesised by intestinal bacteria, and in them, and therefore not available to the

Intestinal Flora

It is generally assumed that, since the is synthesised in a part of the gut where the intrinsic factor it is not available for hæmo responses obtained in pernicious anæmia doses of vitamin B_{12} either given by mouth into the nose suggest that besides intrinsic mass action other factors may be concerned absorption of vitamin B_{12} (Harte and Chow et al. 1954, Chalmers and Hall 1954, Barnett 1932, Welch and Heinle 1951, Shubert 1954).

Whether defects in absorption are the low serum B_{12} levels or not is more The fact that our patients had a normal excretion of radioactive vitamin B_{12} and no and responded to penicillin or to vitamin by mouth suggests that intrinsic factor was absorption normal. We are then left with that the gut contains bacteria competing with for the dietary vitamin B_{12}, and that penicillin destroying these and/or releasing by lysis their vitamin B_{12}, which would explain the rapid that follows administration of penicillin.

It is well known that the megaloblastic to diphyllobothrium infection can be cured removing the worm or by giving vitamin B_{12} contains large quantities of vitamin B_{12} of which have deprived its host. Many groups of avid for vitamin B_{12}; such bacteria are upper gut of pernicious anæmia patients, and accumulating that they occur in other (Davidson 1928, Watson 1950).

The megaloblastic anæmias that develop and animals with self-filling intestinal prevented and cured with antibiotics, which on the flora of the gut (Naish and Capper 1949, Hausmann et al. 1954, Pearson 1954). that antibiotics stimulate growth in groups of animals is now overwhelming (Rhodes et al. 1954), and it is generally accepted do so by affecting the bacterial flora of the

Serum B_{12} Levels

In the present cases the rises in the serum after administration of penicillin were from sixfold, but the peak was not reached until after the commencement of treatment. The peak, however, was attained in 3–6 days, and hæmoglobin values doubled themselves in —in fact in about the same time as is required the peak after administration of vitamin (oral or intramuscular). Ross et al. (1954) serum B_{12} levels in their cases reached the hours after the administration of 500–3000 vitamin B_{12}. These workers think that B_{12} absorbed from the intestinal tract detectable rise in the serum B_{12} level, and of their cases was there a hæmatological a rise in the serum B_{12} level. They further ption of 1 µg of vitamin B$_{12}$ from the gut would ly to produce a detectable rise in the serum B$_{12}$ therefore, the amount of vitamin B$_{12}$ made by the administration of penicillin would be han 1 µg and this might continue for a long he first amounts made available would be ely used in hæmopoiesis and only when sis was satisfied would there be a gradual n of the serum with a consequent rise in the level at the end of 2–3 weeks or more.

Summary

ed according to their response to treatment at least two types of non-pernicious megalo æmia in Africans

pe responds completely to penicillin (oral or ular) or to vitamin B$_{12}$ 80 µg by mouth. In level of vitamin B$_{12}$ in the serum as estimated lena gracilis, is very low before treatment weeks after the start of treatment it is doubled Free acid is present in the gastric juice after nistration of histamine and the excretion of e vitamin B$_{12}$ after treatment with penicillin of the administered dose. The most probable on of the response to penicillin in this type of s that the antibiotic destroys micro-organisms t which compete with the body for vitamin B$_{12}$.

her type of megaloblastic anæmia does not to either penicillin or intramuscular vitamin g but does respond to folic acid by mouth. atment the serum B$_{12}$ levels range from normal gh Free acid is present in the gastric juice, and inistration of folic acid the excretion of radio amin B$_{12}$ in the fæces is of the normal pattern sence of gastric atrophy on gastroscopy the of free acid in the gastric juice and the normal of radioactive vitamin B$_{12}$ all seem to indicate nce of intrinsic factor and normal absorption, fter treatment

idence of these anæmias varies with the season, because of variations in diet which may favour wise) the growth in the intestine, of bacterial rs for hæmopoietic substances

o to thank the Director of Medical Services, Kenya, sion to publish this paper and Dr G. L. Timms in every part of our work. We are greatly indebted Lester Smith, of Glaxo Research Laboratories, for es of radioactive vitamin B$_{12}$ to Dr G. C. Dockeray stroscopies; and to the doctors and nurses of the rge VI Hospital, Nairobi, for their coöperation t this investigation.

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HYPOTHERMIA IN THE TREATMENT OF A CASE OF POSTPARTUM HÆMORRHAGE

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A WOMAN aged 30, a 5-gravida with a normal obstetric history, was spontaneously delivered in her home of a healthy child at 5.15 P.M. on Jan. 11, 1955, after a normal pregnancy and labour. Third-stage hæmorrhage was excessive, and her doctor expressed the placenta at 5.25 P.M. Because of persistent uterine bleeding the Southern General Hospital obstetric emergency team was summoned at 7.10 P.M. When they arrived at 7.30 P.M., the patient was profoundly collapsed, her systolic blood pressure being 40 mm. Hg.

First Resuscitation

Response to resuscitative measures was slow and moderate bleeding continued. By 11.10 P.M., however, the blood pressure appeared to be stabilised at 110/80 mm. Hg and the patient was transferred to the Southern General Hospital, blood transfusion being continued during the journey of four miles. When she was admitted to the labour ward at 11.30 P.M. her condition had not deteriorated and the blood pressure was 110/80 mm. Hg.

Checking the Hæmorrhage

The uterus was explored at midnight. A few scraps of membrane only were found in the uterine cavity, but there were extensive bilateral cervical lacerations with arterial bleeding and these were sutured. Bleeding had ceased at the end of this operation but began again from the uterine cavity ten minutes later. The blood pressure fell to 90/70 mm. Hg and did not respond to continued rapid intravenous transfusion. By 2.45 A.M. on Jan. 12 the patient had become extremely restless. Effective sedation was achieved by intramuscular chlorpromazine 25 mg. and promethazine 25 mg. A similar injection was repeated at 5.45 A.M. and 6.15 A.M. In spite of conventional methods of treatment, moderate uterine bleeding continued and the patient's condition deteriorated steadily.

At 3.15 A.M., under ether and oxygen anæsthesia, the uterus and vagina were packed. During this operation the systolic blood pressure, which had been 95 mm. Hg, dropped to 45 mm. Noradrenaline 4 mg. to the pint added to the blood transfusion met with an immediate response, the systolic blood pressure thereafter being maintained at 110–120 mm. Hg by constant adjustment of the infusion rate. In addition, it was necessary to increase the concentration of noradrenaline by stages to 32 mg. per pint of infusion, to restrict the input of fluid. Just over an hour after the uterus and vagina had been packed the packs had become saturated and frank bleeding per vaginam recommenced. Hysterectomy was considered but rejected because it was thought that the patient would not survive the operation. Despite this, the blood pressure was maintained at about 110/80 mm. Hg with noradrenaline but became unrecordable at once if the infusion was stopped even for a few seconds, as when blood flasks were being changed. The pulse-rate was 125–140 per min., the peripheral circulation was poor, and signs of cerebral anoxia were becoming prominent.

By 8.45 A.M. the patient appeared to be moribund. Her blood pressure, however, continued to respond to intravenous noradrenaline. It was clear that hysterectomy offered the only hope of recovery, all other methods of treatment having failed to control the uterine hæmorrhage. As she was unfit for operation under conventional anæsthesia, it was decided that hypothermia should be used.

Hypothermia

It would have been unsafe to move the patient; so refrigeration was begun in the labour room. The "lytic cocktail," a mixture of chlorpromazine 50 mg., promethazine 50 mg., and pethidine 100 mg., was injected intravenously in four equal divided doses at ten-minute intervals from 10.30 A.M. Ice-bags were applied to the patient's axillæ, groins, abdomen, and chest after the second injection At 10 45 A M 4 ml of a 5% solution of thiopentone was injected intravenously together with suxamethonium chloride 25 mg to permit orotracheal intubation with a no 9 Magill cuffed endotracheal tube Anæsthesia was maintained with a Boyle's machine, semi closed, with a 50% mixture of nitrous oxide and oxygen at a flow rate of 8 litres per min At 11 45 A M , with her rectal temperature 37°C, pulse rate down from 140 to 120 per min , improved colour, and more adequate respiratory exchange, it was possible to transfer the patient to the anæsthetic room which had been drastically cooled to receive her

Hysterectomy

The patient was taken into the operating theatre at 12 15 P M , when her rectal temperature was 35°C There had been further improvement in her colour, and her pulse rate had fallen to 88 per min. Muscular relaxation was obtained with intravenous *d* tubocurarine chloride 20 mg Anæsthesia was maintained with a Waters apparatus using a 50% mixture of nitrous oxide and oxygen, with carbon dioxide absorption

Laparotomy revealed a postpartum uterus of normal size, firmly retracted on the intra uterine pack There was no evidence of uterine rupture and the uterine appendages were healthy Subtotal hysterectomy was performed, the fallopian tubes and ovaries being conserved, and subsequent inspection of the vaginal vault showed the cervical stump and vagina to be dry A light vaginal pack was inserted On completion of the operation at 1 5 P M the rectal temperature was 34°C (93°F), the systolic blood pressure had been maintained between 105 and 120 mm Hg throughout, and the pulse rate remained at 88 per min After operation neostigmine 1 mg , nikethamide 2 ml , and atropine sulphate 0 325 mg were given intravenously to eliminate residual muscular relaxation

Rewarming

It was decided to allow spontaneous rewarming The patient was covered by one sheet only, and instructions were given to add blankets as necessary, the danger of allowing shivering being emphasised Oxygen was administered continuously, at a rate of 6 litres per min , through a naso pharyngeal catheter The blood-pressure was read as often as was necessary for adjustment of the noradrenaline infusion, and the rectal temperature and pulse rate were recorded at fifteen minute intervals

Return towards normal temperature was not accompanied by stabilisation of the blood pressure By the late evening of Jan 12 the rectal temperature was 39 8°C (104°F) and the pulse rate had risen, being above 200 per min at midnight The patient's condition was again critical Recooling was started by intravenous injections of the "lytic cocktail" and the application of ice bags, until, by 3 A M , the rectal temperature had fallen to 37 6°C Between 3 A M and 5 A.M the pulse rate dropped from over 200 to 140 per min and the rectal temperature fell to 35°C Cooling was continued until, at 8 A.M , with the rectal temperature at 33°C, the picture appeared more hopeful

In the light of this experience, it was decided to allow rewarming to proceed only to 35°C, the degree of recovery of vasomotor function then determining whether further rewarming should be allowed, or whether the hypothermic state should be maintained By noon on Jan 13 the temperature of 35°C was reached, and in the early afternoon the blood pressure was found to be recordable (85/50 mm. Hg) for the first time without the aid of noradrenaline, which was discontinued, hourly intramuscular injections of 15 mg of methylamphetamine being substituted Between noon and 4 P M the patient had five brief generalised convulsions After the first convulsion, the administration of oxygen by nasopharyngeal catheter was discontinued, and she was placed in an oxygen tent At 5 P M her blood pressure was 90/50 mm Hg, rectal temperature still 35°C, and pulse rate 120 per min Intramuscular injections of methylamphetamine 15 mg and of nikethamide 1 ml. were now given alternately at half hour intervals By 10 P M the temperature had risen to 35 8°C, and the systolic blood pressure remained between 110 and 120 mm Hg

On the morning of Jan 14 the prognosis seemed to be improving, and, the systolic blood pressure remaining at 105–110 mm Hg, the methylamphetamine and nikethamide injections were stopped. As the day progressed, however, the rectal temperature rose, reaching 38 8°C at 5 P M , when the clinical picture was very depressing The patient was delirious, had become difficult to control, and had aural and visual hallucinations *Intramuscular* morphine sulph given at 7 P M and at 9 P.M. without appare morphine sulphate 16 mg at 11 P.M. produced sedation The patient spent a very restless night, and at 9 A M on Jan. 15 her condition was decided to provide sedation and fluids by infusion of physiological saline solution, with 5 fl paraldehyde to the pint This proved effective, given, and was continued by the infusion of 2 dextrose in sixteen hours, only the first pint drachms of paraldehyde

On the morning of Jan 16, the patient adequately sedated throughout the night, pressure having been maintained, her pulse and rectal temperature 37 4°C She was now rectal infusion of 5% dextrose without par remained very much under the influence of paral general condition remained satisfactory during the late evening she regained consciousness respond when spoken to, and all signs of cerebr had disappeared

The Outcome

Subsequent progress was steady and unevent *quantity of milk could be expressed from the breast* postnatal day In view of the large volume of fluid administered in the forty-eight hours delivery, the absence of respiratory complications able A burn on her left leg, about 20 cm. by 10 cm caused by a hot water bottle before her admission was excised and grafted with multiple postage on Feb 2 under general anæsthesia. Her general by this time was excellent, and her subsequent stay was entirely due to the burn. She was discharged the 66th postnatal day

The patient was readmitted from Sept 16 to ment of her condition. The findings were

General physical condition satisfactory Blood-pre mm Hg Urine dilution and concentration tests globin 13 8 g per 100 ml Blood sugar (random per 100 ml Blood urea 31 mg per 100 ml. Serum sodium 129 m.eq per litre potassium 4 24 m.eq per litre 97 5 m eq per litre (as NaCl) CO_2-combining pow 76 2 vols % X ray of chest negative Electrocardio

Discussion

The decision to use hypothermia in this case from our own experience of the technique published reports Our results were in gen the claims of those who regard this type of anæsthesia as a means of allowing surgery formerly considered unfit for operation (Smith 1953, Dundee and Mesham 1954, Palomba and 1954, Remé 1954, Hopkin 1954)

In spite of the vigorous use of conventional combat the effects of the persistent bleeding the condition usually regarded as irreversible present when hysterectomy was decided favourable feature being the continued infusion of noradrenaline The choice of potentiated anæsthesia or not at all had to Refrigeration was carried out by the technique intravenous injection of the "lytic cocktail" the fall in body temperature produced by (Dundee et al 1953, Dundee and Mesham 19

Two points require special mention in a case thus

(1) Every effort must be made to maintain the blood volume at an adequate level before venously the "lytic cocktail" containing chlor because of the danger in producing peripheral when the circulating volume is deficient (Millar *thesia* 1955) If, however, a state of irreversible peripheral vasodilatation is beneficial (Evans the circulating volume remains adequate

(2) Cooling measures must be vigorous, or temperature may rise One of the advantages is the consequent decrease in the oxygen require tissues as cooling proceeds (Bobbio and Goffrini et al 1953, Dundee and Mesham 1954, Bigelow et al 1954) The "lytic cocktail," and chlorpromazine, upsets thermoregulation (Co 1953, Dundee et al 1953, Churchill Davidson

tage 1954) and in effect converts the subject from neothermic to being poikilothermic, the body re then varying with the environmental temperature n et al. 1954) An initial rise in temperature may be gnificance when preparing for elective surgery even r risk' case, but the shocked patient cannot suffer unity any increased demand for oxygen, such as ompany a rise in temperature

operation it was hoped that, as rewarming l, so would vasomotor function recover; but not occur Prolongation of hypothermia after tion might have avoided much of the subsequent n this case (Remé 1954), or by keeping the under the influence of chlorpromazine, the post course might have been favourably influenced 1954) Eleven hours after hysterectomy the the heart was giving rise to great anxiety, and he major benefits expected of recooling was of tachycardia with an improvement in cardiac The concurrent administration of chlorproma noradrenaline might have been expected to have se effect on the heart rate (Foster et al. 1954) it was found that although, as cooling pro he heart rate did fall, it was not until the rectal ure had fallen to 33°C that any hope of the survival could once more be entertained

worth noting that after the second period of mia, this patient had no sleep until she was given yde. In retrospect it appears that heavier at an earlier stage would have been advantageous efulness is thought to have been caused by, and contributed to the cerebral irritation which the lisplayed.

mission of one method of resuscitation—viz., erial transfusion—will undoubtedly have been the reader. The deterioration in the patient's up to the time of packing the uterus and vagina to a more or less steady blood loss over nearly urs Blood transfusion during this period was in adequate to replace the loss and the systolic essure had remained at or about 90 mm. Hg and l not demand this method of resuscitation antely, packing of the uterus and vagina produced able additional shock, and the accompanying acute hypotension presented the first indication a arterial transfusion while in hospital. The n the patient at this point was so alarming that readily available and effective means of restoring d pressure had to be used This was undoubtedly ltion of noradrenaline to the blood transfusion, roduced an immediate response

venous therapy included 1 87 litres of blood and o of dextran before admission followed by a 8 litres of blood 1 1 litres of physiological saline and 2 8 litres of 5% dextrose The fluid balance 12 to Jan 21 is shown in the accompanying

od urea level reached its peak on the seventh day when it was 55 mg per 100 ml., and on , ninth and tenth postnatal days it was 44 mg and 37 mg per 100 ml. respectively

sibility that irreversible damage due to anoxia had ce particularly to the kidneys pituitary gland arenal glands, was a constant source of anxiety

INTAKE AND URINARY OUTPUT
(Excluding whole blood and dextran)

5)	Intake (ml.)	Output (ml.)	Date (Jan 1955)	Intake (ml.)	Output (ml.)
	3978	57	17	1307	710
	4035	739 + *	18	1023	710
	854	3190	19	1421	857
	274	8 2	20	795	511
	1779	852	21	310	506

* Incontinence of urine

There can be little doubt that reduction in the oxygen requirement of the tissues brought about by hypothermia in the critical phases must have contributed substantially to the protection of these organs and to the survival of the patient.

Summary

The use of hypothermia in the treatment of a case of postpartum hæmorrhage with apparently irreversible shock is described and discussed

Hypothermia is regarded as a supplement to and not a substitute for, orthodox resuscitative measures

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RESUSCITATION FROM "IRREVERSIBLE" SHOCK BY INTRA-ARTERIAL TRANSFUSION

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MANY cases of intra arterial transfusion have been reported Exsanguination and shock from various causes were the indications for its use These causes included hæmorrhage toxæmic states due to peritonitis or to loss of body fluids, and postoperative shock which could not be overcome by intravenous transfusion

All reports bear witness to the superiority of the intra arterial over the intravenous route recovery was more rapid and better sustained, and resuscitation was successful when intravenous transfusion had either failed or held out no prospect of success Recovery is described in cases of very severe shock in some of which cardiac and respiratory arrest had supervened (Negovsky 1945 Bilsland 1951 Haxton 1952 1953 Good 1953 Pryor 1953 Horton et al. 1953)

In contrast with this unanimity of clinical opinion there is no generally accepted view on the mode of action of intra arterial transfusion Current thought on this problem and the reported superiority of intra arterial transfusion have been questioned (Maloney et al 1953) It would be unfortunate if ignorance of its mode of action were to lead to prejudice against a measure which can save life—a virtue which the following case-record may help to demonstrate

Case record

Mrs. A, aged 37 was admitted to King George Hospital Ilford on May 18 1954 She had aborted a 12–16 weeks fœtus 5 days before admission and had continued to lose bright red blood She had had two previous pregnancies. The second which had been of twins had involved the manual removal of a morbidly adherent placenta and a blood transfusion later for secondary postpartum hæmorrhage Her previous health had been good.

On admission she was pale and cold with a muddy com plexion; blood pressure 95/70 mm. Hg and pulse-rate 128

In the ward she was given morphine gr $^{1}/_{4}$ and intravenous 'Dextraven' and blood, two pints of each At 5 P M her blood pressure was 110/70 mm Hg, pulse rate 120, and skin warm but still sallow She was given atropine gr $^{1}/_{100}$ and at 5 30 P M was taken to theatre

Anæsthetic

Anæsthesia was induced with thiopentone 0 3 g, nitrous oxide/oxygen, and a minimal amount of trichloroethylene When uterine hæmorrhage could not quickly be controlled, light ether was substituted for trichloroethylene, in view of the probable need for noradrenaline Control took about an hour from the time of induction, but anæsthesia had to be continued thereafter to control the restlessness of profound shock Gas and oxygen alone were then used (5 and 3 litres per min respectively), except when trichloroethylene was added for short intervals before the repeated bronchial suction which pulmonary œdema made necessary

Operation

The patient was examined under anæsthesia by Miss Valerie Thompson, gynæcological registrar In the vagina and uterus was 30 oz of blood clot The wall of the uterus felt thin and flabby The uterus gave forth a fœtid smell The placenta was morbidly adherent in two places and was removed manually Profuse bleeding followed The uterus did not react to intravenous ergometrine, bimanual compression, repeated massage, or (finally) hot intra uterine douches Because of rapid deterioration in the patient's condition the uterus was packed and bimanually compressed on the pack, this slowed and then stopped the bleeding

Resuscitation

The patient had arrived in the operating theatre with an intravenous dextrose saline drip in the left arm. This drip had been set up in the ward and was continued throughout the resuscitation except for one short interval.

Within 15 minutes of induction of anæsthesia blood was substituted for the dextrose saline solution because of rapid blood loss, which led to shock Rapid transfusion of dextrose-saline solution did not avert or reverse the steady drop in blood pressure Neither did two pints of blood streamed in under pressure, the second containing noradrenaline 2 mg, although most of the blood just lost was now considered to have been replaced A further rapid transfusion was begun of a third pint of blood containing noradrenaline 8 mg The systolic blood pressure was thereby raised from unrecordable to 110 mm Hg, but the improvement was transient, and the pressure again became unrecordable The carotid pulse alone could be felt—rate 130 and soft The skin was cold and bloodless—finger pressure produced no blanching—but there appeared to be no resistance to the intravenous transfusion, blood could be streamed in without pressure from a pump The drip was stopped temporarily

The prognosis was exceedingly grave Intravenous restoration of the blood volume had failed even to arrest the decline in the blood pressure, let alone reverse it The peripheral vascular reactivity and resistance appeared to have failed In the light of these facts an intra arterial transfusion was considered urgent, and surgical assistance was obtained to cut down on the right radial artery Unfortunately the cannula was inserted into a vein instead of an artery, and this was not discovered until $4^{1}/_{2}$ hours later

A further pint of blood was transfused rapidly through this vessel under the impression that it was the radial artery The result was "disappointing," there being no change in the carotid pulse or in the blood pressure By this time the uterine bleeding had stopped

The legs and thighs were bandaged towards the heart, and the head down tilt of the table was increased The intravenous drip in the left arm was started again, dextrose saline solution following the remainder of the third pint of blood The drip-rate was kept slow

About half an hour after the patient's limbs had been bandaged her condition suddenly deteriorated further Her face became pale blue, her carotid pulse became only just palpable, and her pupils were widely dilated and did not react to the laryngoscope light

Oxygen and carbon dioxide were given There was no improvement The carotid pulse began to become irregular and then not palpable with certainty

Nikethamide 8 ml was injected via the drip tubing as fast as possible This produced a convulsion (facial twitching and head retraction), hyperpnœa, and immediate improvement in the carotid pulse, which reappeared and became
stronger The cyanosis all but disappeared
pressure remained unrecordable, but a
pulse could be felt The convulsion passed off
or two

At this moment the patient began to come
thesia and was very restless To sedate her
depressing her cardiovascular system gas-and-
thesia was re-established, and 50% sucrose
injected via the drip tubing This was followed
of the previously central eyeballs to the right
of the pupils, which now reacted to a torch (for
laryngoscope light) To reduce any arterial spasm
arm caused by the "intra arterial" transfusion
plexus was blocked with lignocaine 20 ml. with

8 30 P M —Blood pressure 80/60 by oscillom
could not be confirmed by auscultation. The caro
no stronger than immediately after the injection
made, and the skin remained pale, cold, and
decided that the patient's condition might be im
addition of ether to the anæsthetic, this necess
atropine again because so long had elapsed since
tion Ether was not pressed, because of a sudden
after atropine gr $^{1}/_{100}$ intravenously had been
pulse rate rose sharply from 120 to 150, and the
grew weaker Oscillometry appeared to show a
of 60/50

Although the pulse rate was successfully reduced
intravenous neostigmine (2 mg in 0·5 mg doses),
pressure did not rise

9 45 P M —Crepitations in the lungs could be
the head of the table auscultation over the
of the lungs confirmed their presence Intravenous
thin gr $^{1}/_{125}$ was given to sustain the force of
the myocardium Poor coronary perfusion due
must have made the myocardium grossly hypox
length of time There was no observable effect
injection during the next hour

10 P M —Blind nasal intubation of the trachea
formed to facilitate bronchial suction The pal
fluid of pulmonary œdema was obtained. Suction
as necessary

11 P M —The pulmonary œdema was increas
and it was obvious that the patient could not recov
active assistance, if she could be resuscitated at
decided to "repeat" the intra arterial transfusion
assistance was again obtained The cannula, which
left in situ, was then found not to be in the radial ar
During the next half hour while preparations
made, bronchial suction had to be applied more

Intra arterial Transfusion

The right radial artery was infiltrated with
which was also injected via the cannula before
transfusion. The cannula was inserted retrograd
artery, which was afterwards severed between

11 30 P M —Dextraven 200 ml, followed imm
1 pint of blood, was transfused rapidly under press
seven minutes was needed for this, including time
the bottles Within about three minutes from the
transfusion the systolic blood pressure, which
unrecordable just before transfusion, rose to an
85 mm Hg by auscultation

During the next half hour colour and warmth
return to the skin Sweating began. Crepitations
from the lungs, leaving high pitched rhonchi
bronchial breath sounds The bronchospasm was
and easily relieved by intravenous aminophyllin.
rate remained steady at 120, and the systolic blood
was 80–90 mm Hg Respirations became rapid and
pethidine was given to moderate them and for its
Between midnight and 12.30 A.M the operating
gradually levelled No ill effects were seen to
anæsthetic was discontinued and the endotrach
removed The patient regained consciousness
later and vomited copious dark-brown 'coffee
suggesting altered blood She was immediately able
to requests, to open her mouth, and shortly
answer simple questions rationally and coherently
improvement was maintained during another hour
tion in the theatre after removal of the bandages
legs She was therefore transferred to the ward
With the foot of the bed raised, her blood-pres
90/65 Her lung bases were dry, the intravenous
maintained

lure Course

mited coffee-grounds several times during the er blood pressure rose slowly to her normal 110/70 general condition remained good At 11 30 A.M the removed from the uterus under light general anæs he uterus had contracted down well. The output of normal in quantity and quality the same day and so There was no evidence of damage to the central system

ipheral damage from ischæmia followed ligation of artery A small area of analgesia over the metacarpo al joint of the right thumb disappeared after several Uterine sepsis, probably present before operation, is in the forearm proximal to the cutting-down were treated effectively with antibiotics

se of cortisone was started immediately to prevent s disease Careful search failed to reveal any of endocrine disturbance Normal menstruation body weight increased and the output of 17 keto was normal. The patient returned to her normal housewife She has continued in good health and signs of general or local harm from her experience

operation the patient appeared to have been ly and easily resuscitated from her state of n admission No collapse of blood pressure induction of anæsthesia

adial artery was difficult to distinguish from its al veins procaine infiltration had softened it ourniquet had stopped its pulsation In later ce with an older patient, tortuosity of the artery d to be a helpful pointer After cannulation it tant to release the tourniquet before connecting ng set so that pulsatile flow may confirm that ry and not a vein has been entered

right handed patient it is preferable to use the al artery in view of the possibility of damage ischæmia although this appears to be small et al. 1953) In this patient the left forearm umbered by a splint for an intravenous drip servation of which was considered vital The dial artery was therefore used with no discernible quence The patient's grave state precluded being turned on to her side hence the intra oute (Haxton 1952) was considered inadvisable. ld now use blood alone for intra-arterial trans n view of the arterial spasm attributed to fluids tterly deprive the arterial wall of oxygen (Brown

eneficial effect of nikethamide and the harmful f atropine both dramatic, do not appear to me readily explained by the currently accepted cology of these drugs.

Discussion

e present case irreversibility was diagnosed early of two associated clinical features following a-chronic hæmorrhage (1) the failure of rapid ous replacement of lost blood to restore the ressure or even to arrest or retard its pro- fall and (2) the feeble and evanescent pressor of noradrenaline These are the essential ante features of irreversible shock (Wiggers 1943) because both these features were present that terial transfusion was thought to be indicated intravenous transfusion seemed more likely to d the circulation than to raise the blood pressure— osis which subsequent events supported

has been learnt about irreversibility since the ction of standard methods of producing irre shock in the laboratory (Wiggers and Werle Wiggers 1943) Prolonged hepatic hypoxia with uent peripheral vasodilatation appears to be the nt factor in the causation of irreversibility and intenance or restoration of hepatic oxygenation ts, or resuscitates from experimental irreversible (Engel et al. 1944 Shorr et al 1945 Frank et al. Seligman et al 1947 Delorme 1951 Zanetti 1952, Wayne et al 1954) Intra arterial transfusion has also resuscitated from irreversible shock in a significant proportion of laboratory animals (Glasser and Page 1947, Wiggers 1949)

There is still controversy over the precise biochemical changes consequent on prolonged anaerobic metabolism, which bring about the well known phenomena of experimental irreversible shock (Granick 1951, Frank et al. 1952) Whatever the biochemistry, it is generally agreed that the change from reversible to irreversible shock is *constantly associated* with a change in the behaviour of the peripheral vasculature reversibility by intravenous transfusion is associated with peripheral vasoconstriction but the onset of irreversibility is preceded *by vasodilatation The total peripheral resistance is* high in reversible shock and low in irreversible shock The change from high to low peripheral resistance from vasocontriction to vasodilatation is postponed when hepatic oxygenation is maintained; in established irreversible shock restoration of hepatic oxygenation restores the peripheral resistance and the blood pressure and resuscitates from irreversible shock (Wiggers 1943, Chambers et al 1944 Shorr et al 1945 Frank et al 1946 Seligman et al. 1947 Glasser and Page 1946, Smythe et al 1954, Wayne et al 1954)

Hepatic blood flow increases rapidly after intra arterial transfusion (Griffith and Emery 1930, Johnson 1954) *Initially* the increase is due to direct perfusion by the transfused fluid (Glasser and Page 1948, Jones et al 1950) via the hepatic artery in common with all the major branches of the aorta. The concept of a critical closing pressure affecting the renal and hepatic blood vessels explains how these organs may be made ischæmic despite an apparently adequate perfusing pressure

Hepatic vascular constriction is initiated by sympathetic vasomotor reflex (Griffith and Emery 1930) prolonged by a hormonal product of the partly ischæmic renal cortex (Shorr et al 1945) and continued when this has been exhausted, by the mechanical properties inherent in the structure of the vessel wall (Burton 1954) Among these properties is a paradoxical increase in distensibility of a collapsed arteriole. Intra arterial transfusion by small direct increase in hydrostatic pressure within the aorta and its main branches, opens these collapsed [illegible] and makes way for arterial blood in a manner [illegible] intravenous transfusion cannot imitate even in [illegible] cases In consequence the re-establishment of [illegible] oxygenation inactivates a vasodepressor [illegible] elevates thereby the peripheral resistance [illegible] pressure The vicious spiral of hypotension [illegible]

In the light of this and other evidence [illegible] able to suggest that the essential [illegible] shock of intra arterial transfusion is [illegible] hepatic oxygenation.

All this suggests that, in irreversible shock, the dominating cause of the low blood pressure and of the ineffectiveness of intravenous transfusion may be simply the great reduction in peripheral resistance and reactivity which follow long continued hepatic anoxia

This is not to imply that the cardiac output is actually normal, or that it can be raised as easily as usual, during shock There is a reduction in cardiac output early in hæmorrhagic shock (Blalock 1940), which may well be due to diminished venous return through the liver Eventually the heart loses its ability to react to a rising central venous pressure (characteristic of late irreversible shock) by increasing systolic output (Wiggers 1943) This is a late phenomenon, however, secondary to prolonged hypotension, whose dominating cause is some other factor (Wiggers 1943) It is possible, before this terminal phase to increase the cardiac output during irreversible shock, but resuscitation is not thereby effected (Wiggers 1943) Thus, although poor coronary artery perfusion and impairment of the force of myocardial contraction are important contributory factors to the hypotensive state and ultimately precipitate pulmonary œdema and death, heart-failure is a consequence of inability to raise the blood-pressure by intravenous transfusion and not its dominant cause (Wiggers 1943)

Previous reduction of the cardiac reserve, as from ischæmic heart disease, will reduce the period of hypotension necessary to cause pulmonary œdema, and death may occur from this or from acute heart failure even during the phase of vasoconstrictor shock , death alone is not pathognomonic of the precise syndrome called irreversible shock Cerebral ischæmia and cerebral anoxia are the other common causes of death during reversible shock, and mishap may introduce these avoidable accidents into the list of immediate causes of death in irreversible shock A clear airway and a head-down tilt are indispensable, and usually effective, in preventing these accidents

The gradual development of heart failure, which is the usual cause of death, accounts for the decrease in survival time caused by intravenous transfusion in established irreversible shock As might be expected, blood is worse than plasma in this respect, and both are worse than saline solution (Wayne et al 1954)

A further consequence of this terminal heart failure may be that sudden restoration of the peripheral resistance and blood pressure at such a time, by intra arterial transfusion, may overload the myocardium before it has had time to benefit from improved coronary perfusion This would explain the fatalities which seem to have occurred in this fashion in a small proportion of the published cases Even apart from this, simple overloading of the circulation may take place because of the small quantities of blood needed to initiate hepatic perfusion and to restore the peripheral resistance—as little as a fifth of the amount of blood withdrawn in order to produce chronic hypotension and irreversible shock (Glasser and Page 1946) Glasser and Page improved their survival-rates significantly by giving ouabain at the same time as an intra arterial transfusion for irreversible shock

Death may take place from intra-arterial transfusion for shock in patients with normal coronary arteries It is therefore not surprising that for shock complicating coronary occlusion the results of intra arterial transfusion are not strikingly successful (Berman and Akman 1952)

Before using any method which might raise the blood pressure rapidly after a long period of severe hypotension, whatever the cause, there seems to be a strong case for rapid digitalisation with a safe and effective drug I use intravenous strophanthin for this purpose

It is apparent from the foregoing remarks that increasing coronary artery perfusion for a few minutes by an intra arterial transfusion cannot be a very important contribution to resuscitation from irreversible for heart-failure is the consequence and not the irreversibility The effect of intra arterial t in restarting the stopped heart in animals (Crile and Dolley 1906, Negovsky 194, G Page 1947) has perhaps focused undue atten particular property, which has been credited importance which cannot be deserved in re from irreversible shock In exsanguination, o hand, which may produce acute coronary and ischæmia, perfusion of the coronary and arteries is of obvious importance to the su intra arterial over intravenous transfusion (G Page 1948, Veal et al 1952, Jones et al. 1950)

In all stages of shock renal arterial perfusion and Page 1948) and rapid restoration of ur tion (Jones et al. 1950) after intra arterial t must be of great advantage In reversible s arterial transfusion is followed by reduction peripheral resistance, and rapid restoration blood flow may well be an important, possibly important, cause of this (Brown 1953, Shorr et

Although most of the foregoing observations h made on laboratory animals, there is clinical a logical evidence relating severe shock to hepat in man Thus the release of a portal vein followed by a fall in blood pressure related of obstruction (Aird 1949), an effect also seen (Selkurt 1954) In animals as well as in man has revealed centrilobular hepatic necrosis wh has been due to shock from various causes (F 1944, Delorme 1951, Friedman et al. 1951, A 1954, Bywaters 1946, Maegraith et al. 1947, G MacGillivray 1950, Ellenberg and Osserman 19

Evidently oligæmia is only one of many contributing to the initiation and development All have been shown to interfere with renal a oxygenation in a manner consistent with the which the evidence suggests should be ascribed particular effects. There may yet prove to be and coherent pathology of shock despite the different ways in which it may be initiated.

Summary

A case record is presented of resuscitation by arterial transfusion from irreversible shock due to on chronic post abortum hæmorrhage This was effective after over 5 hours' profound shock follo failure of intravenous transfusion, the admin of noradrenaline and strophanthin, and the apparently terminal phase of shock with œdema Resuscitation was complete and perman

Evidence of the essential rôle of hepatic anox causation of irreversible shock is summarised suggested that the restoration of hepatic oxy is the essential means whereby intra arterial tra is effective in resuscitation from irreversible and that the dominant disorder of function in irr shock is the great reduction of the peripheral resistance consequent on hepatic anoxia

I wish to thank Mr Robert Percival for p publish this case record , and Dr John Challis, Mr Taylor, and Dr J Alfred Lee for their enco I am indebted to many past and present members staff of King George Hospital for their assistance resuscitation

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VERE POSTPARTUM HÆMORRHAGE ASSOCIATED WITH FIBRINOGEN DEFICIENCY

. A Kelsey
Lond, M.R.C.O.G.
R OBSTETRIC AND
OLOGICAL REGISTRAR

J M B Muirhead
M.B. St And., D.Obst.
OBSTETRIC AND
GYNÆCOLOGICAL REGISTRAR

ST LUKE'S MATERNITY HOSPITAL, BRADFORD

PARTUM hæmorrhage is one of the gravest encies in medicine Its incidence and severity may uced by the use of oxytocics, and its danger has essened by the availability of stored blood for sion In some cases however, postpartum rhage is associated with defective clotting of the and may persist despite good retraction of the Fibrinogen deficiency is an important cause of ive blood-clotting in obstetric practice

orts on fibrinogen deficiency in obstetrics have been urveyed by Barnett and Cussen (1954) and by (1954) In the majority of the cases there was accidental antepartum hæmorrhage A smaller r of cases has been reported in association with uterine death of the fœtus due to rhesus antibodies et al. 1953) Reid et al reported five cases rinogen deficiency which they attributed to tic fluid embolism In four of these cases shock ped before delivery with no evidence of ante- n hæmorrhage After delivery the blood failed to nd in one case which was fatal many squamous were demonstrated in lung capillaries The fifth appears to have resembled the case described Reid and his colleagues postulated that in that mniotic fluid embolism had occurred because they evidence of fibrinogen deficiency but the patient reported to have shown signs of shock before the ry

only other reports we have found of cases in which artum hæmorrhage was associated with fibrinogen ency and with no other detectable abnormality are those of Tagnon et al (1946) and of Marchesi (1954) Both these cases were fatal

Case-report

The patient was a healthy woman aged 20 a gravida 2 (the first pregnancy ended in miscarriage) The expected date of confinement was Dec 10, 1954 Pregnancy was normal until the 36th week when slight hypertension developed At 37 weeks the blood pressure rose to 150/110 mm Hg but fell to 130/80 mm after treatment with reserpine (1 mg daily) and rest in hospital for 8 days. On Dec 10 at 39 weeks her blood pressure was 130/90 mm Hg and she had œdema of the feet so it was arranged to admit her on Dec 11 From this time her story is as follows:

Dec 11

4 A.M —Spontaneous rupture of membranes and onset of labour pains Uterine contractions strong and frequent Pethidine 150 mg and trichloroethylene were given

8 30 A.M —Cervix fully dilated Contractions very strong and almost continuous

8.35 A.M —Fœtal heart rate 80 per min A general anæsthetic (nitrous oxide, oxygen, and ether) was given and forceps were applied

9 5 A.M —Easy low forceps delivery of a living male infant weighing 7 lb 14 oz (3572 g) Ergometrine 0 5 mg was injected intravenously during the birth of the shoulders.

9 8 A.M —The placenta and membranes were expressed during the first contraction of the uterus after the injection of ergometrine There was a brisk loss of approximately 20 oz (540 ml) following delivery of the placenta. 'Pitocin' 5 units injected intramuscularly The uterus was massaged it retracted well and the bleeding ceased. The placenta and membranes were inspected and appeared complete

9 30 A.M —Systolic blood pressure only 80 mm. Hg Blood taken for cross matching and intravenous infusion of saline solution started

10 A.M —Pulse very rapid and of poor volume Blood transfusion commenced, 2 pints being given as quickly as possible The uterus was found to be flaccid; it was massaged and a further 20 oz. (540 ml.) approximately was expressed. We did not notice whether this blood clotted.

10 30 A.M —Under general anæsthesia the uterus was explored and found empty It was firmly packed with gauze Ergometrine 0 5 mg injected intravenously

11 A.M —Blood pressure not recordable 3rd pint of blood commenced Transfusion commenced in opposite arm with 1 pint (540 ml) of glucose-saline solution containing 2 ml of 1 in 1000 noradrenaline

11 30 A.M —Blood was oozing through the gauze pack 4th pint of blood started The uterine pack was removed and the uterus repacked very firmly with two rolls of gauze. The vagina was packed with cotton wool pledgets rung out of weak 'Dettol' solution

11 45 A.M —The idea of hysterectomy was considered at this stage but was rejected because the uterus was well retracted there was no external bleeding, and the patient was still extremely shocked One of us (J M B M) then suggested the possibility of fibrinogen deficiency and took a sample of blood for clotting

NOON —The patient's blood had not clotted after 15 minutes. A supply of fibrinogen was requested and was dispatched from the National Blood Transfusion Depot at Leeds. 5th pint of blood started. 20 ml. of 10% calcium gluconate injected intravenously and 50 mg of vitamin K intramuscularly

12 30 P.M —6th pint of blood started Blood pressure not recordable

12 45 P.M.—Intra-arterial blood transfusion started into the left radial artery 2 pints was given quickly with dramatic improvement

12 55 P.M —Systolic blood pressure 104 mm. Hg.

1 05 P.M —Systolic blood pressure 120 mm. Hg 3rd pint of intra arterial blood started The uterus was well retracted but blood was beginning to ooze through the pack.

1 20 P.M —Fibrinogen received from Leeds. 250 mg injected intravenously

1.25 P.M —Bleeding ceased Blood drawn for clotting showed a weak clot in 5 minutes and a firm clot in 9 minutes. The intra arterial drip was continued slowly (We have since learned that transfusions into the radial artery should be performed quickly and completed in an hour owing to the risk of gangrene of the hand. Fortunately this complication did not occur)

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2 35 P M—Much improved Blood clotted firmly in 4 minutes

3 30 P M—Pulse 90 per min, blood pressure 130/90 mm Hg Intra arterial drip discontinued Penicillin and strepto mycin were given prophylactically

9 P M (12 hours after delivery)—The clotting power was tested, as it was intended to remove the uterine pack Only a small clot formed after 5 minutes, and complete clotting did not occur As no more fibrinogen was available until next day the pack was left in Since delivery the patient had excreted only 6 oz (171 ml) of urine, this was heavily bloodstained

Dec 12

9 A M—280 mg of fibrinogen injected intravenously A sample of blood taken through the same needle immediately before the injection clotted firmly in 4 minutes The uterine pack was removed without abnormal bleeding The urine was now clear and there was a good output The temperature rose to 100 6°F 24 hours after delivery, but was normal by the 3rd day

Thereafter the puerperium was uneventful On the 3rd day the hæmoglobin was 8 96 g per 100 ml, and the level rose to 9 6 g by the 10th day Mother and baby were discharged well on the 12th day

Discussion

This case exemplifies the danger of fibrinogen deficiency in an apparently uncomplicated case of postpartum hæmorrhage Theoretically this deficiency could arise from failure of the liver to form fibrinogen, from precipitation of the fibrinogen by a thromboplastic substance or from the using up of all the available fibrinogen in a hæmorrhage We cannot say which of these was the cause in our case Scott (1955) has suggested that fibrinogen deficiency may result from administration of dextran, but dextran had not been given in the present case We gave only a small dose of fibrinogen as this was all that was available Its efficacy confirms the observation by Barnett and Cussen (1954) that doses theoretically inadequate may be effective in practice

In any case of postpartum hæmorrhage where the hæmorrhage persists despite an intact and well-retracted uterus, the simple "clot observation test" (Weiner et al 1953) or the more accurate test of Schneider (1952) should be performed If the clotting power is impaired fibrinogen should be administered As soon as adequate supplies are available a stock of fibrinogen should be kept in every large obstetric hospital.

The value of intra arterial transfusion has been demonstrated in this case Bingham (1952) regards this as the method of choice for treatment of severely shocked patients It should be applied without delay if shock persists after blood has been given intravenously in a quantity calculated to restore the blood-volume

Summary

A case is described of massive postpartum hæmorrhage, leading to profound shock, associated with fibrinogen deficiency The hæmorrhage ceased after administration of fibrinogen by intravenous injection, and the shock responded to intra-arterial blood-transfusion

We should like to express our appreciation to Dr Brian Eastwood who gave the intra arterial transfusion, to Dr C E Wildeboer, the anæsthetist, to Dr A Clark, the house surgeon, and to the midwifery staff We are indebted to Mr G W Theobald for permission to publish this report and for his advice and criticism

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Reviews of Books

The Extra Pharmacopœia (Martindale)

23rd ed London Pharmaceutical Press. 19
Pp 1501 57*s* 6*d*

"Martindale" goes from strength to strength more than seventy years it has enjoyed a position among works of reference common to pharmac physicians Volume II, which completes the edition, is more technical than volume I, which ap three years ago[1] However, only about a third deals directly with analytical addenda to the medica in the companion volume Elsewhere there wealth of information and readable articles on subjects as chromatographic analysis, ion-ex resins, radiotherapy, radiant energy, nutrition hæmatology Is the nomenclature of organic comp a thorn in the flesh of the busy doctor? Let him problem once and for all by spending an evening— two evenings—on the appropriate chapter of Mart His appetite may then be whetted to attack the on structure-action relationships

Martindale remains invaluable as a source of refe in abstract form, and as a starting point for exp the literature on a thousand and one topics of pharmaceutical interest

Surgery of the Sympathetic

A LEE McGREGOR, M CH, F.R C S, consulting Johannesburg General Hospital, honorary resear ciate, department of surgery, University of watersrand. Bristol John Wright & Sons
Pp 200 30*s*

Mr Lee McGregor believes that the sympathetic system is regarded by clinical students and by practising surgeons and physicians as a *terra in* He has therefore tried, in this small volume, to simply and often diagrammatically the indicatio and the results to be expected from, operations autonomic system, The basic surgical anatom physiology is presented, together with a descript the standard operative procedures No attempt is to cover the whole field of peripheral vascular for example, vessel-grafting and the clinical prob peripheral embolism are not discussed

It is essentially a book written by an applied ana with liberal quotations from other authorities. it expresses many opinions with which individual gists would probably disagree, it should fulfil its There are many larger and more comprehensive bo the sympathetic nervous system, but none more

Approach to Clinical Medicine

R H MICKS, F R C.P I, King s professor of materia and pharmacy, University of Dublin, physic Patrick Dun's Hospital London J & A Ch
1955 Pp 135 8*s* 6*d*

IF the next generation of doctors are not good cli trusting to clinical rather than laboratory ou to themselves rather than to their *ancillæ*, it will for lack of wise advice Professor Micks addresses h to the first-year clinical student, showing him ho make good use of his opportunities, continually rem him that he may soon be a practising doctor dependent (but not uncritical) patients, and lacunæ in his more formal teaching The book is written, is full of common sense, and should do make "the rough places plain" There are surprises

Immune serum is proposed for measles prophylax not gamma globulin, and chloramphenicol, or a te is described as useful for whooping cough, without Poliomyelitis gets less space than typhus, and its paralysis "is invariably fatal unless the patient respiration through a tracheotomy tube carried out." or mental conflict is not mentioned as a reason for of fatigue Surely rhinopharyngeal infection is a cause of children's enlarged cervical glands than capitis, and can one be quite sure that more than rhœic stool after the onset of pain excludes app But this is a good little book for the student'

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[1] See *Lancet*, 195[illegible], ii 617

THE LANCET

NDON SATURDAY OCT 1 1955

Appetite and Hunger

past few years some advance has been made owledge of the causes of appetite and hunger still not possible to give a reasoned account common sensations nor to apply rational to some types of obesity and wasting s appetite which has become disagreeable atisfaction is unlikely or distant Both are obviously concerned with regulation take and in our civilised society they are arily complex reactions It has often rked that man is the only animal which eats s more than enough to meet his metabolic an s eating habits are conditioned somewhat cial environment[1] People may acquire the ating too much because of their sociable or conversely feeling that their figures are s fashion requires they may develop the ting very little and in time suffer no sense

In minor psychological disturbances the food eaten may be abnormal in one or the tion. The Germans have a vivid term for who has troubles but compensates and y by overeating—lard sorrow Thus, even ppetite may vary greatly without necessarily to sensations of either hunger or satiety blem is to find what factors cause or inhibit and how food intake and body weight are

Some who are in sound health appear to ood appetite and yet remain thin while ually active do not seem to overeat and yet for their height The popular belief is hin man ' burns up his food more " (*luxus ion*) Passmore and his colleagues in n[2,3] have now shown that thin young men s above their needs clearly absorbed all the , and that the subsequent small increase in tput could be accounted for by the specific action of the extra protein eaten. There was ce that they reacted to dietary excess by the surplus more efficiently than their fatter Yet these thin young men did not gain as much weight as might have been expected they laid down protein and fat, but their body water did not increase in proportion—that is, they responded to overfeeding by concentrating their tissues The person who is underfed loses weight but not a corresponding amount of water, hence the appearance, if underfeeding is prolonged, of "isohydric" famine œdema, in which some of the water may be intracellular rather than extracellular In the course of refeeding after starvation large amounts of nitrogen may be retained without a corresponding increase in body weight From these facts Passmore and his colleagues argue that cellular protein content may vary widely, and that at no point can it be said that an individual has normal protein nutrition simply because his cells contain a certain amount of protein Thus, the thin young men stayed thin despite overfeeding because they concentrated their tissues in both fat and protein It is hard to say what would have happened had the excess food been presented for a longer period Probably they would have rejected it

This prompts the question Why reject food any more than eat it? Whence comes the desire for food or the feeling of satiety? Sensations from the stomach or duodenum are only a small part of the regulating mechanism In an empty stomach vigorous hunger contractions appear, yet these cease before hunger and caloric requirements are satisfied, and hunger may be felt after gastrectomy or denervation of stomach and duodenum[4] Hunger contractions are, as Carlson[4] realised probably only one manifestation of something more deep-seated Another manifestation, in infants and animals, is restlessness, which has been interpreted as food seeking activity Obviously in the wild or primitive state motor activity was an essential preliminary to eating Experiment shows that animals, such as rats fit diet to energy needs with remarkable accuracy and speed. If presented with bulky food of small nutritive value they eat a greater volume than usual, if given a fortified diet they eat less[4] Clearly the stomach is not the seat of the sense of satiety In the one case the rats had fuller stomachs than normal, in the other case emptier Man too, in face of periods of quiet alternating with a few days of activity, automatically balances his food and energy output in the space of a day or two[5] When it is remembered that the satisfaction of appetite involves locomotion, feeding reflexes, the recognition of food that is edible, and the unconscious recognition of food that satisfies the tissues, it is not surprising that a central coördinating mechanism has been found This is apparently in the hypothalamus Animals with lateral hypothalamic lesions may show both hyperphagia and unwillingness to work for their food[4], in them normally linked activities have been dissociated. Also in the lateral hypothalamus lies an area whose bilateral destruction causes complete aphagia even in the presence of food Slightly medial to this, bilateral lesions cause animals to wolf food and become grossly fat[6] These two paired areas probably work in collaboration, each serving to inhibit or stimulate the other The aphagia inducing area is in just about the same position as a neural

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od J C Wilbraham A The Englishman s Food 1939

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R, Meiklejohn A P, Dewar A D Thow R K 7

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[5] Passmore R, Thomson J G Warnock G M. *Brit J Nutr* 1952 6 253

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system, described by Magoun,[7] which determines not only whether other parts of the central nervous system become active, but also their level of activity This bulbar facilitatory mechanism may be responsible for regulating the activity of the feeding reflexes—an idea borne out by the observation of Sherrington [4] and Carlson [4] that hunger is associated with generalised hyperactivity of the central nervous system In addition, appetite and satiety are modulated by voluntary cerebral cortical impulses and by the many hormonic influences known to affect cellular activity

Given that reflexes from the stomach are not essential to fire this central nervous mechanism to activity, a metabolite circulating in the blood may be responsible Hypoglycæmia can cause contractions of the stomach, and this suggests that glucose may be the substance concerned Mayer and his colleagues [8] have described considerable evidence supporting this suggestion Yet it seems unlikely that glucose can be the main signal to the appetite centres Diabetics feel hunger and may overeat (though it could be argued that here hormone imbalance has altered the threshold or response of the neurones) Furthermore, in short-term observations it was found that the desire for food was not altered by intravenous or intragastric administration of glucose half an hour before the main meal of the day [9] Possibly proteins affect the eating centres directly or as a result of their metabolism In a set of observations lasting three weeks it was found that a protein-rich diet had a far higher satiety value than a more calorie-rich one, and that there was no correlation between blood-glucose level and the sense of satiety [10] The specific dynamic action of protein may be the factor involved Brobeck [6] suggests that any increase in the total amount of heat in the body, acting through thermal gradients and thermal receptors, initiates impulses inhibiting the mechanisms responsible for feeding An increase in environmental temperature would act in the same way on this hypothesis food intake and temperature regulation are mutually interdependent

Hypotheses such as this can explain rapid adjustments of food intake to energy demand, but not slower ones After illness or operation a patient has little appetite and loses weight During convalescence he makes up for this and returns to his previous condition [5] Rats behave in the same way [11] Similarly men in a primitive society who have been undernourished do not, in a more fortunate period, eat until they become overweight, but only until they return to normal [12] Widdowson [13] observed that Germans who had suffered long-continued undernourishment had not become stabilised at the low level, but when presented with unlimited food ate enough to provide 6000 calories a day and put on 10 kg weight in eight weeks There must, then, be slow-acting as well as fast-acting satiety receptors or factors If Passmore's suggestion as to cell-protein content is correct, possibly the hypothalamic cells controlling food intake fire less vigorously when their protein level is high, and by being more labile than other lack or excess in the tissues as a whole speculation Clearly, the central feeding depends on the integration of seve factors In time it may be possible to treatment for centres causing abnormalities and body-weight

The Lungs in Mitral

Disordered function and lesions of the long-recognised feature of mitral stenosis, lately has the clinical importance of su been established In 1936 Parker and found changes in the alveolar walls, and in pulmonary arteries and arterioles, in pat mitral stenosis The alveolar walls showed thickening of the basement membranes, times conversion of the alveolar epithelium cuboidal cells The lumen of the pulmonary was reduced by medial muscular hypertrophy associated with intimal fibrous thickening scarring Necrotising arteriolitis was seen Similar changes have been reported workers [2–4] Since the original me pulmonary-artery pressure in mitral monary hypertension has been found to be invariable complication of severe mitral Indirect measurement of the left auricular by wedging the cardiac catheter in a small the pulmonary artery (pulmonary capill pressure) [6] has enabled the pulmonary ven and the pulmonary arteriolar resistance to be Slight pulmonary hypertension is increased left auricular pressure, but tension results from increased arteriolar which in turn is produced by a reduction in of the arterioles and small arteries This sometimes due to the arteriolar chang mentioned, but there is indirect evidence th arteriolar constriction can occur Thus Ri showed that the pulmonary-artery pres exercise, without a parallel rise in cardiac patients with severe mitral stenosis, et al ,[7] by administering hexamethonium, fall in pulmonary-artery pressure, without cardiac output, in patients with severe hy This suggests that the 'arteriolar reversible , and Davies et al believe that striction may be mediated through the nervous system

The radiographic changes in mitral st been well described by Parkinson[8] feature is enlargement of the pulmonary art Olesen,[9] in a follow up study of 351 pati that the hilar shadows were most prominent with severe disease Recently, changes in

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ve attracted interest There are four main
of abnormality fine nodulation due to
rosis, fine horizontal striations in the costo
angles, changes in the small pulmonary
and pulmonary œdema

stematic study of *hæmosiderosis* by LENDRUM
l them to suggest that this condition resulted
iple intrapulmonary hæmorrhages from varicose
ulmonary capillary anastomoses, with rupture
nal bronchioles and the accumulation of foci of
m Opinions differ as to the association of
osis with pulmonary hypertension WOOD [11]
correlation but STEINER and GOODWIN [12] and
et al [13] found that it was generally associated
monary hypertension although pulmonary
on is so common in mitral stenosis that the
might be a chance one. Ossified pulmonary
ave been described as a rare finding [13 14]

striations at the costophrenic angles have been
KERLEY [15] and others. These striations
at the mitral stenosis is severe and is associated
monary vascular disease gross pulmonary
on is usually present The lines often vary with
congestion FLEISCHNER and REINER [16] ascribe
en transient to interlobular œdema but
and LEVIN [17] believe that they are due to
ymphatics. But they may be permanent, in
they tend to be associated with hæmosiderosis
o due to deposits of hæmosiderin in the septa
ometimes disappear after successful valvotomy
persist along with other abnormalities in the

alities in the small pulmonary arteries in life
ted by GOODWIN et al.[18] These workers showed
angiocardiography that the arteries at the
e lungs were narrowed and irregular in contrast
rgement of the main branches The severity
es bore some direct relation to the height of
ry arterial pressure Selective pulmonary
y confirmed these changes, and DAVIES
wed that the correlation between vascular
pulmonary hypertension was close They
the narrowing affected arteries with a pre
muscular coat while the large branches,
relatively little muscle in their walls were
ey also claimed that the arterial changes
ected in plain radiographs and the severity
monary hypertension gauged thereby so
nation of a good plain radiograph of the
he best clinical guide to the level of the
arterial pressure Narrowing never affected
he upper lobe. The constriction must often
le since post mortem angiograms in cases
onary hypertension and arterial abnorma
een found in life showed far less constant
and organic changes in the arterioles were
in a minority [13] BÜLOW et al.[20] have also
ngiocardiography narrowing of the lower lobe
ommonly without organic disease of the
s judged by lung biopsy They took this to
evidence of an initial functional constriction

but also found (as did DENST et al.[21]) that increased pulmonary vascular resistance was more usual in patients with structural arteriolar changes than in others. By contrast GOODALE et al [22] found no correlation between structural arteriolar changes and increased arteriolar resistance.

WOOD [11] reported frank *pulmonary œdema* in about 8% of his cases of significant mitral stenosis It occurred chiefly in young women with a high pulmonary venous pressure, low arteriolar resistance and mild pulmonary arterial hypertension Attacks of paroxysmal dyspnœa representing less severe pulmonary congestion are more usual and according to DAVIES et al.[7] these are no less common in patients with severe pulmonary arterial hypertension than in those with mild hypertension—suggesting that an increase in arterial pressure as well as in venous pressure may cause the attacks Both WOOD [11] and GOODWIN et al [13] agree that pulmonary œdema does not occur only in patients with the smallest valve orifices and most advanced disease of the mitral valve

SHORT [23] and GOODWIN et al [13] have found that the severity of the lung changes is directly related to the severity of the mitral stenosis in many but not all, cases Absence of the changes does not exclude a tight stenosis but their presence virtually establishes it Examination of a good plain film of the lungs in a case of mitral stenosis should therefore yield important information although some clinicians may agree with BÜLOW et al [20] that the arterial abnormalities are difficult to detect by straight radiography

The lung changes after valvotomy have been studied radiographically by GOODWIN et al,[13] who found that in a third of their patients who had a satisfactory clinical result the arterial abnormalities lessened and the horizontal lines disappeared The disquieting persistence of abnormalities in the remaining two thirds is in keeping with the recent studies by BISHOP et al.,[24] who showed that the pulmonary artery pressure and arteriolar resistance do not always diminish after apparently successful valvotomy The possibility that irreversible changes in the lung vessels may vitiate a technically satisfactory valvotomy should be considered, although GOODALE et al.[22] found that if the valvotomy was adequate pulmonary arteriolar resistance might fall significantly even in the presence of striking organic changes in the small pulmonary arterioles

The mechanism responsible for narrowing of the pulmonary arteries and arterioles is unknown but it seems probable that it is initiated by critical narrowing of the mitral valve and the consequent rise in pulmonary venous pressure The teleological concept of arteriolar constriction as a shield protecting the lung capillaries from a powerfully acting right ventricle has been widely accepted [25 26] but has lately been challenged [7] The organic changes in the walls of the arterioles have not been satisfactorily explained The arteriolar necrosis found in some cases closely resembles the lesions in malignant systemic hypertension and SYMMERS [27] has suggested that the pulmonary arteriolar disease may be the result of prolonged and severe

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[24] Bishop, J M. Donald K W Wade O L. *Clin Sci*. 1955 14 329
[25] Lewis B M., Gorlin R. Houssay H E. J Haynes F W Dexter, L *Amer Heart J* 1952 43 2
[26] Wood P *Brit med Bull* 1952 8 348
[27] Symmers W St C. *J clin Path* 1952 5 36

pulmonary hypertension ENTICKNAP[28] found that arteriolar sclerosis in the lungs was not always preceded by capillary dilatation, and he suggested that the organic arteriolar changes depended on pulmonary arterial, rather than venous, hypertension But absence of hyalinisation (which characterises the systemic arterial lesions produced by hypertension) in all his cases led ENTICKNAP to postulate that pulmonary and systemic arterioles might differ fundamentally In 4 of his cases thrombi were found in the arterioles, and these thrombi might have accounted for the sclerosis Possibly repeated thromboses or thrombo-embolism may account partly for the arteriolar changes, but conclusive proof is lacking Rheumatic arteritis in the main pulmonary arteries, and occasionally in the smaller branches, has been reported,[29] [30] but this is unlikely to play any important part in bringing about arteriolar sclerosis or pulmonary hypertension [29] [31]

Scalpel in the Surgery?

THE amount of minor surgery met with in general practice may vary a little, according to the type of practice and the kind of industries in the locality, but the attitude of the practitioner to its performance varies very widely To some it is a skill to be developed and increased, while to others it is a time-consuming hindrance to the proper work of the day

Perhaps not very long ago the practitioner of today was himself a final-year student or a houseman taking his part in the busy routine of casualty and surgical outpatients, gaining experience and judgment as well as dexterity in the lesser surgical procedures left to him by colleagues whose eyes were on higher planes of surgical achievement The sebaceous cyst, the circumcision, the localised abscess —these opportunities are met with often enough in general practice to encourage any practitioner who wants to maintain his skill and to gain the added satisfaction of seeing his own patient through yet one more clinical adventure In the country-town practice (where there is an operating-theatre at the cottage hospital), in the few prototype health centres, and in a few group-practice units, there may be "minor ops" theatres equipped to a standard of efficiency that the single-handed practitioner cannot achieve In urban practice, however, where group practices are less common, practitioners will undertake their own minor operations less often As the items of service making up a day can usually be rearranged to enable a desired object to be achieved, we must presume that it is not simply the lack of time that discourages such work, but a combination of factors including inadequacy of premises (a satisfactory examination room is not necessarily a good theatre), difficulty in getting the help of an anæsthetist, absence of a recovery room, and often lack of the trained nursing help which makes the maintenance of strict surgical sterility practicable For such reasons many family doctors, though well able to do their own minor surgery competently, refer their patients to the casualty department of their local hospital They know that the be performed there in technically satisfac stances, though the attendance may be a inconvenience to the patient and the nuisance to the casualty officer

In the valuable article which we publish Dr J H HUNT develops a principle which in the larger hospitals, might resolve the to the advantage of both hospital and pr It should not be impossible to establish, at with large casualty departments, a mino theatre where visiting general practitioner their own minor surgery Such a depart be efficiently staffed and equipped, and the of an anæsthetist should be easily Local circumstances would determine w the work of a department such as this would by doctors on their own patients, or Dr HUNT suggests, a "general practitioner should be appointed on a sessional bas way, the casualty officer would be relieved non-casualty work which he may find into a programme not designed for it

There are all too few links between the pital and the general practices that feed this one were to be forged it might do It is in casualty that the young hospital sees what he takes to be examples of the and ineptitude of the family doctor It better for him if he were taught his min by a competent general practitioner who him an understanding of the background ever surgical procedure is undertaken.

Annotations

TRIUMPHS FOR CHEMISTS

Two notable pieces of chemical research announced that are of direct interest to m The first of these (as already noted brief columns[1]) is the elucidation of the struct molecule of vitamin B_{12}, or cyanocobalam officially named Isolated and introduced seven years ago, vitamin B_{1} is exceptional logical substances of importance in hum because it contains cobalt It is now well the vitamin is essential for the proper deve erythroblasts, and the commonest disease in with which it is connected is pernicious this disease the vitamin is not absorbed, and is relieved by administering the vitamin in very small doses, measured in microgrammes

The elucidation of the chemical nature of has resulted from a combination of cry work at Oxford, calculation at Los Angeles studies at Cambridge and the Glaxo La Greenford, Middlesex The crystallograph carried out by Dorothy Hodgkin and her To the uninitiated some of the diagrams the their paper look like maps of London's their paper look like maps of London's and others appear to belong to space fic not surprised to learn that Dr Hodgkin and her at Oxford had to call in Californian cyberne in the shape of SWAC (National Bureau of western automatic computer) to help them calculations The formula they eventually complex and represents a considerable achie

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28 Enticknap, J B *Ibid*, 1953, 6, 84

29 Kugel M A, Epstein E J *Arch Path (Lab Med)* 1928, 6, 247

30 Gross L *Amer J Path* 1935 11 631

31 Friedberg C K Diseases of the Heart Philadelphia, 1949

1 *Lancet* Aug 20, 1955 p 402

2 Hodgkin, D C, Pickworth J Robertson, J H K N, Prosen, R J *Nature, Lond* 1955, 176

raphy 'To be able to write down a chemical very largely from purely crystallographic on the arrangement of atoms in space—and ical structure of a quite formidably large at that—is,' they say "for any crystallo something of a dream like situation The aphic data by themselves left a number of loubt, and these have been tested and largely y the workers at Cambridge and Greenford[5] regular chemical methods An interesting the molecule of vitamin B$_{12}$ ($C_{63}H_{88}O_{14}N_{14}PCo$) lic grouping round the cobalt atom which is it in the porphyrins.

ond chemical triumph is the determination of ire of the insulin molecule Insulin proved a ler problem than vitamin B$_{12}$ and ten years d since Sanger and his colleagues at Cambridge their first paper on this subject. The details bed by Sanger et al.[6] show that compared B$_{12}$, insulin has an enormous molecule with ical formula $C_{254}H_{377}O_{75}N_{65}S_{6}$ giving a weight of 5733 5 The structure of the molecule f two parallel straight polypeptide chains sulphur bridges that are parts of cystine Those two polypeptide chains are not as expected equal in length the upper chain units and the lower chain 30 units (counting o residue as 2 cysteine units) so the insulin ust be askew in some manner possibly coiled f the amino acids present in the molecule t leucine occurs most frequently at six times, times, glutamic acid glycine and tyrosine , aspargine alanine cystine glutamine, ine and serine are represented three times, rice and arginine lysine proline and threo nine Notable absentees are methionine and e. The exact arrangement of these amino two parallel chains has been worked out in Sanger and his colleagues—a very striking mical detective work The Cambridge group hown[8] that there are small differences in the of the polypeptide chains of the insulins species cattle pig and sheep insulins each other in this way

idation of the structure of insulin and may point the way to their eventual synthesis of cortisone has depended on chemical know structure of the drug and its partial synthesis. h vitamin B$_{12}$ and insulin we have efficient ources the use of which has been brought to ee of perfection Moreover these substances d remarkably inexpensively A diabetic 40 units of insulin zinc suspension daily pennyworth of insulin while for the patient ious anæmia on 100 µg vitamin B$_{12}$ weekly bout 10*d*. (the streptomyces that produces the a notably efficient organic chemist) The uitary hormones, oxytocin and vasopressin one of the anterior pituitary hormones have mical structures and have already been by American workers but the methods of e not at present suitable for large-scale pro et even if knowledge of structure does not upply of material for treatment it is very We hope that fundamental information of ll help us to understand the mode of action vitamin B$_{12}$ and the others it may lead atment and even aid prevention in the long rs will watch with unsimulated interest the o efforts of their chemical colleagues, even may not follow the technical details

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Cannon J R, Johnson A W Sutherland I R Smith E. L. *Ibid* p 328

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SYNTHETIC ARTERIAL GRAFTS

FOR forty years arterial surgery stood where this century's early pioneers had left it. Only by local repair was it possible to reconstruct a major artery Grafting with a segment of vein though occasionally successful never became a standard method of bridging the longer defects. In 1949 Gross and his colleagues[1] described the clinical application of Carrel's method of homo grafting with the stored arteries of another individual Since then surgeons all over the world have followed this lead, and major arterial lesions up to and including the aortic arch can now be excised and the artery recon structed Such arterial segments are usually dead when implanted, and they do not retain their original structure for long afterwards Within a few weeks only extra cellular material (mainly the elastic layers) remains. The main virtue of the arterial homograft apart from its smooth lining and elasticity, seems to lie in its negative features—its inertness and the mildness of the reaction that it evokes, confined to a slow, healing incorporation which secures its function as a major blood vessel.

Human arterial grafts are scarce Even with per manent storage such as is now possible with deep freezing[2] and freeze-drying,[3] the essential difficulty of procuring the grafts remains Other forms of prosthesis have been tried Intubation of the arterial defect by rigid protheses of metal, glass, or plastic nearly always leads to hæmorrhage or thrombosis, though Hufnagel and his colleagues[4] have shown that in the thoracic aorta of man and the dog a polished 'Perspex' tube or ball valve will usually remain patent if fixed by a multi pointed nylon ring at either end Below this level and particularly where the soft tissues are mobile, all methods involving rigid tubes may be expected to fail. A much more promising method was introduced by Voorhees et al.[5] They fashioned tubes of a plastic cloth 'Vinyon N and sutured these into the dog's abdominal aorta The results encouraged them to use the same method in patients urgently needing operation, and in 1954 they reported good results after grafting with this material in 18 patients mostly with abdominal aneurysms.[6]

The technique of inserting cloth tubes is much the same as that of homografting When the arterial clamps are released blood leaks between the interstices of the fabric. The amount of bleeding depends on the material used, its weave, and its water repellancy Vinyon N is less *satisfactory in this respect than finer fabrics* such as 'Orlon, Dacron ('Terylene) and nylon. It generally needs to be pre-clotted by preliminary exposure to whole blood either in vitro or by prolonging the interval between removal of the distal clamp and removal of the proximal clamp A liberal amount of enmeshed fibrin is helpful in that it provides a medium for the migration of fibroblasts which organise the prosthesis into a living fibrous tube with a durable cloth reinforcement This would seem to be an excellent substitute for a homograft in fact it may prove in some ways even better for homografts may have a limited life Degenerative changes have already been reported in early dog *preparations*[7] but there are so far no reports of late failure in cases grafted with suitable material by established methods. Arterial *grafts* have now been applied in several hundred cases some as long ago as 1948 At St. Mary's Hospital London alone over 100 such grafts have now been applied 40 of them to the aorta Most of these were frozen or freeze dried homografts, but synthetic tubes are now increasingly used for all but the smaller vessels

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[2] Eastcott H H G Hufnagel C. A *Surg Forum*, 1950 p 280

[3] Marrangoni A G Cecchini L. P *Ann. Surg* 1951 134 977

[4] Hufnagel, C A Rabil, P Harvey W P McDermott T F *Surgery* 1951 35 673

[5] Voorhees, A B., Jaretzki A. Blakemore A H *Ann Surg* 1952 135 33?

[6] Blakemore, A H Voorhees A. B *Ibid* 1954 140 324

[7] Coleman C C jun. Deterling R. A jun Parshley M S *Surgery* 1955 37 64

Much research is going on in the U S A with the object of finding the most suitable synthetic arterial grafts, and 1955 has brought a rich harvest of information [8] Hufnagel and Rabil [9] have now been using orlon (an acrilo nitrile polymer mostly used for shirts) long enough to have great confidence in its properties as a graft material Cloth bifurcations, made like a pair of trousers but with an outside French seam, have been inserted in 15 cases after resection of the aortic bifurcation, without hæmorrhage or thrombosis Orlon has only the slightest tendency to early leakage , it can be sterilised by autoclaving , and it does not fray or separate at the arterial suture line Hufnagel has also used braided, seamless, orlon tubes, which are preferable to the sewn-up type for vessels smaller than the common iliac artery Braided nylon, made up by a commercial shoe lace manufacturer to $^1/_4$ in internal diameter, was used in an experimental study by Edwards and Tapp [10] Coating the cloth with silicone was found to prevent early leakage, while a unique flexibility could be conferred on these narrow grafts by a crimping or corrugating process (heating with the tube longitudinally compressed), thus producing a material resembling the tubing from a gas mask or anæsthetic apparatus Surprisingly, these irregular grafts functioned well when implanted into the abdominal aorta of small dogs Shumacker and King [11] have tried heat sealing the mesh of a nylon cloth with a layer of polythene sheeting, but this may have the disadvantage of greatly reducing the fibroblastic invasion Poth [12] also considers it unwise to rely on a single layer of cloth Multiple layers, he believes, are safer , but they should be added after the luminal portion has been inserted, since otherwise blood clots may accumulate between the coats as in a dissecting aneurysm

An ingenious method has been devised in Minneapolis, where Shumway et al [13] have been using thin strips of polyvinyl sponge, wrapped round a tool of the desired size and shape, and boiled This material becomes flattened on its lining surface, and wholly integrated, on cooling, to form a resilient, tough graft which somewhat resembles an actual artery Experimental operations have been successfully completed, but no one yet has much clinical experience of such grafts

The advantages of ready-made or quickly tailored cloth grafts for arteries are impressive In future they should be no more difficult to obtain than suture material or bone plates Rob and Eastcott [14] have described their successful use in the treatment of mycotic aneurysm, a condition hitherto irremediable by reconstructive surgery , a homograft would almost certainly have failed owing to sloughing In at least one other respect cloth grafts are better than homografts in the treatment of aortic aneurysms the "normal" vessel beyond the sac is often much wider than any normal homograft, and synthetic grafts can be made to measure, using the aortogram as the pattern It now remains to explore the possibility of using smaller, seamless grafts, and bifurcating grafts, in the more peripheral arteries, and to ensure that whichever pattern proves best is manufactured to a high standard and is widely distributed The general surgeon must also familiarise himself with the technique of inserting them, so that in emergency this new surgical manœuvre can be applied to any patient who urgently needs it

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8 Deterling R A Bhonslay, S B *Ibid*, 1955 38 71
9 Hufnagel, C A Rabil, P *Arch Surg , Chicago* 1955, 70, 105
10 Edwards, W S , Tapp, J S *Surgery* 1955 38, 61
11 Shumacker, H B King, H *Surg Gynec Obstet* 1954, 99 287
12 Poth, E J *Surgery* 1955 38 90
13 Shumway N F Gliedman, M L Lewis F J *Surg Gynec Obstet* 1955 100 703
14 Rob C G Eastcott, H H G *Brit med J* 1955 i, 378

VITAMIN D AND A.T.10

VITAMIN D is formed when ergosterol or
cholesterol are exposed to ultraviolet light
from plants such as ergot, is converted to
which has been named ergocalciferol but is
as calciferol 7 dehydrocholesterol, found
is converted to vitamin D_3, or cholecalcif
is the compound produced when animals
to sunlight , it is the vitamin D of fish-liver
was known as vitamin D_1 was found to be
of sterols, and the term has been abandoned
the substances formed when ergosterol is
only one other is important in medicine
tachysterol or 'A T 10' (antitetanic

The principal effect of vitamin D is to
absorption of calcium from the gut,[1] and for
it is essential [2] Without the vitamin animals
or osteomalacia through lack of calcium, and
vitamin rickets is cured Occasionally p
rickets because they are resistant to vitamin
need very large doses to enable them to absorb
Resistance to the vitamin may appear in
of the treatment of osteomalacia [4] Other
vitamin D become apparent with large
particular, as well as increased absorption
a rise in the serum calcium to abnormally
and an increased loss of calcium and
in the urine These effects resemble those
mone, and they are best studied in patient
deprived of their parathyroid glands.[1] Th
usually be demonstrated in animals depr
min D [5] A T 10 resembles vitamin D in
the intestinal absorption of calcium, but,
Albright and his associates, the parath
effects on urinary excretion are more pro
with vitamin D [6]

In man (but not in the chick) vitamins
are equally potent, and it has until now
a matter of convenience which of these two
a patient A T 10 has on the whole been
patients with hypoparathyroidism , but in th
is now given less often than formerly, since
and calciferol is easily available and gener
because of the parathormone like effects of

Early reports from Germany suggested
did not cure rickets,[6] and Albright et al
this conclusion but Shohl and his associate
that it could do so Liu and Chu [4] made the
observation, in 5 cases of renal osteodys
A T 10 increased the intestinal absorption
and that the calcium was retained in the body,
did not increase the absorption of calci
patients Recently Saville et al [10] have
A T 10 maintained a satisfactory retention
in 6 patients with rickets resistant to vitamin
argue that the actions of A T 10 do not differ
of calciferol , but, except in 1 patient, th
compare the two substances directly
seems that, in these patients at least, A T 10
the actions of large doses of vitamin D Th
in view of the discovery reported by Dr D
associates on p 687 of this issue In treat
of patients deprived of their parathyroid

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1 Albright F Sulkowitch, H W *J clin Invest*
2 Walker A R P *Amer J clin Nutr* 1955 3
3 Albright F , Butler, A M. Bloomberg E *Amer*
1937, 54 529
4 Liu S H Chu, H L *Medicine, Baltimore* 194
5 Harrison H E Harrison, H C *J clin Invest*
6 Albright F Bloomberg E Drake, T
Ibid 1938 17, 317
7 Albright F , Sulkowitch, H W , Bloomberg E
18, 165
8 Shohl, A T , Fan C Faber, S *Proc Soc*
1939 42, 529
9 Shohl, A T Faber, S *J Nutr* 1941 21
10 Saville P D Nassim J R. Stevenson F
Carey, M. *Clin Sci* 1955, 14, 459

nd, as others have done that some became quite to all the actions of vitamin D_2 and remained hen the dose which had previously maintained was greatly increased When these patients treatment changed to vitamin D_2 or A T 10 onse was again entirely normal.

ding has no parallel, and it raises many exciting s. It is of course of immediate practical e in the management of patients with para tany which has become refractory to other In addition, it may have a bearing on the sis and treatment of rickets resistant to

TIVE TECHNIQUES FOR LARGE BOWEL GROWTHS

carcinoma of the large bowel can sometimes by an effective operation the finer points in are important Shallow et al.[1] found a five-ival rate of 70% after removal of localised in the rectal and rectosigmoid area. This hat if the growth and its areas of spread can assed all should be well—provided that opera ulation does not encourage embolic metastases currence After resection recurrence at the may be due either to inadequate excision or to on of desquamated malignant cells from the en Cole[2] thinks that inadequate excision is y cause since recurrence rarely arises at a after excision of a rectosigmoid growth but after resection and anastomosis for such lesions, h the amount of bowel removed at resection less than that excised at abdominoperineal This argument is, however weak since excision gmoid growth prior to anastomosis is liable to ate on the distal and not the proximal side ce of immunity of a colostomy to recurrence re little bearing on the matter Nevertheless lity that implantation may sometimes be the pported by the experimental work of Vink[3] the colon was transected and anastomosed d to a site where a suspension of the Brown mour had previously been injected into the n Vink showed that implantation occurred in contaminated with luminal contents, and t the suture line was more prone to implanta disinfection of the bowel by sulphaguanidine omycin. The Brown Pearce tumour may be than a carcinoma in man's large bowel. Cer s is no evidence to suggest that carcinoma in tself in the mucosa at lower levels in the bowel. Pearce tumour may not do so either but Vink no control experiments with injection alone to He rightly draws attention to the danger of s results to human pathology Nevertheless, ting carcinoma of the large bowel it is wise to s technique by placing ligatures around the gut below the lesion before mobilisation in order the risk of contaminating with exfoliated o destined for suture

problem in encompassing growth is removal ands. Here there are two difficult questions: s are involved and are some glands hidden It is common knowledge that glandular t may be due simply to inflammation; ood and Wilkie[4] observed the presence of ands should in itself be no deterrent to a cision or resection Blatt and Cincotti[5] have converse observation of lymph nodes which mal but contain microscopic carcinoma A partial solution is to remove every lymph gland within sight. But not every gland is easily visible, some are hidden in pelvic or mesenteric fat So Blatt and Cincotti suggest that vital dye be injected to make the glands abundantly clear to the surgeon's eye. Basing their technique on the experience of Wood and Wilkie they inject Evans blue into the submucosa of the rectum below Houston's lowermost valve this stains not only mesenteric but also hypogastric and common iliac glands and sometimes the para aortic group This injection affects the glands throughout the pelvis, and thus the technique is applicable to growths of bladder cervix, and uterus as well as of rectum There is one defect malignant cells do not take up the dye, so any gland replaced by growth remains unstained

HÆMOPHILIA

HÆMOPHILIA is not a common condition—the prevalence in males in this country is estimated at 1–2 per 100,000—but it gives rise to a 'pressing social problem Four years ago the Medical Research Council set up a Hæmophilia Committee under the chairmanship of Dr J F Wilkinson which made two recommendations one was that a number of clinics and laboratories should be invited to act as reference centres using uniform diagnostic methods and coördinating information, the second was that a memorandum should be prepared to give a succinct account of modern views on the diagnosis and treatment of blood-clotting disorders, and details of the techniques recommended The first of these recommendations has already been acted on and the second is now carried into effect by the publication of a M R.C monograph[1] The monograph, by Dr R G Macfarlane and Dr Rosemary Biggs, is a remarkable feat of compression and clarity The emphasis is on the laboratory investigation of blood-clotting disorders and full practical details are given of the recommended tests from simple whole blood clotting to the thromboplastin generation test The practising pathologist will sigh a little over perfectionist recommendations such as "accept only samples in which no technical difficulties were encountered in obtaining the blood and if he has any experience of these tests he will know that the short descriptions refer to tests that can take a long time to arrange and need skill and practice for reliable results The laboratory section is preceded by a section on the clinical diagnosis of hæmophilia and its differentiation from the purpuras and there is a short and sensible section on the treatment of hæmophilia and related clotting defects the management of bleeding from special sites and dental extraction Everyone working in this field will want a copy of the monograph for the bookshelf or the bench

IN THE NUFFIELD TRADITION

AT the annual dinner of the Royal College of Obstetricians and Gynæcologists on Sept 23 Sir Arthur Gemmell, the president announced a munificent gift from Lord Nuffield towards the college's building fund Through the Nuffield Provincial Hospitals Trust Lord Nuffield has given £50 000 and to this he has added from his private resources a further £75 000 In acknowledging the gift Sir Arthur said that the council proposed to associate Lord Nuffield's name with the new building[2] which would be known as the Royal College of Obstetricians and Gynæcologists Nuffield College Regent's Park In all £400 000 would be needed for the building The move from the gentle shelter of Queen Anne's Street to the park of the more robust Prince Regent is surely a sign of the college's expanding interests and authority and all will wish the fellows and members many fruitful years in their new home to which Lord Nuffield has made such a notable contribution

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Arch Surg, Chicago 195* 65 *61

Brit J Surg 1951, 41 431

Wilkie D P D *Edinb med J* 1933 40 3 1

Cincotti J J *Surgery* 1955 38 3 3

1 The Diagnosis and Treatment of Hæmophilia and its Related Conditions Medical Research Council memorandum no 32 H.M. Stationery Office 1955 Pp 23 2s 6d

2 See *Lancet* 1951 ii 189

Special Articles

MEDICINE AND ADMINISTRATION *

Sir Russell Brain
Bt, D.M, P R C P

This occasion enables me to express the gratitude of the medical profession to the members of a hospital management committee, and thus, indirectly, to all hospital management committees, for the self-sacrificing and time consuming work which they do for the benefit of the Health Service

It seems to me rather a happy paradox that the National Health Service should require as much voluntary service as the old voluntary hospital system, if not more This has advantages which I think we are sometimes in danger of losing sight of I am sure it is a good thing that, at a time when we are all sensitive to the dangers of excessive central control, a considerable degree of responsibility for the management of our hospitals should rest upon people who, although they may be appointed by the Minister or by regional hospital boards, are essentially—I hesitate to say ordinary people!—but representatives of ordinary people, to whom this kind of public service appeals, who have local knowledge, and who are prepared to give up the time to it And, of course, you represent the public also as patients, for we are all, unless we are very exceptional people indeed, from time to time patients, and in the Health Service the patient is what is called, in economic jargon, the consumer But I am not forgetful of the fact that some members of hospital management committees are themselves doctors, and the medical profession naturally owes them a particular debt

* * *

The need for this form of voluntary service, however, raises the question, whether we may not be in danger of overstraining our resources After all, there are many other forms of important voluntary service, and the number of people who are sufficiently interested, and can spare the time for such work, is necessarily limited The other day I made a rough calculation of the number of man-hours required to be voluntarily contributed in order to run a regional hospital board for a year I was astonished at the result, and if one takes into account the very much larger number of hospital management committees, each making its own substantial demand upon their time in man and woman hours, the total is very great indeed Here we meet with a problem rather like that of London traffic The bigger the city and the greater the volume of work done in it, the greater the number of cars needed, and the more cars, the more difficult it becomes to get about to do the work And just as the congestion of London traffic threatens to make movement impossible, so the congestion of business created both for lay and medical committees by the Health Service tends to absorb more time than either can afford to give, in the case of doctors to interfere either with their work or with their hard-earned and all too brief leisure, and indeed to bring business to a standstill Permanent Session, by Democracy out of State Service, is not a fast moving horse I do not know the complete answer It is certainly not more officials, and it cannot indefinitely be more committees, not even another committee to consider this problem! For if it is to be solved it must be solved in part at least by the committees themselves

Perhaps the key to the situation is to be found in the relations between the chairman of the committee and the chief administrator Mutual confidence, flexibility, and a willingness on the part of each to give and take responsibility, and be judged by the results, will save many committee man hours a year, in efficiency or good relations

And good relations are essential if the adventure of the National Health Service not merely smoothly, but also efficient Chesterton once wrote a book which he *Wrong with the World?* and in the described humorously the embarrassment title caused him while he was writing it, he visitors to the house inquired after him, his reply "Oh, my husband is in his study, *is Wrong*" Some people seem to feel about the Health Service, especially about trators If you want to know where they in their bureaucratic offices, doing what course, we must be vigilant to detect abuses, them put right, but excessive criticism is emotion is a bad counsellor, especially when sweeping generalisations Let us give our colleagues, many of whom are themselves credit for at least as much understanding sense as we claim for ourselves But, while believe that the exaggerated statements which made are justified, I think they spring apprehension about the future, and that the anxiety about a matter which is important for both of the medical profession and of the

* * *

The Health Service has been in existence only seven years During that time a very of work has been done, much of it by Ministry of Health and the consultants in tion, to overcome the difficulties inevitable in tional period of what is, in one of its aspects revolution Considering the magnitude of I believe the difficulties have been overcome able success Admittedly, not all problems solved, because in the complicated which we have had to deal it has often been to foresee the full consequences of the One result has been that some doctors have hardship Neither side has always been sometimes we have both been wrong I believe that the large measure of success been achieved has been due to a determination part of all concerned, and not least the Ministry of Health, to preserve what was order of things, while welcoming the have come from the new organisation.

One of the values which we have striven is the independent professional status of the has been done successfully so far, and I shall succeed in firmly establishing this principle as part of the new order But many people, who through regional boards management committees are brought into close contact with the management and the work of doctors, there may be some understand the principle, and therefore necessity for maintaining it

Let me, therefore, try to explain what of the matter is that the relationship and patient derives from the doctor's involves duties and responsibilities which are *unrelated to* the source of his remuneration no difference to the doctor's professional to his patient whether he is paid by the State, or for that matter is not paid at all to this primary obligation to the patient course, if he is paid by the State, to do which he is paid, faithfully, and this is which he shares with everyone who receives whether from the State or from any other believe that a very great majority of doc

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* An address delivered at the annual meeting of the Enfield Group Hospital Management Committee

-he Health Service faithfully, and indeed many re than they are or can be paid for The aition in the Health Service creates difficulties ithere is confusion between his two obligations 's obligation to the patient, however is in its absolute, and entirely beyond the scope of the authority, which therefore has no right to the individual doctor on any matter of pro ractice or ethics The most it can do, if it -rned in such matters is to refer them to its e medical advisory committee

I am right, doctors occupy and will continue a unique position in the Health Service work in the service also have their own pro bligations but the doctor alone has the added ty of caring for the patient as a whole, and ie work of others who render the patient service fessional independence within the Health ot merely an exaggerated form of sectionalism : ial to the welfare of the Health Service and to the welfare of society I do not believe ie would wish to be treated in hospital by a had some other professional allegiance than directed to his patient s welfare Those of us who have to spend much time considering and discussing general principles, admittedly of great importance have to be careful to preserve our sense of proportion and not to regard isolated cases as representative of what is going on generally That is why I find it so refreshing and stimulating to meet, as I have the opportunity of doing today, the laymen and doctors who are getting on with the job I believe that in general the doctor s professional responsibility is recognised and respected. It gives rise to no difficulties and hospital authorities and doctors are working harmoniously together

* * *

We are fond of boasting that we are not a logical nation Though we are often somewhat vague about theoretical principles, we have a habit of doing the right thing intuitively in practice, and then discovering afterwards that we have done it on principle So far we have done it successfully in launching the Health Service and I have every hope, and see every prospect that, if laymen and doctors go forward together in the same spirit of goodwill and mutual understanding, we shall succeed in creating a service which will be a model for the whole world

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International Congresses

VITAMIN E

International Congress on vitamin E, which ose of 1939 in London and of 1949 in New York a Venice on Sept 5–8 under the presidency rlo Foa About 160 members from 16 nations The communications included both reviews lecturers on reports in specified fields of nd reports of original work in these fields dings were greatly helped by the simultaneous of the communications through headphones other languages

vy accumulation of papers on vitamin E P L Harris at about 1600 justified the the conference but made heavy work for . In experimental studies on the effect of the metabolism much interest has centred on the saturated fats in aggravating the symptoms y, on the breakdown products of the vitamin y and on the extent to which the vitamin laced in its functions by certain redox ' including methylene-blue H Dam s descrip min E as an in vivo antioxidant continues Opinions are divided, however as to whether is exerted evenly throughout the body, or is d on special sites, such as the pituitary nd thyroid The discovery by J Green, and h workers, that cereal products contain two of tocopherol (named ε and ξ) has raised to their biological activity and practical in our diet. With the previously known ns (α β γ and δ) the total number of is now six

ist to our detailed knowledge of the import min E for laboratory animals, great uncertainty to its value in the treatment of disease in he 2nd congress sanguine hopes were raised in Shute that vitamin E might revolutionise ent of diseases of the heart and peripheral stem. At the present congress he displayed pressive photographic records showing the progress of various peripheral vascular used by accident burns, or infection after with tocopherol As on previous occasions ght ascribe most of the cures to spontaneous nder the influence of adequate hospital treat Shute s opinion however the effect of tocopherol is so striking that demands for comparisons with controls untreated with vitamin E seem inhuman V R O'Connor would presumably support this view in regard to cardiac and renal patients and in the veterinary field N H Lambert is enthusiastic on the effect of tocopherol in warding off the effects of old age in dogs Convincing statistical evidence seems essential before tocopherol therapy can be accepted as more than an expensive placebo An investigation by Maurice Lee on the progress of leg ulcers, with or without tocopherol, is therefore welcome. The vitamin appeared to accelerate healing slightly , the difference was statistically significant in patients with a history of deep venous thrombosis A point on which all other workers agree is that the doses given by Shute and his followers are greatly in excess of the normal requirements of the body The alleged action of the vitamin cannot therefore be due to the correction of dietary deficiency

The prominence of muscular dystrophy as an effect of experimental avitaminosis E suggested the use of tocopherol in the treatment of muscular dystrophy in man. The results so far obtained have been very disappointing Even in instances where tocopherol has influenced the muscle biochemically as evidenced by decreased creatine excretion the progress of the disease has been unaffected. An ingenious split frame ' film by K E Mason showing side by side motion pictures of dystrophic children photographed after various periods of treatment, reinforced this sad conclusion In contrast K L Blaxter and others have reported that many forms of muscular dystrophy in farm animals respond readily to treatment with tocopherol

Several workers mentioned the novel finding that tocopherol can influence the clotting time of blood In vitro clotting appears to be slightly accelerated which is perhaps difficult to reconcile with the supposed favourable effect of the vitamin in the treatment of thrombosis E Raverdino considers that tocopherol may be helpful, in combination with anticoagulants in treating certain vascular abnormalities of the retina P Prosperi and A Lottini observed beneficial effects in the treatment of a case of hæmophilia.

A pleasing feature of the congress was the evidence of intensive and fertile research on vitamin E in Italy As the fruit of both clear scientific insight and high technical skill a communication by Prof M Aloisi, dealing with the microscopic changes in muscle made dystrophic by vitamin E deficiency earned the admiration of all present

The Wider World

FORMOSA

The Beautiful Island

FROM A CORRESPONDENT

BEFORE the war few of us knew much of Formosa—though we may have remembered that Manson spent some time at Kaohsiung as port medical officer before he went to Amoy But during the past year the name has appeared at uncomfortably short intervals in the newspapers Actually this name of Ilha Formosa, given it by the Portuguese, has been changed by Nationalist sentiment, and the island has been renamed Taiwan—the terraced bay Indeed, it is both terraced and beautiful

Taiwan lies 100 miles off the Fukien coast Geographically, and strategically, it is part of the chain of mountainous islands that include Korea, Japan, Okinawa, and the Philippines, and it shares their typhoons and earthquakes, though it is twenty years since the last disastrous earthquake From north to south run a series of mountain chains with peaks rising to 14,000 ft, so that roads from east to west exist only at each end of the island On the east side the mountains run close to the sea leaving only small plains of intensively cultivated rice, and in some places the sea-cliffs drop 3000 ft sheer to the Pacific On the west there is a plain 10–30 miles wide, that is the heart of the country It is laid out in terraced paddy-fields, irrigated by the rivers from the mountains, and patrolled by egrets, and it grows two crops of rice a year, and in the south three Sugar and sweet potatoes are other main crops, vegetables, bananas, pineapple, squashes, anything will grow in this carefully watered land except Irish potatoes, soy-bean, and apple Ducks, hog raising, sea and river fishing provide marginal amounts of animal protein As you climb the mountains the terraces of rice grow smaller and smaller and give way to kassava, till this too is replaced by the tea gardens The mountains go on up in forests of camphor and oak, tree fern, and accacia, so wastefully cut in the past that it is difficult now to get out the mature timber, and afforestation is only slowly catching up erosion The flowering shrubs and trees decorate the plain and the accessible parts of the forest—azalea, oleander, hibiscus, phœnix trees, and flame of the forest, orchids, poinsinetta, and a dozen others whose Chinese names I cannot remember Industries are springing up, and coal and aluminium are local products The farmer is not rich, but now that the large holdings have been split up he is better off than ever before The average farm is under 3 acres and the only machine employed is the pedal-operated threshing-machine

The weather varies in relation to the mountains In the north and east there is rain all round the year, making Keelung one of the wettest ports in the world Yet fifty miles south of Taipei it rains only in June, July, and August, and the winter is warm and rainless Taiwan has been peopled over the last 500 years by successive waves of migration from the mainland, driving the aborigine inhabitants back into the mountains Of the 10 million people, $7^1/_2$ million came from Fukien and speak Taiwanese (Amoy) About 1 million came from the region of Canton, whose inhabitants are great travellers, and speak Hakanese The 200,000 aborigines speak several dialects of non Chinese origin

HISTORICAL BACKGROUND

Before the Japanese came in 1895 the population was about 3 million, ravaged by misgovernment as a Chinese province, and by epidemic disease, drought, and starvation The Ja
most successful colony with the developmen
hydro electric schemes, modern methods of
tion, and simple public health measures,
population doubled between 1905 and 1940 J
used as a lingua franca and was the langu
the schools This colonial government was
for the Japanese were there to make
Taiwan and they succeeded, but the T
great benefits, including the most complete
system in the world During these years
rate fell from 33 to 18, and the infant mortal
180 to 120, while the birth rate remained
in the 40s Incidentally the present death-ra
8 and the infant mortality rate 30, though
figure is in fact probably higher

The end of the late war brought an
jingoism that destroyed much that was
perhaps this was inevitable after fifty
oppression that was sometimes brutal T
government produced a wave of strikes
turbance Several thousand Taiwanese
the governor was brought to trial for
played and was publicly executed
and progress have gone forward stea
munist successes on the mainland b
flood of refugees to Taiwan, and in 19
government arrived in Taipei, the
that followed have been uneasy ones,
government sitting on top of the
ment and dreaming of the 17th cen
Chung-Kun captured Taiwan from the D
it as a base for his unsuccessful attempt
Manchus out of China

THE PEOPLE AND THEIR HEALTH

The Taiwanese are most likeable,
humorous Education is compulsory and
go to school at some time or other, but
crowded and many slip through the net of
attendance, and stay at home to give a
The Taiwanese are better off than the pe
Asian countries Bicycles seem almost a
in Denmark, beggars are rare, and the
is round the corner of the street in much
not exist here There is little wealth and w
is not displayed, for austerity is the fashion.
not many private cars, but the number
Americans who have served their term
sell their cars It is just as well that there
few, because the Taiwanese—men, women,
—are still attuned to the speed of the buffalo
and cheerfully disregard the lethal potent
automobile

Fig 1—Aborigine village

re about 4000 doctors in practice and 2000 under the Japanese, medicine was almost the ssion open to the bright young man The was rigid and authoritarian and the litigious the country made it difficult for him to adopt ne modern methods of treatment

lical school of the National (formerly Imperial) is now largely staffed by men who have ne time in the United States and better of work are spreading through the island. health stations each serving a population of 000 have been built nearly all since the war neat, simple, one-storey, concrete buildings with a staff of 1 or 2 doctors, 2 to 4 nurses a sanitary inspector and a clerk In the mornings clinics are held for patients who cannot afford or do not choose private doctors Patients are assessed at how much they can afford to pay but treatment and drugs can be given free of charge The afternoons are spent in public health work including clinics for maternity and child welfare school health immunisation and the treatment of trachoma Postgraduate training in preventive organised by the provincial health administra the help of the World Health Organisation, nd other bodies, is improving the amount y of the work done. Till now except at the Hospital in Taipei, the work of the hospitals elow that of the health stations In view of e problems of the country it is perhaps as r the present the greatest effort should be l on preventive medicine and medical

younger of these two ows the hair-changes of ficiency not amounting to or

as practically disappeared since the W H O began to show how D D T could be used at American and British textbooks say sis does not exist If only we knew why ist here whereas it does in all the neighbouring we might be able to control its transmission s and syphilis are common leprosy unusual. iasis and amœbiasis are common ascariasis Poliomyelitis, until recently unrecognised is ing to occur in small localised epidemics in der 5 just as it has in most tropical islands ar When I first came to Taiwan I did not find much delinquency and psychoneuroses miliar Occidental pattern of psychosomatic nd mental ill health seem to be in evi iboflavinosis and vitamin A deficiencies are school children and the child of 10–18 n gets too little protein for his needs (fig 2) ohe and the farm labourer do their work and heir weight and strength is a mystery to me ke the women vary in beauty but both men have beautifully modelled legs The towns ht and narrow-chested but the farmer and worker have fine strong bodies. Children uch of and are always welcome ; they behave hildren do elsewhere but schools are pretty restrictive and remind me of the classrooms of another educational era.

The Taiwanese are not a martial race and they dislike the idea of being involved in a civil war which still appears to be someone else s problem, though it has been said that the one thing they might fight for would be to help the mainlanders back to the mainland

Politics apart the years to come will have problems enough in store, for rising numbers on so densely populated an island may soon produce violent economic changes. But the Taiwanese can accept an impossible situation cheerfully and meantime he takes the greatest pleasure in sharing with you the good things of Formosa—good food good company and a wonderful countryside

Before Our Time

BRITISH DOCTORS AT PADUA UNIVERSITY*

ANDRA BOSATRA

M D Padua

EVEN before the foundation of its university in 1222 Padua was recognised as a centre of international culture and between the 13th and 18th centuries it attracted students from many countries, including some distinguished British doctors.

According to ancient customs many of which still persist in some British and American universities the students elected each year a rector, who was given great authority and prestige, not only over them but also with the civil and religious authority of the city At first there was only one rector but later the students were grouped into ' nations, each of which elected a rector of its own These nations became the basic unit of university administration A document of 1228 mentions the English as belonging, with the French and Normans to the nation of *Langue d oeil* Later they joined the ' German nation which included Flemings, Scandinavians, and Poles The number of English students apparently increased rapidly, and in 1331 they formed with the Scots, a nation of their own The Scots however liked to be kept distinct from the English to such a point that in 1534 they joined with another nation and did not re join the English till 1602

In 1399 the faculties of arts, medicine and natural philosophy were separated from the older faculty of law and given autonomous status. Anatomical research was authorised by the religious and civil authorities and Alexander Benedetti, a professor of the university discussed in a treatise the problem of the construction of an anatomy theatre. These developments drew more British students and doctors to Padua The first important group of which we have news arrived from Oxford in the second half of the 15th century led by John Tiptoft Earl of Worcester and it included students of law and medicine. Though many of these remained for some years for others Padua was only a station of their *peregrinatio academica*

Among these student visitors the first important medical figure we meet is *John Chambers* A priest and a master of arts of Oxford he came to Padua in the last years of the 15th century to study medicine After he returned to England he became personal physician to Henry VIII He collaborated with Linacre in founding the Royal College of Physicians of London and, as counsellor of the king he shared in the medical organisation of England At the end of his life Chambers was warden of Merton College Oxford

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* Based on an address given during the visit to Padua last year of the Visiting Association of Throat and Ear Surgeons of Great Britain.

Thomas Linacre himself came to Italy in 1488, with William of Selling whose pupil he had been at Oxford After visiting Florence, he moved to Padua to study medicine, and took his degree in 1492 Besides the anatomist Benedetti, his masters at Padua included Nicolò Leoniceno, a famous Greek scholar, and he was also a friend of the great editor, Aldo Manuzio When he returned to England he lectured at Oxford and Cambridge, he became a personal physician to Henry VIII, and he was also tutor to Princess Mary Yet he still found time to edit the first English translations of Galen

Somewhere about the year 1540 another student of medicine who has achieved fame came to Padua—*John Caius* He was the faithful pupil of Giovan Battista da Monte, who was the first teacher to bring students into the hospital wards, so as to talk to the patients and to study their illnesses Caius, in proof of his devotion and esteem for his master, quoted him immediately after Galen in the titles of his books

Thomas Phayer, also came to Padua, but it is not known whether he studied medicine or law, but he later practised both professions He was the author of the first English treatise on pædiatrics and of the first translation of Virgil's *Aeneid*

Between 1521 and 1525, as part of his peregrination, *John Clement* visited Padua He, too, was a physician to Henry VIII, he translated Greek classics, and he married the daughter of Sir Thomas More *Edward Jorden*, who took his medical degree at Padua towards the end of the 16th century, was the author of the first English psychiatric study, which includes the case-history of a woman with laryngeal spasm of hysterical origin

And now, at the end of this glorious century, we meet *William Harvey*, who came to Padua to study under Fabricius d'Acquapendente, in the new anatomy theatre, the first in the world, which had been built in 1595 Near by, from a roughly made professorial chair, erected in the open to satisfy the numerous students, Galileo Galilei demonstrated his universal laws Harvey received his degree on April 25, 1602, from the hands of a Palatine count, Sigismondo Capodolista, for he was not a Catholic and the Venetian Republic had obtained leave that non catholic students should receive their degrees from some Paduan counts of imperial title rather than from the bishop

Fabricius, who had deeply studied the venous system, had probably a big influence on Harvey's work on the circulation Moreover, both the idea of the circulation, and the term itself, were known before this work was done But Harvey's achievement was to demonstrate the phenomenon, both qualitatively and quantitatively, so that his inquiry into the circulation of the blood can be regarded as the first really modern work in experimental physiology In his method we can properly recognise Galileo's teaching, for Galileo was the father of experimental research and exercised a profound influence also in medicine, which he had studied as a young man

* * *

Those I have named here are only the most eminent figures of this period How numerous were their less famous colleagues is shown by the fact that the roll of the Royal College of Physicians between 1502 and 1671 includes at least 57 men who had taken their degrees at Padua To these we must add the greater number of students who frequented this university for a brief time, and equally we must take note of the continuous exchange of news and ideas so fervid among the scholars of that epoch—a reciprocal influence evident, for example, in the support which Ramazzini, of this university, gave to Sydenham's theories of the *genius epidemicus* Our meeting today prolongs the community of spirit and culture which is the solid basis of friendship between our countries

Public Health

"Random Reflections"

"I thought it might be useful to
thing of my own faith in the value of
my confidence in our future," said Dr
in his presidential address to the Society
Officers of Health on Sept 22 It
good complaining that the curative services
attention "of course they do and will
do so" He hoped that those engaged in
of disease would become more generous
nowledgement of public health work and
to cooperate in it For their part, those
public health should be generous in ackno
achievements of curative medicine but should
time have faith in themselves, in the value
have done, and in the possibility of doing
things

Medical officers of health had been heard
that the National Health Service Act had left
environmental hygiene and epidemiology,
complaint, he felt, implied too narrow a
meaning of these words

"Environmental hygiene in its restricted
limited to the hygiene of man's physical
is a branch of public health work which I think
officers of health have in recent years tended
to non-medical staff or to other departments
authority, but I agree with Sir William Savage
officers should retain a close interest and
In the first place their medical training and
developed their powers of observation and
weigh the relative importance of the conditions
They expect to have to use their discretion
treatment and not to be bound by hard and
standards which are so beloved by the lay staff
place it has been my experience that
welcome the interest of the medical officer of
work and the opportunity of discussing their
him They realise that the M O H. cannot be
they are with all the detail of the practical work
are engaged day by day, but they know that
the underlying principles and can bring a trained
consideration of such principles in particular
sanitary inspectors generally are quite happy to
of a team of which the M O H is captain, but
does not play then they not unnaturally
independent"

But environmental hygiene meant much
physical surroundings which affect health,
the personal and social relationships which
profound effect on the individual, and
his mental but on his physical health.
ill health, there was scope for much more
work at all ages, which in his opinion could
only by the public health service, in
general practitioners and certain voluntary

The tendency had been to regard
study only of communicable disease, but
thought the M O H should accept J N
definition of epidemiology as "the study of
disease of populations in relation to their
and ways of living"

In discussing the advances that the M.O.H.
into new territory with the aid of allies,
numbered among those allies the
In one respect these had a great advantage
bodies they could take action in
far as their funds permit, without
to similar action in all the similar cases
present themselves, and this made it
do pioneer work on a small scale.
anxious to give personal service to those
or distress, but on the other hand it was
harder to collect money for charitable

no voluntary organisation can be given a free
pend public money, I suggest that it would
rth while widening the range of activities in
intary societies may be subsidised by local

g in conclusion on the future of local govern
tically almost too hot to touch,' he remarked

he point of view of the M.O.H I think the unit of
nment should be the smallest that is capable of
ficient public health services. Too large a unit
nd impersonal; too small a unit cannot afford
ob properly Moreover I feel sure that if the
oung medical graduate is to be attracted to the
h service he must feel that he has a reasonable
btaining ultimately an independent command as
fficer of health The independent commands are
umber at the present time

to holds the presidency in the centenary year
ety Sir John Simon the first president, was
medical officer of health for the City of London

Poliomyelitis

at the annual meeting of the Infantile
Fellowship, held in Edinburgh on Sept. 24,
is Geffen, medical officer of health for
s and Hampstead, remarked that there was
usive evidence that the poliomyelitis virus
ne intestine and was excreted in the fæces,
the spread was alimentary rather than or as
piratory Of prevention Dr Geffen said:

us that a person suffering from the disease should
and that all methods of antisepsis and disinfection
lopted to prevent the spread of the virus. Contacts
isolated and the recommended period is at present
This isolation must apply particularly to persons
sociated with children or who come in contact with
nit this is a counsel of perfection and sometimes
lt to follow in practice On the other hand the
of poliomyelitis in a district should be treated
nfectious, for I believe that by isolation of the
contacts you may prevent the spread of the
pidemic form.

n went on to declare that poliomyelitis was
ase, with the exception of one complication
mplication is the invasion of the nervous system,
ction of nerve-cells and the production of
There seems to be some sort of barrier between
system and the rest of the body which normally
to prevent the passage of the virus of poliomyelitis
ain circumstances this barrier is weakened and
. It may be that local injury over fatigue
njections, and the like may cause this barrier
m locally It is known to us that certain drugs
barrier There is, may I say, at least a hope that
we may find other drugs that strengthen it
e that the barrier is weaker in males than in
s weaker in youth than in old age It is believed
r in pregnancy than at other times and it is
pregnant women are very susceptible to paralytic

viewing experience with the Salk vaccine
said that we needed to be satisfied that this
ve, was safe, and would produce lasting

OTIFICATIONS IN ENGLAND AND WALES

week ended Sept. 17 (37th week) uncorrected
s of poliomyelitis in England and Wales
llows (figures for the previous week in paren
paralytic 193 (206) non paralytic 218 (252)
(458) Regionally notifications in the 37th
pared with those in the 36th week, decreased
ndon and South Eastern region, and in the
tern North Midland and Southern regions.
rises in the Northern, Eastern South Western,
nd regions and in Wales. The excess of non
over paralytic cases in the 37th week was due
notifications from Middlesex, especially
and from Surrey
uncorrected notifications in the 37th week
the years since 1950 (proportion of paralytic
cases in parentheses) were as follows 1950, 479 (60 9%); 1951, ' 00 (46 0%) 1952 184 (62 5%) 1953, 227 (54 2%) 1954, 92 (63 0%) 1955, 411 (24 9%)

Hitherto this year the incidence for England and Wales as a whole has been 8 7 per 100,000

Milk-borne Tuberculosis

Not so long ago tuberculosis of bovine origin was a common disease in this country, but Dr Lethem of the Ministry of Health now feels able to say[1] that it has "followed cholera and plague into the limbo of the past. The results of thirty years preventive work are reflected in the Registrar General s figures for abdominal tuberculosis in 1921 and in 1953 in children under five years of age The most significant change is in London where the deaths per million of children dropped from 136 in 1921 to 4 in 1953 Lethem attributes this great improvement to the fact that nearly all London's milk today is pasteurised or sterilised whereas in 1921 only about half was heat treated The deaths for rural districts also fell considerably from 252 per million of children in 1921 to 12 in 1953 but untreated and untested milk is still being consumed in unknown amounts in country districts In broad terms Lethem can correctly claim that 'the all too common ailment of childhood, 'glands in the neck' once an accepted feature of English life, has disappeared But Dr C D L Lycett s account of tuberculous adenitis in the Marlborough area last year[2] with *at least 15 cases traced to one cow shows what can still* happen

In proclaiming the good news that "the long drawn out battle for safe milk—or at least for tubercle free milk—has been virtually won,' Lethem says that the proportion *of milk produced from attested* (tuberculosis free) herds is now 58% Tuberculosis has lately been cleared from four more areas (one in North West England, one in mid Wales and two in Scotland) which were declared eradication areas by the Departments of Agriculture last March. Since then compulsory tuberculosis testing has been carried out in the 385 herds in these areas not *previously attested reactors have been removed and* slaughtered; and from Oct 1 the four eradication areas have become attested areas. Approximately a fifth of all herds in Great Britain are now in such areas The Ministry of Agriculture says that there were about 5 3 million cattle in attested herds by June this year, compared with 2 25 millions in October, 1950 and adds that at the present rate of progress it is hoped that the country will be free of bovine tuberculosis in about the next ten years."

Medicine and the Law

Capital Punishment in New Zealand

In our leader on the death penalty[3] we included New Zealand among the countries where capital punishment had been abolished between 1870 and 1942 A correspondent has drawn our attention to the fact that the death penalty was reintroduced in New Zealand in 1950, nine years after its abolition in 1941 In view of this change of procedure the numbers of convictions for murder over these years are of interest

For the 9 years before abolition :-10
For the 9 years during abolition : 31
For the 4½ years since reintroduction : 17

These figures offer no clear support for either the abolition or the retention of the death penalty and their significance is further obscured because from 1935 to 1941, though the death penalty was legally still in force in practice all death sentences were commuted to imprisonment for life

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[1] Lethem W A *Mon Bull Minist Hlth Lab Serv* September 1955 p 144
[2] Annual report of the Medical Officer of Health for Wiltshire County Council 1954
[3] *Lancet* July 23 1953 p 181

In England Now

A Running Commentary by Peripatetic Correspondents

ALL this chat that is going on about the identification of human intersexes by skin biopsy and examination of the polymorphs prompts us to publicise the case of our budgerigar Two years ago the thought came to us that the long winter evenings of our declining years might be enlivened if we had a budgerigar to recite to us When we get tired of Pop Goes the Weasel, we thought, we will switch him on to Mary had a Little Lamb, and when the sentiments of Rockabye Baby have begun to cloy we will teach him Pat-a-cake, Pat-a-cake, Baker's Man Right, then, we said, we shall buy a budgerigar

When we brought him home he was surrounded by quantities of budgerigar seed, a supply of golden budgerigar sand, a small sack of budgerigar grit, and a packet of budgerigar cuttlefish bone (packed on the sun-drenched uplands and full of budgerigar vitamins) Also we had a small budgerigar booklet "Male birds," said the budgerigar booklet on p 1, "can be identified by the blue colour of the mask at the base of the beak (see illust, Fig 1)" We looked at Billy (he had been christened in the car) Sure enough his mask was a pale blue and entirely consonant with the appearances as shown in illust, Fig 1 Having satisfied ourselves that the new member of the household was indeed a male, and therefore a born entertainer, we expended some thousands of invaluable man-hours, to say nothing of woman-hours and child-hours, in trying to get his name through our budgerigar's ivory skull "Billy!" we would begin patiently over the breakfast table in a level calm voice designed to inspire confidence "Billy!!" we cried jocularly over lunch "Billy!" we croaked hoarsely at supper "Billy!!!" we roared at bedtime when our control had begun to crack

After six months of nervous and laryngeal exhaustion, during which our budgerigar consumed several pounds of budgerigar seed, a mountain of budgerigar grit, and a small fortune in sun-drenched cuttlefish bones, we observed that his mask was changing colour to a medium brown A horrible suspicion seized us, and we dived at once into our budgerigar booklet Yes, our suspicions were well founded Billy's mask no longer corresponded to illust, Fig 1, but was in all respects identical with illust, Fig 2 The matter was clinched the other day when he won second prize as a female in the Miscellaneous Class of our local R S P C A show (First was a guineapig we know well, from down the road)

Our concept of our budgerigar as an accomplished diseur (or even diseuse) has been abandoned, and we are reconciled to spending our declining years in the company of a series of deafening feminine steam-whistle cheeps But we must confess we find the whole thing rather disturbing We think perhaps it must have been that nasty thermonuclear stuff that did it

* * *

So Smedley's Hydro at Matlock closed last week It seems a pity, after an existence of more than a hundred years, although no-one today would deny that the place has outlived its original purpose

John Smedley, who started it, was certainly a queer card His business was that of a hosiery manufacturer at the village of Lea a mile or two from Matlock, but his hobbies were evangelical preaching and the practice of hydropathy, indeed at his mill he conducted his own brand of religious service, even going to the length of compiling a special prayer-book for the purpose But he concerned himself with the bodies as well as the souls of his workpeople, and quarters were fitted up at the factory where they were obliged to submit themselves to the water cure, which had been made popular in the early years of the 19th century at Gräfenberg, by Vincenz Priessnitz, who, like Smedley, was without medical qualification As with other cults before and since, this unorthodox therapy had a vogue for a time, and treatment was much sought after at Smedley's factory At length a counterpart of the institution at Gräfenberg was built on Matlock Bank for the accommodation of the people who wished to undergo hydropathic treatment, and this was the beginning of the famous hydro—the first of its kind in Britain Extensive additions and alterations took place rapidly, and long be of the century the building was stands today

The arrangements for treatment at the were eventually discontinued, and after a small memorial hospital was opened itself to enable the less well to-do people benefits of the cure That hospital was the Sheffield Regional Hospital Board in no longer used specifically to provide treatment A patient I saw the other day there after a radical cure for hernia referred to it as Smedley's *Hydraulic* transit gloria!

* * *

Nature notes—Our summer migrants again, in their bronzy autumn plumage out and soon reports will be heard from hanger, among them the quaint call note— months—which we can best render as "G bo!" Sleek specimens of *Pract familicus*, often called geepees, may be marked hedgerows to replenish their store of locally as dank worts—'gainst winter snows ditches are still gay with bachelor's buttons of the butterbird from Anatolia heralds and frozen pools In the sky, mackods depart

Garden reminders—Collect leaves in File cuttings

* * *

Merlin's Corner

The pendant chain works like a charm tried it my youngest son felt perfectly well or two A friend's Welsh sheepdog begins to eventually vomits if the chain is not down. chain is down the dog neither salivates nor the chain works like a charm, I am satisfied charm. But can anyone say exactly how it

The dangling chain is pure magic. The count who have tried it is one for and five against. of course, it is all nonsense because modern small leak of static electricity to the ground But "fast" touring in a veteran car on a dry some interesting phenomena as a passenger ground—particularly if he has a handlebar mo

I can confirm that a chain suspended from prevents car sickness It is, in my experience, effective with dogs Since we adopted this ago our dog has been sick in the car only once showed that the chain had become tangled up parts of the chassis, after it had been released recurrence The technique has one undesirable Well meaning fellow motorists will wave you to point out that a component has become

Of course the pendant chain works, and about it Last year someone told me that car be prevented in this way, but I forgot about set out from London for the North of Scotland My 14 year old daughter, car sick as ever journey Coming south again, she hung her window like a keen spaniel sniffing the air During one of our repeated stops I remembered chain. On an old wall I found a broken strand I fixed to the rear bumper so that it trailed I told no one of this The next two hours accomplished in unaccustomed tranquillity, and who had been unable to face lunch, ate a good I detached the wire, and the girl, pale She had touched no further food that day her afternoon's freedom from misery, and gratified at having been the subject of a How does it work? Surely it is by earthing tricity With the chain down I no longer the fingers at the end of a long journey

* * *

From our Advertisement Columns—"B (D model) in good condition £20 or exchange merless shotgun" A return to blunderbuss anæsthesia?

Letters to the Editor

ROFESSIONAL RESPONSIBILITY

Russell Brain in his letter last week writes
r the Minister nor any regional or hospital
as the *moral* right to interfere in the exercise
a professional duty to his patient which is
im to the best of his own judgment—subject
holds a subordinate post to the direction of
onal chief—and to observe the standards of
ethics. We can all agree with this whole
However the plain fact is that these
do most certainly have the *legal* right to do
a result of the various judgments in England
land which, interpreting the situation created
ional Health Service Acts, have established
and servant relationship between hospital
and the doctors on their staffs. The action
spital management committee quoted by
d (Sept 17) is an excellent example of the kind
nal interference and direction which, however
orally to Sir Russell and the rest of us, hos
rities will find it desirable to exercise to
n litigation the public funds with which they
ntrusted

ll, attempting, in my view without much
to draw a distinction between a doctor's
duty to his patient and his obligation to his
hority, writes that ' Even before the Health
introduced a doctor holding an honorary
t surely felt that he was *in the best sense* a
is hospital ' (My italics.) Of course he did But
emotional relationship not a legal one He
himself and his work in such a way as not to
ed to enhance, the reputation of a beloved
f which he was proud and today he is still
these considerations. The reputation of his
wever was and still is essentially the
fessional reputation of himself his colleagues,
lical forbears He was the servant of his
hout being the servant of the management.
lways willingly accepted the directions of
chiefs in regard to our clinical actions at
iate stages of our careers, and we have not
initiative of our juniors by overweening
We ought to object strongly to professional
om the hospital authorities influencing our
linical matters for these directions, based
ust be on caution and the avoidance of
tend to have a stultifying effect upon the
t of medicine

pecially the young men, who feel that the
acceptance of vicarious responsibility means
legal costs and damages should perhaps be
at a litigant's success in an action for pro
gligence depends upon proof of the doctor's
Doctors are no whit less liable to court
and the attacks of counsel when the hospital
a co-defender (*anglice* defendant) than
ued alone

t sentence in Sir Russell's letter means that
Ministers might be persuaded to accept
exercise of his clinical skill and judgment a
ed full and sole legal responsibility I am
him. If he means anything short of this
Furthermore acceptance of this principle
isters would involve legislative action since
s Judges have ruled that under the present
inciple of the vicarious responsibility of the
nd the hospital authorities for the actions
ants, the doctors, shall apply
ings flow from this like the loss of the
ity of reports, the ownership by the Ministers
of hospital case records and the assessment of part time hospital staff under Income tax Schedule F, but the most important is the loss of professional freedom The campaign to restore this freedom which has been begun in Scotland and which has been so notably supported by your leading articles is not designed for any financial benefit to doctors, nor even for reasons of professional pride, but solely for what is believed to be the ultimate good of medicine medical progress, and therefore the public interest.

Edinburgh J G M HAMILTON

THROMBOPHLEBITIS AFTER INFUSIONS

SIR,—We welcome the attention drawn to thrombophlebitis by your leading article of Sept 10 This is a most painful condition, in many instances more distressing to the patient than an operation wound Irritant substances in the rubber tubing are largely responsible, and particularly severe are the irritant effects of rubbers vulcanised with tetramethylthiuramdisulphide which can be readily identified by the fact that they inhibit the growth of bacteria There are two points on which we would like to comment

First, it would be dangerous to assume that plastic tubing could not contain harmful agents. Certain plastics contain plasticisers which are irritant to tissues. The refusal of some manufacturers to disclose all the constituents of which their tubings are compounded is a major difficulty in the selection of suitable tubing We recommend that before any material is used it should be investigated by implanting it subcutaneously and examining the reaction of the surrounding tissues after a suitable interval, and that its effect in contact with tissue-cultures should also be examined[1 2] When a giving set from which irritants cannot be leached out is available it will be possible to investigate the other factors which may contribute towards thrombophlebitis, such as tonicity and pH

Secondly we would like to emphasise that limiting the duration of each infusion to eight hours as laid down in your article is not the ultimate solution to the problem It may be necessary at present but we hope it is a temporary measure to be abandoned as soon as possible To offer it as the final answer is an admission of defeat Many patients need prolonged infusion and with safe equipment and suitably compounded fluids it should be possible to run an infusion as long as necessary without risk Such an infusion given into a large vein with a plastic catheter is much more comfortable to the patient than having a needle stuck into him daily, or eight hourly as you advise. Moreover frequent change of the infusion site, where this is possible, involves a great deal of work for the resident and nursing staff

Haddenham Bucks R P C HANDFIELD JONES
Birmingham. H B M LEWIS

NUMBERING OF FINGERS

SIR,—The council of the Medical Defence Union has considered a problem that arises from time to time in threatened or actual medical litigation This problem has been created by the current nomenclature employed by anatomists and surgeons for the designation of the fingers To do as many do—namely to number the fingers 1 2 3, &c —and to record in the clinical notes e g that finger number 3 requires amputation is to set the stage for a serious surgical mishap Now and again the surgeon reading the notes of the case at a later date before proceeding to operate has counted wrongly by choosing to regard the thumb as no 1 instead of the index finger In this way the wrong finger has been amputated or chosen for some other operation

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[1] Parker R. C. Morgan J F Morton H J *Proc Soc exp Biol.* N Y 1951 76, 444

[2] MacDougall J D B *Nature Lond* 1953 172 124

It seems to the council of the Union that this serious mishap would be obviated if hospital medical officers when writing up clinical notes described the actual finger affected by adopting the designations "thumb," "index finger," "middle finger," "ring finger," and "little finger"

Medical Defence Union,
Tavistock House South,
Tavistock Square, London, W C 1

ROBERT FORBES
Secretary

GLUTAMIC ACID IN HEPATIC COMA

SIR,—We agree completely with Dr Walshe [1] when he says that hepatic coma may arise from different causes We treated ten comatose patients with 23 g glutamic acid a day, together with the basic therapy of hepatic failure Three patients have already survived for two years, two were cases of acute yellow atrophy The third died of hæmorrhage due to œsophageal varices six months after the coma [2,3]

There is certainly a disturbance of sulphur metabolism Personal experiments on hepatic necrosis showed that the glutathione content of the liver and different organs is very low The administration of glutamic acid prevents this decrease and seems to stimulate the synthesis of this tripeptide The decrease in the blood is not as great as in the organs Nevertheless in some cases of hepatic coma there was a decrease even of the blood-glutathione, which was temporarily corrected by administration of glutamic acid [3]

But we would object to the method of determining pyruvic acid, α ketoglutaric acid, and aceto acetic acid Instead of paper strips we employed a triangular paper dipped in buffer ('Veronal' 0 1 *M*, pH 9) and dried before use This permitted a far better separation of the 2 4-dinitrophenylhydrazines So we have demonstrated a derivative of the phenylhydrazine just above the low spot of pyruvic acid This spot is relatively water-soluble When trying to remove the last trace of it we always lost some keto-acid As Markees and Isherwood [4–6] pointed out, pyruvic acid gives two spot separated the two superior spots, whi phenylpyruvic acid After ether extrac they appeared on all the chromatogram I extraction resulted in only a faint spot o gram These findings have an important quantitative assay of the different keto-aci

J DE GR
P DESC
J VAN

Laboratory of Physiopathology,
University of Louvain, Belgium.

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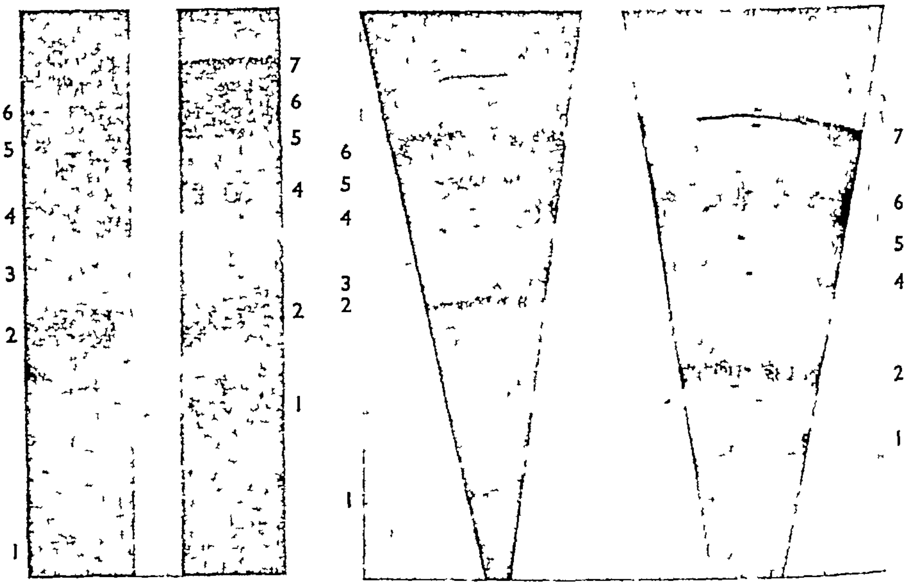
1 Walshe, J M. *Lancet* 1955, i 1235
2 De Groote J *Belg Tijdschr Geneesk* 1954 10, 230
3 De Groote, J, Vandenbroucke, J *Acta Gastro ent belg* 1955, 18 209
4 Markees, S *Biochem J* 1954 56, 703
5 Markees, S *Experientia*, 1955, 11, 206
6 Isherwood, F A, Cruickshank, D A *Nature, Lond* 1951, 173, 121



(a) (b)
Paper-strip

(a) (b)
Triangular paper

Results of paper electrophoresis: (a) dipped and dried before use in veronal buffer (0 1 *M*, pH 9); (b) without buffer Solvent: butonal/water/ethanol (5/4/1) Spots: 1, α ketoglutaric acid; 2 and 4, pyruvic acid; 5 and 6, phenyl pyruvic acid 3 and 7, 2-4-dinitrophenylhydrazine derivatives.

RESERPINE THERAPY

SIR,—Ever since reserpine and similar rauwolfia have been used on a very large treatment of hypertension and neurot small doses, and in that of psychotic di doses, the effects of the drug have been sively Experimental work and clinical strated the physiological and psychological place during administration of the drug treated with small doses for hypertension disorders reported their feelings to the physicians However, so far as I know, t literature on reserpine contains no repor patients recovered from a psychosis paratively large doses There is a characte ancy between the somatic and psycholo experienced by the patient The followin given spontaneously by a 40 year-old treated with parenterally administered d 5 to 15 mg reserpine daily for manic exc strong paranoid and aggressive features poor childhood, but had not had psychotic after a head injury (fracture of left occipital Since then he had had three major psych described as manic excitements by mental he was treated in Canada, France, and is his report

"*The Effects of Reserpine (On Me)* This predominant physical reaction It might be as causing tremendous physical exhaustion wi any mental weariness to go with it Thus, after its administration I felt an almost overp to lie down, and once lying down, was unable t bed but after a co although still feeli rest, had an equ lable urge to get u around. I remem working in the morning I was p I kept getting tired and my ha and more slowl remember ever be When the po I sat down but ately felt so restl to get up and While taking would be periods burning sensatio I would see lights closed, there wo bing sensation in head and I wo stagger with di was always a feel being upon my h sensation of inside the head recollection wh period of what so when I was drug Very ofte extreme difficulty breath when I wa lying down or

t in the admission ward I was living in a state
with *occasional lucid intervals*. I *imagined* the
I and the attendants demons, some better than
noods would change very rapidly One moment
xtremely enraged at everyone and the next in
state of elation. I do not ever remember any
ression It took a long time for these fits of
reality to wear off For some reason which I
explain, I did not emerge into a full realisation
after the *air encephalography* test. After that
of pressure in my head left me and I could see
ople for what they are

Mental Diseases
nitoba Canada.

MILO TYNDEL.

AINING THE DISTRICT NURSE

views expressed in your leading article
eserve the wholehearted support of every
itioner
ing Party majority seem to think that local
ave been asked to take over the nursing
imply to provide one for the general practi
Also there does not seem to be any good
training to be done by local authorities any
the case of the midwife or health visitor
hemselves strongly object to any reduction
of their training as they fully realise that it
oretical knowledge but practical experience
ed.
e weight should be given to the opinions of
have provided and used the service

O LL. LANDER.

AMIDINE FOR TIC DOULOUREUX

administration of stilbamidine intravenously
an effective, safe and inexpensive method
ent of tic douloureux,[1,2] a condition for which
been diversified and largely unsuccessful
ly prepared and administered stilbamidine
xcept for a late chronic neuropathy The
nsory changes of paraesthesia and hypalgesia
ned to the face appear about two to five
the administration of the drug The
the neuropathy is not known
e 0 15 g is dissolved in 200 ml of a 5%
ucose *in distilled water* Since the drug in
rkedly affected by even short exposure to
ation must be prepared immediately prior
tration. The solution is given intravenously
given slowly to avoid a transient shock like
ciated with rapid administration of the
ourse of treatment consisted of the injection
f stilbamidine once daily for fourteen

was given to 14 outpatients, who were
to expose themselves unduly to sunlight
on their *normal occupations.*
f clinical events after the start of treatment
dine is characteristic The patients noted
ks of pain were less severe and less frequent
th to the eighth day Exacerbation of the
was usually noted during the first one to
after the start of treatment. A gradual
e severity and number of attacks followed.
dom from pain occurred from two to four
the inception of treatment Mild paraes
ting usually in pruritus and formication
sides of the face appeared most often in
rd or fourth month They appeared first
e severe in intensity on the side of the face
he tic douloureux The pruritus lasted for
l a half months The *mild paraesthesia* did
ence the patients. The recognition of this clinical cycle is important for otherwise discouragement may be felt during the first or second month particularly after a good initial response The delay in permanent improvement requires considerable patience on the part of both patient and doctor

Of 16 patients with tic douloureux who were treated with stilbamidine, 14 had had previous treatment of some type Excellent results were obtained in 15 patients and a good result in 1 with periods of freedom from pain ranging from four months to twenty five months. The patients who obtained the lesser amounts of relief were treated only a short time ago 15 patients were given one course of treatment and only 1 required a second before a decrease in symptoms occurred The corneal reflexes remained in all 16 patients, being brisk in 14, possibly blunted in 1 *and slightly decreased in 1*, the degree of impairment was not significant In 1 patient the blunting of the corneal reflexes was due to a combination of a previous operation on the same side and the effect of the stilbamidine

The Johns Hopkins Hospital,
Baltimore Maryland

GEORGE W SMITH

Veterans Administration Hospital
Fort Howard Maryland.

JOSEPH M MILLER

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[1] Miller J M. *Ann Intern Med* 1953 38 335
[2] Miller J M. *Bull. Johns Hopk Hosp* 1955 56 146

ELECTROPHORESIS OF PLASMA PROTEINS

SIR,—I would like to add *some remarks* to Dr Miltényi s letter of June 4 and to that of Dr Christiansen (June 11)

In the serum of normal people the β_2 globulins isolated by paper electrophoresis form a substantially smaller part than the slightly faster moving β_1 globulins A clear demonstration of β_2 globulins by this method is a relatively difficult procedure but it is always *possible* It is incorrect to assume, therefore that the normal β globulins usually travel as a single band and that it is only with abnormal sera that the splitting into two *fractions is observed*

We noted also that the increase of β_2 globulins was accompanied by a decrease in β_1 globulins. With the return of blood colloids to normal levels the ratio β_1/β_2 increases[1] At present we are unable to explain the cause of this antagonistic behaviour of the β subfractions These findings were confirmed experimentally

Experimental dysproteinaemia was produced by means of a turpentine abscess in a rabbit. The serum proteins were examined electrophoretically in the usual way several times during the activity and healing of the abscess In contrast to human serum, *the α globulins* did not split under these experimental conditions The β_2 globulin fraction increased in the

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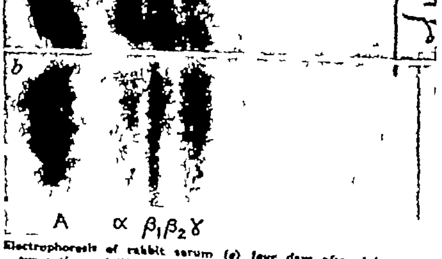
[1] Wiedermann D *Schweiz med Wschr* 1954 84 1367



Electrophoresis of rabbit serum (*a*) four days after injection of turpentine and (*b*) twenty-two days after injection of turpentine.

acute phase, while with α globulins it decreased considerably β_1 globulins, on the other hand, increased notably during healing (see accompanying figure)

It was interesting to compare these results with those of the flocculation methods, modified in our department for investigation of the serum proteins of rabbits The increase in the α globulin and β_2-globulin fractions manifested itself by an increase in the acid-precipitable globulin (A P G) test (modified after Greenspan) The decrease of γ globulin in the acute phase was evident not only on electrophoresis, but even in our modification of the cadmium sulphate test (Pospísil, personal communication) On the other hand, flocculation of total lipoids in the original modification of the thymol test, carried out in pH 4 2,[2] showed lowered values when α globulin and β_2 globulin increased, thus raising the question of the importance of lipoids for the changes in these fractions in rabbits

Department of Experimental Pathology,
Masaryk University Brno,
Czechoslovakia
D Wiedermann

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[2] Pospísil M *Vnitrni lékarstvi* 1955 1, 30

THE "L E -CELL" PHENOMENON IN ACTIVE CHRONIC VIRAL HEPATITIS

Sir,—The report by Dr Joske and Dr King (Sept 3) prompts me to mention a similar case in which L.E cells were found in association with liver disease and in the absence of lupus erythematosus

A man aged 50, was first seen in July, 1953, with a purpuric eruption on the legs There were also transient tender nodules on the legs which may have been due to an existing foot ringworm He had a recent history of loss of appetite, dislike of fatty foods, and pale stools He had never been jaundiced, had never received a blood transfusion, and had never been exposed to occupational poisons

On admission to hospital the relevant abnormalities were facial telangiectases, liver enlargement (4 finger breadths), spleen just palpable, no jaundice

Plasma albumin was 3 3 g per 100 ml , plasma globulin 5 0 g per 100 ml , serum bilirubin 0 8 mg per 100 ml , alkaline phosphatase 18 units, thymol turbidity 16 units, colloidal gold 5 units, cephalin cholesterol 4 units

L.E cells were found in large numbers in the blood In view of this, particular care was taken to search for clinical signs of lupus erythematosus, but there were none , the white blood cell count ranged from 14,700 to 4500 per c mm , the erythrocyte sedimentation rate was normal , the blood Wassermann reaction was negative

The patient was discharged from hospital and readmitted a month later under the care of Prof Alan Kekwick with increasing jaundice and intermittent abdominal pain and vomiting of a week's duration At this time there was also considerable ascites The white blood cell count was 15,000 per c.mm and again L.E cells were found in the blood His condition rapidly deteriorated and he died within two days of admission

Post-mortem examination confirmed the diagnosis of multilobular cirrhosis with terminal acute necrosis of the liver Particular attention was directed to the possibility of systemic lupus erythematosus, but no evidence of this was found The bone-marrow contained a diffuse infiltration with plasma cells compatible with a diffuse type of myelomatosis

We concluded from this case that, although the finding of L.E cells in the blood usually indicates disseminated lupus erythematosus, a positive finding is not pathognomonic Since it is known that the serum L E factor is linked with γ globulin, it seems possible that, as Joske and King suggest, in our patient the reaction was related to the high globulin levels The unexpected post mortem finding of myelomatosis in our case may also have been partly responsible for the production of the L.E phenomenon

It is important that the finding of L E cells in a particular case should not be taken to indicate that the diagnostic problem is completely solved

Middlesex Hospital
London W 1
F Ray Bettley

REGISTRARS

Sir,—Last week's letters on the
to overlook an important factor con
into general practice This factor is
present many N H S practices which
partners of 70 plus, and in some cases 80
be reasonable for the Ministry to set a
There would then be many more vaca
practice

Ex-Registrar General Pr

CHLORPROMAZINE A SERO ANTAGONIST ?

Sir,—Some years ago I pointed out
anti-histamines inhibited the amines tr
mine, and phenylethylamine[1] On the
findings I suggested that more potent
tryptamine (serotonin) antagonists could be
diamines of R_2 N $(CH_2)_3$ N R_2 structure
promazine became available therefore we
anti-serotonin action

A new interest was added to the
Gaddum[2] discovered that lysergic acid
was the most active anti serotonin agent'
The possible rôle of serotonin and its
mental disturbances have also been d
seemed *rational to investigate* the anti-
of chlorpromazine, although its effect in p
is not the same as that of L.S D

In spinal cats we found that the vas
20–40 µg per kg serotonin (expressed
nine sulphate) was nearly completely
per kg chlorpromazine On isolated rat
of serotonin (0 05–1 0 µg per ml of bath)
inhibited by the same concentration of ch

These preliminary results suggest that c
is one of the most potent anti serotonin
in both experiments was long lasting

Further investigations will be
hypothesis that the mental effects of
related to their anti serotonin effect. The
serotonin effect of chlorpromazine, on the
may explain why this drug so effective
various shock symptoms in which
involved[5]

Department of Pharmacology,
Research Institute of the
Pharmaceutical Industry,
Budapest, Hungary

GASTRIC SECRETION IN SIMMO

Sir,—In a review of 595 cases of
Escamilla and Lisser[6] found that ga
low or absent in 85% of those patie
diagnosis had been confirmed by path
tion More than half of these pati
intestinal symptoms The following c
because the secretion of acid and th
appear to have been restored to normal
treatment for hypopituitarism

A housewife, aged 51, was admitted
investigation following attacks of vomit
of four months She had had a severe p
rhage 22 years previously, which was fol
rhœa and loss of pubic and axillary hair
appeared disinterested in her condition
was 120/55 mm. Hg, pulse 100 per min., Hb
and 17 ketosteroid excretion nil Gr
(0 5 mg) test-meals showed absence of

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1 Gyermek L *Acta physiol Acad Sci Hun*
2 Gaddum, J H *J Physiol* 1953, 121, 15
3 Gaddum J H Ciba Foundation Sympo
London, 1954
4 Page I H *Physiol Rev* 1954 34 563.
5 Page, I H *Amer Heart J* 1948, 38 1
6 Escamilla, R F , Lisser, H *J clin Endocr*

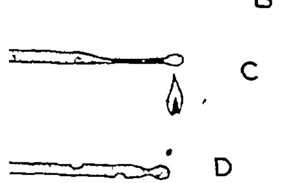
(Prof H. W Rodgers) showed a gross, diffuse
hy of the gastric mucosa
was then started with deoxycortone acetate
lant) and thyroid extract (gr 1) (65 mg) daily
me improvement in the patient's general condi
rovement was much more rapid when cortisone
y) was given and deoxycortone was discontinued
ths after commencing cortisone histamine and
als showed that free gastric acid had returned
test meal the free-acid curve rose normally to
lts Gastroscopy on this occasion showed a
rmal thickness and colour but with only very
he Hb level was 13 5 g per 100 ml

probable that the restoration of gastric
his patient was due to the action of cortisone
o the action of thyroid-extract Sandweiss,[7]
ace available did not believe that there was
lationship between the thyroid gland and
tion and Hardt[8] found a decrease in postcibal
tion in the dog after giving desiccated
the other hand it is known that cortisone
restore the gastric secretion in the hypo
d rat[9] and Stempien and Dagradi[10]
d the restoration of gastric secretion follow
therapy in a patient with Addison s disease

t of Surgery
ersity of Belfast. **JAMES KYLE**

PPED POLYTHENE URETERIC AND VENOUS CATHETERS

irritant Polythene ester is a good material
nd venous catheters that must remain for
the body
tube size 3 with an internal diameter of
ood for these purposes but the advancing
tube, even when rounded or bevelled may
Alternatively in passing it may damage or
the wall.[11] The following method of giving
to the tube may help those who have
ese difficulties



arefully heated over a small flame until a short
is pearly texture and becomes transparent (A)
en removed from the flame and drawn into a
like a Pasteur pipette (B) This capillary
ered in the middle and its cut end is again
e flame A molten globule of polythene *forms*
d retracting towards the taper increases in
ling with the fingers while the tip is still warm
gant olive shape

Side holes are cut with pointed scissors (D) and lengths along the tube are marked as required. After chemical sterilisation the catheter is ready for use

Thus modified the catheters are easy to pass up ureters obstructed by growth, and they slide smoothly up peripheral veins into the great veins without damaging their walls

Radcliffe Infirmary
Oxford **A M N GARDNER**

J Peptic Ulcer Philadelphia and London, 1951
J Amer J Physiol 1916 40 314
servations to be published
J Dagradi A *Gastroenterology* 1951 27 338
Paul, A J Bohn, W J J Amer med Ass
31

ANTIBIOTIC RESISTANT STAPHYLOCOCCAL INFECTIONS

SIR —The time and effort Dr Barber and Dr Burston have spent on their inquiry described in your issue of Sept 17 were well worth while Their findings of numerous staphylococcal strains resistant to penicillin, streptomycin oxytetracycline, or chloramphenicol and, more important still, of almost 25% of all strains resistant simultaneously to penicillin, streptomycin and the tetra cyclines, are a timely reminder to clinicians to use all antibiotics with the greatest care and regard to the long term usefulness of these drugs It might not be a bad plan if clinical bacteriologists were consulted person ally, and brought to the bedside in every case where a patient is about to receive antibiotic treatment

In one respect, however the article by Dr Barber and Dr Burston is open to question They do not seem to consider reducing the incidence of resistant strains by rational combination of antibacterial drugs Yet it has been generally accepted, in the treatment of pulmonary tuberculosis, that combination of streptomycin with p aminosalicylic acid and/or isoniazid will avert or at least postpone, the emergence of resistant strains. The genetic principle involved was formulated by Demerec[1] in 1948 as follows

> ' Theoretically the most effective way of preventing the origin of resistant strains of bacteria is the use in clinical treatment of a mixture of two antibiotics when such are available that effect the same pathogen but are independent in their actions. If such a mixture of two antibiotics is used then only bacteria that are resistant to both can survive the treatment and form resistant strains. Such bacteria would be exceedingly rare

Attention was drawn in this country to Demerec's principle by Zinnemann[2] who advocated the combined use of penicillin streptomycin, and one of the sulphon amides in meningitis due to *Hæmophilus influenzæ* Apart from avoiding resistance, combination of antibacterial drugs is likely to result in synergic action on the infecting micro organisms[3–5]

Although the mode of action of most antibiotic drugs is as yet unknown it has been found that streptomycin on the one hand[6] and the sulphonamides on the other[7] exert their action on bacteria in ways completely different from that of all other antibiotics. On first principles, therefore, streptomycin and/or the sulphonamides should be combined with any one of the other antibiotics.

These considerations have been given in some detail for I do not entirely agree with the suggestion by Barber and Burston that the use of erythromycin should be *rigidly* curtailed and that this drug should be used only for infections resistant to all other *antibiotics* Next to chloramphenicol,[8] which can no longer be administered for long periods, erythromycin is one of the most effective antibiotics in the long term treatment of chronic pul monary infections due to *H influenzæ* We have used erythromycin along with the tetracyclines, in combination with a sulphonamide for quite some time now Accord

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1 Demerec M *J Bact* 1948 56, 63
2 Zinnemann K *Brit med J* 1950 ii 705
3 Ungar J *Nature Lond* 1943 152 245
4 Chain, E, Duthie E S *Lancet* 1945, i 652
5 Thomas J C, Hayes W *J Hyg, Camb* 1947 45 313
6 Garrod L P *Brit med J* 1945 i 107
7 Woods, D D *Brit J exp Path.* 1940 21, 74
8 Zinnemann K *Brit med J* 1953 ii 1060

ing to the authors' recommendations, if I understand them correctly, we have done the wrong thing, for we might have produced erythromycin-resistant staphylococci while treating *H influenzæ* infections. Yet, we have reason to believe that by combining erythromycin with an effective sulphonamide in intermittent treatment we have minimised this danger over long periods.

The combined use of antibacterial drugs, far from being blunderbuss therapy, will in the long run be our only hope of winning the "neck and neck race" with the adaptability of bacteria.

Department of Medicine,
University of Leeds
K ZINNEMANN

NURSING BY THE MOTHER

SIR,—Last year in a paper on Elimination of Hospital Cross-infection Nursing by the Mother[1] and in subsequent correspondence it was claimed that this system of nursing, by abolishing the pool of infection in a common ward, and by preventing transference from patient to nurse to patient, not only gave more certain results but eliminated the effects of even slight infection from the operation wound and that this could be judged best by the absence of even slight scar tissue or suture marks especially in delicate infant tissues.

A very good test subject is a bad hare lip case, because the functional and cosmetic results are so obvious and "marks" from infection are so readily seen in good clinical photographs. Other advantages claimed were that by mother-nursing (in a single room) both the operative and nursing procedures could be very much simplified with advantage and the time spent in hospital reduced. The accompanying figure shows a baby girl who was admitted (with her mother) because of a bilateral harelip at 14 weeks of age. The operative and nursing procedures, in brief, were as follows.

Full feed 5 hours prior to operation, glucose saline rectal drip established before start of operation, 5 oz given and all absorbed, no gloves worn at operation by surgeon or sister, no intratracheal anæsthesia (which too often causes postoperative troubles). At the conclusion of the operation a thin film of penicillin ointment was smeared over the lip with my bare finger, otherwise no dressing at all was applied (all sutures visible), no strapping, no Logan's bow, no restraints used except flannel bands, $1^1/_2 \times 8$ in, pinned round each wrist and to the napkin (thus the baby could play with her fingers but not put them in her mouth). Duration of operation 1 hr 15 min. An hour later the patient was returned to the mother, who then took full charge. Sips of glucose and milk in graduated strengths and amounts were given by spoon hourly, starting 2 hr after operation and continuing through the night as often as the baby woke until next morning she was taking 6 oz of her normal milk formula by spoon feeding. There was no postoperative reaction and no postoperative sedation was necessary. As can be
operative photograph, there is no evidence of
infection, and function is very good.
used parenterally at any time. The
for the patient except removal of the sutures
in the theatre under anæsthesia. The
on the 8th day after operation.

This supports Murray and Calman's[2]
infant carries immunity to its mother
the mother wore neither mask, gown,
would seem that there may have been
regard surgical ritual as inviolate and
on it too much, not always to the
patient. It is surely more logical to
of infection than to ignore it and then
precautions to prevent its effects, and not
fully but with certain loss of nimbleness
There are three other common effects of
the pool of organisms in an open ward,
and recorded—namely, acquired
tion, gastro enteritis, and sore or
Since the paper referred to above was
ago, no case of any of these infections

Bassam Hospital,
near Wellington, New Zealand
CECIL

EARLY AMBULATION

SIR,—In the year 1944–45, as re
in a 100 bed non teaching voluntary
shire, I was confronted with a waiting
Of these, 300 were general surgical cases.
than two thirds of the beds were in use,
of these were surgical beds.

Having received the consent of the
and administrative staff, and the promised
general practitioners, the waiting list was
200 within six months, no general surgical
only tonsils, procidentia of the uterus, and
cases.

After operations for appendicitis, hernia,
varicose veins, the patient was sent home
so each bed was occupied by 52 patients
patients were sent home by ambulance and
removed either by the private doctor or by
The patients were seen at the hospital
operation. In the event of pyrexia or the
healthy, the patients remained in hospital.
taking to the general practitioners to
back into the hospital should that be
handful of patients were returned.

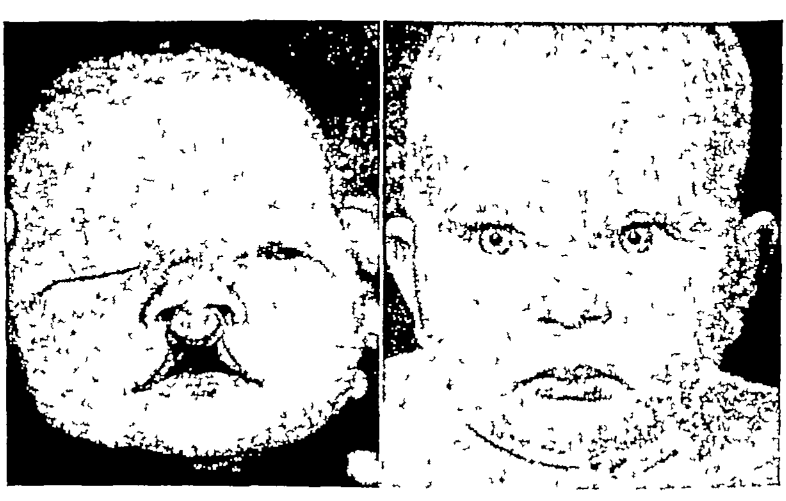
Operations for hallux valgus, hammer toe
were done under local anæsthesia, and
sent home immediately by ambulance.
preparations were done in the outpatient

The total number of operations in the
these I did over 1000, including 200 for

During the last three
worked as locum surgical
less than eighteen
which are in the London

In only one of these
in Hampshire) was there
list of over 1000 general
reason for the large waiting
to that named by Mr
—that operations were
on patients with carcinoma
the operation amounted to
The town being popular
incidence of cancer was
In another hospital
there was a waiting list of
cases.

In all the other
practically no waiting lists.
The operating sessions



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[1] Pickerill C M, Pickerill, H P *Lancet*, 1954, i, 425

[2] Murray, J, Calman, R M
i, 13

minor operations such as circumcisions, cysto sigmoidoscopies. There were times when no re done at all

impression that though local anæsthesia is England as a routine in old people with hernia and in suprapubic cystotomies, ients would not take to it as well as the across the Border

one benefit from not keeping the patient in r operation. It might reduce the number of to barbiturates and other hypnotic addicts. uses hospitals are responsible for initiating ion.

11 I Gottlieb

LING TAPEWORMS WITH MEPACRINE

as interested to read Dr Seaton's article last onally, I have never failed to remove tape plete with scolex using filix mas, provided f sodium bicarbonate, dissolved in a minimum water is first given on an empty stomach

us who have seen tapeworms in situ in the ls know how the scolex is always surrounded yer of mucus. The administration of sodium presumably dissolves the mucus and allows to act directly on it On one occasion three complete with scolices, were removed from at the same time

1 Idris Jones

Seaton's article interests me I have not f tapeworm to treat for some years, but with had no disappointments—and no vomiting plication—and I evicted my own unwelcome at stopping work except for one Sunday

d was to take no solid food on Thursday Friday, I drank fluid magnesia thrice daily and went ng home on Saturday evening with a dose of advised many years ago by the late Dr Burney inciple is to eliminate mucus starve the worm, have a knockout when his resistance is low and ger a layer of mucus protecting the all important erient was needed, and nine yards of worm came e head

ille R P Beatty

INGUINAL BLOCK DISSECTION

must apologise for perturbing Dr Rivlin but I think he draws too close a parallel operation for varicose veins and that for the groin.

true that an incision for Trendelenburg's opera l by first intention even if the superficial l superficial external pudendal arteries are divided ns. Why shouldn't it? The undisturbed tissues of the wound are adequately nourished by the ulation via the branches of the divided arteries hird spoke of my stupid little wheel—the super flex iliac artery In radical dissection of the er *all three* vessels are divided both near their t the periphery divided as it were at the hub rim All intermediate branches are similarly ther the flaps are thick or thin and there can t that the blood-supply to the skin at the centre ive field is a trifle precarious

no doubt bases his comments on a careful many of these wounds, and he may agree that dard near vertical incision is made an area of e in extent but never very large and always an the total area over which the flaps have been l) passes through all the stages of ischæmic ing finally delineated by a well marked line of This happens whether a layer of subcutaneous d in the flap or not It is the separation of this e resultant granulation which delays healing

lling Mr Stanley Lee's excellent article (Sept dissected the groin in another female patient For reasons which are not germane to the present argument I did not wish to remove the iliac nodes and was therefore reluctant to use Mr Lee's extended incision I did however adopt one of his principles and started the operation by outlining an ellipse of skin roughly equal in size and position to the area which usually becomes gangrenous This ellipse was included in the tissue removed after the manner of a mastectomy and it was gratifying to find at the end of the operation that the skin edges came together without tension—no doubt because of the large mass of tissue removed Any 'dead space,' another mythical bugbear of this operation was obliterated by the ingenious if rather old fashioned manœuvre of applying a pad and bandage The flaps were very thin but the wound is healing by first intention

It seems that a thin flap of skin will survive if its blood-supply is adequate, whereas the fattest leg will mortify if the life-giving fluid is cut off I hope Dr Rivlin will not be blinded by this dazzling glimpse of the obvious.

South Mimms, Herts V J Downie

SILICONE RUBBER IN SURGERY

Sir —The use of silicone rubber tubing in neurosurgical procedures was discussed in a preliminary communication which you published for me last year[1] Its physical properties were considered excellent, especially that of heat resistance, which facilitates repeated sterilisations Unfortunately however, our further experiences suggest that it can give rise to a particular toxic reaction

In the past 15 months twelve patients have been under observation in whom altogether eighteen silicone rubber tubes have been introduced With one exception these have been cases of obstructive hydrocephalus, where various operations have short-circuited the obstruction by passing a tube from the ventricles to the subarachnoid space. Our first patient died suddenly elsewhere, a month after operation The remainder have made satisfactory recoveries and all tubes remain patent in the sense that no relapses due to disturbances of intracranial pressure have occurred

It is to the postoperative period that attention must be drawn for, although convalescence was uneventful in half of our patients, there was a delayed meningitic reaction in the other half

The most striking feature of these reactions was their initial appearance in all six cases on either the 16th or 17th day after operation In one patient serial lumbar punctures showed a maximum pleocytosis (144 cells per c.mm. mostly lymphocytes) and protein increase (150 mg per 100 ml) at the 16th day without a clinical disturbance In the remaining five a rise in temperature and meningismus for 1–2 weeks accompanied the cerebrospinal fluid changes—which ranged from 75 to 2000 cells per c.mm. (mostly polymorphs) and from 80 to 300 mg of protein per 100 ml. From the C.S.F. of each of the two most ill patients a *Staphylococcus albus* was grown. In one of these cases its repeated recovery from the C.S.F. indicated that the organism was at least partly responsible for the meningitis. In the other we regarded *it* as a contaminant.

Two patients had recurrent mild attacks of meningeal irritation before discharge from hospital The time between operation and returning home averaged 1 month in those six who did not develop signs of meningeal reaction in the immediate postoperative period; it averaged 2 months in those who did.

Though silicone rubber retains its surface effect of water repellency, it does in fact absorb water owing to the mineral filler used in its manufacture The degree of absorption depends on the filler It is known that certain types are responsible for an increase in weight of as much as 50% when the rubber is immersed in water for 7–8 months. May the delayed reactions we have observed be related to this absorption of water? It is certainly possible that a slow diffusion from this material of a toxic substance—perhaps benzoic acid derived from the vulcanising agent—could provoke a meningeal reaction when it has reached a toxic concentration in the C S F It should also be pointed out that examination of the tubes recovered from the one fatality in this series revealed fine cracks in the outer surface This followed a period of a month in vivo In vitro no such alteration has been reproduced, so this effect is probably due to tissue reaction

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[1] Dimant, S *Lancet* 1951 ii 533

These results indicate that a delayed reaction may be caused by silicone rubber tubes within the central nervous system They suggest too that tissue reaction may in turn affect their durability The neurosurgical use of the original silicone tubes has consequently been suspended in this department while laboratory experiments are proceeding with silicone rubber of altered composition

Department of Neurosurgery
Royal Infirmary,
Manchester 13

STEVENS DIMANT

CALCIFICATION WITHIN THE LIVER

SIR,—I was interested in the article on this subject by Dr Smallwood and his colleagues (Aug 20) Calcification of liver is uncommon, and hydatid disease is the commonest cause I should like to report the following case

An old man of 70 was admitted to a surgical ward with abdominal pain due to a femoral hernia For the past four years he had had pain in the epigastrium after food, which was relieved by alkalis Recently he had lost some weight He had had a "bad chest" for many years, and increasing dyspnœa had gradually developed For most of his life he had worked in factories In the 1914–18 war he had been at the Dardanelles, where he had no illness He had no pets.

On examination he was thin and dyspnœic, with tenderness all over the abdomen and large visible veins on the abdominal wall The liver was grossly enlarged, hard but not tender The spleen was moderately enlarged.

Investigations—Straight radiography of the abdomen showed a calcified ring shadow in the gall bladder region (fig 1) Barium meal revealed a shallow gastric ulcer in the upper part of the lesser curve Barium swallow no œsophageal varices Radiographic examination of the chest showed an opacity in the upper mediastinum Alkaline phosphatase 18 units, thymol turbidity 2 5 units Total plasma proteins 7 5 g (albumin 3 5 g, globulin 4 0 g) per 100 ml

Operation—The hernia was reduced, but no other treatment was advised

Readmission—A week after discharge the patient was readmitted to a medical ward with profuse hæmatemesis, and he died in coma a few days later

Necropsy showed a large carcinoma related to the right bronchus The stomach contained a large ulcer, about 5 cm

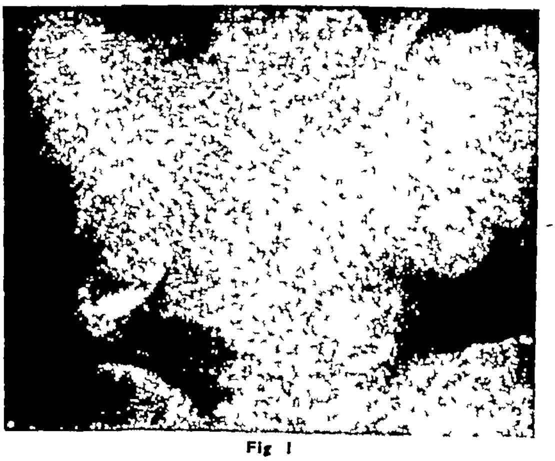

Fig I

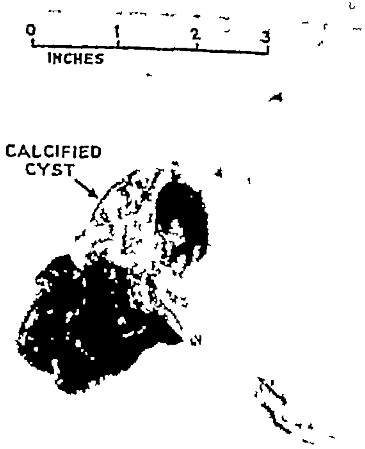

Fig 2.

in diameter, penetrating the stomach wall a
the tail of the pancreas, and there was an
beside this Numerous adhesions were pres
of intestine, and there was an abscess under the
The liver was enlarged and its capsule was
liver contained a cyst, 5 × 2½ cm., to the
gall bladder (fig 2) The wall of this cyst
contents which were yellow, were found
include *Cysticercus echinococcus*

I am grateful to Dr J L. Taylor for perm
this case

Birch Hill Hospital
Rochdale

P S

STAFFING THE TRANSFUSIO

SIR,—Having been abroad for some littl
till now missed the sounds of battle. Yes
to considerable inconvenience with your is
which I had to hide securely from the
staff I wanted to prevent them from
following the suggestion which Dr Dis
any intelligent person "who by a mischan
that field" Conceding, however, for a
Dr Discombe is right and that no intell
stay in the service (I take it he includes
scientific staff) I feel that the Transfusion
country would not seem to be doing too
of the half-wits running it The fact that
have built up a service on the pattern of the
is a compliment which possibly balances
criticism of the service by Dr Discombe
is obviously dissatisfied with the way the
service are conducted, but I fail to see wha
to do Nobody would dispute his contention
primary duty of the Transfusion Service to
and if he cares to look at the statistics, as Dr
already suggested (Aug 6), he will see tha
an amount of blood forthcoming In all
correct to say that during the existence of
service, no one in this country has died be
could be found for him or her It would, how
to me that Dr Discombe, never having been
transfusion centre or having been respo
production of large numbers of bottles of
see the problems in the right perspective
Dr Discombe would prefer a transfusion
something like a dairy with a weekly blood
I am sure that he realises that not even
provide a safe product without an ancillary
and the higher the standard of the labor
broadly speaking, will be the product Wh
Dr Discombe not concede to the Trans
activities which he probably encourag
Does he really want us to degenerate into

thus would lose not only their standards but eputation both at home and abroad ? dard can be kept up only if staff can be iently If we refrained altogether from doing ork or did too little of it, or did no other work collecting grouping and typing the work d become dull and uninspiring I suggest, hat Dr Discombe claims to be the fact at mely that every intelligent person leaves the uld then come about.

ne statement in Dr Discombe's letter which derstand at all He states a field in otion is slow and from which transfer is difficult because of this specialisation.' Just otion slower in the Transfusion Service than ical laboratories ? The grading is the same the country and vacancies in the Transfusion ratories are bound to occur With regard to s I feel is entirely untrue. Every technician the Transfusion Service—and by trained I pe of training which would satisfy the director tre—can be absolutely certain of getting employment in any pathological laboratory ce is that pathologists are only too keen to get trained in a transfusion centre The opposite lways be true

ue that only laboratories performing antenatal able of doing proper cross matches, the policy country should be changed. It will surely not l Dr Discombe's notice that there are a large ospitals up and down the country which have a t pathological service which includes efficient ng and cross matching but whose staff do not do al tests at all I cannot see how a children's ccident hospital, or for that matter any specialised d come across any antenatal specimens in their s some charitable person would give them tal work to do I am, however certain that the in those hospitals would not like to undertake any rk at all. In Dr Discombe's opinion these people attain the standards which Dr Discombe postu s-matching tests. It is a moot question whether ies applicable to cross-matching and antenatal ntical. From my experience I would suggest are not. Though the end result of all serological tination or lack of it, the problems in antenatal s-matching are different.

he mentioned that he studies about 200 antenatal s per month and says that he screens 30–40 sera and that he titres out 5–10 sera. Does he really that only 15–20% of all the samples submitted ory are screened for antibody content ? It is a ost laboratories dealing with antenatal specimens ry one having regard not only to the common ut also to the rarer antibodies as they may be rtant clinically To a mother it is quite immaterial child died on account of hæmolytic disease of the ood by an anti rhesus antibody or by an anti Kell e a. The screening of every antenatal sample investigation involves, of course, very much more just screening selected samples. It speaks r Discombe that he must have this 'solid block make his technicians and himself confident in ts and techniques. It is, however conceivable gain by shedding some work which is not his and letting that be done in a different laboratory d be undertaken equally efficiently Dr Discombe tunate if he can combine both activities without suffering

mbe admits in the last paragraph of his letter eme would involve some increase in the use man power I suggest Sir that we can ill aste either May I suggest that there are re there is enough serum to go round for the uties performed by all pathological labora e region and that even the very burning man power can be solved if there is har operation between the pathological laboratories and the transfusion centre. It is perhaps not pertaining to this correspondence, but I would be obliged to you, Sir, if you would allow me to finish this far too long letter by thanking my colleagues in my own region for the help and understanding which they have accorded me all the time I have been responsible for the service in Birmingham

Birmingham W Weiner.

Diary of the Week

OCT 2 TO 8

Monday, 3rd

Institute of Psychiatry Maudsley Hospital S E.5
5.30 P.M Dr F Stengel first of five lecture-demonstrations.

Tuesday, 4th

University of London
5 P M (Middlesex Hospital Medical School W 1) Dr W S. McCulloch (Massachusetts Institute of Technology) Dr Patrick Wall (Harvard University and M I T) Plotting of Pathways in the Central Nervous System. Action of Strychnine

Institute of Dermatology Lisle Street W C 2
5.30 P.M Dr C O Carter Principles of Genetics

Wednesday, 5th

University of London
5 P M (Middlesex Hospital Medical School W 1) Dr McCulloch, Dr Wall: Fate of Afferent Impulses in the Central Nervous System Reflex Inhibition

Institute of Dermatology
5.30 P M Dr J O Oliver: Pyogenic Cocci in Skin Diseases

Institute of Diseases of the Chest Brompton, S W 3
5 P.M. Dr F H Young Pathogenesis of Tuberculosis (First of three lectures)

Royal Society of Medicine, 1 Wimpole Street, W 1
5 15 P M *History of Medicine* Prof Walter Artelt (Frankfurt) The Doctor makes his Rounds

Liverpool Medical Institution 114, Mount Pleasant Liverpool 3
8 P.M. Prof J Trueta Ætiopathology of Osteoarthritis (Hugh Owen Thomas lecture.)

Midland Medical Society Birmingham Medical Institute 154 Great Charles Street, Birmingham, 3
8 15 P.M Prof H F Humphreys Reflections on World Health (Valedictory address.)

Royal Faculty of Physicians and Surgeons 242 St Vincent Street, Glasgow
5 P.M Prof Stanley Graham Changing Pædiatrics.

Thursday, 6th

Royal Society of Medicine
5 P.M. *United Services* Surgeon Rear Admiral S G Rainsford Some After thoughts of a Submarine Disaster

Friday 7th

Institute of Laryngology and Otology 330 Gray's Inn Road W C.1
3.30 P.M Mr N Asherson: Vertigo

Osler Club
8.15 P.M. (11 Chandos Street, W 1) Professor Artelt Samuel Thomas von Soemmerring (1755–1830)

Saturday, 8th

British Association of Allergists
11 15 A.M (King's College Hospital Medical School S E.5) Autumn meeting

Appointments

East Anglian Regional Hospital Board:

Beattie, J W M.D Belf., M.R.C.P consultant physician in geriatrics, Norfolk and Norwich area.

Blackiston P H. M.R.C.S. F.F.A.R.C.S. D.A consultant anæsthetist Newmarket and Bury St Edmunds area.

Pool, K R. S M.B. Lond: surgical registrar Norfolk and Norwich Hospital.

Rixon P F M.B Aberd registrar in psychiatry Hellesdon Hospital.

Stephens J P M CHIR Camb. F R C.S consultant surgeon Norfolk and Norwich hospital group

Williams I P, M B. Camb M.R.C.P, D.M.R D consultant radiologist Newmarket General Hospitals and Saffron Walden General Hospital.

Births, Marriages, and Deaths

BIRTHS

Williams —On Sept 23 at 155 Andover Road Newbury Berks to Moya wife of Dr P M de C Williams—a third daughter

DEATHS

Whitehead —On Sept. 25 at 9 Lynton Park Road Cheadle Hulme, Cheshire Gordon Whitehead M B., the dearly loved husband of Molly (née Baker) and father of Gordon and John

Notes and News

THE DRUG BILL

ADDRESSING the Essex branch of the British Medical Association at Colchester on Sept 24, Dr D P Stevenson, deputy secretary of the British Medical Association, said that from time to time there was criticism of the amount of medicine prescribed under the National Health Service "Certainly," said Dr Stevenson, "the cost is very heavy Last year it was almost as much as the cost of the family doctor service itself (the actual proportion was four fifths), but to make wild charges of overprescribing against the medical profession—as some of our critics do—is grossly unfair" There were several factors which the critics sometimes forgot First, the cost of drugs had naturally shared in the general inflation of costs in the past seven years Secondly, the cost of some of the most effective modern drugs was very high indeed But if prescribing such drugs enabled an illness to be treated at home and prevented one more patient being sent to occupy an expensive hospital bed, was that not a positive economy for the country as a whole? This apart from the fact that the patient was enabled to return to work more quickly Thirdly, the average age of the population was rising all the time, and older people, by and large, required more frequent treatment than younger persons Fourthly, many members of the public believed that the regular consumption of certain drugs was necessary for their well being It was difficult for any individual doctor to combat this attitude, for the psychological benefits of the bottle and tablet were now well rooted in the public mind The profession would welcome help by the press in decrying the idea that the problems of the twentieth century could not be faced without a bottle of medicine Lastly, the critics of the general practitioner should, in fairness, put the cost of prescribing against the background of N.H S costs as a whole, especially the very heavy costs of the hospital service

WORLD FEDERATION OF SOCIETIES OF ANESTHESIOLOGISTS

As reported on p 669 of our last issue, this federation was formed during the World Congress of Anesthesiologists, held in Holland in September Its foundation was the culmination of the work of a committee set up in Paris in 1951 under the chairmanship of Dr Harold Griffith, of Montreal The committee has throughout had the advice and help of Dr J F Delafresnaye, secretary of C I O.M S

The federation started its independent life with a full meeting of the elected delegates from 26 national societies of anæsthetists, forming the general assembly Also present were observers from societies which are not yet ready to become full members of the federation Among these were official observers from the United States and Soviet Russia Dr Griffith was elected the first president, and Dr Ritsema van Eck (Netherlands), Dr A Goldblat (Belgium), Dr Rudolf Frey (Germany), and Dr Manuel Gurbelo (Cuba) vice presidents Dr Geoffrey Organe (London) was elected secretary-treasurer, and there is an executive committee of twelve including two representatives of the Association of Anæsthetists of Great Britain and Ireland

The object of the federation, as summed up by the president at the opening session, is "to make available the highest standard of anæsthesia to all the peoples of the world" Among its detailed aims are disseminating scientific knowledge, recommending standards of training for anæsthetists, providing opportunities for postgraduate training and research, and establishing safety measures including the standardisation of equipment The secretariat will be in London

RESIGNATIONS FROM BOARD OF GOVERNORS

FIVE members have resigned from the United Oxford Hospitals Board of Governors because the Minister of Health has overruled a decision made by the board about the hospital organisation of the Radcliffe Infirmary The members who have resigned include Dr W Ritchie Russell and Dr Janet Vaughan In announcing the resignations at a quarterly meeting of the board on Sept 21,[1] Sir David Lindsay Keir, the chairman, said "These are experienced and valuable colleagues, upon whose knowledge and judgment about hospital matters we have relied with confidence in the issues on which they have been asked to advise us We all know the circumstances which led to their resig been outside the range of our own knowledg of our own control"

Four of the members who resigned were committee which advised changes in org recommendations were accepted by the b were made to the Minister of Health who, a small committee of inquiry to look into the the action proposed by the board. The board accept the Minister's decision, whereupon the special committee and Dr Ritchie Russ protest

SUPERANNUATION SCHEME

THE National Health Service (Superannuat 1955, which come into effect on Oct 1, consolid regulations dealing with the National Health annuation scheme, and make a substantial ments, many of which are consequential on the ment Superannuation Act, 1953, and the Local Superannuation (Benefits) Regulations, 1954.

The regulations contain special provisions rel holding more than one appointment simultaneously or general practitioner service They provide annuable service can reckon towards benefit disqualifying break of a year without any service appointment being held, that for benefit or dental practitioner on the list of more than one shall be treated as though he were on a single that a person who, on giving up one part-ti after the minimum retiring age for pension annuable in respect of a continuing part-time have his superannuation rights in the latter; provisions with respect to the remuneration annuation purposes by medical and dental; These enable medical practitioners practising have their remuneration as practitioners allocated agreed proportions which may, if they so elect, remuneration from hospital employment.

REMUNERATION OF BIOCHEMIST PHYSICISTS

Professional and Technical Whitley Council on increased salary scales for full time bio physicists who are not medically qualified and in laboratories and scientific departments of the National Health Service The scales are as foll

Basic grade—Probationary period (a) with 1st honours degree or for biochemists only, A.R.I.C., (b) other entrants £475 ×£25–£575 After proba £650 ×£30(3) ×£35(3)–£845

Senior grade.—£910 ×£40(8)–£1230

Principal grade—£1280 ×£50(5)–£1530

Top grade—Minimum of £1600, 4 increments of

W.H.O IN EUROPE

THE W.H.O Regional Committee for Europe in Vienna on Sept 5–8, concluded that in E programmes are the most appropriate meth governments to strengthen their health services 1957–60 the main aims will be to study problems and exchange information, and to de facilities for medical and health personnel. decided that work on chronic diseases should and that greater attention should be given to of accidents The European regional office is to in Copenhagen, possibly in April, 1957

REHABILITATION IN BRIEF

THE Luton and Dunstable Hospital has excellent booklet[1] based on seven years' exp rehabilitation centre The conclusions of its team—including doctors, physiotherapists, work and almoner—are set out crisply in eight rehabilitation," illustrated by well chosen ph

The first principle is "getting well is a f and a day's time-table for three typical pa As a means of promoting remedial movem workshop practice has been found far super and crafts" of the average physiotherap equipment can be modified to exercise any gr and the competitive atmosphere of the works patient's confidence Local industries co-op machinery, as well as by providing a constant s work.

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[1] *Oxford Mail*, Sept 21 1955

[1] Principles of Rehabilitation as *Practised* at L Dunstable Hospital, Luton, *Bedfordshire*

nt a progress is recorded regularly (some of the
for this have been improved in the hospital)
r possible the date of his return to work is fore-
d precisely to the advantage alike of patient and
Since all the patients attending the centre have
disability, it is essential to make early plans for
so that anxiety may be allayed and energy freed
participation in treatment Visits to the centre
l managers to mark progress and discuss future
mmon and welcome

cian or surgeon who has looked after the patient
ital follows his treatment through the centre
on treatment are often influenced by the opinions
nedical members of the team, all of whom are
he weekly clinic held in the workshop and at
es.

the average daily attendance was 26 and the
th of stay four weeks. Enlargement of the centre
projected

TUMOUR PATHOLOGY

atest fascicles of the *Atlas of Tumor Pathology* [1]
g compiled under the auspices of the Division of
ces of the National Research Council at Washing
like the previous ones, much information and
able to clinicians as well as pathologists.

e Soft Tissues [2]

Purdy Stout analyses the findings in 1349 malig
97 benign mesenchymal tumours which have been
Columbia University during the last forty five
histological analysis of these groups is of interest
portion of malignant to benign tumours in the
rded as unrepresentative because consultations are
sought on malignant than on benign tumours.
ure has proved helpful in the study of many
ours, and the author makes several references to
his colleague Dr Margaret Murray: obscure
ecsoblastic origin can sometimes be identified he
e, however anaplastic they may be explants
tro sufficiently resemble their normal prototype
ised. Dr Stout adheres to the myoblastic view
ular-cell myoblastoma because of the evidence
ure studies; but he advises a guarded prognosis,
perience 4 such tumours with a relatively benign
have metastasised

hat if the pathologist properly fulfils his function
repared to advise the surgeon on the probable
nd the best form of treatment of any tumour
The best chance of eradicating a malignant
e soft tissue lies in the hands of the man—be he
radiotherapist—who makes the first attempt
ite biopsy is essential. It is worth noting that
ldom finds it possible to report sufficiently accur
ozen section he prefers to wait a day or two for
ions.

supported by 78 first-class illustrations.

e Major Salivary Glands [3]

and Dr Frazell review 900 cases of salivary-gland
m the records of the Memorial Centre in New
e included 447 benign and 46 malignant mixed
he parotid gland and 47 benign and 11 malignant
urs of the submaxillary gland. There were none
gual gland Almost 60% of the cases were in
there was no detectable familial tendency The
among those who believe that the mixed tumours
dult epithelium, there being in their experience
dence of gradual metaplasia of such cells into the
oid and chondromatous components so charac
hese tumours.

rence rate for the benign tumours initially treated
orial Hospital was only 2 13% this surprisingly
probably (as is pointed out) reflects surgical
within a specialised head and neck surgical
Prolongations of growth sometimes extend beyond the apparently limiting capsule, and it is these over looked excrescences which explain the failed attempt at eradication

The malignant mixed tumours have a long history and the average age of patients when first seen is over ten years higher than in the benign tumours: for these and other reasons the authors believe that the malignant tumours arise from tumours which are initially benign. The duration of life from the onset of symptoms in these cases varied from under one to forty three years. Some of these tumours may present in the first sections as a salivary gland carcinoma and it is only after extensive search that one finds histological evidence of a mixed tumour This, Foote and Frazell believe accounts for the infrequency with which malignant mixed salivary gland tumours are reported: indeed they speak of having examined as many as 100 blocks from a single bulky tumour before the evidence was found; and "on other occasions, even after very extensive study positive evidence could not be produced, although we strongly suspected that a benign mixed tumor had formerly existed"

Their 180 illustrations, of consistently high standard, include many examples of the malignant mixed tumour and two from a case of histologically benign mixed tumour which metastasised to the lung

Tumors of the Stomach [4]

Carcinoma accounted for 72 2% of the 651 cases of gastric tumour passing through the laboratories of the surgical division of Columbia University When one realises that the inoperable carcinomas are excluded from such a series the relative rarity of benign tumours of the stomach becomes apparent While gastroscopy radiography electrogastrography, and exfoliative cytology are all important aids in diagnosis, none of them is decisive in every case: so far as the last of these procedures is concerned Professor Stout sees promise for the future in the abrasive-balloon technique Not only is it sometimes impossible to distinguish the benign from the malignant ulcer by the diagnostic procedures at our command, but a benign and a malignant ulcer may on removal closely resemble each other Gastritis polyposa may be a precancerous condition but the author remains in doubt as to the importance of atrophic changes in the mucosa. Chronic peptic ulcer was found in 7 2% of the stomachs resected for carcinoma, and in several of these the cancer could be found along one of the edges of the ulcer Linitis plastica was found in only 4 5% of the cases of carcinoma Instances of multiple carcinoma of the stomach were seen both in patients with multiple polyps and in those without. One case is reported where a man developed an apparently new infiltrating carcinoma in the remaining gastric pouch twenty three years after partial gastrectomy for fungating carcinoma.

Professor Stout recommends that leiomyomas when diagnosed should be removed because they may at any time cause serious hæmorrhage or become malignant The behaviour of a lymphosarcoma is unpredictable: it may be either resected or treated with X rays. He recalls one case in which the growth was incompletely removed and no further treatment was given: yet there was no recurrence during the nineteen remaining years of the patient's life

Tumors of the Retroperitoneum Mesentery and Peritoneum [5]

Professor Ackerman deals with the interesting group of tumours arising from, or in connection with the mesentery and peritoneum. The Columbia University figures collected by Stout show that over a period of fifty years there were 265 malignant as against 75 benign tumours in the retroperitoneal spaces. Of the malignant types lymphosarcoma liposarcoma, leiomyosarcoma Hodgkin's disease and embryonal carcinoma occurred in that order of frequency while of the benign tumours cysts of the caudal gut phæochromocytoma, and granular-cell myoblastoma were the most frequently observed In this beautifully illustrated monograph, Professor Ackerman pays special attention to mesotheliomas of the peritoneum slightly more than two-thirds of which appear to be malignant: he shows how readily they may be mimicked in the female by a serous cystadenoma of the ovary The consummate ability of mesothelial cells to simulate carcinoma is the subject of special consideration the illustration of exfoliated pseudo-acini, simulating metastatic carcinoma, in the ascitic fluid deposit from a case of cirrhosis hepatitis is particularly instructive

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from the Subcommittee on Oncology, Armed Forces of Pathology 6825 16th Street N W Washington U.S.A.

By Arthur Purdy Stout M.D professor of Columbia University New York 1953 Pp 128.

By Frank W Foote, Jun. M D attending patholo Edgar L. Frazell, M D Memorial Centre for Cancer d Diseases New York 1954 Pp 149 $1.50

[4] Fascicle 21 By Prof A. P Stout 1953 Pp 104 $1 75

[5] Fascicles 23 and 24 By Lauren V Ackerman M D., professor of pathology and surgical pathology Washington University St Louis Mo 1954 Pp 136 $1.50.

University of London

Madame Alva Myrdal, director of the department of social sciences, UNESCO, will give five Heath Clark lectures at the London School of Hygiene and Tropical Medicine, Keppel Street, W C 1, at 5 P M , on Oct 17, 18, 19, 20, and 21 She is to speak on the rôle of health and education in the process of social development with special reference to underdeveloped countries

Royal College of Physicians of London

On Thursday, Nov 10, Dr Denis Williams will deliver the Bradshaw lecture, on Emotions Arising in Epileptic Attacks On Tuesday, Nov 15, Dr W P Sheldon will deliver the Charles West lecture, on Cœliac Disease Both lectures will be given at the college, Pall Mall East, S W 1, at 5 P M.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on Sept 24, with Sir Arthur Gemmell, the president, in the chair, John Browne Fleming was admitted to the fellowship The following were admitted to the membership

H McK G Agnew, M M. Baskin, Lokonath Bhose, M L Bloom, A G Bond, E P Campbell, Tuck Kwong Chong, Mary G Coyle, J A Holmes, Mukulika Konar, J D C Lyons, John MacVicar Chiew Seng Oon, Mary Phillips, Israel Rocker, J P Roux A H Rowson, Samuel Sacks J R Saunders, Muriel J Scudamore, H G I Shanks, C D Smith, R McN Thomson, R F Zacharin

Choice of Food

The food group of the Society of Chemical Industry will meet on Wednesday, Oct 12, at 6 30 P M , in the rooms of the Linnean Society, Burlington House, London, W 1, to discuss factors affecting the choice of food The speakers will include Prof John Yudkin.

Endowment for Research in Schizophrenia

Mr Joseph Porton, of Leeds, has created an endowment of £10,000 for research prizes in schizophrenia

The entire amount of £10 000 will be awarded to any teachers or graduates in psychiatry of the Hebrew University of Jerusalem or of the University of Leeds, or to any qualified doctor who practises psychiatry in England or Israel, who discovers within the next five years a "complete and permanent cure" Meanwhile, the income of the endowment is to be used to provide two annual research prizes After five years if no complete cure has been found, the endowment will be devoted to research fellowships in schizophrenia to be awarded to teachers or graduates of the Hebrew University of Jerusalem or the University of Leeds

Visit of Soviet Doctors

A party of Russian doctors are visiting Britain, as guests of the British Medical Association, from Oct 17 to Nov 4 The members of the party are

Prof S A SARKISOV, director of the Scientific Brain Institute of the ministry of health of the U S S R , Prof V V KOVANOV, director of the school of operative surgery and topographical anatomy of the first Moscow Order of Lenin Medical Institute , Prof G F GAUSE, deputy director of the institute of research for new antibiotics of the Academy of Medical Sciences of the U S S R , Prof L R LARIONOV, director of a department of the institute of experimental pathology and therapeutics of cancer of the Academy , Prof M N FOTEEVA director of the biophysical laboratory of the institute of therapy of the Academy , and Dr L G BOGOMOLOVA director of the laboratory of blood donors of the Leningrad Institute of Blood Transfusion

Life Insurance Medical Research Fund of Australia and New Zealand

This fund, which was established in 1952 to promote research on the diseases of the heart and blood vessels, has announced the following awards for 1955, amounting to about £24,000

Grants in aid

Department of Pharmacology, University of Sydney for further research under the direction of Prof R H Thorp, in cardiac pharmacology

Department of Physiology, University of Sydney for research under the direction of Dr P I Korner on determinants of cardiac output and vasomotor tone

Hallstrom Institute of Cardiology, Royal Prince Alfred Hospital Sydney for further research under the direction of Dr B C Sinclair Smith, on pulmonary function in mitral stenosis

Clinical Research Unit, Royal Prince Alfred Hospital Sydney for further research, under the direction of Dr C R B Blackburn, on portal hypertension

Department of Pathology, University of Melbourne for further research over two years under the direction of Prof E S J King on dissecting aneurysm of the aorta

Department of Physiology University of Western Australia for further research under the direction of Dr Neil Crosby, on the effects of cephalic venous hypertension on body fluids

Travelling Fellowship

Mr Bede Morris, for three years for research on lipid transport and intermediary metabolism to be carried out at the Sir William Dunn School of Pathology, Oxford, under the direction of Sir Howard Florey, F R.S

Sydney Body Lecture

Sir Henry Cohen will deliver this lecture General Hospital, Southend-on-Sea, on at 8 30 P M His subject is Brain—Human

Institute of Dermatology, London

A series of semi permanent exhibitions wil during the winter The first, from Oct. H Haber, will be on histology of normal skin.

British Spas Federation

This federation has decided to set aside a fo at least the next ten years a lecture in memory may be given annually by a physician or

Joint Tuberculosis Council

At its next meeting this council will cons the number of constituent organisations.

The council is at present composed of representa and other organisations concerned with the stud treatment of tuberculosis and other respiratory principal functions are to act as an advisory and publish memoranda on relevant subjects. The scription is three guineas Any society not on the council may apply for membership to the Dr R L Midgley, Hawkmoor Chest Hospital, Devon, before Nov 16

Chartered Society of Physiotherapy

Mr Iain Macleod, the Minister of Health, this society's diamond jubilee congress, and Perkins gave the opening lecture on Progress in the of Fractures Other lecturers during the Dr L J MacQueen, Mr T Holmes Sellors, Knight, and Miss S M. Evans gave the Fr The congress programme also included visits hospitals, and demonstrations of different techniques by physiotherapists.

At a dinner celebrating the occasion, Sir the society's chairman, said that the society (which was formed in 1895) was now urged doctors to take early advantage of the the modern physiotherapists in the rehabilita patients Sir Cecil Wakeley, president of the the health of The Guests, and Earl Mountbatten

Osler's House

The Osler Club of London, at the suggestio Carlyle Lyon, has arranged for a plaque to be Norham Gardens, Oxford, to commemorate Sir William Osler lived there The plaque, whic arms, will be unveiled by Prof G W Pickering Oct 8, at 3 15 P M Further particulars may Dr A W Franklin, Lister House, 11, Wimp

London Hospital

The old students' dinner will be held at Restaurant, London, W 1, at 7 45 P.M , on Th Tickets (32*s* 6*d*) may be had from Dr R. 22, Harley Street, W 1

University College Hospital, London

The annual dinner of past and present stu medical school will take place at the Savoy H W C 2, on Friday, Oct 21, at 8 P.M Dr L E will be in the chair Applications for tickets be sent to the hon secretary of the Old Students Postgraduate demonstrations will be held at th Thursday and Friday, Oct 20 and 21

Sheffield Medical School Old Students Ass

The annual dinner, of this association wil Saturday, Oct 15, at the Royal Victoria Hotel 7 P M

A memorial service for the late Provost R. M. F will be held at Windsor Place Presbyterian Chu Sunday, Oct 2, at 3 30 P M

CORRIGENDA *Pyrogens* —In this annotatio p 603) words spoken by Professor Todd were to Professor Berry

Slipped Femoral Epiphysis —In Mr F C R last week (p 674) the second sentence in the "If should have opened with the words slipping is not marked and *pinning* is possible

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Acquired Renal Disease Simulating Diabet retail distributors of the urinometers, made specifications (*Lancet*, Sept 24 footnote p 646 Elliott Ltd , E Mill Works, Treforest Industri Pontypridd, Glam

MA, CHRONIC BRONCHITIS, AND EMPHYSEMA

W A Lister
T.D M.D Camb F.R C.P
AN TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH

) I wrote a paper putting forward the view that ronchitis should never be regarded as a complete ·tory diagnosis traditional though it might be nfronted with a patient complaining of long or recurrent cough, breathlessness and sputum duty was to exclude heart failure, tuberculosis, localised bronchiectasis or other gross defect. is had been done there still remained a very iber of patients in whom the symptoms showed de of severity These were all to be regarded as asthmatics. Bronchitis in the sense of was a secondary affair and emphysema if it detected with certainty was to be regarded as esult and a hallmark of these two pre-existing

hat *time a number of* papers have appeared ather to stress the infective aspect and implying ential difference between asthma and chronic . Also when discussing the problem with my , I have found many who are reluctant to asthma anything less than a classical spasmodic In textbooks these three conditions still appear ır separate headings, often in different sections different volumes and dealt with by different This paper is written with the object of g the opinion I gave so briefly six years ago and orward further evidence in support of my view ma chronic bronchitis, and emphysema should on not as separate entities but as an integrated *of* pathological change.

' Asthma '

t obstacle in accepting this view is the fact that asthma ' has come to be applied almost y to those examples of respiratory allergy characterised by relatively brief and dramatic It is these attacks that are described under the f ' asthma in the textbooks, and allergists large extent been fascinated by them because often result from a simple antigen antibody These tendencies have left as it were a our nomenclature, and we have no generally term to cover respiratory allergy in its broadest in its milder and more chronic forms. The specialisation has further helped to detract oad view and to separate allergic reactions in respiratory tract from those which occur in the l the clinical appearances as they occur in om their counterparts in adults.

d allergy coined originally by von Pirquet, ans a different way of working or a reaction rom that seen in most people This is no place allergy at length For our purpose the essential that an allergic reaction will be found only in a h an allergic constitution and that this is *often* It is not always a simple matter of antigen reaction but can also be produced by reflex cell damage Those with an *allergic con* ay be sensitive to a number of agents and the their sensitivity may vary from time to time show reactions in different parts of their e nose lungs and skin being the most impor in the site and severity of their reactions may ly from time to *time* (Alexander 1947 StClair and Negus 1948 Bray 1937, Knott 1933 1940 World Health Organisation 1952)

There is nothing in this to imply that the reaction must be severe or short lived Eczema is by common consent an allergic reaction of the skin It is a term which comprises every shade of severity from the trivial to the devastating, from the brief phase to persistence for a lifetime Moreover, the same term is used whatever area of skin is affected Yet all these variations do not alter our opinion as to the allergic nature of the com plaint nor is this weakened because secondary infection *is a common complication or because the skin may* eventually show permanent changes such as pigmentation and lichenification

Allergic reactions in the respiratory tract can vary at least as widely as eczema in severity and effects For every case of classical asthma that we see there is a far greater number of patients with symptoms which are essentially the same but are less severe and in whom they *persist or fluctuate over months or years instead of* hours or days.

Sheldon (1951) points the distinction clearly between these two groups as they occur in children and uses the terms spasmodic asthma ' and ' asthmatic bronchitis ' to differentiate them The characteristics he gives for spasmodic asthma are that the attacks are sudden brief and apyrexial. A family history of allergy is common and skin tests tend to be positive *Infection is incon* spicuous and the tonsils, adenoids and lungs are generally healthy In asthmatic bronchitis, on the other hand the attacks are more gradual in onset they start as colds which go down to the chest Bronchitis and wheeziness may last for a week or more and the attacks are often pyrexial. They are more common in wet and cold weather Often the history starts with an attack of whooping cough or bronchopneumonia Family history and skin tests are less commonly positive Nasal infection is common and often there is evidence of lung damage from previous illness.

The boy is proverbially father to the man and what applies in childhood applies equally in later years though there may be *an interval of* comparative freedom from symptoms during the prime of life. The features that Sheldon describes in asthmatic bronchitis in children are *precisely* those that are found in so called chronic bronchitis in the adult It would be good if Sheldon's terms were applied in general medicine as in pædiatrics, for they draw attention to the essential asthmatic or allergic element in both

Asthmatic Bronchitis

The features which characterise asthmatic bronchitis may be considered in greater detail

A family or personal history of allergy will probably be found as commonly in bronchitis as in asthma if inquiry is made using homely *terms* We should not only ask about asthma eczema or urticaria but whether the patient or his relatives have been weak on the chest liable to catarrh *or morning* cough whether they get more colds than most people in the winter or have had nasal discharge or sinus trouble. These may often be admitted when any question of asthma is stoutly denied

The frequency of attacks in wet and cold weather is another strong pointer to an allergic state '*Don t* sit in a draught or you will catch cold is a commonplace expression and relates to a commonplace experience for we all know that a draught will make us sneeze. The mechanism on which this reaction depends seems to be a reflex released not only by varying degrees of hot or cold in general but by simultaneous exposure of different parts of the body to heat and cold Humidity also plays a part The subject is very fully dealt with by Duke (1927)

Sufferers from so-called chronic bronchitis in later life often date the start of their symptoms from an attack of pneumonia or *to* exposure to poison gas or irritating fumes, just as the asthmatic bronchitis in Sheldon's children is attributed to a cold that went to the chest This leads us to more debatable ground and the question of an allergic reaction being produced by cell damage In the skin it is a commonplace that eczema can result from cell damage by habitual scratching, the friction of alkaline powders, or the application of drugs, and, once initiated, the reaction can persist or recur without further recourse to the agent to which the onset is referred It would not so persist if there were not an allergic constitution When we find signs and symptoms which are typical of respiratory allergy we surely need not force ourselves to regard them differently or as falling in a separate category because their origin can be traced back to exposure to gas or smog It might reasonably be held that cell damage by inflammation from an acute infection can act in the same way and initiate the reaction in that large group of patients who date their symptoms back to whooping cough or pneumonia The point is dealt with later and it is debatable, but we must all agree that an enormous number of people—in fact the vast majority—may suffer from acute infections of the upper respiratory tract or of the lungs and bronchi without these being followed by allergic rhinitis or chronic bronchitis The deciding factor surely is whether or not the patient has an allergic constitution

Finally, there are the frequently recurring attacks, starting as colds and later going down to the chest and persisting for a considerable time, which are so conspicuous a feature of Sheldon's asthmatic bronchitis In later life attacks such as these are equally common in so-called chronic bronchitis, but often they are very slight and the patient and his relations may regard his health as normal A doctor may in fact never be consulted at all The sufferer is merely regarded as "catarrhal" or "subject to colds," or the morning cough and sputum are attributed to smoking Continual nasal catarrh and obstruction dating from childhood may be attributed to a fall, boxing, or being struck by a football Often, as Simpson (1954) points out, the history may clearly be unreliable One may find, for instance, in an elderly person nasal obstruction, a rigid chest, and a degree of emphysema which must have been present for many years, and yet the patient will be emphatic that his cough, breathlessness, and sputum have only come on since he had pneumonia a few months previously

Reid (1954) states that the principal change found in early cases of "chronic bronchitis" is hypertrophy of the mucus-secreting elements, excess mucus in the air-passages, and an increase in the goblet cells, which are present in large numbers even in the bronchioles where normally they are scarce There is usually œdema of the bronchial wall with swelling of the basement membrane and also some infiltration with small round cells These are not changes likely to be caused by infection, smog, or gas Surely they indicate that in these subjects the lining membrane of the respiratory tract differs essentially from that of other people Mr Dennis Barley allows me to quote a personal communication to the effect that he has found in patients with chronic bronchitis of twenty years' standing allergic polypoid changes in the nose, and that sections of tissue removed from the maxillary sinuses have shown eosinophilic infiltration

The more broadly we regard the problem—the more carefully we study our patients suffering from these chronic respiratory ailments, their heredity, their personal history, and the whole of their respiratory tract, both upper and lower—the more certainly shall we find evidence pointing to an allergic constitution as the essential basis of their condition

Infection

Bronchitis, in the sense of secondary infection, is infrequent, as Sheldon points out, in the spasmodic asthma of children It is similarly un spasmodic asthma of adults and in the sea hay-fever When the attacks are relatively periods of freedom long, the respiratory to return to a healthy condition with a norm resistance to infection When, on the other play of more numerous allergens or long unavoidable factors such as temperature cause the reaction, the change in the mucos just described will tend to be correspondingly and may finally become permanent

Controversy and doubt centre on the quest chronic bronchitis may ever be regarded as disease in its own right, or whether it is alwa to some other condition, also whether bacte can produce a true allergic reaction. Most brought up on textbooks which contained a able list of types of chronic bronchitis—dry, plastic, pituitous, fibrinous, purulent, fœtid, rhœal Who could fail to be impressed by and feel uneasy about regarding any, and of them as mere secondary complications state? Davidson (1954) and Sheldon (1951) homage to tradition Oswald (1953, 1954) a distinction between asthma and chronic his test for the latter being a clear h patient of bronchitis before the onset of th but he admits the difficulty and feels diagnosis in only 147 out of his 1000 pati advises that in order to prevent pathog reaching the bronchioles, the best thing permanently in a clear, warm, and dry strongly suggests to me that he is not ent that the distinction is a valid one.

Against the infective theory Scadding ("recurrent respiratory infections devel presumably because of the underlying respiratory mucosa They tend to produce to the mucosa and thus set up a vicious (1938) believes "bronchitis is usually, per secondary manifestation of some more Bray (1937), Knott (1933), Coke and Coke ((1927) agree that true sensitivity to bact terial proteins is extremely rare if in fact The most that can be said by these authors ary infection by certain gram negative aggravate an established attack of asthm bronchospasm in people whose bronchi such a state as to require only slight lation All authors agree on the difficult impossibility, in deciding in retrospect whet has been an actual infective rhinitis or an allergy Duke (1927) says "the winter re by cold sensitiveness could easily have been acute or chronic infection, or for bacteria or bacterial allergy, which conditions have to be very rare and difficult to prove." He and suggests that constant, intimate, and sometimes gives rise to tolerance

There is, therefore, an overwhelming weig against the idea that "chronic bronchitis" of a condition due to bacterial infection, is Nor is there any evidence that bacterial produce per se an allergic response—thou course greatly aggravate a pre-existing allerg alone might be comparatively trivial

The question inevitably follows as to wh infection is so prone to affect a surface—wh mucous membrane of nose or lung—which site of an allergic reaction Oswald (1954) with the numerous writings on this subject problem is not fully understood and is extr

The papers by May (1953) and Elmes Fletcher (1953) on the effects of antibio are cogent and illuminating Their findings agreement and may be summarised

sputum will become mucoid or at any rate at, during the administration of an appropriate If the sputum is mucoid the amount is not by antibiotics. The patient may actually feel the sputum is mucoid because it is so thick o bring away When antibiotics are withheld sooner or later reappear and the sputum urulent again

thus presented is surely that of a respiratory inherently low resistance copiously exuding thus forming a suitable culture medium for evalent organisms As and when infection n be eradicated by *antibiotics but the under* althy state remains It is analogous to a which weeds grow freely They may for a ore or less eradicated by an appropriate weed , alas, not for long as most of us know only The formidable list of types of bronchitis erred to is merely a reflection of the virulence, chronicity of the infection in *any particular* d the amount of disorganisation of the lung ial tissue it has caused

has been said as applying to the lungs applies the upper respiratory tract Both are com lved in the same process Though we cannot spect the mucous membrane of the bronchi wollen, and exudative nasal mucosa of *allergic* asily seen with a speculum. Polypi, sinusitis nedia are common sequelæ They point to the ergic state which gave rise to them and if not may act as a focus from which reinfection of vill continually arise.

Emphysema

ema as dealt with in this paper refers only to on form—the so-called chronic hypertrophic , or *chronic vesicular emphysema.* In his n lectures of 1943—one of the most recent and ve pronouncements on the subject—Christie s that ' almost all patients with emphysema either chronic bronchitis or asthma ' He difficulties in diagnosis and in explaining how elasticity of the lungs is lost He draws to the frequent discrepancy between the eached at the bedside and the post mortem d the unreliability as a sign of the classical ed chest Is not the clue to these problems sentence I have quoted from his paper ? ly agrees that in an attack of asthma the to get the air out of the chest because of the e bronchioles In consequence the patient s omes one of extreme inspiratory effort, with listended to the limit that the thoracic cage With the passing of the attack the chest soon resumes its normal shape. But if the obstruction is prolonged over months and er after winter even though it be relatively one not reasonably suppose that over inflation st sooner or later will become habitual and become fixed ? What more is the classical ed chest than a description of this posture more rmanently held and fixed ? The other *signs* matically there is hyperresonance and weak unds because expiration is limited ; radio ll show widely separated ribs, translucent lung the heart hanging with apex tilted down ause the diaphragm beneath it is contracted to d is low and flat with wide costophrenic angles an confronted with this forced inspiratory ight well diagnose emphysema but it by no llows that if the patient suddenly died the anges of emphysema would be found Gough (1955) found no emphysema post mortem in 10 consecu tive cases of uncomplicated fatal status asthmaticus

In fact emphysema is not a disease in its own right The extent to which the appearance at the bedside is confirmed post mortem merely depends *on how far this* forced inspiratory posture has been accompanied by structural changes in the lungs.

It is doubtful whether bronchospasm alone, however severe can produce permanent structural changes Very likely it is capable of producing thousands of little tension cysts throughout the lungs by means of the so-called check valve mechanism About 1930 it became generally accepted that this mechanism was the cause of the ring shadows often seen on X ray films in tuberou losis *and known as tension cysts pneumatoceles* blebs, or bullæ To quote Flavell (1952), " if the lumen of a bronchiole is pathological, narrowed or distorted to the right degree air may be able to enter the alveoli supplied by it during the bronchial dilatation of inspiration but not to escape when contraction occurs with expiration " But these cysts often collapse and vanish as quickly as they came, or having been conspicuous on X ray films may be impossible to discover post mortem Indeed Flavell states that a healthy alveolus cannot be ruptured by any physiological range of pressure Here we have a possible explanation why post mortem changes are not found in uncomplicated asthma

Gough goes on to point out that *if* chronic bronchitis—by which he presumably means infection—has been present as well, then emphysema will be found post mortem Moolten (1935) showed that if the alveolar mesh has been damaged, pressures well within the physiological range can produce cavities which may not completely return to their original size when the pressure is relieved. They are smooth and round in form from the contraction of the surrounding network of the lung and the negative pressure in the pleural space—a mechanism similar to that which extends a hole made in a sheet of stretched rubber That damage to the walls *of* the alveolar mesh is indeed present in chronic bronchitis cannot be doubted by any one reading Reid s (1954) beautifully illustrated paper on the pathology of this condition. What more perfect combination of circum stances could be devised for producing the changes found in emphysema ?

As the joints of the vertebral *column*, the costo vertebral joints, and the costal cartilages become more rigid with age, a further factor will contribute to fix the thorax in its forced inspiratory posture and to limit the range of expiratory movement The patient will thereby be proportionately short-winded but it does not of necessity follow that his lungs are emphysematous. This depends as we have seen, on the *extent* to which his alveolar network has been damaged by infection

To return to Christie s paper and the difficulties in clinical diagnosis of emphysema, it is curious that he, like all other authors on the subject omits to mention the value of the use of a tape measure, which is after all part of the standard routine in examination for life assurance It is a fact that *one finds as* much or more help from the way in which the patient works his chest and abdomen whilst the test is being made as from the measurements themselves. As the tape is put around him he puffs up his chest to an extremity of inspiration When asked to blow out his breath and empty his chest he may relax for a moment and reduce the circumference by less than an inch. He will *then again* puff up his chest to its limit With persuasion, encouragement and a little practice a moderately strong expiration will be achieved, though it may be a somewhat wheezy affair and induce *coughing* and expiratory rhonchi, which other wise might never have been elicited This inability forcibly to empty the chest is a characteristic and striking feature it is the clinical evidence of the reduction in the complemental air and the great increase in the residual air acknowledged by all observers It is also a demonstration of the muscular imbalance present in this condition and which in turn is the cause of pain in the chest of which sufferers from it often complain after effort

This pain is another feature that Christie does not mention, but it is important to recognise that pain in the chest is often experienced by those who practise principally a thoracic type of respiration The matter was very fully dealt with by Briscoe (1927), who made the points which *all of us can verify for ourselves*—namely, that overtired muscles will ache, that with extreme and constant elevation of the thorax the scaleni and intercostal muscles can be seen and felt in tonic contraction, that these muscles are tender on pressure, and that relaxation will bring relief to the pain though not immediately, for it may in fact continue for some hours The symptom is of importance, because of course chest pain in any way related to exertion must raise the possibility of angina of cardiac origin The main point of distinction is that angina comes on during the effort, and by its intensity compels the patient to stop the effort, after which it passes in a few moments Pain from over-tired muscles, on the other hand, may come on during effort, but it is associated with breathlessness and it is the breathlessness and not the intensity of the pain which makes the patient stop The pain may last for some hours after the effort is over

The Diagnosis

When, therefore, we are confronted with a patient complaining of breathlessness, the decision to be made is not whether he is to be diagnosed as a case of bronchitis, asthma, or of emphysema, but whether he is suffering *from that syndrome of which these three conditions are* the elements We must also decide in what proportion these elements are present, how firmly established they are, and to what extent the nose as well as the lungs is involved

One of the commonest problems that I see in my general medical outpatient department is that of a man in late middle age referred because of increasing shortness of breath and chest pain Naturally the family doctor is particularly anxious about the man's heart, for, though examination has shown nothing amiss in that direction, he can find no explanation for the symptoms, which seem genuine enough (Fry 1954)

We find ourselves *confronted by a well covered broad* shouldered man, a little hard of hearing, and breathing in part through his mouth Questions elicit that breathlessness has been coming on slowly over the last few years, and that for considerably longer he has been subject to colds and bronchitis in winter and in damp, cold, or foggy weather At such times his sleep may be disturbed, but regularly on rising in the morning he takes some little time coughing in order to clear his chest of thick stringy phlegm, usually white, but yellow when he has bronchitis and then it may come away more easily He regards this as a smoker's cough and has recently cut down his consumption of cigarettes in consequence, but with little benefit As to the *pain*, *it is* aching in character, mainly around the lower ribs (indicated by the tips of the fingers of both hands), and comes on after exertion which has caused the breathlessness, or after a severe bout of coughing He has always regarded himself as a strong and healthy man His nose has always been stuffy and crooked, and this he attributes *to having been struck by a football* at school A paternal aunt died of bronchitis at the age of 70, and his brother has asthma, but he has "never had anything like that, thank goodness!" Examination shows both tympanic membranes rather thickened and injected, with an old, healed, dry perforation in one of them He has a deflected nasal septum The most noticeable features in his chest

are its small range of expansion as
tape, and the almost complete absence
control over his abdominal muscles, though
strongly when he coughs After coughing
tory rhonchi are heard Otherwise physical
confirms the family doctor's opinion that
pathological signs in the heart His elect
is normal and a film of his chest shows
striking—perhaps rather translucent lungs
costophrenic angles

With all the evidence set out like this the
are dealing with may seem obvious enough
many of us make a routine of inquiry from
about his childhood and family history?
habitually use a tape measure, auriscope,
speculum? Yet it is by these methods that
features of this case have been elicited,
stethoscope, cardiograph, or radiograph.
we call the condition when we have d
There is no satisfactory name The pat
would be the first to discount asthma (he
in his brother), yet the rhonchi elicited by
indications of at least a degree of bronch
regular morning cough shows that production
is excessive He is hardly a classical case
bronchitis, for, although he tells us that he
coughs yellow sputum, who of us has never
Should we call him a case of emphysema?
so but yet be doubtful whether the path
find any gross changes in his lungs There
however, that his chest is relatively fixed
inspiratory posture Probably Sheldon's
"asthmatic bronchitis" comes as near as any
this is not entirely satisfactory The truth
commonplace syndrome is made up of the th
which form the subject of this paper

The Three Elements

This view is not by any means purely
is essentially practical, for only on such a
our treatment be complete and based on firm
grounds In every patient suffering from the
the three elements—allergy, infection, and
have to be considered

For the *allergy*, we have at our disposal
remedies and a high carbohydrate diet, but
are so often helpful in children We may
out skin tests and a scheme of des
these are less likely to help in the type of pat
described than in spasmodic asthma. The
"mist expect" is of little value, though often
shall obtain better results from antispasm
aminophylline, ephedrine, stramonium, and
which the *National Formulary* and pr
offer a wide range in the form of mixtures,
sprays We cannot do much to improve
ditions, though by freeing our atmosphere
restricting the use of tobacco, and improving
and ventilation of our houses, we may
extent If patients are so fortunately pla
able to spend the winter abroad in a clear,
atmosphere, as Oswald advises, it is no do
possible advice to give, but, alas, it is rath
for the vast majority *Far more* commonly
to improve the quality of the air reaching the
reduce the tendency to breathe through the
improving the nasal airway Negus has emp
one of the chief functions of the nose is to
air passing through it *Such* procedures as the
ing of a deflected septum, and the removal
other obstruction should always be conside
larly in younger patients and before irrever
has been done to the lungs

For *infection* we have antibiotics The
of this syndrome has been recently and

Usually a combination of antibiotics is They may do good for a time but infection return (May 1953 Elmes et al 1953) It is to ensure that the nasal sinuses or tonsils are eat of chronic infection. If infection of the very severe, postural drainage may be invoked ly and breathless people naturally do not well

hysema one can do little once the condition is ablished Prompt treatment of recurring infec help to delay its advent One's duty is to he danger of its supervention in later life when ling with the relatively young It is here that exercises have their chief value Emphasis is laid predominantly on re-education of the Thus is good so far as it goes but my belief ucation of the abdominal muscles and their control is quite as important if not more so o that pull down the ribs from their over osition and by pressing on the abdominal force the over contracted and flattened up into the chest. By moving all the joints ne and ribs, breathing exercises may prevent thorax from becoming fixed in its faulty, over position—or at any rate delay this happening ice of Yoga to this extent at least, is entirely

we must not forget *reassurance* if it is justified it we have described almost certainly will have d some doubt about his cardiac condition. now know well enough how pain in the chest ate heart disease Some perfectly innocent nonplace remark by the family doctor himself We will just make sure that your heart is all ien arranging for the outpatient appointment, fficient to plant the seed of an anxiety neurosis perament susceptible to such a state This e, so vital in helping a patient to make the disability cannot be given unless we ourselves etely confident of our diagnosis.

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edicine is an art and a science inescapably linked ion sentiment and fear Its product can only in uncertain and comparative terms Similarly ndeavour is not readily measured in formalised The yardstick of the market place—the profit account—is not available and hence there is the d for individual moral accountability administra ll as professional If an over all efficiency is to be lthough personal responsibility cannot be measured rtheless be recognised where it exists. —A R J

ter Guardian Sept 20 1955 p 3

ANOXIA IN THE ACUTE RESPIRATORY INFECTIONS OF CHILDHOOD

ITS RECOGNITION AND TREATMENT

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WITH the introduction of the antibiotics and the consequent control of bacterial infections, the clinical picture of acute respiratory infections in infants and children has undergone a considerable change there are now few states of severe illness of the 'toxic' type —e g., hyperpyrexia and repeated convulsions—which in the past often had a fatal outcome However anoxia of varying degree * has become more prominent and is probably now the main cause of death largely because bronchiolitis, which is becoming increasingly common in infants under the age of one year does not respond to antibiotic therapy and often produces a suffocative picture

The problem of anoxia has been studied as part of a comprehensive investigation of severe respiratory infections in 108 infants and children admitted to Paddington Green Children's Hospital and to the children's ward in St Mary's Hospital during the nineteen months September 1953 to March 1955

This paper presents the results of correlating oxygen saturation estimations, clinical data, and response to oxygen therapy

Methods and Case Material

Estimation of Oxygen Saturation

The standard syringe technique of Roughton and Scholander (1943) was used and the error compared with the Van Slyke manometric method was $\pm$ 0·3 volumes %. Duplicate estimations of oxygen content were done and the oxygen capacity was determined by equilibrating the remainder of the sample with room air in a miniature tonometer and repeating the estimation of oxygen content

Collection of Samples

Arterialised capillary blood was used the foot was heated either by a thermostatically controlled electric pad or by immersion in water at 40°C until a satisfactory flush was obtained. A rubber tubing sticking plaster cup (Hytten and Cherry 1951) was applied over the flush border below the external malleolus, and a sharp prick to a depth of about 4 mm. was made with the point of a no 12 Swan Morton blade The free flow of blood thus obtained was collected in an oiled heparinised 1 ml syringe the tip of which was fitted with a rubber adapter to fit exactly into the cup About 0·5 ml of blood was usually obtained quickly; any small air bubbles were immediately expelled, a small quantity of clean mercury was introduced as a mixer a rubber seal was applied and the blood was stored in ice-water pending analysis

Case Material

31 estimations of arterial oxygen saturation were made in 18 children Only about half of these were obtained when the child was in any degree of oxygen lack because undue delay in instituting treatment had to be avoided The remainder were in children who either showed no evidence of anoxia or were already receiving adequate oxygen therapy

Detailed clinical observations in all the children showing evidence of oxygen lack were made particularly regarding colour of extremities and mucosæ and the child's behaviour—i.e type and degree of restlessness and ability to feed and to sleep

Results

Oxygen Saturation

Fig 1 shows the relation between (*a*) percentage oxygen saturation and (*b*) reduced hæmoglobin (grammes) and

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* The word anoxia is used throughout this paper in its commonly accepted sense Hypoxia is of course more correct

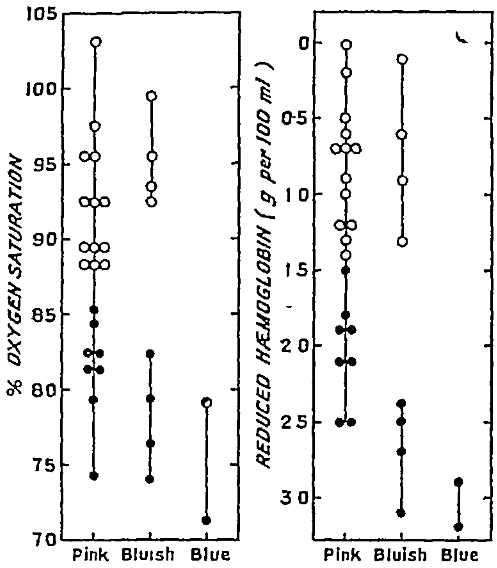


Fig 1—Arterial oxygen contents against colour of the child expressed as percentage saturation and g of reduced Hb Solid black circles, restless children , open circles, non-restless children

colour of the peripheries Those children showing restlessness, of any degree, are indicated by solid black circles, and those showing normal behaviour by open circles It can be seen that colour is a poor guide to lesser degrees of anoxia, and this is for two reasons

(1) Some children display plum-coloured lips and a somewhat dusky appearance of the cheeks even when they are healthy, and when they fall ill of an acute respiratory condition, this may be mistaken for early cyanosis The upper group of circles in the " bluish " group indicates children of this type, they were not seriously ill, showed no restlessness, and had normal oxygen saturation

(2) Anoxia, of a degree sufficient to endanger the child's life from exhaustion if not treated, may be unaccompanied by any detectable change from the normal pink colour This is particularly the case in small babies whose hæmoglobin level is usually about 10–11 g per 100 ml and may be as low as 8 or 9 g This is seen in the " pink " column in fig 1, where children were still pink with an oxygen saturation as low as 75 % or a reduced hæmoglobin level of 2 5 g per 100 ml

On the other hand, restlessness (solid black circles) showed a very close correlation with oxygen lack and was an important physical sign in saturations below 80%, whatever the colour of the child Moreover, on the whole, it was more severe the greater the degree of anoxia

Clinical Picture of Anoxia

Early in the investigation it became clear that restlessness was the most important aspect of the clinical picture of the subcyanotic degrees of oxygen lack The most constant finding was the inability of the child to sleep for any length of time, and with greater deficiency of oxygen sleep appeared impossible Alongside this went irritability, with recurrent crying which was not relieved by nursing, feeding, or other ordinary remedies At this stage it is necessary to differentiate between such behaviour due to anoxia and a very similar picture which may be the result of pain—e g , from otitis media This differentiation has usually to be made on other physical signs—e g , evidence of respiratory embarrassment, particularly increased effort on respiration, and costal, intercostal, and neck retraction

The characteristic movements which are part of the restlessness consist in rather slow flexion and extension movements of the limbs, opening and clenching of the hands, rolling of the head on the pillow, and, in the worst cases, arching of the back

The response to these babies to interference can best be described as child gets excited, cries for a long while cannot be comforted Such reactions also an attack of coughing, particularly when as in tracheo bronchiolitis Somewhat older less actively restless but obviously suspicious and easily frightened They cry easily and nursing or interference A boy of 7 was able frightening dreams which disappeared placed in an oxygen tent

Response to Oxygen Therapy

The uniform and often dramatic relief of with a reversal to normal behaviour, as soon oxygen is supplied is the best confirmation basically due to lack of oxygen

Oxygen therapy was started in the estimations under working conditions showed oxygen concentration obtained in the tent 40–45%, rarely exceeded 50% In many of however, this was insufficient to relieve rest we had to secure higher levels (*a*) by capacity of the tent to about a quarter, 60–70% , (*b*) by using a face mask or (*c*) by using a special box (Morrison gives a concentration of 80–90% In our anoxia could always be abolished by one of the but the standard tent was effective in of them

During the two winters there was bronchiolitis in a child not seen by me given pure oxygen from a mask, but was and died from exhaustion, having been and cyanosed for several hours

Illustrative Cases

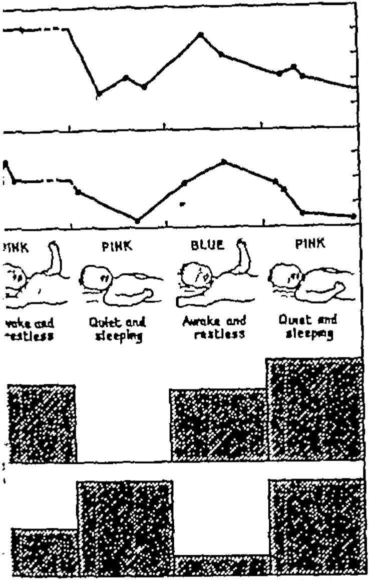
The following are excerpts from the children with severe oxygen lack

Case 1 —A boy, aged 10 months, with bronchiolitis was admitted on the second day which had begun with acute dyspnœa and was very ill, with pallid face, bluish lips and an oxygen saturation of 74% He had expirat and inspiratory recession of the lower ribs. widespread rhonchi, there were numerous and râles in the lower parts of both lungs. At relieved in a standard oxygen tent in which oxygen was 38%, though he never settled and restless all the time There was no response and streptomycin, and the disease progressed.

Twenty four hours after admission he was with respirations 90 per min., pulse rate 170, and 101°F Any lowering of the oxygen concentra attempt to feed the baby led to cyanosis and excited crying Oxygen from a mask (i.e., 80%) fall in the pulse rate to 140 and respirations became pink and quiet and eventually able to of about half an hour Feeds from a bottle eagerly but soon produced pallor, cyanosis, and which the baby took several hours to recover

He was nursed with a face mask for more four hours, and by this time the respiratory considerably less, he was able to manage in a and made an uninterrupted recovery On the admission, when the child was moderately only intermittently restless inside the oxygen oxygen saturation was 84%, and the oxygen breathed at that time 38% It was quite the second day the degree of anoxia was consid

Case 2 —A girl, aged 3 months, with bronchopneumonia, and segmental collapse, acute picture, but her illness did not respo and sulphadimidine and got worse for two days She became obviously cyanosed when out remained a good pink colour and showed no distress in an oxygen tent (concentration 40–45% she slept very little and was continually restless,



ations in pulse-rate, respirations, colour behaviour and ygen saturation in response to breathing different concen- oxygen in case 2, aged 3 months with bronchopneumonia.

of the limbs and groping movements of the hands face She kept opening her mouth but not wanting rting to cry and then stopping for no apparent l appearing quite unable to sit still Her respira ined constant at about 60 per min. and her t 160

ts on this child of breathing different concentrations re shown in fig 2. Estimations of arterial oxygen were obtained while the child breathed 95% n a mask, 45% in a tent and room air (20%) se to relief of anoxia by the mask was prompt ramatic The respiration rate fell in a few minutes 42 and the pulse-rate from 160 to 120 The d wriggling closed her eyes, and fell asleep On the mask she became blue awoke and began to out and could not settle With replacement of the picture was again reversed, and within ten e was fast asleep The estimation of oxygen while she was breathing room air was done within removal of the mask and before the baby actually anosed; hence 76% is certainly a high reading robably have been 10% or 15% lower (judging by in colour) if repeated several minutes later

o seen that the almost pure oxygen supplied by ask was more than this child's requirements, and sfactory relief of the restlessness was obtained by in a small tent giving an oxygen concentration 0–55% Not only was her condition immediately t next morning the signs in the lungs, which had improvement for three days were much lessened y was rapid thereafter

—A girl aged 5 months, with acute tracheo is was admitted twenty four hours after the onset; remely distressed and ill, with conspicuous recession er ribs and neck Placed immediately in the al oxygen box with an oxygen concentration of nd a humidity of 90–100%, she was promptly d able to sleep and feed satisfactorily Though in her chest became more pronounced and the effort was great she had a good colour and slept e time Arterial oxygen saturation after twelve box was 95%.

After twenty four hours in the box there was a sudden failure of the oxygen supply and the baby had to be removed for a few minutes. She became immediately terrified scream ing gasping, and throwing herself into opisthotonos and was quite unresponsive to nursing She became cyanosed and pallid and looked desperately ill In spite of the severe oxygen lack she continued to scream and fight, thus increasing greatly her oxygen demands, and would doubtless have collapsed before long

As soon as the oxygen supply was repaired she was put back in the box, and after a few breaths she stopped screaming lay back and fell asleep A sample of blood obtained immediately after she had been placed *in* the box *when* her colour was again pink but she still appeared exhausted showed a saturation of 88%. The further course of the illness was undramatic.

Case 4—A small weakly girl, aged 6 months with acute tracheo-bronchiolitis and secondary bronchopneumonia was very ill limp pallid, and unable to cry, but not obviously cyanosed. She had costal and neck recession, with severe wheezing and occasional crepitations on the right side The presence of secondary bronchopneumonia was inferred from the constant inverted and grunting respiratory pattern

At first she was completely relieved in a small *oxygen tent* (oxygen concentration 60%) However twenty four hours later although the grunting respirations had gone—which suggested that the bronchopneumonic element had responded to antibiotic therapy—the amount of respiratory obstruction was worse *She refused feeds* and became progressively more restless over a period of two hours. When seen at this time she was pale with cold extremities, and exhibited a quite maniacal restless behaviour with constant screaming throwing herself about, and going into opisthotonos. Frothy fluid was coming freely from her mouth Her respirations were 80 per min. even when she was not crying but she was not *obviously cyanosed, and the oxygen concentration in the* tent was 68%

She was transferred to the special oxygen box and showed a dramatic improvement as the oxygen concentration rose by the time it had reached 80% she had stopped crying was lying quietly for most of the time with only short spasms of restlessness, and shortly after this slept for five minutes. The oxygen thereafter was maintained about 90–92% and the humidity about 90% She slept for long periods and took small drinks from a bottle although mainly fed through an indwelling gastric tube and her respirations settled at 50–56 She had one bad attack of coughing followed by restlessness and crying which was probably due to accidental inhalation of a little saline solution while being fed apart from this she remained reasonably *comfortable* although the respiratory obstruction continued for several days, and there was no recurrence of severe restlessness.

Discussion

Direct estimations of arterial oxygen saturation by the technique described are difficult and time-consuming and as a method of assessing the need for and controlling oxygen therapy they are impracticable in routine hospital work. They served here however to show the close relation between restlessness and anoxia of varying degrees, and also the fallibility of relying on the child's colour, at least in the lesser degrees of anoxia.

In the course of this work the behaviour of the infant has emerged as the most reliable clinical guide in the control of oxygen therapy Before making a diagnosis of anoxia one must always exclude restlessness from other causes—notably hunger discomfort, loneliness, and pain. They all, however are well known to pædiatric doctors and nurses and in practice do not cause much diagnostic difficulty In the presence of obvious respira tory distress the likelihood that restlessness is due to anoxia is very great.

It may be thought that a decrease in arterial oxygen saturation from the normal 95% to 80% does not con stitute a serious deficiency However, when the oxygen dissociation curve for hæmoglobin is taken into account, it becomes evident that this decrease in oxygen saturation represents a decrease in oxygen tension in the plasma from the normal 100 mm. Hg to 47 mm, the tension in mixed venous blood at rest being about 40 mm The

TABLE I—OXYGEN REQUIREMENTS IN 108 CASES OF ACUTE RESPIRATORY INFECTION WITH MINIMUM OXYGEN CONCENTRATION NECESSARY FOR RELIEF OF ANOXIA

	Age		
	Under 1 year	Over 1 year	Total
No of cases	37	71	108
Number requiring oxygen			
Tent (40–50 %)	8 (*22%*)	5 (*7%*)	13 (*12%*)
Small tent (60–70 %)	8 (*22%*)	3 (*4%*)	11 (*10%*)
Mask or box (80–90 %)	6 (*16%*)	0	6 (*6%*)
Total	*22 (60%)*	*8 (11%)*	*30 (28%)*

availability of oxygen to the tissues (which depends on diffusion, and this in turn on differences in tension) is thus greatly reduced, and it is almost certainly this reduction that accounts for the serious illness observed

Clinically the degree of oxygen lack can be judged by finding the minimum concentration of oxygen which enables the child to sleep and feed satisfactorily The importance of anoxia in acute respiratory infections of children, particularly those under the age of one year, is approximately indicated by analysis of the present series (tables I and II) These cases represent the consecutive ordinary admissions to a routine children's department 30 of 108 (28%) required oxygen therapy, and 22 of the 37 babies under one year of age (60%) Of these 22 babies, 8 were relieved by a standard tent, 8 by a small tent, and 6 by an oxygen concentration of 80% or more supplied by a face mask or by the special box As regards anoxia bronchiolitis is seen to be the most serious illness, and indeed its case-mortality is known to be high

The humidity of the air breathed is undoubtedly important No special study of this was possible in the present investigation, but I do not think that such a study would alter the conclusions about anoxia, for in all cases the humidity was automatically kept as high as possible by means of an atomiser in the tents and in the box

In view of the experience with this series of cases it seems justifiable to recommend the use of greater concentrations of oxygen than are ordinarily supplied by the standard tent, in all instances in which the child remains restless and unable to sleep Apart from the exhaustion caused by restlessness continuing for twelve to twenty four hours the effects of long continued tissue anoxia must be considered Drinker (1945) has written extensively on anoxia begetting anoxia and puts forward evidence that anoxia of the pulmonary epithelium leads to pulmonary œdema and a vicious circle The appearance of frothy fluid in fairly large quantities from the mouth, in case 4, after two or three hours' obvious oxygen lack supports this view, and suggests that an insufficient concentration of oxygen may not only fail to relieve the original anoxia but also produce fresh exudate and pulmonary embarrassment In this context it is interesting to record th —associated with increased effort and decrea supply—was often followed by increase of distress, continuing for several hours advantages of the special oxygen box is th is easily fed inside the apparatus without decrease of the oxygen concentration.

TABLE II—OXYGEN REQUIREMENTS IN RELATION TO TYPE OF ILLNESS

Diagnosis	Age			
	All ages		Under 1 year	
	No of *cases*	No needing *oxygen*	No of *cases*	No needing oxygen
Segmental pneumonia	24	0	0	0
Bronchopneumonia	43	12 (*27%*)	14	6 (*43%*)
Bronchiolitis	30	17 (*57%*)	20	16 (*80%*)
Other	11	1	3	0
Total	108	30 (*28%*)	37	22 (*59%*)

Summary

The recognition and treatment of anoxia and young children with acute respiratory infe discussed Clinical data are correlated w *saturation estimations* and response to oxygen

The child's colour is a poor guide to the anoxia and is sometimes misleading R *on the other hand, constantly* accompanies is a sensitive index for control of therapy

In a number of cases the standard oxy giving an oxygen concentration of 40– inadequate for the relief of anoxia, and higher tions were required These were supplied b tent, face mask, or special oxygen box design 80–90% oxygen Using these higher concen necessary, the oxygen lack was relieved in 32 children

I am grateful to Prof R Cruickshank for help in the preparation of this paper, to Dr Reginald Dr T Pearse Williams, Dr J P M Tizard, Stapleton for enabling me to make these ob patients under their care, and to the house nurses for their helpful coöperation.

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PHYSICAL ACCOMPANIMENTS OF DISORDER IN OLD AGE

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It has been known for some time that in la association exists between physical and mental Thus Dayton (1940) showed that the increase of morbidity and of mortality in the general po age advances is paralleled by an increase o breakdown But the relative prevalence of disease in different kinds of psychotic disorder unknown, and we thought it worth because the pattern of outcome differs so sharp five main groups of cases admitted to mental after the age of 60—the senile, arteriosclerotic, confusional psychoses, the affective disorders, paraphrenias of late onset (Roth and Morr Roth 1955) Some of our findings were pres International Congress of Gerontology last yea Roth 1955)

Briefly *senile psychosis* is a condition with a gradual and continuously progressive dimin personality and intellect, and *arteriosclerotic ps* in which the deterioration is remittent, clearly with neurological evidence of cerebrovascular or both *Acute confusion* is a clouding of cons the absence of previous dementia or person In *affective psychosis* a sustained depression is mood, with corresponding ideation, is the lead while in *late paraphrenia* a well organised

ABLE I—MEAN AGES DURATION OF ILLNESS, AND FOLLOW UP DATA IN FIVE DIAGNOSTIC GROUPS

—	No of patients		Mean age (years and tenths of a year)	Mean duration of illness before admission (months and tenths of a month)	Follow up					
					3 months			1–3 years		
					Dead	In hosp	Dis charged	Dead	In hosp	Dis charged
					(%)	(%)	(%)	(%)	(%)	(%)
	M	F								
orders	77		00 5	10 0	5	33	62	15	13	72
		152	87 2	7·6	4	20	76	6	13	81
ı	—	36	70 3	66 0	6	61	33	32	39	30
otic psychosis	24		73 4	26 8	50	33	17	71	17	12
		33	74 2	21 2	12	72	16	58	18	24
osis	14		78 8	53 6	75	25	0	86	14	0
		45	75 3	31 3	29	61	7	62	29	9
sional states	26		70 4	2 0	35	8	57	37	4	59
		28	71 3	1 5	30	29	32	56	3	11

elusions appears in a well preserved personality nitions are given elsewhere (Roth 1955)

ous studies we planned to exclude from the senile group cases of progressive dementia due to advanced sease In fact no such cases were identified and it ear that where the two coexisted it would be at present to determine the relation between them. neurological signs, physical illness was, therefore a diagnostic criterion in this study

The Investigation

nes consists of 485 cases selected from 473 re now patients aged 60 and over, admitted to ell Hospital. Those excluded were neurotics llaneous organic states, such as cerebral tumour ral paralysis. The 220 *cases with affective* ormed the bulk of the material Table I shows rs in the other groups and their sex distribution cases of late paraphrenia 36 were women main types of mental illness were differentiated inical picture on admission the performance logical tests, and the outcome as shown by studies (Roth and Morrissey 1952 Roth and 1953 Hopkins and Roth 1953 Roth 1955) ion of illness and pattern of outcome are shown

a were derived from the medical case records ories, specialists reports, and laboratory and em findings About a third of the cases were ne or other of us The presence of all kinds of lness was recorded except (1) conditions giving *disability and not requiring treatment* (2) one or joint lesions (3) senile emphysema and (4) *minor conditions such as varicose veins and* dermatitis bedsores, and gingivitis

In the preliminary report mentioned above inclusion of cases with raised erythrocyte-sedimentation rate (E.S.R.) either alone or in the presence of minor disabilities, resulted in a relatively higher incidence of physical illness among the senile psychotics than is described in the present paper Systematic records of sensory defects were available only for the affective and the paraphrenic groups.

Prevalence of Physical Illness

The total prevalence of all types of physical illness (excluding the varieties mentioned above) was in affective disorder 48% in late paraphrenia 50% in arteriosclerotic psychosis 60%; *in senile psychosis* 80% in acute confusional states 89% (see table II) Three facts emerged

1 There was significantly more illness among the acute confusional states than in the cases as a whole (P = < 0 01) showing that physical illness was an additional characteristic of this group differentiating it together with *duration* of illness test results, and pattern of outcome from the remaining groups.

2 The differences in incidence of physical illness did not account for the different natural histories of the five groups

3 In affective disorder and arteriosclerotic psychosis, *there* is a higher prevalence of physical illness among males This may in part account for their poorer prognosis.

VARIETIES OF PHYSICAL ILLNESS

Table II shows the varieties of illness found. Cases were included under more than one heading where appropriate The categories of urogenital, respiratory and cardiac disease are self explanatory The latter includes cases with unequivocally abnormal electrocardiograms (E.C.G.) and with angina of effort When

—PERCENTAGES OF VARIOUS KINDS OF PHYSICAL ILLNESS AMONG THE DIAGNOSTIC GROUPS WHERE THE NCY DIFFERS SIGNIFICANTLY (P = < 0·02) FROM THAT IN THE MATERIAL AS A WHOLE, THE FIGURES ARE) TYPE ACTUAL NUMBERS GIVEN IN ITALICS
3 — No definite illness does not refer to C.N S disease or to hypertension without signs of cardiac failure)

Group	Urogenital disease	Respiratory disease	Cardiac disease	Postoperative, postinfective and posttraumatic states	Other acute or active conditions	Percentages with "no definite illness"
disorder	11 (*11*)	9 (*7*)	17 (*13*)	22 (*17*)	17 (*13*)	43 (*33*)
erotic psychosis	38 (*9*)	21 (*5*)	29 (*7*)	13 (*3*)	13 (*3*)	20 (*7*)
chosis	21 (*3*)	14 (*2*)	0 (*0*)	7 (*1*)	14 (*2*)	64 (*9*)
fusional states	27 (*7*)	42 (*11*)	38 (*10*)	23 (*6*)	8 (*2*)	13 (*3*)
Total	21 (*30*)	18 (*25*)	21 (*30*)	19 (*27*)	14 (*20*)	37 (*52*)
disorder	10 (*15*)	3 (*6*)	12 (*18*)	16 (*24*)	11 (*17*)	58 (*88*)
phrenia	11 (*4*)	8 (*3*)	19 (*7*)	6 (*2*)	11 (*4*)	50 (*18*)
erotic psychosis	12 (*4*)	6 (*2*)	13 (*5*)	12 (*4*)	12 (*4*)	55 (*18*)
chosis	18 (*8*)	9 (*4*)	9 (*4*)	0 (*0*)	9 (*4*)	60 (*27*)
fusional states	36 (*10*)	14 (*4*)	46 (*13*)	21 (*6*)	18 (*5*)	11 (*3*)
Totals	14 (*41*)	6 (*18*)	16 (*47*)	13 (*37*)	12 (*34*)	52 (*154*)

TABLE III—PERCENTAGES OF CARDIAC DISEASE WITH AND WITHOUT HYPERTENSION IN FIVE DIAGNOSTIC GROUPS SEXES COMBINED BOLD TYPE INDICATES A FREQUENCY SIGNIFICANTLY HIGHER ($P = < 0.01$) THAN IN THE MATERIAL AS A WHOLE

Group	No	Cardiac disorders without hypertension	Hypertensive heart disease	Total
Affective disorders	229	7	20	27
Paraphrenia	36	8	22	30
Arteriosclerotic psychosis	57	12	37	49
Senile psychosis	69	3	15	18
Acute confusional states	54	35	13	48

the psychiatric breakdown was clearly precipitated or accentuated by acute physical stress, the case was noted as postoperative, postinfective, or posttraumatic "Other conditions" include miscellaneous illnesses severe enough to need treatment or to produce disability

Central nervous system disease is not shown in the tables because it formed one of the criteria on which a diagnosis of arteriosclerotic psychosis was based, when a history of "strokes," of epileptiform convulsions, or of clear cut focal signs, are taken together, the prevalence is as follows affective disorder 3%, paraphrenia 8%, senile psychosis 4%, arteriosclerotic psychosis 59%, acute confusional states 24% The latter figure is due mainly to the inclusion of epileptic confusions

A study was made of the frequency of raised blood pressure (B P)—i e, a systolic pressure of 210 mm. Hg or over, or a diastolic pressure of 110 mm Hg or over, or both The results are shown, for the sexes combined, in table III, where the proportions with cardiac disorders of all other kinds are also shown

Arteriosclerotic psychosis showed the expected pattern Signs of cerebral involvement predominated, with raised blood-pressure as the next most frequent condition Infective conditions, both respiratory and urogenital, and cardiac disorders were also quite common in the male sex

In *senile psychosis*, not only was the total prevalence relatively low, but the conditions found were often clearly intercurrent or secondary, and definite cardiac disease could be rarely identified Some cases were found with good physical health, and females especially may survive under care for several years in an advanced state of dementia Males, however, were usually found to be generally enfeebled and decrepit on admission, and had a high mortality despite the absence of specific disease The post-mortem data confirmed the infrequency of specific physical disease

In the *acute confusional states* toxi-infective conditions were common, and the E S R was raised in 39% of females and 50% of males Cardiac and cardiorespiratory, and genito urinary disorders also seem important, especially in males

The following cardiac conditions were found among the 54 cases auricular fibrillation 16%, arteriosclerotic heart disease (with clinical or electrocardiographic evidence) 23%, cardiorespiratory disease, with cardiac failure, 10%, failure with hypertension 8% Nearly half these cases also showed a raised E S.R, usually attributable to urogenital or respiratory infections—a point of interest in view of the connection between heart-failure and infection observed by Flint (1954) Among the cases with respiratory disease were 2 with bronchial carcinomata, and 1 with pulmonary tuberculosis Post operative and postinfective states were relatively common

The low prevalence of hypertension, and the frequency of cardiac failure, as compared with the other groups, are noted below

A feature common to the great majority of cases of acute confusional psychosis appears to be the presence of physical disorder not primarily located in the brain, as it is in the senile and arteriosclerotic groups In some, the confusion is a terminal phenomenon, either associated with a specific chronic illness, or of obscure derivation—death being attributed to indefinite causes, such as myocardial degeneration Necropsy may show severe renal or coronary atheroma, with the fatal outcome but the confusion itself sumed to have been linked But in othe confusional episode is an isolated one complete and sustained (case 1) A furthe patients are subject to recurrent episod associated with exacerbations of the underly illness—which was usually cardiac disease fluctuating course these cases resemble psychosis, but they differ in the absence of strokes or fits, nor is there dementia, or of any focal lesion Moreover, treatment of the condition may enable the patient to leave

As examples of the reversible and of the types of confusion the following cases may b

Case 1 —A boot-repairer, aged 72, who had before, was admitted on Oct 12, 1951, under He had been well until 7 days before, when he developed pyrexia, becoming confused at nigh violent The certificate stated he was hallucinated, and disoriented. He was difficult Previous physical health good, no history of down A sister had died from a stroke

On admission he was disoriented for time and the year as 1891 Said his age was 92 Memory events Poor general health and nutrition, rest, respirations 38 per min. Frequent cough emphysema, many râles at lung bases, cyanosed 92, B.P 140/80 Marked peripheral arteriosclero albumin 40 mg per 100 ml. E.S.R. (Westergr in 1 hour

Progress —Treated with penicillin injections twice daily for 3 days) On Oct 15 X ray of consolidation or infiltration Oct 17 much psychological tests confirmed absence of dementia discharged, fully recovered from mental confusion

Follow-up —On Oct 6, 1953, 2 years after at home Well, active, mentally alert.

Case 2 —A farmer, aged 74, was admitted as patient on July 2, 1953 He had suffered from bronchial asthma for many years, and his physica deteriorated over the past 5 years. There indication of memory impairment During the winter his sleep had been disturbed by difficulty For several months he had been muddleheaded inappropriately at night Certification became owing to his violent and uncontrolled behaviour no previous mental disorder His father and died from heart attacks He was described as

On admission he was garrulous but well rational by day, when no memory defects were but at night he was confused, restless, and Well nourished (11 st 8 lb) with evidence of recent No pyrexia Dyspnœic at rest, respirations Chest emphysematous, with numerous rhonchi grossly irregular, auricular fibrillation, heart B.P 140/90 No systemic failure No signs of dama nervous system E.S.R (Westergren) 36 mm in 1 reaction positive Cerebrospinal fluid normal albumin 60 mg per 100 ml., numerous pus c *Escherichia coli* X ray of chest (July 3), "irregular mottling right base ? pneumonia or infarct.

Progress —7 days after admission he dev retention of urine from prostatic enlargement, and prostatectomy was performed and a de inserted (Mr D A. Langhorne) Subsequently he both mentally and physically, but continued to confusional attacks at night. Discharged on

Follow-up —Until one month before his death 1954, he had continued to improve and been ab all his farm business He then became progre confused and restless, and developed thrombo Death was attributed to congestive heart-failure

Among the *affective disorders*, the frequen illness, even when central nervous-system excluded, is in both sexes lower than for all except senile psychosis, but postoperative infective states are relatively prominent. pressure was found in 18% of men, and in ther functional group, the *paraphrenics* (whose was higher) cardiac, urogenital, and miscel nditions were found in that order of frequency ion was present in 22% which agrees closely gure for the affectives Sensory defects (found vere more common than among the affectives, and of greater severity

m Findings

ies were carried out in 101 cases by Dr G A R and Dr D P King Only information about ic appearances is available at present, and the must therefore be treated with caution, but it an independent evaluation of the conclusions m observation during life.

t point is the frequent mention of vague and ic causes of death such as "myocardial on, generalised arteriosclerosis' and

parate disorders, such causes were given least often functional groups (25%) next among the acute states (45%) then among the *arteriosclerotics* l most commonly in the senile psychotics (84%) of 31 deaths among the latter were attributed to cases this low figure confirms the findings with physical illness in senile psychosis during life

specific diseases cardiovascular disease was ionest single cause of death among both the (8 out of 23 necropsies) and the acute con out of 20 necropsies) Of 27 cases in the rotic group cerebral catastrophes accounted for only although in 3 other cases old areas of oftening were found Coronary occlusion and ular disease accounted for only 2 deaths each thus an association between cerebral degenera gh mortality and the finding of vague non uses of death We know that in these groups trivial illness or injury may prove fatal Thus ses an accidental fall with or without fracture ed by death within a few weeks. Other patients succumb to a vegetative death with fall in re, physical immobility and great wasting equate food intake Of the 6 cases of gross ic atrophy observed all were in the senile group Histological studies of the brains of a of the cases are in progress.

r point is that the distribution of atheromatous ered in the various groups

atheroma was found in 60% of cases with arterio- chosis, but in only 30% of those identified as acute The largely extracerebral ætiological basis of the he specific rôle of occlusion of cerebral vessels in the received some independent confirmation Arterio dneys, on the other hand were reported more g the confusional states (55% as against 33%) functional groups, the recorded incidence of both 3%) and of renal (9%) arteriosclerosis was much in any of the organic groups.

llness and Mortality

the *affective disorders* the number of deaths follow up period was much lower than in the ps, and evidently the difference is not attribut e relative frequency of physical illness Our uggests that psychiatric disorder directly (by nd indirectly through inanition, neglect , &c., may account for about a quarter of the d that specific physical illness is responsible mainder Three-quarters of the patients who in fact been found during life to be suffering finite physical illness (e g coronary or hyper art-disease)

y among the *paraphrenics* was slightly greater ng the affectives but their mean age was heir mortality was lower than among any of e groups, and death was more often due to ase processes

It is important to note that in the affective and the paraphrenic groups clinical signs of cerebral involvement were slight Among the two groups where cerebral disease was known to exist, the *senile and arteriosclerotic psychoses*, the prognosis was poor, but this cannot be attributed to physical illness elsewhere in the body, the frequency of which was actually lower among the senile psychotics than the affectives and much lower in both the organic groups than among the acute confusional states; yet in the affective and the confusional cases mortality was lower Moreover, death among the senile group occurred less often from specific diseases than from intercurrent disease or trauma such as accidental fractures or the ill defined causes already referred to Even among the arteriosclerotics this was true in about half the cases In both these groups the mortality is far higher than can be accounted for by age alone and must be attributed to cerebral degeneration and its effects But arteriosclerotic disease holds a position intermediate between senile and confusional psychosis in that extracerebral somatic illness probably plays a subsidiary part

In the *acute confusional states* where physical illness is so often found, the outcome is nevertheless better than in either of the strictly organic psychosis. If structural brain disease is in fact responsible for low survival rates, then the relatively good prognosis in the confusional states may be related to the absence of irreversible cerebral changes. Other evidence points to the potential reversibility of the cerebral disturbance: thus few patients remain in hospital death or discharge within three months being the usual outcome—which would hardly be so if there were residual brain damage Moreover, longer follow up shows that many patients return to mentally active life and even among those who die in hospital or shortly after discharge, the degree of clouding of consciousness tends to fluctuate and lucid intervals occur

Discussion

The published data about the prevalence of physical illness in old age among samples of the general population (Sheldon 1948 Registrar General 1951 Pemberton 1955) though not available in a form strictly comparable with our figures, indicate that among the acute confusional states of both sexes, and among the male arteriosclerotics, physical illness is probably far in excess of chance expectation Moreover the greater prevalence of physical illness among males in two of our main groups (paraphrenia being almost wholly confined to females) is a reversal of the trend found among samples of old people outside hospital at this age, and suggests that physical illness plays an ætiological part in the mental disorders of old age, but one which for some reason unknown is more important in the male sex

Relation of Physical and Mental Illness

A comparison of the groups suggests that physical illness is probably of ætiological importance in the acute confusional states—an interpretation supported by the short duration of the psychiatric symptoms (averaging 1 0 months) in this group and by the varieties of physical illness (cardiac, cardiorespiratory, postoperative, and postinfective) actually found At the other end of the scale among the senile psychoses, we find largely minor infective conditions or ill-defined chronic states which were probably intercurrent and unlikely to be of primary ætiological significance. Arteriosclerotic psychosis is intermediate between these two in respect of the incidence of cardiac and cardiorespiratory disease and postoperative and postinfective states. These and other physical disorders are evidently not the cause of the progressive dementia from which the cases of arteriosclerotic psychosis usually suffer ' for in the acute confusional group the still higher prevalence of all these physical conditions was associated with a cerebral disturbance of a transient and recoverable kind It is cerebrovascular disease, for which there was frequent clinical and post mortem evidence, that is more probably related to the dementing process But it may be that, once progressive degeneration in the brain due to cerebrovascular disease is identified, the possibility of disease elsewhere in the body does not get enough attention Arteriosclerotic psychosis and the acute confusional states have in common a relatively high prevalence of cardiovascular and urogenital disease, and the possibility arises that the condition of fluctuating confusion, with alternating periods of clouded consciousness and relative lucidity, so often a feature of both conditions, is due to the physical illness (outside the brain) common to both groups The importance of giving heed to this extracerebral disease is underlined by the finding that only a minority of patients with arteriosclerotic psychosis died of cerebrovascular catastrophes

The relatively high prevalence of hypertension among cases of arteriosclerotic psychosis may be related to the frequency of gross focal lesions of the central nervous system characteristic of this condition In the acute confusional states, on the other hand, hypertension was *relatively uncommon while cardiac failure was significantly* more common than in the cases as a whole (P = < 0 01) The difference between the acute confusional states and arteriosclerotic psychosis is particularly striking in this respect (table III) The previous level of the blood-pressure was usually unknown, but in a few cases of acute confusion at least there was reason to believe that hypertension had been previously present, even though on admission the pressure was normal or low There was also evidence of recent infarction and cardiac dysrhythmia more often in the confusional than in any of the other groups All this suggests that myocardial failure in a setting of hypertensive heart disease may be the immediate factor underlying some cases of acute confusion

In other cases of confusion it seems likely that chronic cardiac or renal disease have diminished the capacity to deal with relatively small disturbances of metabolism, due to minor toxic or infective conditions Occasionally no specific cause could be identified, either during life or post mortem, for a cardiac dysrhythmia or mild failure, which in these cases may have been symptomatic of the toxic or infective disorder itself

Among the affective disorders, as a group, the rôle of physical illness is difficult to assess owing to the absence of comparable data for the general population But we have shown (Roth and Kay 1955) that when this group was subdivided, cases with physical disease formed a higher proportion of those who had fallen mentally ill for the first time late in life than those whose first breakdown had occurred at an earlier age This was particularly true of males, among whom physical illness probably plays a part in causing affective psychosis when breakdown first occurs in the senium

The frequency of physical illness in the paraphrenia group appeared to be of roughly the same order as among the females with affective disorder Defects of vision and hearing were, however, commoner and in general more severe

The contribution of physical illness to causation thus varies in importance in the different groups of mental disorder But no extracerebral disease, or combination of diseases, is specific to any one group, and in each case specific etiological factors have to be looked for elsewhere Thus somatic diseases—particularly cardiac, respiratory, and urogenital—are most important in the group with acute confusion, but only a small proportion of physically ill old people become confused, and there may well be some other factor which renders them vulnerable to physical stress If the underlying change is in the brain, it must nevertheless be of a different kind from that which occurs in the senile and arteriosclerotic psychoses, for dementia rarely supervenes on acute confusion In the affective psychoses, the specific cause is probably a simple mendelian dominant (Slater 1936), the manifestation-rate of which (some 30%) may be influenced to some extent by environmental and ex nous factors, including physical illness In late p phrenia, with a roughly similar pattern of phys illness, the total picture is yet very different Sens defects almost certainly make some contribution this group also contains many individuals isolated spinsterhood, bereavement, or life long eccentricity suspiciousness, from their fellows But since the clin picture often resembles schizophrenia there may be ot more specific, factors at present unidentified In arte sclerotic psychosis the specific factor is the occlusion cerebral blood-vessels, with cardiac and renal disease important accessories Finally, in senile psychosis, c bral atrophy with abundant plaques and neuro fibril changes are generally regarded as the fundamental ca But there is need for much further investigation into cerebral and metabolic changes accompanying psych in the elderly, and for adequate correlation of th *changes with the clinical picture*

Differential Mortality

Of the two groups with the highest mortality, the se psychoses show the lowest prevalence of physical nesses, while the arteriosclerotic psychoses show lower prevalence than acute confusion, which has a more favourable outcome The differences in pattern outcome between the five groups are largely independ of age—anyhow for periods of observation of 2–3 yea There were striking differences in mortality within e of the age groups 60–69 years, 70–79, and 80 and ov Thus, among patients aged 80 and over, senile psychot had almost three times the mortality of cases w affective disorder for equivalent follow up peri (ranging from 1 to 3 years) Hence cerebral degenerat emerges as the most potent cause of mortality in t cases studied, and this is independent of any contribut by cerebral catastrophe, not only in senile psychosis b also to a large extent in psychoses with cerebrovascu disease

This observation may be of some general biolog interest Senescence may be most objectively defined "that change in bodily faculties and sensibilities a energies which accompanies ageing and which rend the individual progressively more likely to die fro accidental causes of random incidence" (Medawar 195 It is determined by innate or natural factors as well the cumulative effects of wear and tear Very little known about the structural or functional changes und lying innate factors in man But it may be not witho relevance that in senile psychosis—a disorder oft regarded as a caricature of "normal" senescence—br atrophy not easily recognisable at necropsy carries such high mortality, though the associated extracerebr disease is usually trivial Biologists have long emphasise the converse relationship in organs and organisms betwee growth and ageing, and, since the cell population of th central nervous system is incapable of division, it viability may prove to be a determinant of innate ageing

The factor apparently next in importance to brain atrophy in causing death is physical illness, whose high prevalence among acute confusions doubtless accounts for a large part of the difference in mortality between the confusional and affective groups Within the confusional group, however, neither age nor physical illness adequately explained the dichotomous pattern of outcome in death or discharge from hospital except that cardiac diseases were usually fatal

These two groups of cases with confusion are easily recognised soon after admission Those who will recover have usually begun to clear by the time they enter hospital, and intermittent contact is possible with them within hours or days of admission. Those who are still out of touch with their environment for 10–14 days after admission tend to die. In many such cases there is no obvious reason why this should be so, and acute confusion should be treated as a medical emergency calling for detailed physical assessment with particular attention to possible cardiac failure or dysrhythmia, which are so commonly associated.

We may conclude that mental clouding associated with physical illness is of serious import in patients admitted to mental hospital. Nevertheless psychiatric interest should centre on the fact that the psychosis is potentially reversible; improved methods of treatment may reduce the number of deaths without increasing the number of patients likely to become permanent inpatients.

In psychiatric disorders of old age as a whole, the frequent association of mental with physical illness needing urgent attention should be borne in mind. Treatment of the physical disorder will always improve the patient's chances of leaving hospital.

Summary

The prevalence of extracerebral physical disease among psychiatric inpatients aged 60 and over, and its contribution to the natural history of each of the five main clinical groups found at this period (the senile, arteriosclerotic, and acute confusional psychoses, the affective disorders, and the paraphrenias) have been investigated. The following conclusions are drawn:

1. In senile psychosis the progressive deterioration and high mortality are due to cerebral degeneration, and physical illness is intercurrent or secondary.

2. In the acute confusional states physical illness is of major importance in determining both the onset of the psychotic symptoms and the characteristic pattern of outcome (death or discharge within a few months). But it is necessary to postulate an additional factor, such as deficient homœostasis, to account for the abnormal vulnerability to physical stress shown by this group. The cerebral disturbance is potentially reversible, and cerebral degeneration is absent. Both in this condition and in arteriosclerotic psychosis there is a high prevalence of cardiac and renal disease.

3. Arteriosclerotic psychosis appears to be intermediate, in respect of the part played by physical disease, between the senile and acute confusional groups. It is suggested that the typical confusional episodes are due, in part at least, to extracerebral disease, which also contributes towards the high mortality. But as in senile psychosis—the other condition with a poor outcome—cerebral degeneration is the major cause of the poor outcome.

4. In affective psychosis, where cerebral degeneration is absent and the prognosis is good, such mortality as occurs is almost wholly due to specific physical disease. There is evidence that physical illness is an important cause of affective breakdown when this develops late in life for the first time.

5. The part played by physical illness in paraphrenia requires further study—particularly the rôle of sensory defects which are found in severe form in 30% of cases. Death results usually from specific physical disease rather than the ill-defined causes characteristic of the psychoses with cerebral degeneration.

6. In all diagnostic groups (except paraphrenia) physical morbidity is commoner among males—a fact reflected in the higher mortality of males. Thus the link between physical illness and psychiatric breakdown seems to be especially close among elderly males.

7. Specific physical illness is the usual cause of death in the conditions where cerebral degeneration plays little or no part. But cerebral degeneration emerges as the most potent cause of death in mental disorder of old age.

8. Investigations in the circulatory, metabolic, and neuropathological functions in the psychoses of old age are urgently needed. Meanwhile it is suggested that full physical assessment and appropriate treatment are of particular importance in those cases presenting with episodes of confusion, or with affective disturbance arising for the first time late in life.

Our thanks are due to the South West Metropolitan Regional Hospital Board for their financial support, and to Dr Joshua Carse for his help and encouragement. We are indebted to Dr H. Seaward Morley, consultant physician to the hospital, for his reports in a number of cases, to Dr G. A. Harrison and Dr D. P. King for permission to refer to their post-mortem reports, and to our colleagues on the staff of Graylingwell Hospital for their ready and helpful coöperation.

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EFFECTS OF INHALATION OF SULPHUR DIOXIDE ON RESPIRATION AND PULSE-RATE IN NORMAL SUBJECTS

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Amdur, Melvin, and Drinker (1953) found that the inhalation of sulphur dioxide in low concentrations (1–8 p.p.m.) produced consistent changes in respiration and pulse-rate. Breathing became shallower and more rapid, and the pulse-rate increased. These changes were observed in fourteen normal subjects but were not seen in two boiler tenders who were habitually exposed to high concentrations of the gas.

As these results seemed to be relevant to the problem of air pollution in London fog, it was decided to examine the effects of sulphur dioxide on the work of breathing determined by analysis of simultaneous pneumotachograph and œsophageal pressure tracings (McIlroy, Marshall, and Christie 1954). Initial experiments using virtually the same technique as that of Amdur et al. not only failed to reveal any change in the work of breathing but the expected alterations in respiratory rate and depth were not observed. To investigate the matter more fully, experiments under rigorously controlled conditions were planned.

Possible reasons for our initial failure to confirm the findings of Amdur et al. were considered:

(1) The Boston experiments each lasted thirty minutes, divided into three ten-minute periods. In the first period the subject breathed air alone. Sulphur dioxide was then introduced into the air stream for ten minutes, and this period was followed by a further ten minutes during which the subject again breathed air. Pulse-rate, respiratory rate, and tidal volume were recorded every two minutes. No experiments were reported in which the subject was given air alone to breathe during the middle "exposure" period. The possibility that the changes attributed to sulphur dioxide might in fact have been due to psychological reaction to the experiment could not therefore be ruled out.

(2) Similarly the changes observed could have been due to the subject's unfamiliarity with the procedure, in which case the effects might have become less in subsequent experiments on any one subject. This possibility had to be considered.

(3) Although it was stated that the gas was inhaled through a face-mask, it is not known whether mouth breathing or nose breathing was practised. This point might have been of considerable relevance since it is possible that the mere detection of an unfamiliar smell could alter the respiratory pattern and increase the pulse-rate.

(4) The possibility had to be considered that Londoners might be "immune" to the effects of low concentrations of sulphur dioxide, as were the workmen reported by Amdur et al The levels of atmospheric sulphur dioxide in Boston are roughly the same as those in London, but little is known of the prevalence of other irritant pollutants in the two cities

(5) Amdur et al used 1% mixtures of sulphur dioxide in air, compressed in steel cylinders and bled into the main air stream from which the subjects breathed They stated that the sulphur dioxide concentrations were checked by the method of Thomas and Abersold (1929) This is a conductimetric method in which measurement is made after conversion of the sulphur dioxide to sulphuric acid It would fail to differentiate between sulphur dioxide and any sulphuric or other acid which might have been present as a contaminant, and therefore the possibility that their subjects were breathing some irritant apart from sulphur dioxide had to be considered In a personal communication, however, Dr Amdur stated that methods of analysis specific for sulphur dioxide had also been used and therefore this possibility did not exist in fact

Methods

The first four possibilities mentioned above were taken into account in the design of our investigation

Each subject took part in at least three experiments each comprising three ten-minute periods During the "exposure" periods they were given to breathe 0 p p m (a "blank"), 5 p p m, and 10 p p m sulphur dioxide mixtures, hence one exposure was a true control (In addition six subjects were given 20 p p m sulphur dioxide, this group is discussed separately below)

To obviate possible effects of apprehension in the subject, which might be expected to decrease in subsequent experiments, the order in which the various concentrations of gas were exhibited was determined by reference to a table of random numbers

In the experiments which prompted this investigation the gas was inhaled through a mouth-piece This procedure is technically preferable to inhalation through a face-mask because there is no tendency to leakage, and the subject is given no alternative route for breathing

To test the hypothesis that the effects reported by Amdur et al were mediated through the nose, a group of subjects underwent a duplicate series of experiments in which they inhaled the gas mixture both from a mouth piece and then through the nose from a close fitting anæsthetic face-mask

To examine the possibility that London dwellers might be "immune" from the reported effects of sulphur dioxide by virtue of their continuous exposure to relatively high degrees of atmospheric pollution, the apparatus was taken to a rural site, and experiments were made on country dwellers By the courtesy of the Director of the East Malling Horticultural Research Station, facilities were granted to subject to the procedure a group of 6 volunteers from his scientific staff This establishment is situated in rural Kent, 30 miles south-east of London, and the volunteers had all lived nearby for at least two years before the investigation

All the subjects in this investigation were healthy adult males between the ages of 21 and 40 None had any history of respiratory or cardiac disease, and all were without clinical signs of bronchospasm before the experiments

The experiments were arranged in groups in which 6 subjects breathed the three gas mixtures

Group A	Barts, mouth breathing
Group B	Barts, mouth-breathing
Group C	Barts, nose breathing
Group D	rural, mouth breathing

Groups B and C comprised the same 6 subjects, who took part in both nose breathing and mouth-breathing experiments This scheme involved the performance of 72 experiments on 18 subjects

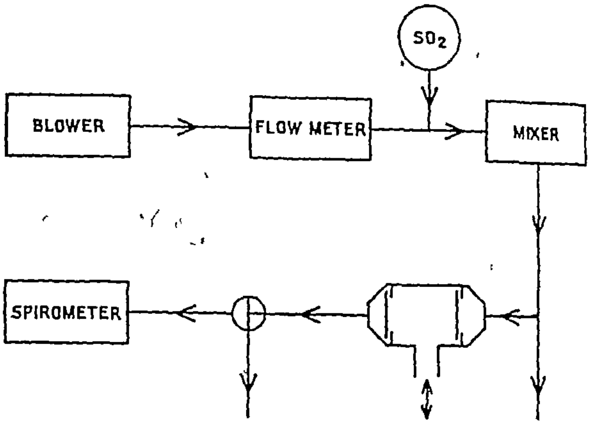
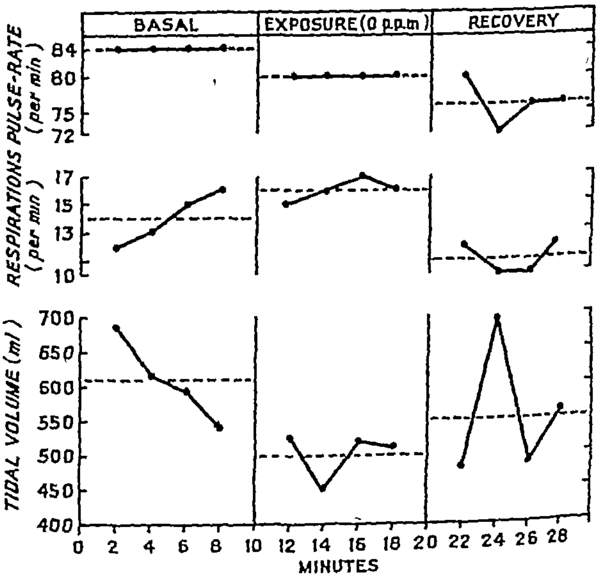


Fig 1—Diagram of apparatus

The apparatus was essentially the same as that used by Amdur et al, and is illustrated diagrammatically in fig 1 The subjects breathed through a valve assembly from an open circuit through which air was blown at 100 litres per minute By turning a three way tap expired air could be collected in a spirometer and its volume determined A pneumotachograph was not included in the circuit, because its dead space might have affected the breathing of the subjects

Sulphur dioxide from a "siphon" was diluted with air in a gas burette, the degree of dilution being calculated so that, when the mixture was displaced by mercury at a constant rate and bled into the main air stream, known concentrations of the gas resulted To check the concentrations of sulphur dioxide so produced, the mixtures were aspirated through hydrogen peroxide at pH 4 5, and the resultant sulphuric acid determined by titration with N/250 borax

Subjects were told that at some time during the experiments they might or might not be given weak sulphur dioxide to breathe They were instructed to signal if they detected the gas, and to signal again when they thought its administration had been discontinued After the experiment they were asked to comment on the experience, and their remarks were noted They were told to make themselves comfortable and to breathe



	Percentage change from basal values	
PULSE-RATE	−4 8	−9 5
RESP-RATE	+14 3	−21 4
TIDAL VOLUME	−18 0	−9 8

Fig 2—Results of a control" experiment. (Dotted lines represent mean values)

MEAN PERCENTAGE CHANGES FROM BASAL VALUES IN ALL GROUPS AT DIFFERENT GAS CONCENTRATIONS

Group	Period	Pulse rate 0	Pulse rate 5	Pulse rate 10	Pulse rate 20*	Respiratory rate 0	Respiratory rate 5	Respiratory rate 10	Respiratory rate 20*	Tidal volume 0	Tidal volume 5	Tidal volume 10	Tidal volume 20*
A, Barts mouth	E	−1·5	+0·5	−1·1		+13·4	+8·8	+2·9		−12·2	−0·6	+0·4	
	R	[illegible]	−0·3	−2·3		+5·3	+1·4	−2·0		−5·1	−3·7	+2·2	
B Barts mouth	E	+4·0	−0·7	+2·2	+4·7	−1·3	+1·8	−4·3	+5·2	−0·0	−8·5	+1·8	+0·4
	R	+5·7	−0·1	+4·0	+4·3	−6·9	+1·2	−5·4	+1·8	+1·3	−10·0	+7·1	+3·3
C Barts nose	E	−0·5	−3·4	0·0		+1·0	−5·1	−0·5		−3·2	+3·5	+1·4	
	R	−1·3	−1·0	+0·3		+1·0	−0·0	−0·8		−1·2	+0·0	+0·0	
D rural mouth	E	−0·5	+0·3	+0·3		−0·4	−4·0	−0·8		0·0	−3·2	+1·2	
	R	−2·5	−1·7	+4·2		+1·5	+1·4	+2·2		−0·9	−13·7	−0·6	
A+B+D	E	+0·7	+0·1	+2·4		+1·9	+2·9	−0·7		−4·4	−4·1	+2·1	
	R	+0·4	−0·[illegible]	+2·2		0·0	+2·4	−3·2		−1·6	−9·1	+2·9	
A+B+C+D	E	+0·4	−0·8	+1·8		+1·9	+0·9	−2·8		−4·1	−2·2	+2·0	
	R	0·0	−0·9	+1·7		+1·1	−0·5	−4·1		−1·5	−4·6	+2·5	

* These values relate to experiments made on 4 subjects from group B and 2 subjects from group A.

E exposure R, recovery

naturally Five minutes were allowed for the subjects to settle down and get used to the apparatus before the half hour experiment proper was begun At the tenth minute the gas mixture was bled into the air stream until the twentieth minute when it was stopped At two-minute intervals their expired air was switched into a spirometer ten exhalations being collected at a time and tracings taken on a moving drum Their pulse-rate was noted at the same time

Results

Respiratory rates and tidal volumes at two minute intervals were measured from the spirometer tracings in each experiment. The values obtained were the means of the 10 exhalations collected Pulse rates were measured at the wrist. The data from one experiment are shown in fig 2 For each of the three periods ("basal," "exposure," and "recovery") the means of four tidal volumes respiratory rates, and pulse-rates were calculated* (readings at 0 10, 20 and 30 minutes after the start of the experiment were discounted) The mean values in the first period were considered as basal, and the percentage changes from them were calculated in the two subsequent periods In each group at each gas concentration the mean values of these changes (see table) and their respective standard errors were calculated

Examination of individual results in all the groups shows no consistent change, and no subject showed the triad of effects reported by Amdur et al The variations observed are apparently random

If all the groups are considered together, the changes in pulse rate respiratory rate and tidal volume observed during and after the inhalation of 5 or 10 p p m are very small. Changes observed during the corresponding periods in control experiments are of a similar order There is no regular variation with gas concentration. Results are consistent with a hypothesis of no change in the quantities measured during "exposure" and "recovery" periods, compared with "basal" values at any of the concentrations 0 p p m (control) 5 p p m. and 10 p p m of sulphur dioxide. Differences between the results in the nose breathing and mouth breathing groups and between those in town and country groups are not significant at the 5% level.

One subject originally included in the series could not complete the experiment in which he was given 10 p p m to breathe, because he developed considerable bronchospasm. There was no apparent effect with 5 p p m Since the investigation was designed to examine the effects of inhalation of the gas on respiratory rate tidal volume and pulse rate, and the subject could not proceed with the experiment in which these values could properly be observed, another subject was substituted for him in the schedule

None of the other subjects developed clinical signs of bronchospasm nor were any distressed by the gas. Most subjects detected the gas, some coughed or reported irritation with the higher concentration, and a few signalled that they detected the gas when none was being given

On the completion of these tests 6 volunteers who had taken part in them were given 20 p p m Again no consistent effects on the values measured were noted * All the subjects found the gas irritant

Another experiment outside the scheme, was made on a physiologist, who told us that in the past sulphur dioxide "made his chest feel tight" He asked out of interest to be submitted to the standard procedure using 10 p p m In the third minute of exposure he developed clinical signs of severe bronchospasm which persisted for about an hour after the experiment He experienced

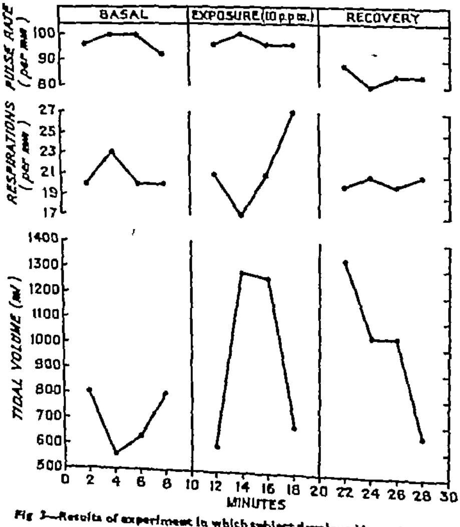


Fig 2—Results of experiment in which subject developed bronchospasm.

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* Multigraphed copies of the protocols of these experiments may be had from the office of THE LANCET 7 Adam Street Adelphi, London, W C 2

[illegible]

Discussion

[illegible]

Summary

[illegible]

REFERENCES

[illegible]

[illegible] DRAINAGE FOR THE RELIEF OF ASCITES

[illegible]

Technique

[illegible]

Illustrative Cases

[illegible]

Total volume excreted in 24 hr	*Protein*
1995 ml	75 mg per 100 ml = 1 49 g total
3145 ml	40 mg per 100 ml = 1 26 g total
2140 ml	100 mg per 100 ml = 2 14 g total
1460 ml	60 mg per 100 ml = 0 88 g total
2575 ml	40 mg per 100 ml = 1 03 g total

Irritation of Bladder —Cystoscopy on these patients some weeks later has usually shown a normal vault to the bladder but there has been evidence of thickening of the mucosa of the base On two occasions culture produced *Pseudomonas pyocyanea*, possibly introduced by the plastic catheter In no case however were the symptoms of cystitis sufficient to cause real discomfort nor was any implantation of carcinoma into the bladder found though cancer cells were sometimes recovered in the fluid draining from the bladder

Conclusions

These results suggest that this operation is well worth while in patients who are reasonably fit and likely to live for some time It is not recommended for those who are poor operation risks. No tapping is required and abdominal distress due to the pressure of ascitic fluid is obviated There is of course frequency of micturition but this slight discomfort is of no significance compared with the patient s previous distress Furthermore the permanent removal of this pressure breaks the vicious circle by relieving the pressure on the portal circulation and thereby may lessen the formation of the ascitic fluid In the same way this loss of ascitic fluid could possibly slow up growth of the intraperitoneal deposits of carcinoma by depriving them of the fluid on which their metabolism depends Some protein is bound to be lost but no more than in the untapped patient who has already lost it into the peritoneal cavity Any anæmia and hypoproteinæmia in these patients should be corrected before operation

STAPHYLOCOCCAL ENTERITIS

TWO ASSOCIATED FATAL CASES

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We report these two cases of staphylococcal enteritis (1) because this disease is of current interest and importance (2) because the two cases occurred in the same surgical ward, within a week and were infections by the same strain of organism and (3) because a small survey of the staphylococcal population of the ward showed that this same strain was widely distributed

Case reports

Case 1 —A man aged 59 was admitted on Jan 13 1955 to a surgical ward for gastrectomy He had a peptic ulcer which had bled several times. On Jan 17 a preoperative course of penicillin 2 mega units daily and streptomycin 1 g daily both by injection, was begun On Jan 18 partial gastrectomy was successfully performed The patient was now started on a course of penicillin 2 mega units and streptomycin 8 g daily by mouth

Enteritis —Apart from a persistent pyrexia of about 100 F postoperative progress was satisfactory until Jan. 21 when [illegible]he patient woke in the morning with severe diarrhœa, [illegible]scribed as grey fluid draining per rectum' The diarrhœa [illegible]tinued throughout the day and in the evening intra-[illegible] infusion was begun Overnight the rectal fluid became [illegible] (Jan. 22) shreds of membranous material [illegible] the small bowel were seen in the stools [illegible]ion of the stools showed that gram [illegible] place of the usual bowel flora. [illegible] looked slightly better Culture [illegible] of *Staphylococcus pyogenes* [illegible]cin and erythromycin [illegible]ycin, chlortetracycline [illegible]) and tetracycline [illegible] course of oral and [illegible]od into coma towards evening and he died in the small hours of Jan 24 the fourth day of the illness.

Necropsy findings —Bilateral basal bronchopneumonia was found and the peritoneal cavity contained a small clear effusion The partial gastrectomy had healed satisfactorily the mucosa was congested but otherwise normal. The duodenum and small bowel were dilated their serosal surface being smooth and salmon pink The small bowel contained yellowish fluid in which floated shreds of membrane Similar shreds adhered in a few places to the mucosa which was unnaturally smooth Almost the whole of the small bowel appeared denuded of the superficial layers of mucosa The muscular walls did not appear œdematous or inflamed The large bowel contained an inspissated mass of the same yellow shreds resembling caseous material The colonic mucosa was normal.

Histology —The small bowel had a layer of fibrin on its mucosa containing polymorphs and round cells and partly separated forming a pseudomembrane The mucosa was denuded of its villi and both mucous and submucous coats contained a mixed infiltrate of round cells and polymorphs The muscular and serous coats showed little congestion or œdema.

Case 2 —A man, aged 51 had been treated at home for several weeks for a condition labelled Behçet s type of erythema multiforme Unknown amounts of chloramphenicol and chlortetracycline had been given locally and systemically He was admitted to the same ward as case 1 on Jan. 19 two days before the onset of enteritis in case 1 A course of oxytetracycline 2 g a day by mouth was begun At this time the principal lesions were on his penis and in his mouth both being ulcerated The lesions improved rapidly on this treatment and he remained well until Jan. 26 two days after the death of case 1

Enteritis —On Jan. 26 he woke with a sore throat and diarrhœa His temperature was 100°F and pulse-rate 100 His stools were very loose and consisted largely of mucus and shreds of membrane A smear of the stool showed a striking predominance of gram positive cocci The diarrhœa continued throughout the day At 6 P.M. oxytetracycline was withheld and an intravenous drip was begun. The patient vomited once or twice and complained of severe cold. His diarrhœa continued throughout the night.

Next day culture of the stools showed a profuse growth of *Staph pyogenes* sensitive to chloramphenicol bacitracin, and erythromycin and insensitive to penicillin streptomycin chlortetracycline oxytetracycline and tetracycline A nasal swab yielded a heavy growth of an organism of almost identical sensitivity Chloramphenicol was again administered but the patient died the same evening

Necropsy findings —The only significant findings were in the small and large bowel and were identical with those in case 1 There were no lesions of skin mouth or penis

Bacteriology

Methods

For nasal swabs brush plates, and the subculture of enriched stools blood agar containing 1 unit of penicillin per ml was used Fæces were enriched by overnight culture in 3 5 ml. of digest broth containing 10% of sodium chloride, and a teaspoonful of fat free meat which was autoclaved at 15 lb for twenty minutes and to which was added potassium tellurite to a final concentration of 1/10 000

Antibiotic sensitivity tests were by the method of Gould and Bowie (1952) Coagulase testing was done on slides and in tubes, reconstituted rabbit plasma being used in the tubes.

The Cases

In the two cases the staphylococci isolated from the fæces were of the same phage type (47/75/77) A nasal staphylococcus isolated from case 2 was of phage type 47/53/75/77 and differed from the other two strains by being slightly sensitive to aureomycin

The Ward

After the death of case 2 the following further investigations were made

(1) A nasal swab was taken from all the patients and from 9 out of the 13 members of medical and nursing staff.

(2) A brush plate was taken from the top blanket of each occupied bed

(3) A stool was collected from each patient

COAGULASE POSITIVE PENICILLIN-RESISTANT STAPHYLOCOCCI ISOLATED FROM NOSES, BLANKETS, AND FÆCES AFTER DEATH OF CASE 2

Bed no	Nose	Blanket	Stool	Stool	Blanket	Nose	Bed no
12					-		13
11	T	S	T S	Empty bed			14* II
10		P		Empty bed			15
9	Empty bed			Not tested			16
8	Empty bed						17
7	Overnight patient only						18
6	Overnight patient only						19
5	Overnight patient only						20
4	T	P			T	P	21
3	C		C				22
2	P						23
1	P	T C			T		24* I

T, phage and sensitivity patterns typical of lethal strain
P, phage pattern only same as that of lethal strain
S, sensitivity only typical
C, other coagulase positive staphylococci
* Beds occupied by cases 1 and 2
Tested and found negative for staphylococci
Of 18 members of the staff 9 were tested, and the typical organism was found in 1 swab only
The phage pattern of the similar strains was 47/75/77 with one factor more or less

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Erythromycin appears to be the main weapon against the infection—once it has occurred Prophylaxis should include such measures as daily examination of the stools, including gram smear , culture of stools in non-urgent cases for antibiotic therapy , and possibly the inclusion in the diet of material containing liver tetracycline-resistant lactobacilli to limit bowel sterilisation Once the disease is established, recovery is exceptional In case 2 death took place thirty six hours from the onset

Summary

of staphylococcal pseudomembranous ed from a common source are reported

A brief bacteriological survey of the ward showed heavy contamination by the strain responsible

The causation and prevention of this disease are discussed

We wish to thank Dr E H. Gillespie, of the Public Health Laboratory at Sheffield, for the phage typing, his interpretation thereof, and his advice , Dr J E Ennis, consultant pathologist, Dryburn Hospital, for advice and encouragement , and Dr C F W de Saram and Mr R Petticrew for access to their records and permission to publish the cases.

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PULMONARY DISEASE SIMULATING TUBERCULOSIS AND CAUSED BY CHROMOGENIC ACID-FAST BACILLI

R DOUGLAS YOUNG
M.B Edin , M.R C.P.E
ASSISTANT CHEST PHYSICIAN, BEDFORD GENERAL HOSPITAL AND CHEST CLINIC

THERE are many varieties of acid fast bacilli, the most important being *Mycobacterium tuberculosis* Some varieties are characterised by their ability to produce yellow or orange pigment when grown on certain media, and interest has recently been aroused in the pathogenicity of such " chromogenic acid fast bacilli " Hall and Erlandson (1955) have collected from the literature eleven cases of pulmonary disease in which these bacilli were considered to be the cause

Because this condition can easily be misdiagnosed as tuberculosis and treated among open cases with the risk of added infection, I am reporting the following additional case

Case-report

A woman, aged 31, was seen on Jan 5, 1954, with a history of hæmoptysis This had occurred first in the previous May, and had recurred in December after a normal confinement She had a slight productive cough but no lassitude or chest pain The only significant previous history was measles in childhood, a few attacks of bronchitis, and gingivitis with pyorrhœa for the last eleven years Early in 1953 she had teeth extracted under general anæsthesia, but no subsequent incident suggested a pulmonary abscess

She was well nourished and afebrile, with no lymphadenopathy or finger clubbing The only abnormality found was gingivitis with dental caries Radiography of her chest showed a cavity in the right upper zone, with a little nodular infiltration below it and similar nodulation below the left clavicle. A blood-count was normal, and her erythrocyte-sedimentation rate 35 mm in 1 hour (Westergren) A specimen of sputum was reported on Jan 11 to contain acid fast bacilli on direct smear, and the patient was admitted to hospital with a diagnosis of pulmonary tuberculosis

Treatment and Progress

Within two weeks culture of the organisms was reported to be atypical for tubercle bacilli As the sputum contained a mixed growth, with *Hæmophilus influenzæ* predominating, the patient was given a course of penicillin 1 mega-unit daily for ten days This had no effect on the radiological appearances Bronchoscopy revealed only a little muco-purulent secretion in the posterior segmental bronchus of the right upper lobe

Between Jan. 11 and March 5 seventeen specimens of sputum and two laryngeal swabs were examined all were found to contain acid fact bacilli on direct examination and all produced a growth of chromogenic acid fast bacilli on Löwenstein's medium No tubercle bacilli were ever isolated from the sputum or the urine, and no acid fast bacilli of any type from the gums Three pooled specimens of sputum were treated and inoculated intramuscularly into two guineapigs, which, when killed ten weeks later, gave no evidence of infection with tubercle bacilli

By this time the patient's three children, all under 6 years of age had been found to have normal chests on radiography and to be negative to the multipuncture tuberculin test

She was treated empirically with streptomycin 1 g p-aminosalicylic acid 16 g and isoniazid 200 mg daily from Feb 17 to March 20 Her sputum contained the same acid fast bacilli on direct examination throughout February and early March thereafter her sputum became negative even on culture, and gradually disappeared. Her general condition improved a little but her chest radiographs showed no change She was discharged home on April 16 gradually mobilised and was kept under observation at the clinic On June 21 however a laryngeal swab was again positive on culture the organism being as before It was decided that resection was indicated and on Aug 24 1954, a right upper lobectomy was performed by Mr C W James at Harefield Hospital followed two weeks later by a five-rib thoracoplasty The operations were done under cover of streptomycin and isoniazid

Pathology

The only organism that could be isolated from the operation specimen was the same bacillus The resected right upper lobe showed atelectatic apical and posterior segments containing an irregular and fairly thick walled cavity about 5·5 × 2·5 cm. The subapical branch of the posterior bronchus could be traced to the cavity Below the large cavity was a second small slit like cavity 2·0 × 0·5 cm Medial to this the posterior bronchi were crowded and ectatic The rest of the lobe was apparently free

Histology

The cavity's lining consisted mainly of vascular inflammatory granulation tissue with an occasional foreign body giant-cell. In the cavity lining there were patches resembling tuberculous granulation tissue but the giant cells were somewhat atypical. Some acid fast bacilli morphologically identical with those in the culture were seen in the cavity wall. The bronchus draining the cavity showed ulceration of the mucosa and much scarring of the mucosa and submucosa in places. Squamous metaplasia of the surface epithelium extended to the junction of the bronchus with the cavity

Postoperative History

The patient was discharged home on Sept. 20 chemotherapy being discontinued two weeks later All postoperative laryngeal swabs were negative Ten months later the patient remained well and symptom free

Bacteriology

The *morphology* of the bacillus on direct smear was consistent with that of *M tuberculosis* The first two specimens were in fact reported without comment as containing acid fast bacilli.

Culture—The time for macroscopic growth to appear on Löwenstein-Jensen medium varied from two to four weeks. When first detected both colony structure and morphology were indistinguishable from those of *M tuberculosis* The organism was strongly acid fast and pigment production was not noteworthy In addition it passed the usual cultural tests to detect non tuberculous mycobacteria—i.e., did not grow on egg media at room temperature and did not grow on nutrient agar at 37°C in five days There was, however no cording in Dubos fluid medium and, after standing two to three days at room temperature exposed to the light an orange-yellow pigment developed. It was this latter fact which first indicated that the organism was not *M tuberculosis*

The growth of the organism on first subculture on various media is summarised in the accompanying table

After two or three subcultures the organism grew profusely on all the media both at 37°C and at room temperature The morphology changed with age showing pleomorphism the bacilli were fatter than tubercle bacilli, of various length, and showed extensive beading and barring

Pigment—The formation of pigment appeared to depend on exposure to light rather than on temperature Cultures grown at room temperature exposed to the light produced orange yellow colonies whereas those grown at room temperature in the dark developed no such pigment The effect of exposure to light while growing at 37°C was not investigated.

GROWTH ON DIFFERENT MEDIA

—	Löwenstein and Jensen	Löwenstein and Jensen (glycerol omitted	Nutrient agar	Glycerol agar	Glycerol potato	Sabouraud
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R T	–	–	–	–	–	–
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R T	+	+	–	+	+	+
42 days 37°C	+ + + +	+ + +	+	+	+	+
R T	+ + + +	+ + +	+	+	+ +	+ +

R T., room temperature

The *sensitivity* of the organism to various chemotherapeutic agents tested in liquid Dubos medium was determined with the following results

Isonicotinic acid hydrazide inhibited by 2·5 µg per ml.
Streptomycin inhibited by 2·0 µg per ml.

This represents resistance ratios of 64 and 16 respectively compared with the standard *M tuberculosis* strain of H37 Rv

Sodium *p*-aminosalicylate not inhibited by 100·0 µg per ml.
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Sulphonamide: inhibited on solid media containing 10·0 mg per 100 ml.

Pathogenicity

The following tests were made

1 mg moist weight of bacilli was injected into two guinea pigs one subcutaneously and the other intramuscularly The one receiving a subcutaneous injection died eleven days later The only abnormality found was a purulent local lesion in which acid fast bacilli were present in large numbers These were isolated on culture There was no enlargement of the lymph glands. The other guineapig was killed four and a half months after injection. There was no demonstrable tuberculin sensitivity two months after injection. No abnormality of any kind was seen post mortem

White mice injected intravenously with 0·01 ml of a four day Tween -albumin culture showed extensive disease of the lungs and kidneys in which large numbers of acid fast bacilli were present when the mice were killed three months after injection Others, which died of intercurrent disease showed no lesions due to the acid fast bacilli.

Two Orkney voles were injected with 0·1 ml of a four day tween albumin culture intraperitoneally These were killed three months later The male showed enlargement of the mesenteric, renal, and portal lymph-glands in which however no acid fast bacilli were seen. The female showed much less disease there was slight enlargement of the mesenteric glands which contained moderate numbers of acid fast bacilli. No lesions were seen in any of the organs.

Discussion

Since the end of last century chromogenic acid fast bacilli have been cultivated from many different sources (Pinner 1935) Those associated with pulmonary disease have recently received close attention because their differentiation from tubercle bacilli is obviously important True acid fast saprophytes are easily identified by their ability to grow on egg media at room temperature and by their lack of pathogenicity to laboratory animals Between these and tubercle bacilli lies a group of organisms many of them chromogenic, which by their diversity defy accurate classification Studies made by Tarshis and Frisch (1952) Buhler and Pollak (1953) and Timpe and Runyon (1954) suggest that a group of these organisms potentially pathogenic to man can be distinguished by their virulence to animals and by the following cultural characteristics

(1) They can be isolated repeatedly from the patient either from pulmonary secretion or from resected diseased tissue

COAGULASE POSITIVE PENICILLIN-RESISTANT STAPHYLOCOCCI ISOLATED FROM NOSES, BLANKETS, AND FÆCES AFTER DEATH OF CASE 2

Bed no	Nose	Blanket	Stool	Stool	Blanket	Nose	Bed no
12							13
11	T	S	T S	Empty bed			14* II
10		P		Empty bed			15
9	Empty bed			Not tested			16
8	Empty bed						17
7	Overnight patient only						18
6	Overnight patient only						19
5	Overnight patient only						20
4	T	P			T	P	21
3	C		C				22
2	P						23
1	P	T C			T		24* I

T, phage and sensitivity patterns typical of lethal strain
P, phage pattern only same as that of lethal strain
S sensitivity only typical
C, other coagulase positive staphylococci
* Beds occupied by cases 1 and 2
Tested and found negative for staphylococci

Of 13 members of the staff 9 were tested, and the typical organism was found in 1 swab only

The phage pattern of the similar strains was 47/75/77 with one factor more or less

7 patients and 1 member of the staff were found to be infected by penicillin resistant coagulase-positive staphylococci From these persons (or from their fæces or blankets) 17 separate isolations were made Of these 17 organisms, 7 strains were of the same phage-type and the same sensitivity pattern as the lethal organism 5 further strains had the same phage pattern but were more sensitive to antibiotics 2 further strains had great resistance to antibiotics but were of a different phage-type The remaining 3 strains were of an atypical phage type and were amenable to all the above mentioned antibiotics but penicillin The member of the staff carried the lethal strain

The distribution of these different groups of staphylococci is shown in the accompanying table Apart from case 2, none of the patients had a history of antibiotic therapy likely to predispose to carriage of a resistant organism

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(1) They can be isolated repeatedly from the patient either from pulmonary secretion or from resected diseased tissue.

(2) They are not found in association with tubercle bacilli in the same patient

(3) They are pleomorphic, and the colonies produce pigment, which is usually buff or yellow, though occasionally orange, only after a period of growth In some cases the pigment forms after standing at room temperature, in others on exposure to light

(4) No pellicle is formed in Dubos medium

Their virulence to laboratory animals differs from that of *M tuberculosis* in the following respects

They are not virulent to guineapigs unless injected in massive doses—e g, 25 mg intraperitoneally, as advised by Tarshis and Frisch (1952), who found no virulent acid fast saprophytes even at this dosage The type of lesion produced by such a massive inoculum differs from that caused by tubercle bacilli in its serosal rather than parenchymal involvement, absence of tubercle formation, and frequent healing

Lesions are produced in rats and mice, but the amount of disease varies The strain tested by Pollak and Buhler (1955) caused fatal disease in Syrian golden hamsters, an effect potentiated by the concurrent administration of cortisone, which had little or no effect on injected guineapigs or rabbits

Cross sensitisation experiments in guineapigs have shown that there may be an antigenic relation between some chromogenic strains and tubercle bacilli This is not invariable, however, because the guineapigs in the present case were not sensitised to tuberculin, nor did the patient react to an antigen prepared from another strain of chromogenic bacilli kindly supplied by Dr Middlebrook Both in the present case and in one reported by Feldman et al (1943) the close family contacts remained tuberculin-negative

The sensitivity of chromogenic bacilli to chemotherapeutic agents varies, Collins (1953) finding most of the strains tested relatively resistant to streptomycin, and Penso (1949) had similar results with *p* amino salicylic acid Though tests in the present case indicated relative insensitivity, after a month's combined chemotherapy the sputum became negative and later disappeared, although the cavity did not appear any smaller

Mohler (1939), Laporte (1940), and Gibson (1953) have studied the synergism of atypical acid fast bacilli and lipoid material, and it is suggested that macrophages, by their lipophagic action, may activate a dormant virulence in previously saprophytic bacteria. Of the published cases of pulmonary infection associated with these organisms, 5 showed achalasia of the oesophagus, with subsequent inhalation of lipoid material

This is the third case in which lobectomy has been performed, one previously being improved and the other cured In the management of such a patient it is important to realise that superinfection with tuberculosis is possible if the patient is treated in an open tuberculosis ward, and that sensitivity tests are of great importance The organisms usually being drug resistant, the problems of treatment resemble those of the pre streptomycin era of tuberculosis When the disease is localised, resection sometimes appears to be the solution

Summary

Eleven cases of pulmonary disease due to chromogenic acid fast bacilli have been previously reported, and a twelfth is added with bacteriological and pathological data It was treated by resection

Owing to the frequent resistance of these bacilli to the usual drugs used against tuberculosis, resection, when possible, is suggested as the treatment of choice.

I am indebted to Dr N R Wynn Williams for access to the records, to Dr W F Lane and his staff for the bacteriological work concerned, to Dr A. O Wells for the virulence tests, and to Dr E Nassau for the pathological details.

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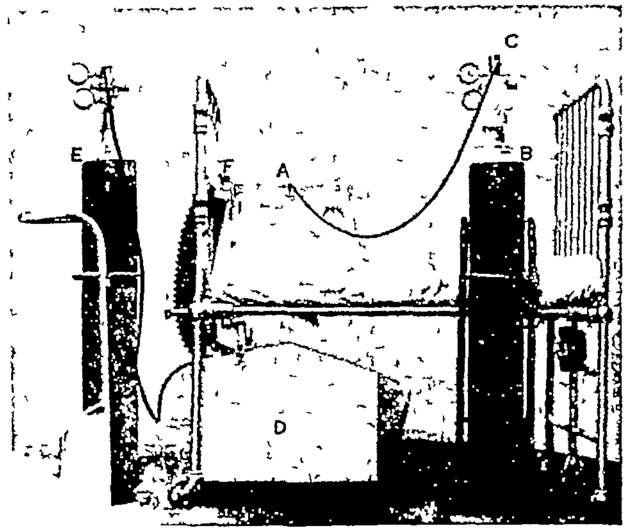
New Inventions

EXPERIMENTAL HIGH-TENSION OXYGEN BOX INCORPORATING COOLING AND HUMIDIFYING DEVICES

THIS apparatus has been designed to meet the need for a higher concentration of oxygen than that supplied by the standard oxygen tent, for use in the treatment of severe anoxia in babies The conditions for which it is intended are acute respiratory infections and asthmatic conditions, and it is not intended as an incubator for premature babies The maximum concentration of oxygen



gh-tension oxygen apparatus assembled

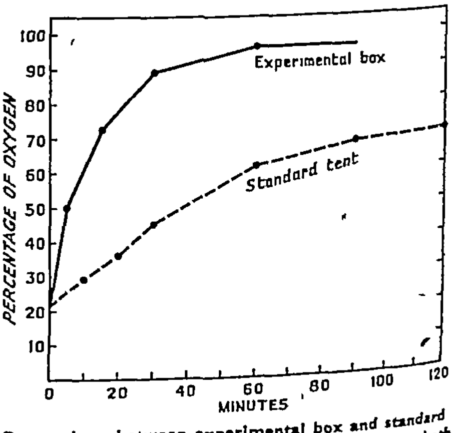


Fig 2.—Comparison between experimental box and standard oxygen tent with oxygen inflow of 5 litres per minute in both cases

(Reproduced by courtesy of the Editor of the *Journal of Physiology*)

This graph was obtained under laboratory conditions with no patient in either apparatus. Under working conditions in the ward the standard tent does not give more than 50% oxygen, because of increased leakage On the other hand, the experimental box gives 80–90% under ward conditions.

obtained is 92%, and, if the instructions are followed there is no danger that the carbon-dioxide concentration will exceed 1%. By opening the window on the side of the box any concentration of oxygen between 35% and 90% can be obtained but the apparatus is more complicated to manage than the standard tent and demands a rather higher standard of nursing care and so is not recommended for routine use unless oxygen concentrations higher than 50% are required.

The apparatus (fig. 1) consists of a Perspex box (A) which covers the upper half of the baby with a plastic apron attached around its foot, which is tucked under the mattress. The mattress should be rubber-covered. The main oxygen supply (B) is run through a humidifier (C) directly into the box and the flow should be kept at 7 litres per minute. Two corrugated rubber tubes connect the interior of the box with a sealed cold chamber in a refrigerator unit (D) kept under the bed. Circulation of the gases in the box through this unit is obtained on the Venturi principle, by a subsidiary oxygen supply (E) connected to the cold chamber and the flow required varies between 1 and 3 litres per minute according to the ambient temperature. Cooling is adjusted by turning the flange (F) to keep the temperature between 65 and 70° F inside the box. The humidity is lowered proportionately to the rate of circulation through the cooler because of condensation in the cold chamber; therefore the cooler should be used as sparingly as possible—in very cold weather it can sometimes be switched off completely.

The main differences between this apparatus and the canopy type of tent are (1) the smaller capacity, which enables a more rapid rise in oxygen concentration, and (2) the rigid material, which diminishes leaks and ensures a higher maximal concentration (fig. 2).

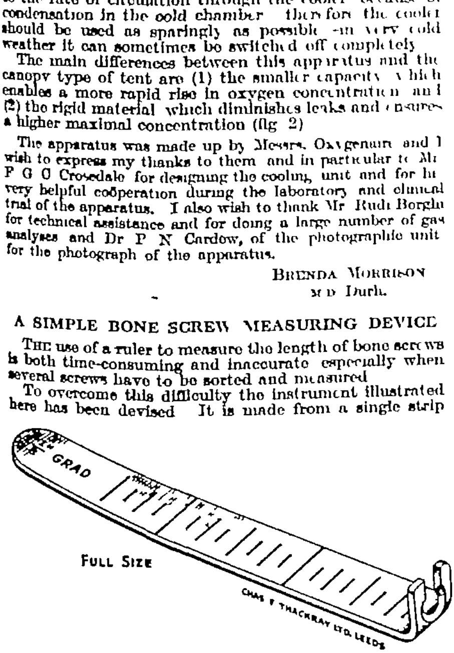
The apparatus was made up by Messrs. Oxygenaire and I wish to express my thanks to them, and in particular to Mr. F. G. C. Crosedale for designing the cooling unit and for his very helpful coöperation during the laboratory and clinical trial of the apparatus. I also wish to thank Mr. Rudi Borghi for technical assistance and for doing a large number of gas analyses and Dr. P. N. Cardow, of the photographic unit, for the photograph of the apparatus.

BRENDA MORRISON
M.D. Durh.

A SIMPLE BONE SCREW MEASURING DEVICE

THE use of a ruler to measure the length of bone screws is both time-consuming and inaccurate, especially when several screws have to be sorted and measured.

To overcome this difficulty the instrument illustrated here has been devised. It is made from a single strip of metal bent over at one end to form a shelf which is slotted and countersunk to accommodate the head of a screw. The long arm is calibrated in eighths of an inch.



This measuring device is used most easily in a vertical position; a screw can be easily inserted into the slot and the length read off from the scale. Slight forward inclination will then swing the screw shaft clear of the vertical bar and enable it to be removed without fumbling.

The instrument was made for me by Messrs. Charles Thackray, Leeds.

Whiston Hospital,
Prescott, Lancs.

M. H. HALL
M.R.C.S.

Reviews of Books

Mysterious Waters to Guard

WESLEY BOURNE, M.D., F.R.C.P.(C), F.F.A. R.C.S., emeritus professor of anæsthesia, McGill University, Montreal. Oxford: Blackwell Scientific Publications. 1955. Pp. 398. 42s.

ANÆSTHESIA, first discovered in 1846, has a short history, yet the modern tendency is to relegate the first hundred years to the dark ages and associate only the remainder with real progress. This is far from fair and though perhaps the most spectacular advances have taken place most recently, nothing could have been achieved but for the solid foundations laid by the pioneers. Prominent among the more recent of these is Dr. Wesley Bourne. He has long been an advocate of physiological and pharmacological method in anæsthesia and of the formation of departments for education and research as well as for anæsthetic services; and in this interesting collection of philosophical addresses and essays he shows time and time again how percipience, careful investigation, and unbiased assessment have paved the way for later traffic. In a collection of this sort some overlapping is inevitable and the book is more suited to occasional reading than continuous study. But on each page one can sense the personality of a man who at all times puts people before things, the individual before the routine in treatment, and whose personal ideal has been to perfect our methods for alleviating pain through anæsthesia.

The Genesis and Prevention of Cancer

2nd ed. W. SAMPSON HANDLEY, M.S., senior consulting surgeon, Middlesex Hospital, London. London: John Murray. 1955. Pp. 320. 21s.

IT is twenty-four years since the first edition was published and many of the younger pathologists must be unfamiliar with Mr. Sampson Handley's views on the genesis of cancer. Although the new edition has been revised the original concept remains unchanged. By careful painstaking histological work Handley found evidence of lymphangitis and lymphatic obstruction in the neighbourhood of cancers, adenomas, and papillomas. This inflammatory action he attributed to infection and his hypothesis is that lymphatic obstruction always precedes cancer and is the main factor in its causation. Reviewing other hypotheses as to the origin of malignancy, he discards them all; and brushing aside the evidence for the virus origin of certain malignant growths in animals, he maintains that "no specific organism of cancer will ever be discovered." As preventive measures he recommends preputiotomy in all male infants at birth to reduce both cancer of the penis and cancer of the cervix; dental treatment to reduce infection in the mouth and alimentary canal; and a course of deep X-ray therapy in all cases of chronic mastitis. He would like to see further study of the preventive value, in the aged, of antistaphylococcal inoculation and of small weekly doses of thyroid substance.

Chirurgie réparatrice

2nd series. Prof. P. MERLE D'AUBIGNÉ. Paris: Expansion Scientifique Française. 1955. Pp. 266.

THIS volume, written with the collaboration of some dozen other members of his hospital staff by a surgeon who is popular and highly respected on both sides of the Channel, is the fruit of their combined experience at the Hôpital Cochin. It consists of a series of unconnected chapters on arthroplasty of the hip; ligamentous lesions of the knee; non-union of the tibia; arthrodesis of the ankle; tabetic arthropathy; paralyses of the brachial plexus, median and ulnar nerves; malunion of the lower end of the radius; non-union of the carpal scaphoid; Dupuytren's contracture; restoration of opposition of the thumb; treatment of the ulnar claw hand; myelography; anæsthesia; and burns. The writers make no pretence to originality but aim to g
the reader some guidance in conditions which
pose problems much more of indication than of tech
by a critical analysis of their own experience. In
notable for the high quality of the radiographic
ductions, British readers will find much to inter

particularly in the chapter on Charcot joints by Dr Tran Ngoc Ninh, and in the fine review of his work on hip arthroplasty by Prof Merle d'Aubigné himself, who gives his reasons for preferring a cervico-capital prosthesis The follow-up of all hip arthroplasties, as he recognises, is still far too short, many cases deteriorate but others improve with time, and of this he writes with charming humility "Les améliorations tardives sont dûes à l'adaptation de la Bonne Nature, il faut en remercier Dieu."

Homosexuality and the Western Christian Tradition

DERRICK SHERWIN BAILEY, PH D, central lecturer, Church of England Moral Welfare Council London Longmans, Green 1955 Pp 176 15*s*

Dr Bailey shows that the homosexual interpretation of the Sodom story first appeared in some Hellenistic Jewish writings of the 1st century B C

Probably it was born by chauvinism out of dispersion and exile, and nurtured by outraged Jewish morality in a Greek society with different standards of sexual behaviour The charge of homosexuality is one which is commonly made by people against those whom they fear and dislike, and it continued to be made by Christians about pagans and heretics, and by anticlericals against the religious orders

Dr Bailey makes an important contribution when by his historical research he thus exposes the dubious origins of our current social standards and legal practices in relation to homosexuality When, however, he goes on to refute various accusations that the Church has added to the troubles of humanity by its punitive attitude to homosexuality and by a supposed obsession with sexuality, he seems to strain his documentary evidence to prove that the Church's attitude has in fact been the opposite—wise, forbearing, and merciful Actually, this evidence is so fragmentary, and its survival so fortuitous, that it can prove nothing Moreover, he has omitted mention of much important information, of which that masterpiece of sex obsession, *Malleus Maleficarum*, is only one example

Few will feel able to share his hope that, now Sodom has been debunked, we shall soon hear no more of it In theological belief, even more than in psychological theory, what counts in the long run is not the specialist's knowledge but the layman's belief To some extent Dr Bailey himself insists on his layman's right to judge when he remarks repeatedly that very little is known scientifically about the origins of homosexuality Perhaps in fact a great deal more is known than the educated layman in these matters is prepared to accept, and therein lies a major difficulty in bringing about law reform The clinician, for his part, would not accept Dr Bailey's clear division of homosexuals into two classes —inverts and perverts—though this would enable legislation to be made tidy and satisfying In making the distinction, he is writing as a moralist, and it is as an outraged moralist that he says that "Homosexual perversion is not itself a fount of corrupting influence, but only, as it were, the ineluctable consequence of a corrosion which has already left its mark upon marriage and family life and, if not checked, may ultimately undermine the whole social order and lead to sexual anarchy" In these later passages the objectivity so evident earlier has become obscured by feeling It is a pity that a finely reasoned book should be marred by such unreasonable and irrelevant statements But this defect does not detract from the value of Dr Bailey's final suggestions for altering the law, which are sensible and practical, and probably go as far as the public will tolerate in one step

The Rural Hospital

Its Structure and Organisation R F BRIDGMAN World Health Organisation Monograph Series no 21 1955 Obtainable from H.M Stationery Office Pp 162 £1

Dr Bridgman, a leading French authority on health-service planning, defines a rural zone as one whose inhabitants take more than half an hour to reach the nearest town and whose life is essentially linked with the working of the soil In organising rural hospitals the trend, he thinks, is towards combining preventive and curative medicine in a single establishment with the characteristics both of a rural hospital and of a health and prevention written primarily for the information of underdeveloped countries, but also for those which want to remodel their hospital services Therein lies its weakness, for it tries to cater for primitive tropical areas, and underdeveloped regions with dense rural populations, as well as for rural areas in highly developed countries. If the result is sometimes disappointing, the fault perhaps lies with a world so diverse in its social, economic, and cultural patterns as to make generalisations very difficult.

Dr Bridgman approaches his formidable task by way of a valuable chapter on the types of rural settlements and their special problems, including climatology and demography, and then discusses in detail the scope, architecture, equipment, and staffing of the rural hospital He ends with the comment that any one country may well contain several regions where the rural hospital requirements differ widely, and he emphasises the need to avoid rigidity and over standardisation. There is a bibliography of 98 references and a useful index The translation from the French has been well done, but the statement that endemic typhus is spread through the use of surface water needs to be looked at again.

A useful book, but perhaps too short for its purpose

Pathogenesis of Poliomyelitis

HAROLD K. FABER, M.D professor emeritus of pediatrics, *Stanford University School of Medicine* *Springfield, Ill.* *Charles C Thomas* *Oxford* *Blackwell Scientific* Publications 1955 Pp 157 36*s*

THIS lecture is concerned with the behaviour of poliomyelitis viruses and their mode of entry to the body, and it gives an interesting account of much of the earlier research in this field Professor Faber is strongly opposed to many of the more recent views regarding widespread infection of the blood and other tissues thus he insists that the virus lives in the nerve-cell alone, except as perhaps a late secondary phenomenon Also he maintains that the initial invasion of the body takes place by way of the peripheral nerves, and that virus is excreted into the intestines by centrifugal axonal spread His attitude to these difficult problems seems, indeed, too rigid to convey conviction

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Fractures and Joint Injuries (Vol II 4th ed Edinburgh- *E & S Livingstone* *1955* *Pp 628* £6 with vol I, published 1952) —This long awaited second volume completes the fourth edition of Sir Reginald Watson-Jones's textbook. Criticism, if entertained at all, can be *only* on the grounds that it is too personal and perfectionist, and these are in fact the qualities which make it so valuable to the orthopædic surgeon in training Though the undergraduate student may find too much in it to digest, he will come to value its help more and more during his years of practice Whatever changes the future may *bring in the* details of fracture management, the basic principles of treatment, combined with a magnificent intolerance for the second rate, will always be found in the pages of "Watson-Jones"

Cornell Conferences in Therapy (vol. VII New York and London Macmillan 1955 Pp 264 31*s* 6*d*) —Dr Harry Gold's selection from the 15 informal but informative discussions held last year by Cornell University Medical College ranges from the general (how to evaluate a new drug) to the particular (surgical treatment of mitral valvular disease) and the homely (the doctor's bag revisited) Every reader will find something to catch his eye and hold his attention.

Collected Papers on Aviation Medicine (London Butterworth, for the Advisory Group for Aeronautical Research and Development, North Atlantic Treaty Organisation. 1955 Pp 209 37*s* 6*d*) —These papers were presented at meetings of the aeromedical panel of the group The speakers included Air Commodore P B *Lee-Potter*, Air Commodore J C Neely, Wing Commander H. P Ruffell Smith, Wing Commander H L Roxburgh, and Flight Lieutenant D I Fryer

Atti del VI Congresso Internazionale di Microbiologia. —The proceedings of the 6th International Congress of Microbiology, which was held in Rome in 1953 (see *Lancet*, 1953, II, 719), have now been published in seven volumes. Each of the volumes contains the reports of several sections of the congress, and they may be bought separately or by the set Further particulars may be had from the secretariat of the congress, Istituto di Igiene "G Sanarelli," University City, Rome

THE LANCET

LONDON SATURDAY, OCT 8 1955

The Unconquered Staphylococcus

TWENTY years ago there was usually more reason for anxiety about the outcome of a streptococcal than of a staphylococcal infection Cellulitis puerperal sepsis, scarlet fever, and septicæmia were much more feared than boils carbuncles osteomyelitis and pyæmia The arrival of sulphonamides and antibiotics so dramatically reduced the risk of death from streptococcal infection that we have only gradually come to recognise that our control of staphylococcal infections is still far from satisfactory Ubiquitous persistent, hardy, and adaptable the staphylococcus shows a dismaying capacity to produce strains resistant to successive antibiotics and we cannot yet claim any dramatic benefits from the use of autogenous vaccines toxoids, or antitoxins in the prevention and treatment of staphylococcal infections Obviously we shall have to think about, and even systematically plan against, this organism Perhaps we could do something useful if we had a better definition of our objectives *and a clearer scheme of action than has* hitherto been apparent from our practice and its results

An important first step might well be to adopt SOMMERVILLE's [1] suggestion that staphylococcal infections, as communicable diseases, should be made notifiable Without a suitable scheme of notification nobody can accurately measure the problem or confidently assess the results of attempts at control It might be a great advance even if individual hospitals set up their own systems for ensuring that the facts of each outbreak are established and recorded in sufficient detail, for it is probably within hospitals that the infections are most serious—at least for the present BRODIE JAMIESON and SOMMERVILLE [2] recently emphasised some important lessons learnt from their study of the complications of a therapeutic trial of antibiotics in bacillary dysentery within a hospital for infectious diseases Like others [3] they observed as the main complications 'scarlet fever,' sore throat without rash, and gastro-enteritis By a typing scheme that depended upon agglutination reactions with seven monospecific antisera and tests for sensitivity or resistance to seven antibiotics (three of which were tetracyclines) they established that these complications of antibiotic therapy were due to a 'hospital staphylococcus' of a defined type From this they argued that, just as control of malaria by an attack on anopheline mosquitoes is practicable only if the responsible vector species is identified control of staphylococcus cross infection in hospitals may depend not upon indiscriminate attempts to discover and treat all carriers of coagulase-positive staphylococci but upon the recognition of carriers of defined types whose pathogenicity is proven by their being isolated from actual lesions. This reasoning is supported by the findings and conclusions of BARBER and BURSTON,[4] who studied the behaviour of staphylococci in a maternity unit and in the other departments of a general hospital Within the maternity unit, during a period of three months 89% of the babies acquired penicillin resistant staphylococci mostly from their nurses, but though they became nasal carriers these babies took no harm thereby A few weeks after the close of the investigation however, a nurse came on duty with a boil on her face, and within a few days one baby had acute mastitis and another had conjunctivitis—both apparently derived from the boil From this and other evidence it seems likely that on reaching a new host, staphylococci from an infective process set up infection more readily than staphylococci from a healthy nasopharynx. Just as bacteria can be adapted by repeated subculture to use a particular substrate, so perhaps they can adapt themselves in actual lesions to grow in spite of the tissue reactions of a particular host In surgical wards BARBER and BURSTON noted that postoperative infections often seemed to coincide with the presence in the ward of a patient with an extensive or open staphylococcal infection of the skin or respiratory tract SPITTLEHOUSE [5] has produced evidence of a possibly close association between impetigo and strains of staphylococci lysed by phage 71 and his report, *tending to confirm rumours* that something of the kind had been observed (though not published) by other workers in the same field, suggests that we may still usefully probe the differences between the coagulase-positive staphylococci that cause lesions and those which are merely carried as commensals

Two other approaches to the problem of the hospital staphylococcus must here be noted In our correspondence columns last week Dr K. ZINNEMANN suggested the use of streptomycin or sulphonamides or both in association with any one of the other antibiotics Such combined chemotherapy is routine practice in treating tuberculosis, in which it is applied with precisely the object of preventing the emergence of resistant strains, so theoretically the proposal seems to be justified But there would have to be great care in dosage especially with penicillin and streptomycin, and many will look doubtfully upon the use of this powerful combination as a routine especially in view of the irreversible toxic effects of streptomycin, leading to giddiness and loss of hearing Certainly we should need good evidence that the actual advantages justified the risks The second approach is that of GOULD,[6] who in continuance of his previous suggestions [7] recommends treatment of persistent nasal carriers on the staff of hospitals by *applications of 1% oxytetracycline cream for 7–14* days to the anterior nares The possible dangers of this method are the sensitisation of people who may later require systemic treatment and the risk of disseminating resistant strains GOULD's evidence suggests that the second risk is less than might be feared On the whole this approach does not seem likely to find great favour, for the more selective attitude which would concentrate on proven lesion producers appears preferable If however, local applications are to be made to the nose, it might be well to choose some of the antibiotics not used systemically, among which one could probably find preparations which neither sensitise patients nor allow the emergence of resistant strains Polymyxin, bacitracin, and neomycin may deserve consideration here

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[1] Sommerville T *Med Pr* Feb 2 1955 p 101

[2] Brodie J, Jamieson, W Sommerville T *Lancet* July 30 1955 p 223

[3] See references in *Lancet* 1953 ii 1215 and 1954 i 907

[4] Barber M Burston J *Ibid* Sept 17 1955 p 578

[5] Spittlehouse K E *Ibid* August 20 1955 p 378

[6] Gould, J C *J Hyg Camb* 1955 53 379

[7] Gould, J C Allan W S A *Lancet* 1954 ii 955

At least three lessons need to be learnt from the work cited above the first, that we ought to make more use of typing methods to ascertain which strains are actually dangerous, so that we may reduce to manageable proportions the task of dealing with carriers, the second, that we should try to separate clean surgical cases from those with staphylococcal lesions likely to cause heavy contamination of the environment, and the third, that we should become more intelligent in our use of antibiotics On this third issue, so much has already been said in these columns[8] that any more may seem wearisome repetition, yet we need look no further than our own columns this week for evidence that, with the best intentions, antibiotics are still being used in the wrong way They are still given not only to treat trivial infections but also—in pursuit of security—to prevent infection which there is little need to fear and which, if it arose, could probably be controlled quite easily The consequences of their ill-advised or routine administration can be disastrous, and no accidents of practice are graver than those in which loss of life or health is attributable not to the disease but to the remedy The position today is that uncritical thought and practice are in danger of endowing some of our most valuable drugs with more notoriety as causes of disease than fame as cures of it Advice on their correct use abounds in current medical literature[9]—a recent report published in Australia[10] deserves warm commendation—and indeed the dosage schedules issued by the manufacturers are both clear and reliable, being based on careful and adequate experience which has been thoroughly analysed (One fairly reassuring feature of present practice is the restraint with which erythromycin seems to be being held in reserve as a life-saving remedy against such dangerous staphylococcal infections as pyæmia and acute enterocolitis) But we still have to read of too many tragic accidents that have followed excessive dosage of antibiotics, courses of treatment unduly prolonged, and administration of antibiotics to persons who have previously been sensitised

Antibiotics are powerful drugs, capable of cutting short in dramatic fashion the dangerous progress of many serious infections It is desperately and dangerously wrong to abuse them as placebos, febrifuges, substitutes for diagnosis, and covers for imperfect methods of asepsis In point of fact we stand a far better chance of controlling bacterial disease by learning how to turn our pathogens into commensals than by acting as though extinction of every known and unknown micro organism capable of living on the human body was either possible or desirable Such attempts at large-scale extinction would be more likely to eliminate man than his microbes

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[8] See, for example *Ibid* 1955, i 1059

[9] Garrod L P *Brit med J* Sept 24 1955, p 756

[10] Chemotherapy with Antibiotics and Allied Drugs By JEAN C TOLHURST GLEN BUCKLE, and STANLEY W WILLIAMS National Health and Medical Research Council of Australia Special [illegible] series no 6 Canberra. 1955

A Substitute Heart

THE idea of artificially maintaining a lesser or greater degree of circulation through part or all of the body has interested experimental physiologists and biologists for many years In 1928 DALE and SCHUSTER[1] described a double perfusion pump by which the systemic and pulmonary circulations could be maintained, with adjustment of the output according to the resistance in these two systems CARREL and LINDBERGH[2] kept alive isolated organs, such as the cat's thyroid, for as long as thirty days by means of perfusion As the years passed many others tried to by-pass the heart and lungs by mechanical pump oxygenators,[3] and in a few instances the machines were used clinically But the complexity of the problems involved, and of the apparatus needed to overcome them, was always too great The mechanical heart is not yet ready to take its place in intracardiac surgery

Hypothermia, it seemed at first, might eliminate the need for a substitute heart, but this is not so Only a few intracardiac procedures can be carried out safely at body-temperatures above 26°C Further cooling, to permit a longer operation, often causes ventricular fibrillation, which cannot always be converted to the normal cardiac rhythm Something simpler and safer was needed Elimination from the artificial heart of the mechanical oxygenator (as was suggested at the outset by DALE and SCHUSTER), leaving the lungs themselves to oxygenate the blood, worked better, but a good many troubles remained. Most of these now seem to have been dispelled by using a donor circulation The discovery by ANDREASON and WATSON,[4] working at the Buckstone Browne Research Farm, that experimentally the circulation can be safely maintained with no more inflow into the right heart than that from the vena azygos indicated that a substitute circulation of this order might suffice for coronary flow in the open heart They employed the double shunt, pump-controlled, cross circulation technique (originally worked out in Toronto in 1938 with the aid of purified heparin[5]) and found that most donor and recipient animals survived after thirty-minute experiments From Minneapolis now comes news of a stirring development the circulation of an adult person has been tapped to provide a source of oxygenated blood in sufficient quantity to maintain total perfusion of the circulation in children undergoing open cardiac surgery

LILLEHEI and his colleages[6] report that they have successfully completed 38 such cross circulation procedures, mostly for the repair of grave ventricular septal defects and for the correction of the tetrad of Fallot All the donors, and 27 of the recipients, survived Briefly, their apparatus consists of a pair of plastic catheters ligated into the recipient's venæ cavæ, a venous reservoir whose pressure is simply adjustable by a side air-vent, a pump leading to the donor's femoral vein, and a simple tube with a second pump from the donor's femoral artery to a retrograde catheter lying in the ascending aorta of the recipient The venous reservoir has been found to overcome the difficulty experienced by ANDREASON and WATSON in maintaining a constant venous return from the recipient to the donor, and it also serves as a bubble trap without leading to appreciable hæmolysis The operating field in the open heart is almost blood free Brisk leakage through the aortic valve can usually be corrected by adjusting the aortic catheter, but a temporary tourniquet above the coronary ostia may have to be applied at intervals Some difficulties have been experienced with conduction effects after the suture of high interventricular defects and such effects may also result from spontaneous hypothermia during the bilateral thoracotomy Body temperature is therefore recorded and an electric blanket beneath the patient is switched on if necessary

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[1] Dale, H H., Schuster, E H J *J Physiol* 1928 64 356

[2] Carrel A Lindbergh, C The Culture of Organs London, 1938.

[3] Gibbon J H jun *Surg Gynec Obstet* 1937, 69 602. Jongbloed J *Ibid*, 1949, 89 684 Karlson, K E Dennis C., Westover, D Sanderson, D *Surgery*, 1951 29 678 Melrose D G *Brit med J* 1953 ii 59 See *Lancet*, 1952, ii 1021

[4] Andreason, A T Watson, F *Brit J Surg* 1953, 41 195

[5] Thalhimer W, Solandt, D Y, Best C H *Lancet* 1938 ii 554

[6] Lillehei C W Cohen, M, Warden, H E, Varco, R L *Surgery* 1955, 38, 11

Some idea of the potential value of controlled cross circulation in radical cardiac surgery can be gained from studying the cases recorded by LILLEHEI et al Patients with ventricular septal defects and pulmonary hypertension, confined to hospital and often existing in an oxygen tent have been completely relieved, their pulmonary artery pressures after operation were normal, the shunt having been completely closed Others with the tetrad of Fallot have had their arterial oxygen saturation raised to 96%

The limitations of this bold new approach to radical heart surgery are not yet known The cross circulation has been maintained for forty minutes and procedures within the open heart occupying up to fourteen minutes have been successfully completed We may expect to hear of this method on trial in cardiac-surgery centres on both sides of the Atlantic and we hope that it may fulfil its spectacular promise for those unfortunate children whose hearts have hitherto been barred to the surgeon.

Scarcity of Staff

To obtain and keep their staff is for many hospital authorities a perpetual worry In a smallish hospital the lack of one key worker—be it cook, boilerman, or theatre attendant—can cause serious difficulties Apart from the chronic "shortage" of nurses the problem in some hospitals is confined to one or two scarce grades, such as radiographers or pharmacists but other hospitals are contending with a general shortage of all domestic workers

The grim situation of some of them, and the publicity it receives, have led to some misunderstanding and exaggeration. It is true that the bargaining position of hospital staffs has vastly improved since before the war, for reasons which include full employment, earlier marriage, later school leaving the low birth rate of the 30s, prosperity in general, and the widening opportunities of employment for women As a result there has been a dramatic improvement in the real earnings of nurses and domestic workers particularly in the lower grades, in the last fifteen years. On the other hand the remuneration offered has apparently sufficed to allow continuous and substantial increase in the number of National Health Service staff, in each of the three broad groups (nurses and midwives, professional and technical, and domestic) since the Service began Admittedly hours of work are shorter, but, as a whole, the number of staff has increased faster than the number of inpatients, though not as fast as desired medical standards have been raised or new techniques have been developed We must also recognise that, to fill every vacancy in the hospital service, and provide each hospital with as many nurses as it felt it required would at present cost an additional £10–30 million, and there will be doubts whether the Chancellor of the Exchequer would be willing to find this sum let alone the higher remuneration and the cost of additional amenities needed to attract this staff The general shortage, therefore, is probably a shortage of money as well as of people Nevertheless there remain shortages in particular grades, and a maldistribution of existing staff between hospitals, which must somehow be remedied and in these we see the disadvantages of central determination of wages and salaries for the whole hospital service

In industry it is usual for wage agreements to settle minimum rates but to leave each employer free to pay more than the agreement lays down should he wish or consent to do so In the hospital service however, the Whitley machinery determines, the exact rates which must be paid and the individual hospital is no more free to pay more than these rates than it is free to pay less The negotiating machinery for the hospital service does not seem any slower or any more rigid than the negotiating machinery of most other departments of the national economy the tendency to preserve existing differentials when new rates are negotiated is by no means restricted to the hospital service But wherever an industry or service is slow to take account of changes in alternative employment—changes in remuneration, in working conditions, in prospects of promotion and in status—it is bound to develop shortages of workers of certain skills Similarly, the more general shortage of staff which afflicts hospitals in some areas can be traced to the inflexible wage structure Obviously it would be wasteful for the Whitley machinery to fix pay throughout the country at the relatively high level which would be appropriate for the area where recruiting is most difficult at best a national rate can be expected to suit the average area But a rate which may bring too many applicants in one place may bring few or none in another Many and diverse factors may tend to make hospital employment attractive or the reverse—e g, the opportunities for other employment in the locality the state of the hospital buildings the number of other employees the siting and prestige of the hospital and the social and marital opportunities in and around the hospital In view of the number of women employed, and especially married women it is idle to suppose that geographical movements of rejected applicants will even out shortages and surpluses of labour Undoubtedly much is gained by having nat [1]
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one another for staff in a perpet
auction But, as we have pointed
can be lost by excessive unifo
should now be faced

In the long run the sc
individual hospital managen

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[1] *Lancet* 1940 ii, 201 *Il*

the nationally negotiated rates of pay, where their circumstances warrant it But admittedly we cannot be really happy about this proposal unless there is more rational allocation of money between different hospitals, and each hospital keeps within its allocation We must hope that the Guillebaud Committee will have considered this problem and will suggest arrangements that will enable hospital administrators to give more of their time to managing and less to recruiting

Annotations

THE HELICOPTER AND SURGERY

In war-time successful treatment of the wounded depends greatly on their being brought speedily to a surgical centre During the period of over a century from the introduction of the ambulances of Dominique-Jean Larrey in the Napoleonic campaigns to the beginning of the 1914–18 war, the pace at which the wounded were evacuated from the battlefield was increased hardly at all, and seldom did the organisation of their surgical care equal that which had rightly earned Napoleon's gratitude Since 1914 the development of the internal combustion engine has gradually enhanced the range and speed of evacuation, which is now effected by motor-ambulance, jeep, D U K W , landing-craft, aeroplane, or helicopter Of these the helicopter is the most versatile —it " scoops " casualties from the sea or hoists them from the decks of small vessels, and it lands on larger ships or in confined spaces on buildings, in streets, in the jungle, or in mountainous country During " aerial stalemate " in any future war helicopters are likely to be the main means of transport in combat areas

The use of helicopters for evacuating battle and other casualties has been well tried Sako et al [1] have surveyed the evacuation and resuscitation of 250 major casualties to a forward hospital ten miles from the front line in Korea in the years 1952 and 1953—when the local circumstances were particularly favourable for this method The value of the helicopter is vividly illustrated by an account [2] of the steps taken to deal with the many men injured in an explosion on the U S aircraft-carrier *Bennington* off the coast of New England in May, 1954 Of 203 officers and men who were injured 91 were killed immediately or died soon afterwards, and 82 were transferred ashore for treatment With a shuttle service of helicopters the first patients arrived at a shore hospital four and a half hours after the explosion, and in all 64 were received there within seven and a half hours The remainder, who were transferred by naval craft, arrived about twelve hours after the explosion After the explosion in H M S *Indomitable* in February, 1953, a helicopter was used to fly additional medical officers and plasma to the ship, but air evacuation of casualties was unnecessary [3] The value of the helicopter in bringing medical aid promptly to the scene of an accident was illustrated again this week when an R A F doctor was lowered to the deck of a Dutch vessel off Flamborough Head, to attend an injured seaman [4]

In the North East of Scotland each winter some country districts are cut off from road, rail, and telephone communication for days or, rarely, weeks at a time Last winter, in Operation Snowdrop, naval helicopters were used mainly to drop supplies to isolated crofts and communities, but in one or two instances patients were lifted out of snowbound homes who could not have been otherwise transported except perhaps by sea The Scottish North Eastern Regional *Hospital Board* has now arranged to bear the cost of a helicopter ambulance service operated by naval helicopter from Lossiemouth which, subject to Service requirements, will be used for the transport of civilian patients in emergencies [5]

Mr Peter Masefield has said the future of the helicopter depends on the solution of four problems size (not less than 50 seats), speed (not less than 150 m p.h), reliability (not less than two engines), and reduction of the noise at take off and on landing. Of these reliability is the only factor which is relevant at present to the use of the helicopter as an aerial ambulance

ATYPICAL MYCOBACTERIA

FROM time to time patients with a clinical picture resembling pulmonary tuberculosis are found to have acid-fast bacilli in their sputum, which, when fully identified, are not typical strains of *Mycobacterium tuberculosis* On an earlier page of this issue Dr Young describes such a case, and other reported cases have been collected from the literature by Feldman *et al.*[6] and by Hall and Erlandson [7] These organisms are often chromogenic with smooth, easily emulsifiable colonies, but Timpe and Runyon [8] have described a small subgroup whose colonial appearance closely resembles that of true tubercle bacilli They have low virulence in guineapigs, but commonly cause extensive disease in mice and golden hamsters They also appear to be naturally resistant to isoniazid, often to *p* aminosalicylic acid and streptomycin, and usually to penicillin, chloramphenicol, and the *tetracycline antibiotics* [9] Since isoniazid resistant tubercle bacilli may be of low virulence in guineapigs, the classical guineapig virulence test does not distinguish between atypical mycobacteria and tubercle bacilli, and the pathologist must resort to other investigations [10] Perhaps the most *useful guides* are the degree of pigmentation, the colonial morphology on agar based media, the presence of cord formation, the temperature requirements for growth, catalase production,[11] and the Mantoux reaction of guineapigs infected with the strain.

In seeking to establish whether *atypical* mycobacteria can have given rise to the patient's disease we have to rely on indirect evidence, since it is difficult to fulfil Koch's postulates Timpe and Runyon [8] distinguished two main groups of strains, one of which they regarded as accidental contaminants and the other as probably causing disease This second group tended to be virulent in mice and were obtained repeatedly *from* the sputum in large numbers in patients whose sputum had yielded no tubercle bacilli on repeated examination In addition, *Mantoux negativity, failure* to respond to chemotherapy, and isolation of the atypical organisms from resected lung tissue are strong indications of their pathogenic rôle in individual patients Nevertheless it is usually difficult to make sure that there has not been a *true* tuberculous lesion superinfected with these organisms.

We have little information about the frequency of such infections, but Tarshis and Frish [12] have found chromogenic acid fast bacilli in 1–4% of routine diagnostic specimens Many workers believe that the frequency is increasing, but this opinion may result from more frequent detection as a result of chemotherapy *Thus it* is very common for such *strains to* be detected because they are drug resistant or because the patient has failed to respond as expected Possibly too they may replace sensitive strains of tubercle bacilli in the lesions during chemotherapy

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ŒSOPHAGITIS

Aylwin[1] found that the cause of the œsophagitis associated with hiatus hernia was the digestive juice secreted by the supraphrenic gastric pouch the damage to the œsophagus varied directly with the degree of enzyme activity, as indicated by its pepsin content and pH While awake the patient swallows saliva thus neutralising the enzymes when he is asleep this protection is lost and in recumbency the œsophagus is bathed by gastric fluid—though perhaps only from the thoracic portion of the stomach It appears from Aylwin s observations with a dye introduced into the abdominal portion that reflux from this area does not always occur in the recumbent patient with hiatus hernia presumably because the changes in intra abdominogastric tension are slight and can sometimes be resisted by the hiatus weak though it is The relaxation of sleep must be important here for recent evidence shows that recumbency itself may be a factor in inducing œsophagitis in patients without hiatus hernia when the hiatal pinchcock is presumably not weakened

Lodge[2] has examined at necropsy the œsophagus in 500 unselected cases of death in hospital œsophagitis was found in 180 inflammation alone was present in 52 local ulceration in 66 and extensive ulceration with inflammation extending to the external muscle layer in 37 while in 25 the disease was classified as chronic Necropsy on 100 patients who had died within twenty four hours of the onset of illness or from the time of an accident revealed œsophagitis in only 8 in 5 the condition was chronic judging by the degree of fibrosis present. In the larger series, too the prevalence of chronic œsophagitis was 5% According to Lodge the acute condition in those confined to bed for longer than twenty four hours is accounted for by excessive gastric regurgitation into the œsophagus and delay in return of gurgitated material to the stomach Presumably in cumbency the normal hiatus and cardia cannot with and the variations in abdominal and gastric tension e to the movements, voluntary and peristaltic during urs of wakefulness. Lodge indicts as additional factors ere vomiting and also the stomach tube which pre nts the proper closure of the cardia and may in addition ave a direct traumatic effect on the œsophageal mucosa 36% incidence of *œsophagitis is surprisingly* high ut all 500 patients were severely ill, and patients strong ough to survive may have a lower incidence.

ANOXIC RESTLESSNESS IN CHILDREN

In a study of anoxia in the acute respiratory infections of childhood, published on p 737 of this issue Dr Brenda Morrison has confirmed that colour is a poor guide to lesser degrees of anoxia some healthy children normally have a somewhat dusky appearance while at the other extreme dangerous anoxia may be unaccompanied by any detectable change in colour particularly if the infant has a low hæmoglobin level Dr Morrison found that oxygen lack, on the other hand was closely correlated with restlessness, which varied directly with the degree of anoxia and was prominent when the oxygen saturation fell below 80% In her experience restlessness is the outstanding clinical sign of subcyanotic oxygen deficiency in acute respiratory infections in children and inability to sleep for any length of time is the *most constant* token of this restlessness Recurrent inconsolable crying is also prominent The bodily movements constitute a characteristic picture slow flexion and extension of the limbs, opening and clenching of the hands rolling of the head, and in severe cases, arching of the back Handling or any interference is resented and causes excitement crying and refusal to be comforted That *these signs are all basically due to oxygen lack is evident* from the dramatic relief with return to normal behaviour when oxygen is administered

Oxygen therapy is still often applied without ensuring that the concentration is suitable Today with no lack of ample instruments for measuring the concentration, there is no excuse for this Dr Morrison found that the oxygen concentration in the standard Oxygenaire ' tent was 40-45% which was insufficient to relieve restlessness in 17 *of the 30 children who showed this sign* She raised the concentration in the inspired air to 60–70% by providing a tent with a quarter of the capacity, and thereby dispelled the restlessness in a further 11 of the children Finally in the most severe cases, she applied a high concentration of oxygen by means of either a face mask providing 90-95% of oxygen in the inspired air or a special oxygen box (described on p 752 of this issue) providing 80–90% of oxygen This apparatus differs from the *conventional* canopy type of tent in its smaller capacity which facilitates a rapid rise in oxygen content and in its rigid material which reduces leaks and ensures a higher maximal concentration

Serious anoxia is a much commoner feature of respiratory infections in infants than in older children In Dr Morrison s series of 108 children of all ages 60% of those under one year required oxygen therapy, compared with only 11% of those over one year She has demonstrated convincingly that the behaviour of the infant is the most valuable clinical guide in the control of oxygen therapy

As winter approaches pædiatricians and physicians responsible for the care of children in hospital should review their methods of oxygen therapy, and be prepared to administer oxygen at any predetermined concentration up to 90% But the danger of causing retrolental fibroplasia in very premature infants by administering oxygen in concentrations over 40% must always be borne in mind

RUSSIAN SPRING SUMMER ENCEPHALITIS

THE relationship between the various forms of tick borne summer encephalitis in different parts of the world has been keenly investigated The similarities between the different causal viruses, revealed by hæmagglutination and agglutination inhibition reactions suggest that these may have a common ancestry variations depending on differences in the hosts or in the pathogenicity of the virus.[1]

One of the less well known members of this group Russian spring summer encephalitis was first recognised in the U.S.S R in 1935 Silber and Soloviev[2] isolated from cases a virus serologically related to that of Japanese B encephalitis and they identified the arthropod *Ixodes persulcatus* as the most probable vector The disease which has an incubation period of eight to eighteen days is characterised by *paresis and paralysis* which usually develops on the second or third day of the illness The motor disability is particularly noticeable in the neck and shoulder girdle muscles but also may involve the back and limbs progressive atrophy of the affected muscles ensues.

All 5 cases that have been described outside the Asian and East European areas were laboratory infections and 2 of these ended fatally Jervis and Higgins[3] isolated the virus from a woman who was probably infected by contact with animal excreta and died on the fourth day of the disease Haymaker et al[4] established the diagnosis by neutralisation and complement fixation tests in a man who accidentally inhaled the virus, became ill ten days later, and died thirteen days after the onset The necropsy findings in this case illustrate the relation of Russian viral encephalitis to the St Louis, Japanese B, and equine forms of encephalitis which it most closely resembles pathologically The virus is strictly neurotropic, and no visceral lesions are found comparable to the inclusion-bodies found in the kidneys in the St Louis and equine forms The lesions in the central nervous system are largely confined to the grey matter and consist of areas of neuronophagia with a mononuclear-cell exudate of hæmatogenous or microglial origin Perivascular cuffs of lymphocytes are uncommon A predominantly oligodendroglial reactive process is the only significant histological change differentiating Russian viral encephalitis from the Japanese B form Topographically, the cerebral cortex is relatively spared—which contrasts with the almost universal cortical involvement in Japanese B encephalitis The thalamus, substantia nigra, and inferior olivary nuclei are usually extensively affected, while the degree of cerebellar change is variable The sensory nuclei of the brainstem are less severely involved than the motor nuclei, and the lesions in the anterior horns of the spinal cord are indistinguishable from those in poliomyelitis

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The virus causing louping-ill, an encephalitis of sheep, is closely related to, and possibly identical with, that of Russian spring summer encephalitis But intracerebral inoculation of lambs with viruses recovered from these two conditions produces different clinical pictures

The importance of these pathological studies of Russian encephalitis lies mainly in the comparison which can be made between this and other forms of tick borne encephalitis The classification of the less clearly differentiated types of encephalitis aids those who are attempting to classify the viruses themselves

HYPERDYNAMIC CIRCULATION

A HYPERDYNAMIC circulation—the main features of which are warm hands, nose, and ears, a collapsing pulse, a muscle "knock" felt by grasping the patient's forearm in the palm of the hand, and capillary pulsation often seen best in the nail-beds—is common in patients with severe anæmia,[1 2] hyperthyroidism,[3] arteriovenous fistula,[4 5] or extensive osteitis deformans [6 7] These clinical features are in contrast to those found in patients with a low cardiac output secondary to ischæmia or hypertensive or stenotic valvular heart disease, when the pulse is small and of poor volume, the periphery is cold, and the skin and muscle blood vessels constricted Cardiac catheterisation and the application of the Fick principle have done much to help our understanding of the circulatory changes in the hyperdynamic state, but several questions remain unanswered, and in particular there has been no information about the effect of exercise in such patients Donald and his co workers in Birmingham [8] have now corrected this deficiency by investigating the circulatory state at rest and on exercise in patients with a hyperdynamic circulation caused by anæmia or hyperthyroidism

In anæmic patients at rest they found a cardiac output greater than normal when the hæmoglobin level was less than 40%, and a normal cardiac output at hæmoglobin levels above this value The increase in output was due to an increase in stroke volume rather than an increase in heart rate in fact the rate was often surprisingly low, in some patients with a hæmoglobin level of 30–40% it was only 67 beats per minute Despite the high rate of blood flow the pressures in the pulmonary and systemic circulations were normal, and this absence of any increase in peripheral resistance was largely due to the reduced viscosity of the blood and, to a lesser extent, to peripheral vasodilatation Because of the lowered peripheral resistance the work done against pressure by the right and left ventricles was not increased, despite the high cardiac output No significant increase in the filling pressure of the right ventricle was detected, which suggests that this is not a critical factor in initiating the high cardiac outputs (None of Donald's patients had a hæmoglobin level of less than 30%, below this level it is common to find a raised venous pressure—a sign which indicates a reduced cardiac reserve and serves as a warning of the risk of frank cardiac failure if a transfusion is given too rapidly) On exercise most of these anæmic patients had an abnormally large increase in cardiac output Judged by the volume of oxygen consumed per minute the cardiac output in patients with a hyperdynamic circulation was 140–196% greater after exercise than that in healthy people with comparable oxygen consumption As might be expected, the amount of work done by the right and left ventricles was greater than in healthy people, owing to the high rates of blood flow rather than any increase in peripheral systemic or pulmonary resistance One curious finding was that 3 of the 11 patients with anæmia had definite desaturation of their arterial blood, in the order of 85% (Arterial desaturation has been described before in anæmic subjects [9 10]) None of the patients had any clinical evidence of lung disease Nor can the cause of the desaturation have been the rapid rate of blood flow through the lungs, because the saturation increased on exercise when the rate of flow was even greater Thus this arterial unsaturation remains unexplained

5 patients with hyperthyroidism were studied At rest all had cardiac outputs above normal, and 4 had pronounced tachycardia The diastolic blood pressure was low, and this so reduced the peripheral resistance that the work against pressure of the left ventricle was normal despite the high rates of blood flow The pulmonary vascular resistance was not reduced to the same extent, so the right ventricular work was increased. Clinical evidence of this is found in many patients with hyperthyroidism who have increased pulsation in the left parasternal region and over the right ventricular outflow tract, and in whom right sided rather than left sided failure tends to develop As in the anæmic patients, exercise increased the cardiac output above the level found in healthy people with comparable oxygen consumption

The signs of a hyperdynamic state in the peripheral arteries are related more to the low diastolic blood pressure than to either the cardiac output or the increased pulse pressure High pulse pressures are found in atherosclerotic subjects who have a raised systolic blood pressure but do not present the signs of a hyperdynamic circulation, and Donald and his colleagues have observed a hyperdynamic state in patients with a normal cardiac output When the diastolic blood pressure is low the pressure volume relations of the arteries are greatly altered, and the increased distensibility of the vessels may give the impression of a hyperdynamic state even though the stroke volume is within normal limits

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RECONSTRUCTION and extension is to be started at two London medical schools Colonel J J Astor has given £400,000 towards the cost of the rebuilding of Middlesex Hospital Medical School, which was first planned before the late war King's College Hospital Medical School is to be extended in two stages Work on the first stage, costing £90,000, is expected to start next spring

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Special Articles

THE PHYSIOLOGY OF CHANNEL SWIMMERS

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THIS paper presents the results of three years study of some of the factors concerned in the ability to endure immersion in cold water People showing unusual tolerance of cold have been compared with people showing unusual intolerance

In 1951 there was a swimming race across the English Channel in which eighteen of twenty competitors swam from France to England in times ranging from 12 to 20 hours in water at 15 5°C (60°F) This is of great interest because records of shipwreck survivors show that persons immersed in the sea at 60°F usually live only about 5 hours, and seldom more than 6 hours death being due to hypothermia (Molnar 1946)

The swimmers in the 1951 race all conformed to a certain physical type, very different from that of athletes who cover long distances on land by running cycling skiing or mountain climbing Some of the swimmers were frankly obese others were of stocky build and had well rounded contours concealing the muscular pattern (fig 1)

Investigations

The swimmers in 1951 could not be followed in the race across the Channel, but one of them a Greek (J Z) generously allowed observations to be made on him during an attempt on the record for swimming Lake Windermere (10½ miles)

At Windermere the water temperature was 15 8 C (60·4°F) similar to that in the Channel The swimmer's rectal and deep muscle temperatures were measured before and after practice swims and after the attempt on the record which lasted 6 hr 50 min Observations were also made on a subject (G P) with poor tolerance of cold, who was a mountaineer and former long distance runner and skier but only enjoyed swimming in warm waters. Other measurements included those of body form, distribution of fat and consumption of oxygen during swimming The effect of immersion in a cold bath without swimming was studied to assess the importance of the high metabolism of swimming in the maintenance of body temperature Three other subjects were also studied of whom two were fat and one was thin. In 1954 when another Channel race was held measurements made on all sixteen competitors included skin fold thickness and rectal temperatures were measured on four swimmers at the finish of the race

The investigations were made to try and answer the following questions

> How do long-distance swimmers maintain their heat balance ?
>
> Do they keep up a high level of energy expenditure exhausting to the average person ?
>
> Do they lose heat less rapidly because of their body form and thickness of subcutaneous fat ?
>
> Can they continue to swim in spite of moderate hypothermia ?

The physical characteristics of the subjects of the experiments are shown in table I, and those of the 1954 Channel swimmers in table II

J Z aged 42 had swum the Channel three times, once staying in the water for 20 hours. He claimed that his resistance to cold had increased over the years owing to his practice of wearing a minimum of clothing and of swimming in very cold water

TABLE I—DETAILS OF SUBJECTS OF EXPERIMENTS

Subject	Age (yr)	Height		Weight		Surface area (sq m.)	
		(cm)	(ins.)	(kg)	(lb)	DuBois's formula	Measured
J	42	164	64 7	9[illegible] 9	211	2 04	2·02
G P	41	183	72 0	75 [illegible]	166	1 98	1 86
O G, E	[illegible]	183	72 0	71 4	158	1 92	
K H	23	178	70 0	67 0	148	1 8[illegible]	
W M	21	170	6[illegible] 0	68 2	150	1 78	

G P aged 41 was a healthy subject with very little subcutaneous fat

O G E was an apparently slim man aged 42.

The two other subjects J M and K. H. were young Naval ratings of average physique

Methods and Results

Body temperature

The body temperatures of J Z and G P were measured, before and after swimming at Windermere, in a boat house 10 yards from the lake with an ambient temperature of 16°C (60 8°F) Rectal temperature was measured with a copper Constantan thermocouple protected by a plastic catheter and inserted to a depth of 5 inches. Needle thermocouples were used to measure muscle temperature

Before his attempt on the record J Z greased his body with 3 or 4 lb of anhydrous lanolin which formed an uneven layer averaging 1 mm. thick. In swimming he used the crawl throughout his stroke rate being 52 a minute for the first 3 hours and decreasing then to 50 strokes a minute J Z

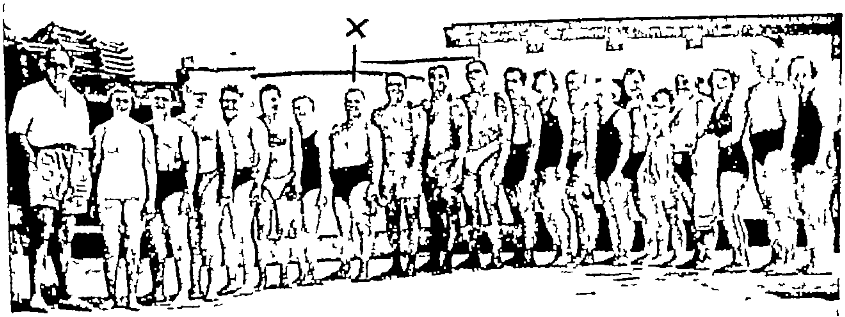

Fig. 1—Competitors in cross-Channel race 1951 J Z. marked by cross. (Reproduced by kind permission of the *Daily Mail*.)

TABLE II—MEAN MEASUREMENTS OF 1954 CHANNEL SWIMMERS COMPARED WITH BRITISH FACTORY WORKERS YOUNG GIRLS

	Channel swimmers 1954 (males)		Factory workers 1952 (males)		Channel swimmers 1954 (females)		Schoolgirls	
	Mean	Range	Mean	Range	Mean	Range	Mean	Rang
No of subjects	12		228		4		39	
Weight (lb)	188 6	168–229	147 5	108–230	158 0	147–175	135 0	104–17
Height (cm)	169 6	157–181	170 9	154–182	162 3	156–168	168 3	158–1
Biacromial breadth (cm)	40 9	39–43	38 5	33–42	38 7	36–41	36 7	32–41
Bitrochanteric breadth (cm)	34 8	32–36	32 8	29–35	35 2	33–39	34 0	30–37
Mid thigh girth (cm)	57 6	54–62	50 9	40–63	60 9	55–67		
Superficial tissue thickness (mm)								
Biceps	5 8	4–9	2 7	2–6	9 5	6–12	5 5	3–13
Triceps	11 8	9–20	5 7	3–13	15 0	12–17	10 2	4–21
Subscapular	16 0	11–35	7 8	3–21	13 6	10–16	9 4	4–18
Subcostal	14 1	7–23	7 7	3–21	12 0	8–17	7 1	3–16
Supra iliac	13 8	9–22			15 5	11–21	9 1	4–17
Abdomen	18 4	14–26	8 9	4–23	23 4	18–30	12 4	7–26
Age (yr)	34	23–58	35	17–58	27 5	21–35	16–17	

rested for less than a minute every 2 hours to take food he consumed 70 g of glucose and approximately 6 oz of hot milk and coffee At the end of the attempt, which lasted 6 hr 40 min , he was in good condition and ran up the beach The layer of grease was still present over his trunk, thigh, and arms His forearms and legs were intensely pale , his brachial pulse was only felt with difficulty, and his radial pulse was impalpable until 50 minutes later His blood-pressure was 130/90–95 mm Hg 53 minutes after the swim, compared with 120/75 mm. Hg before, and his body weight had decreased from 211 to 209 lb The temperature measurements occupied 30 minutes, during which he stood nude , he did not shiver or complain of cold Eosinophil counts were 357 per c mm. before the swim, 22 per c mm 3 hours after the swim, and 435 per c mm the next morning

TABLE III—RECTAL TEMPERATURE OF J Z SHOWING EFFECT OF SWIMMING

Windermere swim no	Before entering water	Time after leaving water	Water temperature	Duration of swim (min)
1	37 8°C (100°F)	9 min 37 8°C (100°F) 11 , 37 8°C (100°F) 28 , 38 2°C (100 8°F)	13 8–15 8°C (56 8–60 4°F)	62
2	37 6°C (99 7°F)	3 min 37 9°C (100 2°F) 5 , 37 7°C (99 9°F) 10 , 37 6°C (99 7°F) 16 , 37 5°C (99 5°F)	13 8–15 8°C (56 8–60 4°F)	73
3		3 min. 37 4°C (99 3°F) 18 , 37 2°C (99 0°F)	15 8°C (60 4°F)	409

Observations were also made before and after practice swims lasting 73 and 63 minutes In these J Z swam across the lake to a river, where the water temperature was 13 8°C (56 8°F) The crossing took 15 minutes each way , so J Z was swimming in the river for 33 and 43 minutes respectively His rectal temperature was virtually unchanged after the practice swims and only slightly reduced after swimming for 6 hr 50 min. (table III) His stroke-rate during practice was 51–58 a minute, which was higher than in the long-distance swim , so heat production was presumably correspondingly increased The eosinophil counts were unchanged after the practice swims

Tissue temperatures are shown in fig 2 The deep muscle temperature in the thigh was above the rectal temperature, and the deep temperature in the forearm was only 2°C below the rectal temperature The deep muscle temperature (4 8 cm. depth) fell rapidly when muscular activity ceased , during swimming the muscle temperature was probably higher than those plotted in fig 2

These results, taken together, show that, in spite of considerable cooling of the superficial tissues, the temperature of the central body mass remained normal. J must have reached a stable state in which the effec thermal insulation of the outer tissues was such that production balanced heat loss

The second subject, G P , intended to swim for an in Lake Windermere He had an initial sensation of in cold, which gradually diminished, and after 10 minute felt no discomfort When he had been swimming fo minutes, shivering started in his jaw muscles, and his swim movements began to be restricted because of weakness, w steadily increased until at 30 minutes he was forced to up On getting out of the water G P could not stand crawled on to the jetty, and had to be assisted to the house Violent generalised shivering lasted 20 minutes. rectal temperature (fig 3), which was 34 5°C (94 1°F minutes after leaving the water, compared with 37°C (98 before entering it, reached 33 7°C (92 7°F) 10 minutes after which it began to rise

Swimming in water at 20 5°C (68 9°F) G P develo suddenly muscular weakness after 41 minutes , his re temperature, measured 3 minutes later, had fallen to same level as that reached after 30 minutes in L

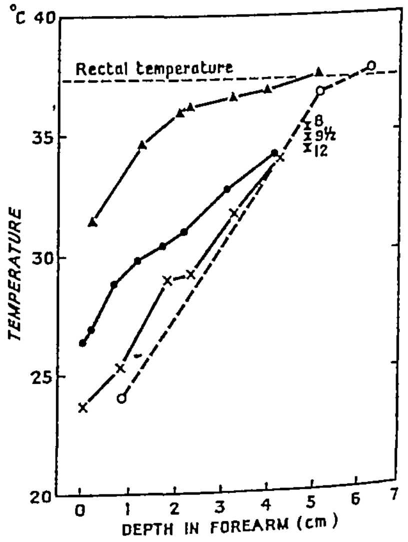

Fig 2—Temperature gradients :

x—x in J Z 's forearm after long distance swim of 409 mi

o- - -o ditto in thigh

●—● in J Z 's forearm after 60 min immersion witho swimming in water at 16°C

▲—▲ in G P 's forearm under normal conditions

I deep forearm temperature at 8, 9½, and 12 min. aft leaving the water after 63 min swim.

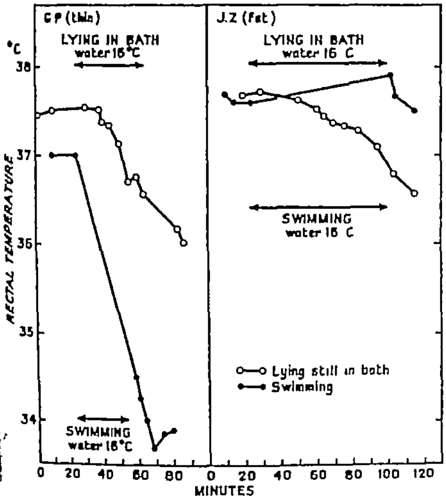

Fig 3—Rectal temperatures after swimming and during immersion without swimming in water at 16 C in G P (thin) and J Z. (fat)

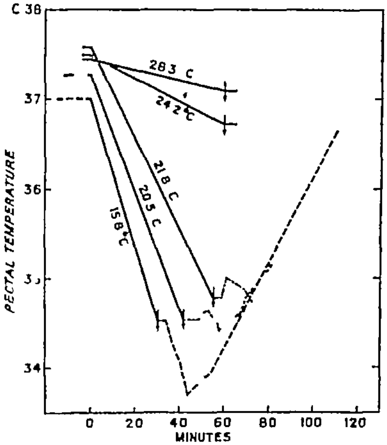

Fig 4—Rectal temperature in G P after swimming in water at various temperatures.

Time 0 = time entering water

↓ = time leaving water

The water temperatures are shown above the corresponding rectal temperatures

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Windermere In slightly warmer water 21 8 C (71 2 F) G P swam for an hour before complaining of weakness At higher temperatures still he continued for an hour without any weakness but even in water as warm as 25·3°C (77 5°F) his rectal temperature fell slightly (fig 4)

Expenditure of Energy in Swimming

Expired air was collected in a Douglas bag connected to a mouth piece by tubing 1 inch in internal diameter which passed underneath the subject as he swam and up between his legs The bag was supported by a pole until it was partially full when it was allowed to float behind the subject The inlet valve was fitted to a plastic tube curving over the subject's head, so that he could use the crawl stroke The results are presented in table IV

TABLE IV—OXYGEN CONSUMPTION (LITRES/MIN) AND ENERGY EXPENDITURE (CAL./MIN)

Subject	Lying		Sitting		In bath 16°C (60 8 F)		Swimming		
	Cal.	O_2	Cal	O_2	Cal	O_2	Cal	O_2	
J Z.	1 55	0 31	1 75	0 36	3 50	0 71	10 85	2 17	Slow crawl
					4 05	0·90	13 5	2 70	Crawl 50 strokes/min.
					4 75	0 95	12·0	2 40	Crawl 56 strokes/min
							14 8	2 90	Crawl 58 strokes/min
G P	1 45	0 29	1 70	0 34	8 30	1 60	10 3	2·06	Breast stroke moderate
							10 4	2 07	Breast stroke moderate
							10 8	2 16	Breast stroke moderate
D G E.	1 30	0 26	2 3	0 46	3 5	0 70	10 5	2 10	Breast stroke moderate

Bath temperature 21 8°C (71 2 F)

In swimming speed through the water is a deceptive index of ork-rate since it is affected by so many variable factors—e.g., aves, wind and currents. J Z.'s speed in Windermere varied om 1 7 to 1 3 m.p.h. He started at 1 7 m p h A head wind soon prang up and the water became choppy his speed fell to 1 3 p.h. In the last hour the water was calm, but by this time he as tiring and could not make more than 1 3 m p.h His stroke ate on the other hand, was remarkably constant at 50–52 strokes minute In swimming baths speed is affected by the turn at he end of the bath. Both in open water and in baths the apparatus r collecting expired air may cause drag

Expert swimmers using the crawl are probably much more cient than average swimmers using breast stroke Thus D G E nd G P swimming at the pace they normally use when asked to wim for say half an hour only swam at about 1 1 m.p h whereas Z. even after 6 hours was still doing 1 3 m.p.h

In view of these considerations it seems unwise to do more than se the three categories slow moderate and fast as an index of ort in swimming.

Using the crawl, at a stroke rate of 56–58 a minute J Z's oxygen consumption was 2 40–2 97 litres a minute During the long-distance swim of 10½ miles his stroke-rate was 50–52 a minute so probably his oxygen consumption was 2 1–2 6 litres a minute G P using the breast stroke had an oxygen consumption of 2 1–2 2 litres a minute which is comparable with J Z's long-distance energy expenditure

On a surface area basis the heat production was about the same J Z 4 70–5 00 G P 5 30–5 55 calories per square metre a minute In spite of the identity of heat production, G P became hypothermic in 30 minutes swimming in water at 15 8°C (60 4°F), in which J Z could maintain thermal equilibrium for many hours

TABLE V—CONDITIONS BEFORE BATH EXPERIMENTS ON J Z

Room temperature	Time in cold bath (min.)
1 hour at 19 C (66 2 F)	73
3 /4 hours at 15 8 C (60 4 F)	63
2 hours at 26°C (78 8 F)	48

Effect of Immersion in Water without Swimming

J Z's rectal temperature was measured on three occasions while he lay in a vigorously stirred bath kept at 16°C (60 8°F) His skin temperature remained not more than 0 5°C (0 9 F) above that of the water unless stirring was discontinued whereupon the skin temperature rose rapidly

Before immersion J Z dressed in his usual clothes—i.e light worsted trousers and short sleeved shirt open at the neck—spent 1–3 hours sitting still at various room temperatures (see table V) The changes in his rectal temperature are shown in fig 5 (one experiment is omitted because the thermocouple was defective) Heat production was increased by

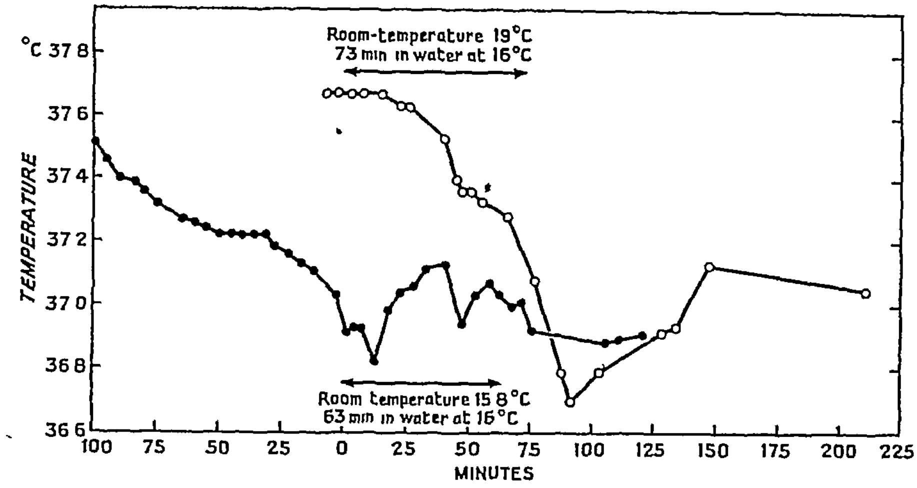

Fig 5—Rectal temperature in J Z during immersion in a cold bath (16°C)

●——● Two hours sitting in room at 15 8°C before entering bath Oxygen consumption 990 and 950 c cm. a minute during immersion

○——○ 1 hour in room at 19°C Oxygen consumption 740 c cm. a minute during immersion

shivering (see table IV) but was inadequate in one experiment to prevent a slight fall in body temperature

He did not complain of discomfort other than boredom, and once he read a newspaper while lying in the bath Shivering was never prominent and consisted of a fine tremor He maintained his body temperature rather better when swimming than when lying still in water at 16°C (60 8°F)

Similar experiments were planned with G P as subject The results of the first experiment are shown in fig 3 and table IV

Before immersion G P , dressed in his ordinary clothes, was engaged in sedentary work at a room temperature of 18°C (64 4°F)

Violent shivering began within 2 minutes of his entering the bath, and continued throughout the experiment Discomfort was intense for the first 5 minutes in the bath and gradually passed off, giving way to a sensation of great cold. After 33 minutes he asked to be taken out, and had to be lifted from the bath because muscular rigidity made him incapable of voluntary movement The experience was so unpleasant that he was unwilling to repeat the experiment

Comparison of this experiment with the effect of swimming in water at a similar temperature shows that, in the case of G P , although there was a considerable fall in rectal temperature in the bath it was much less steep than when he was swimming, which is in contrast to the results obtained with J Z This is in spite of the fact that G P 's oxygen consumption was less in the bath than when he was swimming in Lake Windermere (table IV)

Mean Skin temperature in Air and Thermal Sensation

The mean skin-temperature of J Z showed an unusual relationship with sensations of comfort The level of mean skin-temperature associated with thermal comfort in most people is 33 5–34 0°C (92 3–93 2°F) (Hardy and Soderstrom 1938, Gagge et al 1938, Yaglou and Messer 1941) J Z , on the other hand, was comfortable with a mean skin-temperature of 30–31°C (86 0–87 8°F) He wore few clothes and habitually slept naked at night at a room-temperature of 15–16°C (59 0–60 8°F) with only a sheet to cover him In the experiment described above, when J Z sat in a room at 26°C (78 8°F), his mean skin temperature rose to 32 5°C (90 5°F) and he complained of feeling too hot

Other subjects usually first complained of cold when their skin-temperature fell to 32 5°C (90 5°F), and of severe discomfort when it fell to 30°C (86°F) These results (table VI) are consistent with the findings of Gagge et al (1938) and Hardy and Soderstrom (1938)

No studies appear to have been made on subjects showing exceptional tolerance of cold J Z 's resting metabolism is well within normal limits (table IV), so his tolerance of cold differs from that of patients with thyrotoxico who have a high skin tempe ture and increased heat p duction

Studies on Other Subjects

Experiments similar to th described above were m with three other subjec The results are shown fig 6 Again there was association between amount of subcutaneous and the effect of immers on body-temperature

G P and O G E sw together for 60 minutes water at 21 8°C (71 2° O G E 's rectal temperatu rose by 0 25°C (0 45°F), whereas G P 's fell by 2 8 (5°F) J M and K H also swam together in water 19°C (66 2°F) for 35 minutes, by then J M.'s rec temperature had risen 5 0°C (0 9°F) and K H 's h fallen 1 3°C (2 3°F) O G E and J M were fat, a G P and K H were thin (table I) Neither O G nor J M was obese in the ordinary sense, and O G would usually be described as of slender build. Un measurements were made, it was not suspected th these two subjects had such a considerable subcutaneo layer of fat

K H and O G E were also the subjects of expe ments in baths, the results of which are shown in fig K H cooled less rapidly in the bath than when he w swimming, resembling in this respect the other th subject, G P

In O G E , on the other hand, the rectal temperatu fell while he lay in a bath at 21 8°C (71 2°F), wherea when he was swimming in water at that temperature h rectal temperature rose O G E therefore resemble J Z O G E 's metabolism, due to shivering, rose t about the same level as J Z 's, both being considerabl less than G P 's shivering metabolism (table IV)

Anatomical Measurements

The regional thickness of the skin and subcutaneous tissue was estimated in all five subjects from the thicknes

TABLE VI—SKIN TEMPERATURE AND THERMAL SENSATION IN AIR

Mean skin temperature		Thermal sensation of subject			
°C	°F	J Z	G P	R B P *	H D L *
35 0	95 0				
34 5	94 5		Too hot		
34 0	93 2				
33 5	92 3		Comfortable	Comfortable	Comfortable
33 0	91 4				
32 5	90 5	Too hot			Slightly col
32 0	89 6		Cold		
31 5	88 7				
31 0	87 8	Comfortable			
30 5	86 9			Very cold	
30 0	86 0	Comfortable	Very cold		
29 5	85 1				
29 0	84 2	Comfortable			
28 5	83 3				
28 0	82 4	Comfortable			
27 5	81 5				
37 0	80 6	Slightly cold			

* Observations on Arctic crews.

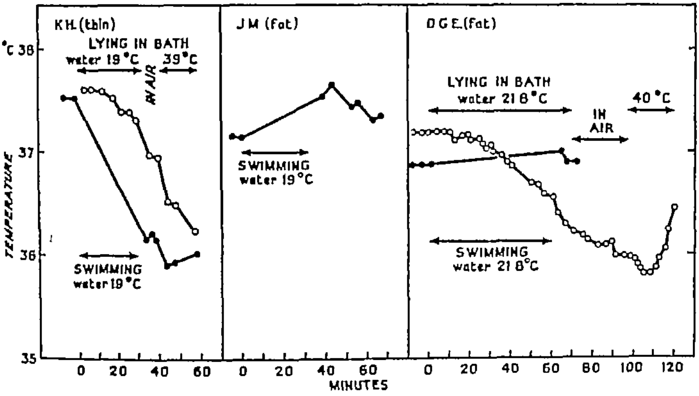

Fig. 6—Rectal temperature during swimming and in cold bath in 3 subjects 2 fat and 1 thin. Compare with fig 3
●——● Swimming ○——○ Lying in bath.

of the skin folds. These were measured with spring loaded callipers exerting a pressure of 1 kg and with jaws measuring 3 sq cm The skin fold thickness so measured corresponded approximately to double the thickness of the subcutaneous layer of fat determined radiographically The results are shown in fig 7 where the subjects are divided into two groups, fat and thin The difference between the thickness of subcutaneous fat in these two groups is striking and corresponds to their tolerance of cold water Diagrammatic silhouettes of J Z and G P are shown in fig 8

Conductance and Insulation

These findings suggest that tolerance of cold water is related to the thickness of the subcutaneous fat The thermal conductivity of human fat and muscle has been redetermined by Hatfield and Pugh (1951) and Hatfield (1952) who found fat to be about three times as good an insulator as muscle and almost twice as good as skin These figures are for tissue removed from the body without a blood-supply Fat is avascular compared with skin and muscle so the difference in thermal conductivity in vivo would be even greater depending on the volume of blood flow to the different tissues

The over all thermal conductance of the body (effective thermal conductance) can be calculated from the skin and rectal temperatures and the heat production (Hardy and Soderstrom 1938) The effective thermal conductance K in calories per square metre an hour per degree centigrade is given in the equation

$$K = \frac{H}{Tr - Ts}$$

where Tr = rectal temperature in °C
Ts = mean skin-temperature in °C
H = heat production in calories per square metre an hour minus 12% representing heat loss from the lungs

Effective thermal conductance has two components It is a measure of the passage of heat through the tissues by direct conduction and of the convective heat flow due to the circulation of the blood Calorimetric studies have shown that, below a certain environmental temperature effective thermal conductance becomes minimal and constant, and under these conditions cutaneous blood flow is too small to play a significant part in heat loss

The effective thermal insulation of the tissues is the reciprocal of the effective thermal conductance and can be converted into Clo units by multiplying by 5 56 (Gagge et al. 1941)

The effective thermal conductance in the vaso constricted state is 9 3 in men and 7 0 in women, the Clo value being 0 6 and 0 8 (Hardy and DuBois 1940)

Approximate values for effective thermal conductance and insulation have been calculated for J Z and G P swimming and lying still in water (table VII) Such calculations when based on stable conditions, may be regarded as reasonably reliable and this condition is fulfilled in the case of J Z In the case of G P who did not reach a stable state allowance has to be made for loss of stored heat associated with continued body cooling and the estimation of this factor is difficult (Burton and Edholm 1955) As an approximation stored heat loss has been calculated as follows

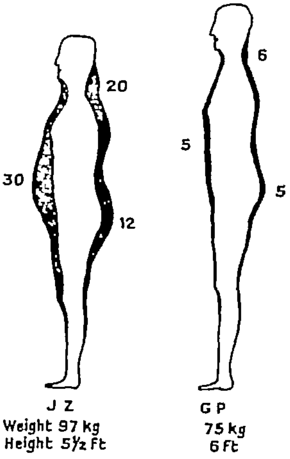

Fig 8—Silhouettes of J. Z. and G. P Numerals indicate thickness of subcutaneous fat (mm.) at the corresponding points. Height of figures is to scale but not thickness of fat.

$$\text{Stored heat loss} = \frac{\text{rate of fall in rectal temperature near end of experiment} \times \text{specific heat of tissues} \times \text{body-weight} \times 2/3}{\text{surface area}}$$

The value for the bath experiment was:

$$1\ 4 \times 0\ 83 \times \frac{75\ 5}{1\cdot 9} \times 2/3 = 30\ 7$$ calories per square metre an hour

G P., swimming in water at 25 3°C (77 5°F) showed only a small fall in rectal temperature (0 8°C) (1·4°F) after an hour It has been assumed that under these conditions stored heat can be ignored.

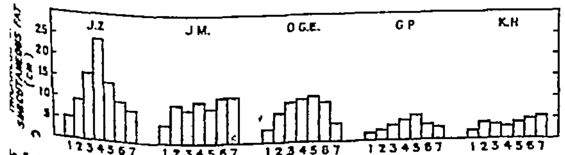

Fig. 7—Thickness of subcutaneous fat in 5 subjects: 3 fat (J. Z., J M., and O G. E.) and 2 thin (G P and K. H.) at 7 sites: 1 forearm; 2, arm; 3 chest; 4 abdomen; 5 back; 6, thigh; and 7 leg

TABLE VII—EFFECTIVE THERMAL CONDUCTANCE AND INSULATION

—	Metabolism (kg cal /min)	Heat dissipated through tissues (kg cal /m ²/hr)	Temperature °C (°F)			Conductance (kg cal /°C/m ²/hr)	Insulation (*Clo*)
			Skin	Rectal	Difference		
		Subject J Z (2 0 sq m)					
Swimming	660	290 5	16 0 *(60 8)*	37 4 *(99 3)*	21 4 *(39 5)*	13 4	4 2
Bath	270	118 8	17 0 *(62 6)*	37 1 *(98 8)*	20 1 *(36 2)*	5 9	9 4
		Subject G P (1 9 sq m)					
Swimming	630	291 6	25 3 *(77 5)*	37 1 *(98 8)*	11 8 *(21 3)*	24 7	2 3
Bath	498 + 30 8*	281 3	16 0 *(60 8)*	36 6 *(97 9)*	20 6 *(37 1)*	12 7	4 4

* Stored heat loss

Table VII shows that conductance was much greater in both men while swimming than in the bath This is attributable to the peripheral localisation of the extra heat production of muscular work

In G P conductance was so great that even the metabolism of swimming was insufficient to prevent hypothermia from developing in water at 21 8°C (71 2°F), and water warmer than 25°C (77 0°F) was necessary for a stable thermal state In J Z , on the other hand, although conductance was twice as high when he was swimming as it was when he was motionless in water, the metabolic production of heat was enough to prevent his body from cooling

Channel Swimming-race, 1954

The cross Channel race in August, 1954, provided an opportunity to collect more information on long-distance swimmers

Methods

The rectal and oral temperatures of four of the seven successful competitors were recorded immediately after completion of the crossing The rectal thermometer was introduced to a depth of $3^1/_2$ inches and left in place at least 3 minutes The measurement was repeated in doubtful cases Other observations included sea-temperature, weight and distribution of grease used by the swimmers, food intake during the swim, and stroke rate

All 16 competitors were examined before the race, and measurements made of skin fold thickness in collaboration with Dr W H Hammond, to whom we are greatly indebted The method used (Edwards et al. 1955) was to measure over six standard sites with spring loaded callipers Superficial tissue thickness measurements were obtained from a chart relating fat-thickness measured by X rays and calliper readings This method has been used for surveys on children and industrial workers (Hammond 1955) , so there is a basis for comparing swimmers with other groups

Results

The measurements are set out in table II, and th swimmers are compared with a group of British facto workers The subcutaneous fat of the swimmers in a areas measured averaged twice the thickness found the factory workers All the measurements recorded the swimmers fell at the extreme range of the frequenc distribution for the factory workers

The summarised figures given in table II, together wi the heights and weights, provide further evidence th long distance swimmers belong to a certain physic type, characterised by a large body weight in relation height It is clear that none of the swimmers was thi

Other observations made on the Channel swimmers a set out in table VIII Two of the swimmers had rect temperatures of 34 7°C (94 5°F) and 34 8°C (94 6°F) the end of the race This is similar to the rectal tempera ture of G P when he was forced to give up The winne had a rectal temperature of 35 6°C (95 8°F), and th second woman to finish had a normal mouth temperatu of 36 7°C (98 6°F) * These last two swimmers were fa even by Channel swimming standards

The grease used by the swimmers was anhydro lanolin, and the amount used varied from nil up to 8 l When used, it was applied all over the body , the thick ness differed greatly because the grease was smeared o with the fingers The lanolin soon became hydrated, an much of it washed off, especially over areas exposed t rapid water flow, such as the hands, the feet, and th medial aspects of the arms By the end of the race th average thickness in two subjects examined was judge to be less than 1 mm There appears to be some loss o confidence among Channel swimmers in the effectivenes of grease, and one of them, when asked before the rac why she used no grease, said she could keep warm withou it and saw no point in carrying extra weight across th Channel. (The increased buoyancy was apparently no appreciated)

In all the swimmers examined after the race th peripheral pulse was absent and the limbs were cold— to touch them was like handling fish Measurement o blood-pressure was difficult owing to the small puls volume at the elbow

Procedure on a Cross Channel Swimming race

The swimmers leave Folkestone in their respective pilot boats about 7 P M and assemble on the beach at Ca Gris Nez about 11 P M The pilot boats wait offshore and

TABLE VIII—1954 CHANNEL-RACE OBSERVATIONS

Order of finishing	Name	Sex	Country	Age (yr)	Time in water	Body temperature	Notes
					hr min		
1st	B Pereira	M	Portugal	33	12 25	35 5°C (96°F rectal)	
2nd	H Hamad	M	Egypt	37	12 49	34 7°C (94 5°F rectal)	
3rd	B Fisher	F	Britain	27	14 25		Grease on face and neck only
4th	J Zirganos	M	Greece	44	16 23		Grease on trunk only
5th	M Feather	F	Britain	21	16 23	36 7°C (98 0°F mouth)	No grease
6th	A. Abertondu	M	Argentine	35	16 53		No grease
7th	El Sousi	M	Syria	27	17 55	34 8°C (94 6°F rectal) 34 4°C (94 0°F mouth)	5 lb grease 1–2 mm thi
Competitors who did not finish						*Cause of failure*	
	N Barnie	M	Scotland	57	17 5	Fatigue	$1^1/_2$ lb grease.
	J Kammersgaard	F	Denmark	35	14 50	Fatigue	
	B Toufic	M	Lebanon	23	16 approx	Fatigue	
	J McClelland	M	Britain		15 ,,	Unspecified	
	A Rizzo	M	Malta	28	14	Fatigue	
	B Paysour	M	U S.A	26	$14^1/_2$,	Cold	
	K. Wray	M	Britain	28	3	Pulled shoulder muscle	8 lb grease
	D Beltram	M	Mexico	36	5	Cramp	

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* We are indebted to Dr Sabri, the Egyptian medical office for this figure

are marshalled by two control boats equipped with radio About midnight the swimmers grease themselves and get ready They all start together at about 12 30 A M 4 hours before high water at Dover Each swimmer is accompanied by a motor pilot boat and a rowing boat The first competitor usually finishes about midday and commonly lands near St Margaret's Bay The last swimmer may not finish until after dark and may land anywhere between Folkestone and St Margaret's Bay On landing the swimmer has to wade out of the water he then returns to his pilot boat and is taken back to Folkestone. The times are checked by the swim marshal in one of the control boats The other control boat maintains communication with the swim marshal and with the shore

Other Swimming races

During our time spent with the Channel swimmers we heard descriptions of other long distance swims some of greater duration and others in colder water than the Channel. These are reported briefly here because they do not appear to have been published

On Dec 31 1953 a 42 km race took place in the Nile near Cairo two and a half times round an island The water temperature measured by Dr Sabri was 11°C (51·8°F) and only two out of thirty two competitors finished the race They were in the water for 14$^1/_2$ and 17 hours About half the competitors gave up in less than 7 hours because of cold

In 1953 J Z swam in the Bosphorus in water at 8°C (46·4°F) for 4 hours He was then removed semi conscious and remained in this condition for 3 hours (He and his trainer were convinced that he had been poisoned.)

Among very long swims there are two outstanding ones, both in warm waters One was of continuous swimming for 70 hours in the Mississippi travelling 300 km. down stream; and in the other in the River Plate 200 km was covered in 75 hours In both cases the water temperature was said to be about 21°C (70 F)

Disturbance of Consciousness

There are several instances of disturbance of consciousness in long-distance swimmers presumably due to cold In 1946 Hamad the Egyptian swimmer had to be taken out of the Channel after 7 hours He was in a confused state—e.g., he asked for cotton wool to wipe his eyes and then attempted to eat the wool In 1951, when Hamad was 35 lb heavier and much fatter he won the Channel race In 1945 another Egyptian swimmer who was considered to be too thin by his trainer was also removed after 7 hours he was unconscious for 3 hours

The winner of the Ladies Race in 1951 became hallucinated after wading ashore and complained that she saw animals in the water Similar hallucinations were experienced by a swimmer in the 1954 race who was removed from the water after 7 hours because of cold

Discussion

Partial answers can now be given to the questions asked in the introduction

Do Channel swimmers tolerate hypothermia better than others? The answer appears to be yes, because the level of rectal temperature measured in two of the cross Channel swimmers was as low as in G P when he was forced to give up swimming in Lake Windermere It seems unlikely that this tolerance of hypothermia is an important part of the ability to withstand cold J Z could maintain his body temperature for very long periods when G P could not and it can be suggested that the rectal temperature falls only when the swimmer is becoming fatigued and his expenditure of energy decreases

The muscular weakness experienced by G P when his rectal temperature fell to 34·5°C (94·1 F) was quite distinct from cramp or fatigue this phenomenon needs further study

Is the heat production of Channel swimmers exceptionally high enabling them to maintain heat balance even in cold water? J Z in short practice swims, had an energy expenditure of 350–400 calories per square metre an hour On longer swims when the stroke rate fell the energy expenditure was possibly about 310–350 calories per square metre an hour The energy expenditure of other Channel swimmers has not so far been measured but the values obtained with J Z are comparable with those of G P and O G E Glaser (1950) reports a value of 365 calories per square metre an hour for moderately hard swimming (expired air was collected in a Douglas bag during swimming)

Karpovich and Millman (1944) studied in many subjects the energy expenditure during sprint swimming They collected the expired air after the subject had swum a distance of 60–120 ft holding his breath Very high caloric values were obtained, up to 80 calories a minute The manner of measuring and the nature of the sprints make it difficult to compare the results with those obtained in the present study where the swimmers were in a stable state However, swimming the breast stroke at 1·7 m p h cost 18 calories a minute which is a little more than the caloric expenditure of J Z swimming slightly faster It is clear that J Z's energy expenditure during swimming is not exceptionally high If in this respect J Z is typical of Channel swimmers, the answer to the second question is in the negative What is remarkable, however is the total energy expenditure of a Channel swimmer The time spent in crossing the Channel is 12–20 hours, and the rate of stroke is maintained approximately constant throughout In the case of J Z this means an energy expenditure probably averaging 750 calories an hour—i e. a total expenditure of 9000–15 000 calories. This makes Channel swimming possibly the greatest feat of endurance in the world of sport

An important aspect of heat production during swimming concerns the advice to be given to those in danger of shipwreck Glaser (1950) wrote

> Fit men who are in danger of immersion in cold water might be advised to swim or struggle as hard as they can for as long as they can. If they try to preserve their strength by clinging to wreckage or floating on their lifebelts, they will die from cold Perhaps more lives would have been saved in the past if this had been understood.

The present results do not support this statement In the case of J Z the rate of body-cooling was very low when he lay motionless in a cold bath and virtually nil while he was swimming He would probably do equally well motionless or swimming G P on the other hand cooled more rapidly while swimming than while lying still and he would almost certainly survive longer if he refrained from swimming or struggling

This finding was confirmed in the other thin subject studied O G E had a slight fall of rectal temperature in the bath but not when swimming The water temperature was relatively high (21·8°C 71·2 F) and the increase in heat production due to shivering in the water was small compared with the heat production of swimming The traditional naval advice to cling to wreckage and not to waste energy by swimming is probably correct

Do Channel swimmers lose heat less rapidly because of their physique? The spreading of grease over the body is common among long-distance swimmers and is relevant to this question J Z used about 2 kg of lanolin before the Lake Windermere swim If it is assumed that all the lanolin was spread evenly over the whole body the thickness of the layer can be calculated as follows

Surface area of J Z = 2·04 sq m—i.e. 20 400 sq cm
Lanolin = 2000 g of sp gr 0·97
Vol of lanolin = $\frac{2000}{0\cdot97}$ = 2060 ml

Therefore on each sq cm. there will be $\frac{2060}{20\,400}$ of lanolin, about 0·1 ml. giving a thickness of 1 mm.

Larger quantities than 2 kg (4 4 lb) were used by some, up to 8 lb (i e , about 4000 ml), so the average thickness in that case could have been up to 2 mm Even then the increased insulation due to applied grease would be small, but it might have other useful effects, such as reduction of friction

Perhaps the most important and certainly the clearest answer was obtained to the question of whether the heat loss in Channel swimmers was diminished owing to their body build All the Channel swimmers were fat and many of them grossly fat The increased insulation and the decreased rate of heat loss appear to be the chief factors enabling Channel swimmers to maintain body-temperature in cold water for a long time Other factors, such as the length and volume of the limbs in relation to the trunk, were also considered A man with short limbs and a large trunk would cool less quickly than a man of the same surface area but with long slender limbs and a small trunk Calculations based on measurements on J Z and G P suggested, however, that only a minor part of J Z 's advantage could be explained by this difference The important factor seemed to be tissue insulation.

This conclusion is similar to that of Scholander et al (1950), who found no evidence of any difference in the body temperature of Arctic animals compared with those in *temperate or tropical zones*, nor any difference in the resting metabolic rate There was, however, a very large difference in the insulation, due to fur in land animals and to blubber in the water mammals—*e g* , *seals*

These findings regarding Channel swimmers were admirably summarised by Dr Sabri when he said "To be fat is good "

We are grateful to the Channel swimmers for their friendly coöperation, and particularly to Major Jason Zirganos, whose enthusiastic help provided the initial stimulus for this investigation. This work could not have been done without the assistance of Mr S Rockett, who was the swim marshal on both cross Channel races We are also indebted to Messrs Butlins, the organisers of the race in 1954, for their coöperation

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TECHNIQUE OF ADMINISTRATION

FROM A CORRESPONDENT

> "Amongst old official men the point of practice most valued is conformity to standing rules and regulations They are accustomed, with too much regard to their own convenience and too *little* to the specialties of cases, to insist upon adherence to system or precedent, called by euphemismus adherence to principle"—HENRY TAYLOR, *The Statesman*, 1836

Sir Henry Taylor was writing about the Civil Service as it existed more than a century ago, long before the Welfare State had appeared upon the scene But there is surely a parallel between the criticisms then current regarding the machinery of a system in Whitehall now long obsolete and those so often launched today at the administrators of the local authorities, the hospitals, and the other social services It is tempting to speculate whether we have not reached a point where a more vital conception of the function of administration is one of our most pressing needs

It all comes back, Taylor thought, to persons, capacity, and training Part of his solution is to be found in what his book said about education When the student is four and twenty, the sooner he is in authority the better

> "An early exercise of authority is, in the case of most men, necessary to give a capacity for taking decisions Prudence is much more easily learnt than *decisiveness*, the former may be taught at any age, the latter only to the young "

What is the chief ingredient in administrative capacity? The most important qualification, Sir Henry declares, is "fitness for acting through others , since the importance of his operations vicariously effected ought, if he knows how to make use of his power, to predominate greatly over the importance which can attach to any man's direct and individual activity" How often is this simple "fitness for acting through others" still ignored in favour of the acquisition of "experience" or paper qualifications of one kind or another! A man must act through others , they must be carefully chosen (a topic upon which he has much to say) , and "discipline" is a matter requiring the greatest care

> "The closeness or looseness of the discipline to be exercised must of course vary, not only with the nature of the man, but also and more distinctly with the nature of the work , and where the work is such that its effective depends much upon its conscientious performance, authority should be so used as in no degree to supplant the conscience, but on the contrary to support it , and the support should be given by an influential coöperation in which authority is rather felt than recognised. In such cases civil should be farthest from military and nearest to ecclesiastical discipline "

This is a penetrating passage widely applicable to t problems which so often flow from the attempt to d charge large scale duties which depend upon conscientio performance One has only to think of the large scho or college—or perhaps par excellence the hospitals to sense how acute is the thought that runs through th passage

He knew too that the use of "instruments" mu not be carried too far Consider such a passage as th in which he discusses *précis* writing and insists on t importance of the personal handling of papers

> "He who has to act upon a long series of documents w hardly be able to master their contents without making abridgement of them for himself It is only a smatterer business who will think it of much more than a prelimina assistance to him to have such an abridgement made for hi by another "

Comparing past with present, where does Taylor advice fail—most noticeably—now? Perhaps in lack of the sense of scale and of the relationship betwe human capacity and large scale administration The is nothing in his book to correspond with the mode conception of "span of control" No superior, as su experts as Colonel L Urwick would claim, can supervi directly the work of more than five, or at the most si subordinates whose work interlocks

Much of the success achieved by the modern busine consultant can be attributed to an intelligent applicatio of this principle Detail accumulates round the man a the top, and the temptation to add more and mor subordinate staff directly responsible to himself is ofte found to be the cause both of frustration in the busine and of personal breakdown in the individual thus ov burdened The solution is found in a regrouping of duties and responsibilities Not more than five or si subordinates is the clue , and it has even been suggeste by Mr Graicunas[1] that there is a mathematical pro ciple involved: "what is supervised is not only the individuals but the permutations and combinations of the relationships between them —and the latter increase by geometrical progression so that the addition of a sixth subordinate adds over 100% to the number of relationships that have to be supervised!

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[1] Relationship in Organisation. By V A Graicunas In Pape in the Science of Administration quoted by L. Urwick i *The Elements of Administration* London

However this may be the fact remains that attention to the span of control as a vital factor in efficiency is one of the most valuable things that the modern study of administration has to offer us Its application to hospitals and other branches of medical work has still to be worked out Can it, one wonders, afford any help with the problems facing the matron of a large hospital? Can the work of twenty or more wards or departments be so grouped that the matron has to deal only with five or six sisters, or is the principle not really applicable at all and if not, why not? What in any case is to be said of a situation wherein some hundreds of student nurses are supposedly responsible to a single matron? How can she be effectively accessible to such numbers? It may well be that we have been too long content to allow the scale of the hospital to grow and wards and departments to multiply without amending the pattern inherited from the Nightingale era when numbers were very different

It is surely high time that more attention was given to the working out of a statement of the principles common to business and to non-commercial organisations like hospitals. It must take account both of the common sense embedded in such conceptions as span of control and of the disinterested—dare one say more ethical?—content of that other strand of reflection represented by Sir Henry Taylor and since his day so widely embodied in the best practices of our Civil Service

MEDICAL DEFENCE UNION

This year *for the first time since 1928 the Medical* Defence Union held its annual general meeting out of London—in Bristol on Sept 20 The president Dr S Cochrane Shanks was unable to be present and the meeting was addressed by a past president Mr St J D Buxton There was ample evidence, he said, that many medical students *in fact most* qualified and began hospital work or general practice with negligible knowledge of the simplest of medicolegal matters Forensic medicine was often thought to be a subject of little importance to the student who found out that the dean did not worry if he failed to attend the requisite number of lectures for signing up The lecturer in forensic medicine had a heavy task he was expected to teach not only the medicolegal aspects of crime and mental disease and the rôle of the doctor in the courts but also the many matters, such as certification which were connected with medical practice

The Union s annual report discusses further the question of what to tell the patient In recent cases judges had given their views on the withholding of material information on the care and treatment of a patient It was evident that when the court learned that the full facts of a case had not been disclosed, the good will extended to a medical defendant might be withdrawn The report says that certain principles should be borne in mind in deciding what to tell the patient or his relatives These were best illustrated by considering the following questions

What is the best for the patient from the medical point of view?

What will be the effect *on the patient* if he is told of a misfortune or accident while he is under treatment?

Should the patient be informed at a later date?

The criterion should always be what was best for the patient medically and not what was sound from the legal point of view The report emphasises that if a doctor makes a statement at any stage of a case about what has happened to the patient, then that statement must be true If he is answering questions put by solicitors acting for patients it can be damaging to the doctor to answer obliquely evasively or incompletely Whenever a letter is received from a patient a relative, or a solicitor or whenever a conference is proposed asking for information about the treatment of a patient, members of the Union are urged to seek the advice of the secretary without delay

The total membership of the Union on July 10 was 41 561 During 1954 the Union handled 2348 cases compared with 2384 in 1953

The Widdicombe File

XXVIII SWEET THAMES RUN SOURLY

DEAR SAMUEL

I write to congratulate you in the first place for landing the job at St Ethelred s in the second and more so for having had the sense and guts to uproot yourself from Redbrick when you seemed so fortunately and comfortably established there

O that some others thought like you! You ve been at Redbrick man and boy student houseman registrar lecturer these -how many years is it?—too many anyhow without a break You ve had an excellent department the best of chiefs and a more senior rank than you d any right to expect But local prejudices local politics local fashions have been settling into your bones like radio strontium The fashions are often good fashions many things you do far better than average at Redbrick and a few better than anywhere but to be a full man, a properly educated man you need a sniff of the larger world Or rather more than a sniff The fashionable year in the States is good as far as it goes but so long as your roots remain in Redbrick so long as you re certain to go back there you will retain your protective skin of Redbrick prejudices You must move to a proper settled job

Ideally I suppose before you return to Redbrick—if ever you do—you should do a spell at this job in London then another on the Continent then one across the Atlantic, and one in the tropics Life s too short of course (what couldn't we do with the *Back to Methuselah* 300 years—pathologists more than most people for they get better as they get older up to any age, just so long as they stay interested—but think of the promotion ladder if professors retired at *275*!) but you must do what you can London for you is the bare minimum through London at least there blows the dusty wind of a cosmopolitan traffic If you keep your ears and eyes open you will learn there more of the world and its citizens and its newest ideas than you would anywhere *else on earth*

Note that I ve no great brief for the London schools as such Not more than two of them at most are the equals, as single schools, of the best provincial and Scottish schools (I cry St Wormwood s and her sisters mercy but I was thinking of undergraduate schools only) and the worst are the worst by far to be found in this island Not one of them is part of its university as Redbrick is you will not find yourself dining with archæologists or debating with astronomers or even find your students looking for partners in the art school the distant omni absence of London University as anything but an arbiter of finance and examinations is something you will find astonishing and depressing (it should have been decentralised into at least three universities long ago but the irretrievable scattering of buildings is something no reorganisation can touch) But parochial in their outlook though the individual schools are they yet gain something from propinquity:

the mere fact of being in the same city with a dozen other departments of pathology makes it difficult (though not alas impossible) for any of them to stagnate entirely, and some (though far less than you'd expect) exchange of ideas does occur At least the London schools differ far more, for good or ill, from the provincial schools than the provincial schools differ among each other which is why you need this move

Equally, of course, the London man needs to experience the provinces He is even harder to shift to the true Cockney the black men begin at Calais and the Eskimos at Potter's Bar

It is the merest platitude that all university departments should encourage circulation of their staff The trouble of course is that unless all do it there comes to be some unfairness University A believes in circulation, and appoints a lecturer from University B University B believes in taking care of its own, and appoints one of its own juniors so the juniors in University A are squeezed out I think there ought to be a fairly rigid rule that no one should be promoted beyond the lowest grade in his own school It's perfectly right and proper (indeed, the only possible way in most cases) that the bright student who's discovered an interest in pathology (or what subject you will) should be welcomed into the appropriate department of his own school as soon as he's over his house jobs and Army service (a left handed blessing on Army service !) as a demonstrator or assistant lecturer or registrar or research assistant or whatever you may call him Two or three years there will ground him in the subject, and give everyone concerned (himself included, if he is capable of self-assessment) a pretty fair idea of what his potentialities are He should then be firmly transplanted to the most distant city he can be persuaded to move to, to whatever kind of job seems to be best suited to him and not allowed back to his home school till he is good enough to win a properly advertised job there against normal competition Some such rule would be a great preventive of stagnation

There ought of course to be a similar rule about the appointment of professors (two " outsiders only " hurdles, one near the beginning and one near the end, would be enough, I think) and another for the appointment of consultants to teaching hospitals (perhaps the rule there ought to be that not more than two thirds of the consultant staff might be graduates of the school) but that's looking a little far ahead for you at the moment, Samuel

What do they know of Redbrick who only Redbrick know ? (Or London or even Boston, Mass —*mutatis mutandis* and sauce for the gander) The best metaphor is not that of the rolling stone, but a horticultural one Have you ever bought a bush from a good nurseryman ? He will tell you half the battle lies in the transplanting Too often moved, the bush will never grow Left too long in one place, it grows leggy, long rooted, inelegant, and immovable Transplanted at judicious intervals, you have a well proportioned compact bush ready to root at once in its new home and embark on the production of flower and fruit Go thou and do likewise do not bury your talent too long in one plot

So far so good You're doing the right thing That should be support enough for you in the trials which are to come For trials there will be Hell, said Shelley, is a city much like London, and if hell is a shade exaggerated and something in the dimmer parts of Purgatory would be nearer the mark, it is nevertheless true that the crown and epitome of your trials lies in this one fact—you will have to live in London I escaped, as you know, not so long ago to one of those grimy northern cities that Londoners list first among the places of all on earth they could least bear to live in, and have found myself and my family far better off in consequence , so I speak from

For the energetic young bachelor of either sex to wl theatres, concerts, art galleries, shops, and social ballr are the indispensable froth of life and money no g object, London is a reasonable proposition , Y Colonial, come to Britain for a year or two, ostens to acquire a few more letters after his name but tr if subconsciously, chiefly intent on getting the san the wide open spaces out of his hair, will find al needs—lectures and classes and exams ad infinit history down every back street, fun and games at ev level from Schonberg and Shakespeare down to Fra Laine and Frankie Howerd every night into the s hours For the sober academic, so far as his work g the good and the bad just about balance For the fa man, so far as his family and his out of working ho activities go, there's no two ways of thinking possib London's the last place in these otherwise green pleasant islands to choose to live in To q approximately,

> " Once in finesse of fiddles found I ecstasy
> In click of gold heels on the hard pavement
> Now I find
> That warmth's the very stuff of ecstasy "

London has too many fiddles (I mean musical instrume though the horrible *double-ongtong* is a fair comment the way also), too many high heels, but not enc warmth

On the snags of living in London it is as harc know where to begin as it is to find your way in Lond streets but it is as well to begin at the roots, v finance London you'll find will cost you a whole more At every level, whether you live in hotel hostel, or rent or buy a house, it applies Roug speaking—don't take this as gospel, and remember e if it was true yesterday when I could vouch for it it r not be true tomorrow—if you sell your house in Redb and buy one of similar size and sort in London, yo be down something over £1000 on the transact Travelling will cost you a lot more not that Lon Transport is especially dear (though it is) but you travel much further Your groceries and the like cost about the same, though you will get less ser with them Domestics are even more scarce, expens and unreliable than in Redbrick All sorts of odd th like theatres cost more—the seat that cost you 8s at Redbrick Theatre Royal will cost you 17s 6d Shaftesbury Avenue (True, in Shaftesbury Avenue y have a greater choice, but most of the best stuff comes the course of time round to Redbrick myself, I f myself more likely to go to a play running for a w only or a concert for a night, than to a play that may running next year or a concert that is one of a summ long series) You will have to spend more on the m ostentatious elements of entertaining your acqua tances will visit you less often, but they will have travel so many miles across London to visit you that will seem discourteous to offer them anything less than formal dinner when they reach you Education fantastically expensive so much so that I wonder family men have not long ago migrated to Scotland, wher I gather, it is fantastically cheap The mystical sel immolation involved in sending one's sons to a goo boarding school (there cannot surely be more than few dozen doctors in this country who can really afford t pay out of income the bills of three or four childr simultaneously at boarding schools and/or universitie yet unaccountable numbers do it) is one it is possible t refuse to undergo, but in London even a decent day-schoo is a strain and the very kindergartens ask for the moo and get it

The ultimate fundamental trouble with London r simply that it's too big That's been a platitude ever since Cobbett, who called it the *Great Wen* (had he m mind I wonder a carbuncle or a sebaceous cyst ?) and probably for centuries before Cobbett for that matter But until you get into the place and try to live there you don t properly realise it Because it combines an enormous population with a site almost completely devoid of obstacles to expansion in every direction it sprawls shapeless undisciplined, featureless across space enough for a dozen or more ordinary big cities

London has four great zones There s international London at the core, Westminster the City Mayfair Soho, Harley Street Savile Row Piccadilly Shaftesbury Avenue and the like, where things happen but where only a millionaire can buy enough space to be comfortable in. Then ringing round that is a zone averaging five miles wide of Victorian London Cockneydom proper a tedious array of terrace upon terrace of mediocre respectability hardly relieved by a real slum even—Whitechapel Islington, Lambeth Fulham Willesden and the like. Then there's this century s London, suburbia proper an even wider zone of semidetached villas, in which you can recognise still the nuclei of what were once real separate towns—Wimbledon Epsom Harrow Croydon—submerged in a confluent rash of brick spots, more depressingly monotonous in its search for a variety of architecture within the limits of a low budget and a timid depressed taste than even the Cockney zone of terraces. And then there s outer suburbia London that is soon to be most frightening of all where what at first sight seems to be real country begins to intrude where you can wander often for as much as five hundred yards in blissful silence before the noise of Miss Joan Hunter Dunne s tennis balls whistling through the birches breaks it to you that even here every copse is filling up with desirable—O how desirable !—country residences, filled with fugitives from London This centrifugal macular urbanisation more or less intense goes on over practically the whole south east quarter of England to the south the drifts of new villas, marching up Downs and down Weald have barely had time to become less frequent before they exacerbate in final fury at the coast

Where then you may well ask are you to live ? At Redbrick you live within walking distance of the University and ten minutes tram ride of the city centre You are cramped for gardens and a little grimy but the convenience is a great compensation Or you could have found a suburb within walking distance of the moors, and yet within half an hour of work by car at the outside At Ethelred s you will find youself working in the inner fringe of my second zone the terraced zone of dismal Cockneydom You will not be allowed to live in any of the shabby terraces of the immediate neighbourhood the occasional intrusive blocks of flats are no place for a family with children in any case they are either municipal and not for newcomers or impossibly expensive There are a few oases of respectable streets, usually on their way down but the houses there are either impossibly dear or never come into the market You cannot live in Mayfair You will find yourself pushed, willy nilly into suburbia If, for the sake of peace and quiet you plump for the extreme periphery you may land yourself with a daily journey of an hour and a half each way—and though you may be prepared to sacrifice your own time to that extent remember your children may have the same journey to school some day and so will your friends if ever they are rash enough to attempt to seek you out Living really well out is workable though expensive if your hospital is next to a main line station : it is easier to live in Brighton and work at Guy s than to live in Hounslow say and work at King s. You will compromise and find a house in suburbia proper and for the sake of a patch of lawn and a few hollyhocks find yourself in a brick box near neither your job nor your friends nor your children s school nor the country nor the shops and the cities of central London nor anything that makes life comfortable and convenient

You will not find the Londoners much better The real Cockney will play his character part of the amusing rascal for your benefit but you will find him at heart as inaccessible to you as any indigene to any foreigner The staff of St Ethelred s will be very polite and very friendly but you are not an Ethelred s graduate, and it will be a long time before you have more than a sherry party acquaintance with them outside working hours Probably they are no worse than others, but they are scattered in a dozen different suburbs and any kind of mutual visiting involves long and weary evening journeys There is one remedy that would make work in a London hospital twice as attractive—that the hospital should acquire enough property near it to house at least a nucleus of its staff at all levels so there would at least be some sort of social rallying point But what might once have been easy (and was done in several provincial schools but so far as I know in none of the London schools to any useful extent) is now hardly possible The property is not to be bought and there is no money to buy it if it was.

Your suburban neighbours you will find even less accessible The suburbs are remarkable communities—or rather remarkable examples of collections of people who ought to be communities but are not. Their sameness the vagueness of boundaries produced by universal confluence precludes local pride No one altogether belongs there The husbands belong rather, if anywhere to the distant and diverse circles of their working day The children belong to their equally diverse and distant schools The daily women come often from equally distant homes Only the wives and the toddlers maintain a sort of grocer s shop sorority, and however wide such a circle of acquaintance may become it takes a rare set of women to build up a real community when nobody else is interested

Most of the Londoners you'll meet will be incomers like yourself—at least incomers within the last generation or so They have the faults and virtues of an immigrant population They are rootless and dissatisfied, lacking in any real communal sense or local pride They worship quick success, and the outward appearance of success. Typical of London is the woman of 30 who looks like well dressed 21 from a distance, and like painted 40 under the light But equally they represent a skimming of part of the cream of drive and originality from the districts from which they have come It takes above average drive and originality and imagination to emigrate at all, and the resultant community retains for a time some of the critical lift the nervous intelligence, the anxious desire to do something new that its new members brought with them Though you will find few good companions you will find excellent collaborators. Till it runs you ragged life there is a notable stimulus.

That of course is the saving grace so far as you are concerned London is no place to live in but it is not at all a bad place to work in if only because there s so little else worth doing there I could comminate endlessly as the London streets, on the hard water the elderly fish the traffic jams, the summer sweat in the Underground the infinite condescending self-sufficiency of the Londoner and many other things but I ve said enough I still think you re right to go there Myself I did the same after all I left with few regrets—but (like Shaw's waiter and his marriage) I would do it again O, yes most certainly I would do it again

I regret the school I left and most of my colleagues I regret Kew and Richmond Park and Chelsea I regret the Old Vic I regret the R S M library To these I apologise for my splenetic outburst against their metropolis but to no one else PETER DAVEY

In England Now

A Running Commentary by Peripatetic Correspondents

THE Hunters' Moon is shining its annual message to our valley Once again it is time to change from otters to foxes and hares, a time of bitter-sweetness in the age-old pattern of venery The last drops of river water trickle out of the punch holes in our boots, the long poles are pushed up on the roof trusses of the barn Behind us lie pleasant memories of warm sunshine on ancient tweed jackets leaning over the bridge for meets at the gentlemenly hour of ten-thirty, swopping stories as shaggy as the hounds themselves, pottering along the lush river banks, and having an uninhibited excuse for recapturing the childhood pleasure of splashing through the shallows Otter-hunting has the added charm of invariable arrival near a pub at lunchtime, when even the otter courteously takes time out The afternoon's pace is tactfully geared to the burden of the day, holts are explored with a great display of patience, terriers are coaxed and not cursed Whether the occasion is disturbed by a view of the otter is of little moment so long as the hound van and the cars are waiting by the last bridge and we can squelch our toes contentedly in the lengthening shadows But October bids us gird up our loins and be prepared for sterner joys

The foxhounds are back in kennels, sharing our own embarrassment of surplus flesh A few weeks' work will soon cure them, our dyspnœa will probably last until Christmas Spartan tradition demands nine o'clock meets at outlandish farmsteads, so, we, the helots of an inflexible timarchy, will stand blue-nosed by the gate, conscious of rheumatic twinges and a growing ineptitude to scale a dry-stone wall Fell foxhunting is always on foot, for the crags are far too steep to ride and Reynard has to be sought on the high ledges But a touch on the horn and the music of hounds gone away puts psychosomatic symptoms back where they belong and our ageing bones rattle with the best in hot pursuit A prayer to Heaven goes up for a check and our heat-regulating mechanism to function a bit better under stress A thankful rest against the rocks brings a view of Charles James slinking through the brackens How much more like cats are foxes in the lithe way they move about and glide up the stones to walk the wall top At other times I have watched them stalk mice with such characteristic feline grace that they seemed to have little in common with the rest of the dog family Old Ringwood throws his tongue to shatter such meditations, and in next to no time the pack are in full cry across the scree, until a sudden silence means that our late lamented cockerels have been avenged Nature red in tooth and claw Our basal ganglia tingle with excitement, our neopallium is really very new

* * *

Calling things by initials—B M.R., P A, and so on—is fair enough when the reader understands such shorthand But those who don't are baffled and nettled, and, as I have learnt, they may also be alarmed My partner attended in my absence a patient of mine sent home from work with a rise of temperature There were no obvious physical signs, and he gave him a certificate stating the diagnosis as P U O Next morning an agitated member of the patient's household was on the doorstep The family had been in no doubt that the initials stood for Polio Under Observation

* * *

During the recent unseasonable outburst of fine weather an adventurous colleague of ours penetrated as far as Scotland on his summer holiday Owing to the mysterious workings of destiny, his wife—the Master Planner of such occasions—was absent on the Continent at the time the expedition set off, and our colleague found himself in sole material and moral charge of his car, his two small children, a cocker spaniel puppy, and the various adnexa appropriate to such company Our colleague's younger child becomes notably queasy on car journeys, and under the driving-seat he keeps a quantity of assorted oily rags and handkerchief tissues, together with a small portable vomitorium which started life as a jelly-mould. In addition he exhibits a 'Kwell' before each trip of any length, with results that sometimes gratifying

The first day, our colleague tells us, went well children fought unobtrusively on the back seat to t accompaniment of ear-splitting shrieks, and the pup attempted to commit suicide by struggling through window in the intervals of strenuously licking the ba of our colleague's neck at unexpected moments in thick of the traffic Toffee papers blew in our colleagu face, it rained so immoderately that he could scarc see the back of the lorry in front, and he was stung a wasp In short, a perfectly normal drive

The next morning, flushed with his easy victory the day before, our colleague not only omitted to esta lish a satisfactory blood-level of hyoscine in advance breakfast, but also unthinkingly permitted the co sumption of bacon and eggs It was not until he w tying the rope around the luggage on the back of t car that he was brought to his senses by his young child intimating that she felt sick, Daddy The situati was difficult but not insuperable. Hastily producing kwell, our colleague rammed it in and sent the childr off on a run with the dog to shake it down On th return he subjected his younger child to a brief clini examination, her deportment and colour appear within normal limits It was getting late, and our c league had three hundred miles to go

They had gone twelve of them when the inevitab happened Our colleague had been listening to t snatches of sacred song from the back and was congrat lating himself on an undeserved escape when, in t middle of the second verse of Jesus bids us shine, t kwell shot across the car like a bullet and embedd itself in the dashboard Fortunately our colleague w not in the direct line of fire, and the brunt of the ma attack was taken by the puppy, who set up a pani barking With some difficulty our colleague manœuvr the car to the side of the road and produced the han kerchief tissues and the oily rags, it being now too la for the small portable vomitorium During the moppin up operations it proved necessary to remove his young child's new coat, which he laid carefully on a wall besi the road until he had serviced the underlying cardiga and dress After he had cleaned up the car and pacifie the spaniel he inserted another kwell and started o again to the accompaniment of further sacred musi It was not until fifty miles further on that his young child complained of feeling cold

* * *

This week at our hospital the builders are working with all their paraphernalia down to pneumatic drill directly over the theatre This has somewhat confuse the Thoracic Surgeon, whose decibel output as he split sternum almost equalled theirs But the builders got first They sent down a message asking if he could mak less noise

* * *

The candidate was doing well He had dropped n marks on any of the oral questions He was, in fact doing a little too well, both he and the examiner knew it

“Tell me, then,” the examiner asked finally, without a glimmer of a smile on his face “What is the dose o strabismus ?”

The candidate was shrewd. He stroked his chin pensively as if searching for the answer “The —er—tincture or the solution, sir ?” he inquired dryly This was a good parry to the examiner's thrust

“Well ?” the examiner frowned. Things had taken a different turn from the I'm afraid I don't-know sir attitude ‘ The tincture of course, my boy ! ” It was important that he kept his flag flying at all costs But alas, the examiner was baited with his own bait

“Oh !” the candidate feigned surprise “I didn't know that strabismus was soluble in alcohol !”

* * *

THOUGHTS FROM JUNG

Deep within the psyche are
Animus and anima
Wraithlike, old, phylogenetic,
Ego all antipathetic,
Born to be the death of us,
Anima and animus.

Letters to the Editor

CHRISTMAS GIFTS FUND APPEAL

SIR,—Every autumn an appeal is made to members of the medical profession for contributions to the Christmas Gifts Fund organised by the Royal Medical Benevolent Fund The appeal has been made for many years and the very good response is definite proof that the cause meets with approval

I ask your readers once again to be generous and to send contributions marked Christmas Gifts' to the secretary Royal Medical Benevolent Fund 1 Balliol House Manor Fields, Putney, London S W 15, so that the less fortunate of our colleagues, or their widows or children may receive a Christmas present This brings much happiness and pleasure and often is the means of making a very real difference to many on Christmas Day

WEBB-JOHNSON
President
Royal Medical Benevolent Fund

POLIOMYELITIS AND TONSILLECTOMY

SIR,—The report of the Medical Research Council Committee on Inoculation Procedures and Neurological Lesions (July 2) is of great interest and help to those who have to deal with cases of poliomyelitis This report is very well summarised in its last paragraph

> "The results indicated that persons whose tonsils had been removed were more likely to develop the bulbar form of poliomyelitis than those who had not had the operation even if years had elapsed between the removal of the tonsils and the onset of poliomyelitis

The latter part of this statement is fully confirmed by the small epidemic we experienced during the last hot weather (September 1954 to February 1955) in Salisbury Southern Rhodesia

Of 80 cases (all in Europeans) in hospital during this period 19% were bulbar cases. Among 54 cases where a record regarding tonsils was obtained of those with tonsils intact 6% had bulbar poliomyelitis with 3% deaths whereas of those who had had tonsillectomy (ranging from three months [1 case] to twenty five years previously) 32% had bulbar poliomyelitis with 14% deaths. The over-all death rate was 10%. The most striking feature was that from the start of the epidemic the higher age levels predominated

Deaths

Date	*Age (yr)*	*Sex*
Aug 14 1954	34	M
Oct. 26	2	M
30	28	M
Nov 23	39	M
Dec 10	38	M
21	8	F
24	27	F
Jan 21 1955	29	F

With memories of the many hundreds of cases of poliomyelitis in the epidemic of 1946–47 during the mass migration of refugees from east to west across North West Germany and of the relatively small incidence in the adult population (restricted more or less to young adults) so that one could still label this infantile paralysis," the query arises as to why there should be this increasing shift to the older age groups Could the operation of tonsillectomy as at present practised have some connection with this as well as with the added risk of bulbar involvement?

Up to the years after the first world war the operation of tonsillectomy was mainly in the hands of the general practitioner who sallied forth with his guillotine and, with a whiff of open general anæsthetic removed tonsils and adenoids in a matter of minutes, on a kitchen table The child was up and running about the next day In this operation the bulk of the soft, spongy infected lymphoid tissue which the guillotine was able to grasp was removed but there was usually left behind a small portion of the tonsil This thin shelf—i.e. below the level of the surrounding pharyngeal wall—of tougher lymphoid and connective tissue possibly continued to fulfil its proper function and acted as a filter and buffer protection over the 9th and 10th cranial nerve offshoots in this area

The ranks of the ear nose and throat surgeons and anæsthetists increased tremendously with the return to civil life of medical men who had lost several years on war service Also with the improved technique the operation of complete enucleation of the tonsil was increasingly practised from 1920 onwards

Is it purely coincidental or is there some connection with complete enucleation of the tonsil and disarmed susceptibility to the poliomyelitis virus at any age in those who have not already acquired some degree of immunity from a mild exposure? If this assumption is by any chance correct we may expect the incidence in future epidemics to rise steadily in the successively older age groups

Statistically in regard to the various forms and degrees of infection and the death rate the epidemic in Salisbury was found to conform more or less to the normal world wide pattern with the virus group concerned (Brunhilde) On the other hand since something like seven to eight hours a day was spent personally with these cases there was an opportunity to take note of one or two features regarding which there appears to be very little comment in current reports

(1) In cases of bulbar and respiratory failure generally and notably in 6 of the 8 patients who died there was a characteristic sickly sweet nauseous halitosis. Several of the nursing staff confirmed this and its gravity in prognosis

(2) In 30 cases nystagmus was a definite feature as follows: right side only or predominantly 17 left-side only or predominantly 6 bilateral and equal 7

(3) Facial paralysis occurred in 12 cases, as follows: right side 9 left side 3; bilateral, 0

(4) In men (all of whom were automobile drivers) it was noted how frequently the right leg and particularly the dorsiflexors of the right foot, were affected. This might suggest that in a country like Rhodesia with its long distances, the throttle hand-control commonly found on the steering wheel of old cars might still have its use to prevent leg fatigue from pressing on the accelerator pedal

(5) One other feature which struck one increasingly as the epidemic progressed, was the considerable proportion of cases with alimentary tract paralysis. Difficulty in swallowing and dilatation of the stomach are not uncommon but we also found in many cases a clear lack of intestinal peristalsis with resultant collection of hard impacted fæces in the colon. Milk and glycerin enemata were found to counter this most effectively but the intestinal stasis was very persistent in many cases.

(6) Lastly according to the records of admissions to the European Infectious Diseases Hospital Salisbury there has been a clear-cut sequence of virus diseases as follows

July to September 1953 Ac ant. polio group-2 virus

November 1953 to February 1954 Meningo-encephalitis Coxsackie group B types 2 and 4

March to June 1954 Ac. ant. polio group-3 virus

July to September 1954 Meningo-encephalitis of unknown virus origin probably Brunhilde since out of 6 cases there were 2 with residual paralysis and there was 1 death and this was immediately followed by

September 1954 to March, 1955 Ac ant polio group 1 virus

The above diagnoses are in accordance with laboratory reports on fæces by the Poliomyelitis Virus Research Institute Johannesburg (director Dr J H S Gear) Not all results are yet to hand There was one notable exception—a case (in a girl aged 17) where Coxsackie virus, group B was isolated from the fæces in December 1954

This epidemic is more fully portrayed in an excellent article by Dr Derck M. Kotze assistant medical officer of health Salisbury in the July 1955 issue of the *Central African Journal of Medicine*

City Health Department
Salisbury
Southern Rhodesia

JAMES MELVIN

ANTIBIOTIC-RESISTANT STAPHYLOCOCCAL INFECTIONS

SIR,—Dr Zinnemann in his letter last week is, of course, quite right to draw attention to the importance of combined therapy with two or more antibacterial agents in order to reduce the incidence of drug resistant strains The reason we did not stress this in our paper of Sept 17 is that staphylococcal infection in hospital is in a class by itself In our studies the majority of those infections clearly resulting from hospital cross infection were due to strains resistant to penicillin, streptomycin, and the tetracyclines, so that two suitable agents for treatment were not available In this situation we felt justified in asking for strict control of the use of erythromycin, the one remaining active and non-toxic agent

Dr Zinnemann's treatment of chronic pulmonary infections due to *Hæmophilus influenzæ* with erythromycin, tetracyclines, and sulphonamides is, we are sure, excellent for *H influenzæ* We do, however, think there is a danger that such treatment may lead to the emergence of erythromycin resistant staphylococci from strains already resistant to most other agents In outpatients this is no doubt a risk worth taking, but in hospital wards the possible danger to other patients from the emergence and spread of such strains must not be overlooked

Department of Bacteriology
St Thomas's Hospital Medical School,
London, S E 1

MARY BARBER
JOHN BURSTON

MORPHINE ANTAGONISTS

SIR,—Dr Bonnycastle and Dr Costa (Sept 10), on the basis of an experiment on drug-induced respiratory depression in rats, doubt the respiratory stimulant action of ββ methyl-ethyl-glutarimide (NP13) and 2 4 diamino 5 phenylthiazole (D A P T) I am not surprised by their results Neither of these drugs is to be considered as an unfailing respiratory stimulant, when used either alone or as an antagonist to barbiturate, or morphine They are, however, to be regarded as valuable antagonists to the general depressant effects of these two drugs, respectively, and this does include respiratory depression in a certain proportion (50–80%) of cases This statement applies particularly to dogs and man

A sharp distinction must be made between the toxicity of NP13 and D A P T The former is, in the treatment of barbiturate coma, pushed almost to its limit, but there is no danger if care is exercised [1] D A P T is quite harmless The usual dose is 20–40 mg , but we have given 300 mg intravenously without any subjective or objective effects Of 150 patients treated 2 have shown signs of vomiting, but proof that this was due solely to the D A P T is lacking [2]

Dr Bonnycastle has referred to the low mortality rates (1 6–2%) when conservative methods of therapy have been used in the treatment of barbiturate poisoning The calculation of mortality rates in the cases cited is misleading If a person takes gr 30–70 of barbiturate he will almost certainly recover Therefore these cases (the majority) should not be included in a " mortality " rate The number of reported cases where the person has taken over gr 100 (a probably fatal dose) is too few to compare with ours on any statistical basis

We do base our assertion that NP13 treatment is better than conservative therapy on the fact that in 9 out of 10 cases of barbiturate poisoning, no matter what the dose, there is objective improvement (return of reflexes, elevation of blood-pressure, increase in respiration) within 5–7 hours We feel that such a patient is in less risk than one who is to remain in coma, areflexic and with low blood-pressure, for another 48 hours Last but not least, we would stress the saving in hospitalisation

This conclusion is now based on the experience of the treatment of over 130 cases of barbiturate poisoning, in which there has not been 1 death attributable solely to barbiturate The highest recorded amount of barbiturate consumed has been gr 160

Melbourne F H SHAW

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[1] Shulman, A Shaw F H Cass, N M Whyte H M. *Brit med J* 1955, i, 1238

[2] McKeogh, J Shaw F H In course of publication

NUMBERING OF FINGERS

SIR,—I should like to support very strongly the plea made by Dr Forbes in his letter last week The Medical Protection Society has also had recent experiences of the unwitting maiming of a patient which may follow the identification of fingers in case records by numbers instead of by individual description (thumb, index, middle, ring, and little)

These cases can be real tragedies for the patients concerned If a functional finger is wrongly amputated it means of course that the useless finger(s) must also be amputated subsequently The loss of the extra finger may be the vital factor in preventing the patient from following his previous occupation, in which he may be a highly skilled craftsman

Such an injury can be a grievous burden on the conscience of the surgeon responsible, quite apart from the heavy compensation involved

ALISTAIR FRENCH
Secretary,
London, W C 2 The Medical Protection Society

SIR,—From Dr Forbes's letter last week it would seem that faulty nomenclature and not destiny shapes our ends Why not call the thumb, fingers, and toes " digits," and number them ? Such a nomenclature is applicable to polydactylism and the feet The alternative seems to be that we should learn to point with our toes and wear rings on them to prevent them being rough hewn too

Flimwell near Wadhurst,
Sussex GEOFFREY E LOXTON

CAR-SICKNESS

SIR,—The peripatetic correspondents who in the past two issues have ascribed the effect of chain hanging on car sickness to magic must surely be right Having never heard of sickness in a driver, I have developed the hypothesis that the cardinal cause of car sickness is failure of adjustment The driver knows when he is going to swing the car over, to brake, or to accelerate, and his semicircular canals therefore know in advance what is required of them A parallel may be drawn with the surgeon who was telling me the other day how he was always sick in aeroplanes until he was told by an air hostess to " go with " the plane rather than brace himself against the movement

I have made three personal observations which support my theory

The first concerns my five children, each of whom was consistently sick in cars of various types until about the age of two, when the trouble ceased Is not this because the child is then old enough to " fix " his surroundings and adjust himself accordingly ?

Secondly, the risk of sickness in cars is greater for anyone if he reads, thereby removing his perceptions from his surroundings

The third observation relates only to a single case, but I think it is significant I have an elderly relative who has travelled in cars for many years without feeling any nausea He has recently developed glaucoma and his fields of vision are limited to what lies straight ahead of him If he now rides in the back of a car he can see nothing but the heads of those in front and he is horribly sick , but if he sits in the front he is free of all nausea, presumably because he can then distinguish the road well enough to anticipate the movements of the car

Newcastle upon Tyne R H M STEWART

PLASMA INSULIN ACTIVITY IN DIABETES MELLITUS

SIR,—I have already stated three reasons[1] each sufficient, why the substances estimated by the methods used by Vallance Owen and Hurlock[2] are other than those marketed by Messrs. Boots Pure Drug Company as insulin. In their reply to my letter[3] these inferences were not fully answered; but, as the disagreement seemed to be becoming largely semantic revolving around the term 'effective plasma insulin concentration' I did not continue the correspondence.

Since then however the meaning of the term insulin has become capable of more precise definition, and it may now be defined in structural, rather than functional terms. At present it seems preferable that the term should define that group of known substances, all derived from the *insulæ* now known to show great structural similarity with species differences trivial compared to the invariance of the central pattern. For simplicity this group may be referred to by the symbol I. That group of substances (which will include the insulins) which shows a similar effect under defined conditions (here glucose uptake by rat diaphragm) may be referred to as hypoglycæmic factors, or more simply H. That group of factors other than insulins may be termed 'not insulins' or $\bar{I}$. The arguments advanced may be simplified if amounts H_a, I_a, $\bar{I}_a$ per unit volume of plasma lead to assay responses in some linear metameter (H_a), (I_a), and $(\bar{I}_a)$ units, these units being arbitrary but consistent. Clearly $(H_a) = (I_a) + (\bar{I}_a)$.

The inference underlying their previous article[2] may be stated as follows

H is demonstrable in human plasma.
I is the best known H.
I and H have certain features in common.
Therefore H is I ($\bar{I} = O$)
Therefore I is demonstrable in human plasma.

(It is however only fair to add that the possibility of an operational definition of I distinct from H has largely matured since this publication.)

My reasons for inferring H could not be I were briefly

1. The standard error of the estimate of H was unreasonably low for any hormonal assay.
2. The correlation between H and the blood glucose level was unreasonably high.
3. The standard error of estimation of H was far less than that of I, from which it may be inferred, not only that $H \neq I$, $\bar{I} \neq O$ but also that $\bar{I}$ is producing far the greater part of the response.

Their reply to these criticisms that in one patient whose resting plasma response was (H_1) giving insulin, led to a later response (H_2) where $(H_2) > (H_1)$ is evidence against a pure systematic error dependent on the blood glucose level, but not a refutation of the above criticisms.

In the latest article by Dr Vallance Owen and his colleagues (Sept 17) the identity of H and I is further defended on the following grounds (their numbering)

1 In dogs if the known source of I is extirpated no H is detected. (This, if true implies not that $H = I$, $\bar{I} = O$ but only suggests that in dogs, I is a large part of H or I is only effective in the presence of small amounts of I.) Actually of the two dogs concerned, only one survived more than a week without a pancreas or insulin, after which time its 'plasma insulin activity' was still well above half the preoperative level, and this could not have been due to insulin. Their word 'abolished' is hardly appropriate.

2. Cysteine and glutathione inhibit both H and I. (This does not imply $H = I$, $\bar{I} = O$ since I and $\bar{I}$ may have common metabolic pathways, as indeed is to be expected.) In addition, Randle found this inhibition inconstant.

3. If I is given, then H increases. Let the initial level of H be H_1, $(H_1) = (I_1) + (\bar{I}_1)$ and after adding insulin to raise the plasma level by I_2, H_2. Then if $(H_1) + (I_2) = (H_2)$ and $(H_2) > (H_1)$ this implies not $H = I$, $\bar{I} = O$ but merely $(I_1) + (\bar{I}_1) + (I_2) > (I_1) + (\bar{I}_1)$.

4 A patient with an I producing tumour had a lower level of H after its excision than before. Let H_1 be the original level, H_2 the final level, and I_t the plasma level of I derived from the tumour. Then $(H_1) > (H_2)$ does not imply $H = I$, $\bar{I} = O$ but merely $(I_1) + (\bar{I}_1) \pm (I_1 - I_t) + (\bar{I}_1)$

Further internal evidence against insulin being estimated lies in their obese diabetics having far higher 'plasma insulin concentrations' than the controls they had previously reported and in their 'plasma insulin' actually tending to increase with increasing severity of diabetes as indicated by their blood-sugar levels. These anomalies confirm the presence of the hypothetical factor I had inferred from their previous data.

There would seem to be no sufficient evidence for this assumption of the identity of H and I and consequently no acceptable evidence that plasma insulin activity (insulin being defined as above) is being measured. This does not of course affect the validity of their most important inferences that there is sometimes an inhibition of exogenous insulin and that there are clear differences in plasma hypoglycæmic activity between different types of diabetes.

I do not wish to imply that these are not extremely important observations but only to point out that now a precise operational definition of insulin is available, it should not be confused with that large class of plasma glucose utilising substances. Such confusion is likely to delay the breakdown of this class into those structural components, other than insulin, which would appear to be responsible for by far the greater part of the apparent insulin activity of the human plasma rat-diaphragm system.

Central Middlesex Hospital,
London N.W.10
JOHN H EDWARDS

GENERAL PRACTICE

SIR,—As Dr Hunt's constructive review last week of the scope and development of general practice in relation to other branches of medicine is likely to be regarded as authoritative, I regret that he did not find it convenient to mention the relationship of general practice to the 'public health' branch of medicine.

I feel sure that Dr Hunt along with the great majority of his family doctor colleagues would agree that the prevention care and aftercare services of the health authorities contribute greatly to the effectiveness of their work.

Any consideration of the likely development of general practice which ignores the 'public health' branch of medicine fails to do justice to the future possibilities of general practice.

A proper development of the practice of *domiciliary* medical care by general practitioners—with the help of energetic health departments—would be infinitely preferable to a continued yearning for a return to general practice in hospitals.

Health Department
County Buildings Worcester
T McI GALLOWAY

MODIFIED ELECTROCONVULSION THERAPY

SIR,—The paper by Dr Kelleher and Dr Whiteley (Sept 17) was very interesting but their numbers are relatively small and I feel that the proper administration of thiopentone and suxamethonium chloride given with reasonable care and attention to dosage is a safe procedure and has the great advantage of freedom from anxiety for the patient.

My opinion is based on personal experience of the administration of thiopentone and suxamethonium chloride to 1000 patients in the past four years at the Lancaster Moor Hospital. 6472 convulsions were controlled. There were no deaths no local complications of any note from the injections, and no fractures or disloca

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1. *Lancet* 1951 i 314
2. Vallance-Owen, J, Hurlock B *Ibid* p 63
3. Vallance-Owen J., Hurlock B Please N W *Ibid* p 953.

tions This is in marked contrast to the period 1942–52 reviewed at this hospital by Mr J P Kelly, F R C S, where a study of 2200 patients receiving electroconvulsion therapy showed an incidence of injury of 2 4% and this included fractures of the spine, shoulder, and femur (sometimes bilateral), and dislocated jaw[1]

We must agree that when convulsions are induced in psychiatric treatment the incidence of complications can be so reduced that it is unjustifiable to induce them without muscle relaxants

Lancaster P J MURPHY

MYASTHENIA GRAVIS

SIR,—I am grateful to Dr Ferguson and his associates at Manchester for responding, in their article of Sept 24, to my remark made in your pages last year regarding the dearth of evidence about the results of the medical treatment of myasthenia gravis I can, however, only agree that their review of the treatment of 85 patients provides no comparison with the results of surgery It is plain that the average state of their patients is different from that of the patients for whose surgical treatment I have been responsible A large proportion of the Manchester patients suffered from ocular symptoms only, and a still larger number were able to remain at full work Our patients submitted to surgery at the New End Endocrine Clinic and elsewhere had naturally been filtered through a fine medical mesh before reaching us. Very few were operated on for ocular symptoms only and most were suffering from generalised myasthenia which rendered them incapable of full work No comparison, therefore, of our series with the Manchester series is possible I am nevertheless in entire agreement with the temperate opinions expressed in the four conclusions at the end of Dr Ferguson's article

London GEOFFREY KEYNES

NURSING BY THE MOTHER

SIR,—Dr and Mrs Pickerill have proved that the best nurse for the baby in hospital is its own mother I wonder if this profound but obvious fact has been realised by those responsible for planning new babies' wards for hospitals in this country Newcastle has "given them a lead" Are others brave enough to follow?

An old fallacy, long in vogue with pædiatricians and ward sisters of bygone days, has now been generally recognised At one time it was thought that many of the disorders suffered by a baby were to be assigned to the inadequacy of the mother All would be well, it was thought, once the baby had been taken from its mother and put under the control of a scientifically trained ward sister It was forgotten that a baby requires the loving care and caresses of its own mother more than its food It was forgotten that one ward nurse often gave some attention during a day on duty to nearly all of the thirty-odd babies in the ward where she worked, and might carry infection with her The infection which causes gastro-enteritis is the main danger of infants' wards I can wholeheartedly support the findings of Dr and Mrs Pickerill about the mother being the ideal nurse, for since my hare lip babies have been treated in a separate room and usually looked after by their mother, gastro enteritis has not occurred as a complication of hospital treatment

It seems, however, that Mrs Pickerill has been so absorbed by her fundamental principle that she has forgotten to advance with the times in her operating theatre The use of rubber gloves is essential nowadays in every surgical operation I believe also that no major operation should be done upon an infant unless an intratracheal tube has been inserted by an *anæsthetist who is used to passing tubes upon small babies* Without an intratracheal tube the airway at any time may be compromised, with it, most untoward happenings can be overcome In America, owing to the lack of enough skilled anæsthetists, surgeons have long worked unde difficulties when operating upon babies, but in England most surgeons who operate upon the newborn, fo congenital atresia for instance, have at last woken u to this fact, and endotracheal anæsthesia is used in most centres as a routine for major surgical operations upon small babies

Leeds MICHAEL C OLDFIELD

A CONCEPT OF DIABETES

SIR,—During the last ten or twelve years my own concept of disease has come to resemble the one expounded so brilliantly by Dr Jackson Definite and named diseases have become to me not an entity arising de novo, but the end-result of a diseased state They could not be labelled until this pre existing diseased state reached a certain point Meanwhile they were latent, in a condition of "pre-disease" or incubation

Dr Jackson implies that during the "pre" period of diabetes, quite definite clinical features of the disease are present Diabetes has the peculiar advantage that laboratory methods can verify suspicions, and legitimately stamp the patient as prediabetic

Once this stage has begun, the course is variable The temporary stimulus to the disease—e g, pregnancy—may vanish, and the individual return apparently to normal The disease (or prediseased state) may never reappear, or under the influence of the same or other stimuli it may flare up again and may progress along lines which cannot be predicted or understood unless the nature and severity and mode of action of the stimuli are fully known

This broad conception of disease is a general one, and for my part I developed it through the clinical study of thyrotoxicosis There the same features are present It is inherited, congenital, or acquired In my limited way I pursued the same method of inquiry as Dr Jackson—the only method—that of watching with care the long history of patients over years In this way I could trace back (as he does) the developed disease to its early phenomena, and I considered the question how far the early phenomena were the disease itself or a "pre-disease" When such phenomena appeared and then became quiescent, say for years, and thyrotoxicosis then developed, I used the term "latent period" for the quiet interval

In the article by Dr Ferguson and his colleagues on Myasthenia Gravis in your same issue, many of the same ideas can be discerned It is true also, I believe, of tuberculosis and, I am inclined to think, of duodenal ulcer

Bradford PETER MCEWAN

SIR,—Dr Jackson must be congratulated on the impressive variety of evidence he has gathered, in his article of Sept 24, in support of the conception of prediabetes and for writing such a stimulating paper

He mentions premature arterial disease as a manifestation of prediabetes Recently a patient of mine, in whom thrombosis of the femoral artery was successfully treated by an arterial graft, developed two years later mild diabetes Since then I have done a glucose tolerance curve on all patients presenting with calf claudication and arterial disease of the great vessels I have found latent diabetes in a high proportion of those under the age of 55 (only a few cases in all) In other words, when thrombotic arterial disease begins early in life without gross hypertension, prediabetes should be suspected

One other point so many elderly patients give a history of cataract extraction before the development of diabetes that I am sure ophthalmologists should use the glucose-tolerance curve as part of the routine investigation of such cases In this way I believe many more cases of prediabetes would be recognised

Bristol, 8 J NAISH

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[1] Kelly, J P *J Bone Jt Surg* 1954 36B 70

RESISTANT TUBERCLE BACILLI

SIR,—We cannot leave unanswered the letter from Dr Mitchison and Dr Selkon in your issue of Sept 24 in which they expressed doubts as to whether the mycobacterium resistant to streptomycin and isoniazid isolated from the case reported by us on Sept 17, was in fact a tubercle bacillus.

In the first place we had no reason to doubt from the cultural characteristics of the organism which was isolated from the patient on no fewer than eleven occasions that it was a typical tubercle bacillus. Moreover its resistance pattern, which was remarkably uniform in all the specimens, was practically identical to that of the organism isolated from the patient's sister who was undoubtedly suffering from extensive cavitated pulmonary tuberculosis and who has since died from the disease

If your correspondents are justified in their suspicion that the patient's organism was *not* a tubercle bacillus one of the following two assumptions must be made

(1) The patient's sister had, in addition to pulmonary tuberculosis, an infection with a chromogenic or other atypical mycobacterium which she transmitted to her brother in whom it produced a disease which was presumably *not* pulmonary tuberculosis but was clinically and radiologically indistinguishable from it

(2) She merely had pulmonary tuberculosis but was discharging tubercle bacilli which by sheer coincidence exhibited the same resistance pattern as her brother's atypical and non-tuberculous, but undeniably pathogenic, mycobacterium.

Both these assumptions in our opinion place a considerable strain on the imagination, and we still prefer the simpler view that both the patient and his sister had pulmonary tuberculosis and that the organisms isolated in both cases were tubercle bacilli

We are however grateful to your correspondents for reminding us that a more precise bacteriological identification of the patient's organism would have made our case report more complete and perhaps more convincing Fortunately several of the cultures are still available and our bacteriological colleagues, Dr Wallace and Miss Stewart have kindly agreed to carry out the further investigations suggested by Dr Mitchison and Dr Selkon We shall inform you of the results in due course

Tuberculosis Unit
City Hospital
Edinburgh 10

IAN W B GRANT
JAMES McC. MURDOCH

PRESCRIPTIONS IN LATIN

SIR —You may be interested in the following dictum which appeared on p 28 of your first volume for the year 1855

The Lancet never publishes prescriptions in Latin considering the practice of writing them in a dead language to be quackish.

Dundee

ADAM PATRICK

*** Well—hardly ever Professor Patrick will no doubt forgive our occasional lapses from consistency in the succeeding 100½ years We still believe that English is the language of choice, but the reasons for our belief have changed —ED L

Public Health

Poliomyelitis

In the week ended Sept. 24 (38th week) uncorrected notifications of poliomyelitis in England and Wales were as follows (figures for the previous week in parentheses) paralytic 201 (193), non paralytic 193 (218) total 394 (411) Regionally, notifications in the 38th week, compared with those in the 37th week decreased in the East and West Ridings and in the Northern, North Western Midland Eastern and South Western regions and in Wales There were increases in Greater London and in the rest of the London and South Eastern region and in the North Midland and Southern regions. In Greater London (excluding London county) Willesden again contributed most cases, followed by Sutton and Cheam, Southall, and Ealing The Metropolitan boroughs with the most notifications during the week were Lewisham, Woolwich, St. Pancras and Greenwich

Total uncorrected notifications in the 37th week of each of the years since 1950 (proportion of paralytic cases in parentheses) were as follows 1950, 419 (63·0%) 1951, 85 (50·6%) 1952, 188 (67 0%) 1953 218 (54·6%) 1954 84 (58 8%); 1955 394 (51·0%) So far this year the approximate incidence for England and Wales as a whole has been 9 6 per 100,000

"Not Poliomyelitis" in Lowestoft

A recent outbreak of an infectious illness in Lowestoft at first caused apprehension because the initial symptoms resembled poliomyelitis. Dr A C Gee, medical officer of health for Lowestoft, tells us that the town has been comparatively free from poliomyelitis this summer there have been only 4 paralytic cases, the first in July On Aug. 27 a general practitioner phoned to ask the medical officer of health to see a child with what he thought might be poliomyelitis The main features of the illness were neck rigidity, stiffness of the legs pyrexia, and vomiting The next day the child was much better, all signs of meningismus had disappeared, and the diagnosis of poliomyelitis was discarded

During the next two weeks many similar cases were reported Some practitioners sent patients to the local fever hospital with a diagnosis of 'non paralytic poliomyelitis' and they notified them as such to the medical officer of health while others treated their cases at home Most patients recovered within a week It was hard to tell the actual numbers involved but it seems that most of the town's practitioners saw between 12 and 20 cases each The typical picture was neck rigidity fairly high pyrexia and a short period of vomiting The average duration of the illness was a week to ten days and those affected were distributed throughout the town Most of them were children No common ætiological factor was apparent.

In view of the similarity of this outbreak to that recently reported from Willesden, the help of the Ministry of Health was requested A medical officer from the Ministry visited the town and examined typical cases with the doctors concerned The experience gained in Willesden suggested that this was something similar, and until laboratory investigation can be completed it must be presumed to be a virus infection which, in its early stages at least could quite reasonably be diagnosed as a possible early poliomyelitis Nasopharyngeal washings, fæces, and matched sera are now being obtained from suitable cases for investigation It is interesting to note that once the alarm of poliomyelitis had been dispelled by a statement to the press, most doctors reported an immediate drop in the number of cases they were called to visit.

Infectious Diseases in England and Wales

Disease	Week ended September			
	3	10	17	24
Diphtheria	6	6	9	6
Dysentery	400	400	417	450
Encephalitis				
Infective	4	8	3	1
Postinfectious	1		1	1
Food poisoning	560	808	400	353
Measles, excluding rubella	2618	1661	1038	1082
Meningococcal infection	21	20	11	15
Ophthalmia neonatorum	30	33	2[illegible]	31
Paratyphoid fever	34	86	115	60
Pneumonia primary or influenzal	170	1[illegible]0	164	171
Poliomyelitis				
Paralytic	206	[illegible]06	193	201
Non paralytic	19[illegible]	25[illegible]	218	193
Puerperal pyrexia	210	[illegible]	213	[illegible]
Scarlet fever	[illegible]0	[illegible]0	329	4[illegible]6
Smallpox				
Tuberculosis				
Respiratory	599	594	500	550
Meninges and C.N.S	5	9	16	19
Other	71	65	58	78
Typhoid fever		4	4	6
Whooping-cough	1[illegible]1[illegible]	1467	114[illegible]	1113

Not including late returns

Obituary

HUBERT MAITLAND TURNBULL

MA., DM, DSc Oxfd, FRCP, FRS

IN his department at the London Hospital Professor Turnbull set a standard for pathological work in this country, and raised morbid anatomy to the level of a science Part of his contribution was to introduce and naturalise those methodical Teutonic techniques of examination and record which have proved so necessary to the advance of pathology But he could not have done this unless he himself had been a man of singular and inspiring quality, whose pupils carried far and wide—into wards and operating-theatres as well as laboratories—an enduring belief in what he stood for As has been said of John Hunter, his greatness was revealed not as a discoverer of new entities, nor as a teacher, but by his example in the use of the scientific method—faithfully, in purity of heart, and with entire devotion to truth In the medicine of our time few men have had more influence

He was born in 1875 in Glasgow, but he regarded Edinburgh as his home, for not only did his family move there when he was still an infant, but his mother, Margaret Lothian, was a grand-daughter of Adam Black, the publisher, who was twice lord provost of the city His father, Andrew Turnbull, F R S.E, was managing director and actuary of the Scottish Widows' Fund In this professional Edinburgh background the boy's attention early turned to medicine and to ornithology both of which became life-long interests He used to recall his mother's stories of her visits to the old Edinburgh Infirmary in the days of hospital gangrene, and his own visits with a colleague of his father's to the neighbouring moors to collect the eggs of the black-headed gull

From Charterhouse he went to Magdalen College, Oxford, where he took a good second in Greats and played soccer for Oxford. His father then suggested that, as he was always dissecting birds, he should " take up something scientific " Turnbull accordingly entered the small Oxford medical school and later proceeded to the London Hospital After he qualified in 1902 he held house posts at the London, and the bound volumes of the hospital records are proof of his superb note taking In 1904, with a Radcliffe travelling fellowship, he went abroad to continue his studies and spent a year as voluntary assistant to Schmorl in Dresden Schmorl's post mortem demonstrations were then attracting visitors from all over Europe, and he taught Turnbull his technique for bone The subject was one in which Turnbull was particularly interested, for at that time he had thoughts of becoming an orthopædic surgeon

On returning he worked for his D M under Redcliffe Salaman, the first director of the pathological institute at the London Before his thesis (on the case of a young woman who had no cortex behind the fissure of Rolando) was published in *Brain*, Turnbull had to rewrite the paper five times to please Salaman " But I learned a lot," he used to add, and later it was described as one of the best papers ever written in morbid anatomy When Salaman retired, for reasons of health, in 1906 Turnb succeeded him as director of the institute

His work with Schmorl had fired him with th determination to introduce precision into the pos mortem room, and the early years of his appointme at the London Hospital were not easy Dissections that time were made by visiting physicians, who turn up at irregular hours and whose performance ofte left much to be desired Moreover, biopsy specime were handled by the clinical laboratory But by 19 all the histopathology was under his control, and th physicians, constrained to punctuality and a standardis technique, gradually ceased making the examinations

Under Turnbull's direction the institute soon attracte graduates from other centres, both at home and abroa who came to work as voluntary assistants Through h immense industry, he built u a personal experience that place him in a paramount positio as an authority in special patho logy Though all the system of the body received his thought ful attention, his studies wer particularly directed to disorde of the bones, and, with the exper help of his technician, Joh King, he improved upon th techniques learnt from Schmor The quality of this work ma be judged from his papers o generalised osteitis fibrosa, fœta rickets, and congenital syphili He also spent much time i studying arterial disease, bu his classical paper "Alteration in arterial structure and thei relation to syphilis" (*Quart J Med*, 1915) has hardly receive the notice it merits, perhap because its title gives littl indication of its scope

The central nervous system was one of his chief interests, and at a necropsy in which it was known to be involved Turnbull would himself take charge of the removal of the brain and spinal cord, and the selection of blocks for section when fixation was complete His name is especially associated with postvaccinal encephalomyelitis, the first case of which was observed as early as 1912 though further material was not obtained until 1922–23 Having established the identity of this disease, he informed the Ministry of Health (in December, 1922), and submitted his reports to a Commission appointed by the Ministry in January, 1924 This delayed publication, and the London Hospital report did not appear until a year after Bastiaanse's study of his Dutch cases in 1925

Much of Turnbull's research and original observations, however, were incorporated in his lectures and demonstrations These were recognised by intelligent students as a unique source of knowledge Based as they were on his own experience, they often contained matter that was in advance of the current textbooks But since truth, rather than dogma, was punctiliously dispensed, they were not easy going His delivery was alive enough, yet he was not easy to follow because his prose style was cumbersome In his desire to be exact, he would often pack his sentences with qualifying clauses or parentheses until it was hard to unravel what he meant The histological demonstrations after the lectures were accompanied by painstaking sketches showing the essential features of a disease His superb demonstratorship was also shown in the lecture diagrams he drew with great care on huge sheets of paper

Coming in 1912 from Cambridge "where I had been taught to criticise all my teachers" W D N found Turnbull outstanding

"He lectured twice a week at noon when the wards were closed for dinners so that it was possible for all clerks and dressers to attend. If operations started at 1 P.M. it meant a hurried lunch or no lunch at all but we hated to miss a single lecture. He wrote a summary of every lecture on the blackboard in small neat writing with numerous headings sub headings, and even sub-sub-headings, each in a separate column. Many of us came in early to take this down before he started and by amplifying as he talked we obtained a textbook of pathology quite unique When we got to know him better in later years many of his old assistants asked him to publish his lecture notes, but he was never persuaded to do this. It was a pity for they included a number of original observations never published elsewhere

"His knowledge of morbid histology was, of course proverbial. When one took him a difficult section usually he could find its counterpart from his own collection in a few minutes but if it were a real teaser time would be no object. He would ask for more sections some unstained After a week or so a letter would come asking for the paraffin block or possibly frozen sections. Finally a few months later would come a masterly description with the full differential diagnosis, all written carefully in his own unmistakable handwriting.

At first the Chief as he was always called might seem unapproachable but one soon found out that this was not so The only thing he would not tolerate was shoddy work if one were merely ignorant he was always willing to impart knowledge Many of us owe any success we have had to his teaching and example

Others besides his students wondered why Turnbull did not publish more but he seems seldom to have felt compelled to do so, though often driven by clinical colleagues to adorn their work with his supremely accurate and carefully written reports In his early days at the institute he worked very long hours, and there are stories, some of them true of his being found asleep in his laboratory by assistants arriving in the morning But he was by no means robust and the continuity of his activities was perpetually interrupted by migraine As the years went by he gave more and more time to those in his department who were engaged in research and to the preparation of their work for publication

"His reading (says a former assistant) was vast and up to date. He would ransack the literature of a whole subject and his critical mind would tear to shreds experimental or other work which he found careless or inadequate He was always highly critical of inaccuracy and in his own department the emphasis was always on precision The exact measurements of organs and lesions were given in grammes and millimetres for example the situation, size weight, dimensions and appearance of all endocrine organs were recorded in every necropsy In his reports there was no such thing as slight atheroma or slight anything else However slight or otherwise, the lesion was recorded by exact measurements for his was the technique of great routine thoroughness. It was for such reasons that in the London Hospital the institute of pathology became known in Turnbull's time as the Temple of Truth."

Thus the number of papers appearing from the institute represented only a minute fraction of the amount of work that went on in it for he would not allow anything to be published which did not fulfil his criteria for exact observation and reasonable deduction "His teaching his example and the loyalty he inspired in his assistants probably contributed far more to the advancement of pathology in this country than any of the publications that came from his institute

Through Turnbull's students his methods spread first through the hospitals of the London County Council and then over most of Great Britain for he instilled an ideal and standard of accuracy below which his pupils would not fall And wherever they were he continued to help them S L B recalls how when he became particularly interested in bone Turnbull gave him unstinted help

His publications on bone pathology appear relatively few in comparison to the time and labour he devoted to the subject but each is a major contribution representing a great amount of work and packed with detailed evidence This was set out with admirable clarity I usually found that it required considerable concentration and several readings before all the contained information could be assimilated In his letters (which I have always kept for reference he expresses himself more freely and each is of course usually restricted to a few points. Here the essentials of a complicated histological problem emerge most clearly

On his personality and the ways in which it affected his juniors D S R says:

What Turnbull demanded of himself and it was great he required of those who worked with him. Visiting the post mortem room while dissections were in progress, his eagle eye would quickly note any imperfections in technique and gross transgressions might lead to the operator's suspension for unjustifiable mutilation of the dead These attributes combined with a certain austerity of person and natural reserve sometimes made him a formidable figure But behind his reserve there lay a depth of human understanding and sympathy often revealed in the written rather than the spoken word His letters beautifully expressed and carefully written in his polished and legible script were treasured by the recipient Few however knew of the long hours he gave to help colleagues or their families who were in difficulty In his dealings with others he was uniformly just and fair Important decisions were never made without clear unbiased and logical thought once made they were consistently carried into effect.

While still a student D H recognised Turnbull as his future mentor in medicine

No-one at the London in my memory has inspired in me such admiration or such feelings of personal devotion and affection as did this man He had the bearing head and face of the scholar redeemed from austerity of manner by a smile of great charm and sincerity To think of him at work one has to conjure up a tall distinguished scholarly figure dressed in the protective clothing of the post mortem room, wielding a knife with great skill and observing every detail in the cadaver with the eyes of a lynx Yet one cannot capture what he was really like unless one realises that he had in full measure common sense a sense of humour and a sense of fun He was hypercritical of everything and everybody and on occasion he exercised a good deal of gentle satire and dry wit But his kindliness to his assistants his championship of the rights of his technicians, the care he bestowed upon the choice of suitable wedding presents for young doctors of his acquaintance and his interest in the careers of young men and women, including the children of colleagues—all these will be long remembered.

"Above all he was modest and he fully recognised that humility is the prerequisite of all learning The natural bent of his mind was towards academic learning and scholarship and he showed constantly that disinterested intellectual curiosity which has been called the life blood of civilisation

When in 1946 Turnbull retired from the institute which in 1927 had become the Bernhard Baron Institute he was made honorary consultant morbid anatomist to the London Hospital, and emeritus professor of anatomy in the University of London In 1939 he had already been elected F.R.S. and to mark his retirement the University of Oxford conferred on him the honorary degree of D.Sc. Aside from professional work, his interests and hobbies lay out of doors—rhododendrons in the garden bird watching, and geology in the field along with golf and fishing His skill in drawing so evident on the blackboard and his illustrations of microscopical preparations, found an outlet in water colour sketching One could wish that his health during the years of retirement had given him more opportunity for these attractive diversions

Professor Turnbull's wife died in 1933 and he is survived by a daughter and three sons, one of whom is Dr Adam Turnbull, M R C P He died at the London Hospital on Sept 29

The portrait which we reproduce was made in 1936 by W Kaufmann

HAROLD BURROWS

C B E, M B, Ph D Lond, F R C S

In 1925 Mr Harold Burrows was forced by ill health to retire from his extensive surgical practice at Southsea and Portsmouth He lived to retire a second time after twenty years' work as an experimental biologist on the rôle of sex hormones in the ætiology of malignant growths, and to spend some years of contented, if only comparative, leisure among his books and in his garden He died on Sept 29 at the age of 80

He was born in India, the son of Surgeon-Major E P Burrows of the Bengal Army, and was educated at Marlborough and St Bartholomew's Hospital, where he was dresser to Henry Butlin As was the custom then, he lodged, along with other students, with another of his chiefs, C B Lockwood, who was a pioneer of aseptic surgery He was greatly influenced by Lockwood's ideas and also by those of Sir Lauder Brunton Indeed, to Brunton's influence may be traced Burrow's own physicianly approach to surgery

After qualifying in 1899 he became a prosector at the Royal College of Surgeons, and in 1901 he took the F R C S He joined the staff of the Bolingbroke Hospital in 1903, and later that of the Seamen's Hospital, Greenwich During these early years, while building up his consulting practice from a room in Bertrand Dawson's house, he eked out his income by coaching and by working as an assistant editor to the *Hospital* under Sir Burdett Coutts

In 1907 he moved to Portsmouth and was appointed to the staff of the Royal Portsmouth Hospital In establishing his consulting practice in Portsmouth and its neighbourhood he was greatly helped by Henry Rundle, another old Barts man

Burrows had joined the Territorials before 1914, and when war broke out he was mobilised at once with the 5th Southern General Hospital He volunteered for foreign service and in 1915 he went to France with the 20th General Hospital In 1918 he was appointed consulting surgeon to the 1st Army and later to the Army of the Rhine with the rank of colonel He was twice mentioned in despatches and in 1919 he was appointed C B E He contributed chapters on wounds of the blood-vessels to several textbooks on war surgery, and this was the subject of the essay for which he was awarded the Jacksonian prize of the Royal College of Surgeons in 1920

After the war he returned to civilian life and picked up the threads of his work at Southsea and Portsmouth He did much to forward the development of the Gosport War Memorial Hospital, to which he became consulting surgeon With the encouragement of Sir Robert Jones, he also started orthopædic clinics at Portsmouth and in the surrounding countryside In 1923 he published his book on *Mistakes and Accidents of Surgery*, later called *Pitfalls of Surgery* His *Surgical Instruments and Appliances*, produced in 1927, ran through a great many editions

In 1925 a long illness, following a heart attack, led him reluctantly to give up his clinical work He turned almost at once to cancer research and became experimental biologist at the research institute of the Royal Cancer Hospital (since named the Chester Beatty Research Institute) His chief interest was the relation of hormones to the development of cancer, and he became a world authority on that subject When Lacassagne, of Paris, in 1932 showed that œstrogens were the first substances originating in the body to be implicated in the causation of breast cancer, Burrows was already working on the relation of the internal secretion of the ovary to the occurrence of this disease in laboratory animals He was one of the first to demonstrate that œstrogens induce neoplasia by a small but incessant supply, rather than by large quantities secreted at periods which are separated by intervening periods of rest Later he turned his attention to problems relating to the pituitary ovarian balance, and showed that certain types of hormonal cancer in rodents could be either prevented or inhibited by treatment with an appropriate hormone antagonist He was the first to observe that mice treated with massive doses of œstrogens developed scrotal hernia He published many papers in scientific journals, and his books on *Localisation of Disease* appeared in 1932 and *The Biological Action of Sex Hormones* in 1945 A colleague at the institute recalls him as "a most charming and enthusiastic research-worker with very wide experience of both clinical and laboratory work He was an amusing and interesting raconteur with stories which were often very much to the point and based on incidents of his own full life"

After he retired from the Chester Beatty Research Institute in 1944, Burrows lived at Marlborough, but he retained his intense interest in hormones and cancer In 1949 he brought out a second edition of *The Biological Action of Sex Hormones*, and in collaboration with E S Horning he wrote *Œstrogens and Neoplasia* which was published in 1952 Till his last illness he continued his scientific writings, and this year he had completed a book on *Tumours of the Reproductive Organs*

Of these last years F R F writes "Harold Burrows did not often leave his home in Marlborough, and his friends had to their regret few chances of seeing him during the last few years To be with him was always an experience and a pleasure, for he was a man full of ideas, not only of work to be done but concerning persons and affairs also He never had an ill word for anyone and saw the good that there is in everyone and everything To work with him was an education in wholehearted service and tolerance A truly gentle man, devoted to his family life and to friendship for his fellow men, he was an example of kindliness in thought and deeds"

Mr Burrows was twice married His first wife, Lucy Mary Wheeler, died in 1927 His second wife, Gwendoline Mary, daughter of Engineer Rear-Admiral O R Paul, survives him His youngest son, the only child of his second marriage, died while a student at Barts Of the two sons of his first marriage one is Mr H Jackson Burrows, F R C S,

Sir JAMES WALTON

M J S writes "When I first went to the London, James Walton was surgeon to outpatients He was already a superb craftsman I have seen a good many surgeons at home and abroad, but I cannot recall a better technician At that time his surgical activities were prodigious, for (as his colleague, Robert Milne, once said of John B Murphy of Chicago) he did everything from the top of the head to the sole of the foot—everything done beautifully, expeditiously, and without haste In later years he confined himself chiefly to the abdomen, and while he was equal to any demands on his skill, I think he excelled in gall-bladder conditions, especially in patients who had been operated on before I recall helping him one morning with two cases deep in jaundice as a result of division of the common duct at an earlier operation Both cases came from a seaside town on the South Coast Walton then had his own operation for such cases, using a small rubber tube for anastomosis of the duodenum to the stump of the duct in the hilum of the liver In one of the cases there was no need to use a tube, and the anastomosis was direct Both cases were done with eyeless straight needles! I ventured to say when we were dressing afterwards that the surgeon in that particular town had been busy, but Walton confessed that both cases had been done by leading London surgeons and had gone to the same place to convalesce

"Walton had a host of friends, though perhaps it was not easy to get to know him well His kind manner with his hospital outpatients, and the delicacy of his questioning was an education They were almost made to feel that they were conferring an honour when they poured out their woes

Diary of the Week

OCT 9 TO 15

Monday 10th

UNIVERSITY COLLEGE, Gower Street, W C 1
5.30 P.M Prof J F Danielli D.Sc. Physicochemical Mechanisms of Drug Action

POSTGRADUATE MEDICAL SCHOOL OF LONDON Ducane Road London, W 12.
5 P.M Dr Ian Gilliland Exophthalmos,

INSTITUTE OF NEUROLOGY Queen Square W C 1
5 P.M. Sir Charles Symonds Value of Symptoms in Neurology

CHELSEA CLINICAL SOCIETY
8.30 P.M. (Rembrandt Hotel Thurloe Place S W 7) Dr F Lincoln Williams: Alcoholism.

Tuesday 11th

ROYAL SOCIETY OF MEDICINE, 1 Wimpole Street W 1
4.30 P.M. *Experimental Medicine* Dr. E. G L Bywaters Dr G A. Rose Prof G Payling Wright Dr D A Long Hypersensitivity and the Collagen Diseases
8 P.M. *Psychiatry* Dr W. D Nicol General Paralysis of the Insane (Presidential address)

INSTITUTE OF DERMATOLOGY Lisle Street W C 2
5.30 P.M. Dr C. O Carter Genetics in Dermatology

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr Aleck Bourne Hypertension in Pregnancy

Wednesday 12th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine* Dr J J R Duthie Dr A St John Dixon Dr M. R. Jeffrey Anæmia in Rheumatoid Arthritis.
8 P.M *Surgery* Mr John Bruce: Changing Concepts in Contemporary Surgery (Presidential address.)

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr R. W Riddell Rôle of Fungi in Skin Diseases.

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11 Chandos Street W 1) Mr Denis Leigh Present Status of Psychosomatic Medicine

SYDNEY BODY LECTURE
8.30 P.M. (Southend-on-Sea Hospital) Sir Henry Cohen Brains—Human and Mechanical

OXFORD UNIVERSITY
5 P.M. (Radcliffe Infirmary) Prof. Carl V Moore Nutritional Aspects of Iron Deficiency (Litchfield lecture)

ROYAL FACULTY OF PHYSICIANS AND SURGEONS 242 St Vincent Street Glasgow
8 P.M. Mr. Wallace M. Dennison Advances in Surgery of Infancy and Childhood

Thursday, 13th

UNIVERSITY COLLEGE
5 P.M. Dr J Monod (Paris) Specific Factors in the Biosynthesis of Enzymes

INSTITUTE OF NEUROLOGY
5 P.M. Dr W Noordenbos (Amsterdam) Pain of Central Origin.

ROYAL SOCIETY OF MEDICINE
5 P.M. *Ophthalmology* Mr R. C Davenport: Uveitis (Presidential address.)

ROYAL EYE HOSPITAL, St George's Circus S E 1
5.15 P.M. Dr T. H Whittington Aspects of Refraction (First of seven lectures.)

LIVERPOOL MEDICAL INSTITUTION 114 Mount Pleasant, 3
7.30 P.M Dr R J MINNITT: A Surgeon and Seven Pieces of Old Silver (Inaugural address.)

UNIVERSITY OF ST ANDREWS
5 P.M. (Queen's College Small's Wynd Dundee) Sir Wilfrid Le Gros Clark, F.R.S Problems of Muscle Growth and Regeneration.

Friday 14th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
5 P.M. Dr A. M. Cooke Osteoporosis.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY 330 Gray's Inn Road W.C 1
4.30 P.M. Mr F. C. W Capps Association between Dermatology and Otorhinolaryngology (Annual address)

Saturday 15th

E E G SOCIETY
10.15 A.M. (National Hospital Queen Square W C 1) Autumn meeting

Notes and News

ENGLISH AT SCHOOL

SPEAKING at Westminster Medical School's prizegiving on Oct 3 Mr H E Harding the dean, deplored the contemplated removal of English from those subjects which form the minimum entrance requirements for all faculties including that of medicine within London University[1]

Indifferent standards in a language may not matter in a pure science course in which expression is carried out in a pattern of signs and symbols but in medicine I foresee no future for the applicant who cannot express himself in speech and in writing and who has not reinforced his background with wide reading In interviewing applicants Mr Harding had discovered that few on the science side devoted more than two brief unsupervised periods a week to the subject and there was no evidence that this kind of study was encouraged In our recent entrance scholarship examination most of the candidates reached good scholarship standards in the basic sciences. In English none achieved a high standard several an adequate standard but the vast majority a standard so low that it bordered on illiteracy

OPPORTUNITIES IN THE PROVINCES

IN an inaugural address at the annual prizegiving of King's College Hospital Medical School on Sept 30 Dr J H Sheldon spoke of the real attractions of the provinces as compared with London The great stimulus of working in the provinces came from the wealth of clinical material owing to the absence of fragmentation in the disposal of clinical problems Dr Sheldon favoured the scheme of interchange for senior registrars between teaching and regional hospitals, since the main hazard in the provinces was intellectual isolation—a hazard accentuated by the absence of students whose salutary influence on the outlook of their seniors was well known In recent years the situation had improved out of all recognition owing to the creation all over the country of regional specialist societies and anyone going to work at a provincial hospital could now be sure of a completely satisfying professional life

University of Leeds

At recent examinations the following were successful

M.D—Gunter Holti D H Miller

M B Ch.B—M M Akal, J H Binns Muriel A. Boyd M. H Carr D J Godfrey Donald Halmsworth F R. Halmshaw J M Hulme J B Hunting R. C Laverick A L Lawrence Theodore Chukwuemeka Ezeokpuo Mbanefo Veerasamy Samy Naiken S M. Rosen, William Sawyer D O Senior Margaret J D Sturges Ekanem Udo Ukpong J L. Wilkinson.

D.I M—Andres Aronson, E. P Cadogan Agnes D Collins.

University of Liverpool

On Monday Oct 31 Wednesday Nov 2 and Friday, Nov 4 Sir Henry Cohen will deliver the Sherrington lectures in the Arts Theatre of the university at 5 30 P.M. He is to speak on Sherrington as physiologist philosopher and poet

On Sept. 27 the following degrees were conferred

M.D—James Parkhouse.

M.B Ch.B—R B Crosbie

University of Durham

On Sept 24 diplomas in psychological medicine were conferred on Josephine Rutter and Margaret R Walley

Royal College of Physicians of Edinburgh

Dr C. A. H. Watts will deliver the John Matheson Shaw lecture on Friday Nov 11 His subject will be Neuroses in General Practice Prof L J Witts will give the Sydney Watson Smith lecture on Thursday Dec. 15 when he will speak on Anæmia and the Alimentary Tract Both lectures will be held at the college at 5 P.M

Law on Homosexuality

The council of the Magistrates Association has recommended by 41 votes to 33 that homosexual conduct in private between consenting adults aged 30 or more should no longer be a criminal offence except where a mentally defective person is concerned This recommendation, published in the association's annual report has been submitted in a memorandum of evidence to the Departmental Committee on Homosexual Offences and Prostitution.

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[1] *Times* Oct. 4 1955

St George's Hospital Medical School, London

A course of postgraduate demonstrations in neurology and psychiatry is being held at the hospital on Thursdays at 5 P M The course is open, without fee, to all doctors and senior medical students The lecturers are Dr Denis Williams, Dr Desmond Curran, Dr M A Partridge, Dr J H Paterson, and Sir Paul Mallinson

Conference and Exhibition for Nurses

The Professional Nurses and Midwives Conference and Exhibition, held under the auspices of the *Nursing Mirror*, will take place at the Seymour Hall, Seymour Place, London, W 1, from Oct 10 to 14, under the presidency of Sir William Gilliatt

Abortion Law Reform Association

A public meeting of this association is to be held on Wednesday, Oct 26, at Conway Hall, Red Lion Square, London, W C 1, at 7 P M, to discuss prospects of reform in the new Parliament It is hoped that Mr Joseph Reeves, M P, Mr Douglas Houghton, M.P, and Mr Kenneth Robinson, M P, will speak

Wessex Rahere Club

The autumn dinner of this club will take place at Fortt's Restaurant, Milsom Street, Bath, on Saturday, Oct 29, when it is hoped that Mr Ogier Ward will be the guest of honour Membership of the club is open to all Barts men in the West Country Further details may be had from the secretary, Mr A Daunt Bateman, 11, The Circus, Bath

The Physiological Society and the British Pharmacological Society

At a dinner held jointly by the two societies on Sept 27 in the great hall of the Royal College of Surgeons, Sir Henry Dale, O M., F.R S, and Lady Dale were the guests of honour The occasion celebrated Sir Henry's 80th anniversary Prof E B Verney, F.R S, was in the chair, and presented many messages of greeting from Sir Henry's friends and pupils abroad Sir Charles Lovatt Evans, F.R S, proposed the toast to Sir Henry, and Professor Verney proposed the health of his fellow guest and octogenarian, Prof Winifred Cullis Professor Z M. Bacq proposed The Societies, and Prof J H. Burn, F.R S, Prof J H Gaddum, F.R S, Dr W Feldberg, F.R.S, and Prof G L Brown, F.R S, recalled some of their times with Sir Henry After Professor Heymans had read greetings from Belgian academies, Prof A. V Hill, F.R S, expressed to Mr Julian Taylor, vice president of the Royal College of Surgeons, the thanks of the societies to the Royal College for their hospitality, and he moved that the meeting adjourn for ten years until Sir Henry's 90th birthday

Middlesex Hospital Medical School

Responding to the toast of The Middlesex Hospital and Medical School at the annual dinner on Sept 30, Prof B W Windeyer, the dean, announced that £400,000 towards the rebuilding of the medical school had been given by Colonel J J Astor, who has been chairman of the hospital for 17 years Plans had been ready for a long time, and rebuilding had just begun when the war interrupted the work, which could now go ahead again Unfortunately the ultimate cost would be greatly in excess of even this magnificent gift, and it was hoped that the balance would be made up from subscriptions from other friends of the school, and contributions from the University of London and the University Grants Committee He regretted that Colonel Astor was not present at the dinner, but he had not yet fully recovered from a recent illness Professor Windeyer also spoke of a plan for the exchange each year of two consultants from the hospital (a physician and a surgeon) with their opposite numbers in Toronto for a period of one month, and he welcomed at the dinner Dr Ian MacDonald from the Sunnybrook Hospital, Toronto His announcement that the library had been named the "Boldero Library" after Sir Harold Boldero, his predecessor as dean, was warmly received, and he also recalled that this year marked the centenary of the birth of Sir John Bland Sutton, who made possible the building of the Bland-Sutton institute of pathology Dr J H. Baron, the senior Broderip scholar, also responded to the toast

The chairman, Sir Harold Graham Hodgson, complimented Professor Windeyer on the completion of his first year as dean, and congratulated the many Middlesex men who achieved academic and civil honours during the year, which was notable for another anniversary, as the foundation stone of the hospital on its present site was laid 200 years ago The health of the chairman was proposed by Mr W R Winterton.

New M O H for Glasgow

Dr Arthur Horne has been appointed medical offic health for Glasgow in succession to the late Dr Stuart Lai

Dr Horne, who is 53, was born in Inverness and edu at the Inverness Royal Academy and Glasgow University wh graduated M B in 1923 The following year he took the D.P H joined the health department of Glasgow corporation as a re physician at Knightwood Fever Hospital, and in 1927 he be medical superintendent at Ruchill Sanatorium In 1928 he obt his M.D with commendation Later he was appointed c officer for the northern division, and, in 1935 senior ass medical officer of the city Since 1946 he has been senior d M.O H, and since last July he has been acting M O H He i a lecturer in public health at Glasgow University

Welsh Regional Hospital Board

Dr J Stenner Evans has been appointed senior admin tive medical officer to the board in succession to Dr T Jones, who has become provost of the Welsh National S of Medicine

Dr Stenner Evans, who was educated at Merthyr Interme School, University College, Cardiff, and St Mary's Hos London, qualified in 1916 and took his M B Lond with ho the same year After service with the R.A.M.C he return Wales as an assistant physician to the Welsh National Assoc for Tuberculosis In 1921 he took the D P H He spent 13 ye general practice in Dowlais before in 1931 he became a re medical officer to the Welsh Board of Health During the lat he was hospital officer for North Wales and he was one o authors of the Medical Research Council's report on the inci of tuberculosis in war time which was published in 1942 A start of the National Health Service in 1948 he was appo deputy senior medical officer to the Welsh Regional Ho Board

Oxford University Medical Society

The first meeting of this society in the Michaelmas term be held on Oct 11, when Dr A M Cooke will give an ad entitled The Forerunner The programme includes a posium on Nov 29 on Thinking, when the speakers wi Prof Gilbert Ryle, Sir Wilfrid Le Gros Clark, F.R.S, Mr Farrell, and Dr R G McInnes All the meetings will be on Tuesdays at 8 15 P M at the Radcliffe Infirmary president is Mr David Sargant (Magdalen) and the secre Mr Nigel Keddie (Oriel)

The National Council of Social Service (26, Bedford Sq London, W C 1) would be glad to have particulars of any welfare organisations set up since 1951 or which may be se before the spring of 1956 to include in the new edition of directory *Voluntary Social Services*

Appointments

CAMPSIE, JOAN, M B Edin, D.P H asst M O.H, Roxburgh Selkirk counties
FINN A B R M A M B Camb, D P H M O H, Guildford Godalming
HORNE, W A, M D Glasg, D P H M O.H Glasgow
HOWITT, L F, M B Aberd, D P H asst M O H, Roxburgh Selkirk counties
RIDLEY, D S, M D B SC Lond whole time consultant pa logist Hospital for Tropical Diseases, London
WARD, BARBARA, M B Lond D.A school M O Nottingham

Manchester Regional Hospital Board

BARR JOHN, M.B Aberd, D M R.D consultant radiolo Macclesfield Hospital centre and Parkside Hospital
COWPE, C O, M B Manc, F R C.S consultant orthop surgeon, Altrincham General Hospital and Withington Wythenshawe hospitals
CREMIN, M D, M B Lond, F R C.S D.L O consultant E. surgeon to Burnley and district group of hospitals
IRWIN D T, M B Dubl, D M R.D consultant radiolog Preston and Chorley group of hospitals and Whittingh Hospital
MULLINER, G N M B Manc, F F.A R C.S, D A consulta anæsthetist, Preston and Chorley group of hospitals a Whittingham Hospital
O REGAN JOHN M B N U I, D P H whole time tubercul physician, Rochdale and district group of hospitals
SHIRGLEY, J A M B Manc D PATH whole time consulta group pathologist Rochdale and district hospital centre

Colonial Appointments

ADAMS W E, M B N Z D P H M O H, British Guiana
BOLTON, J M, M R.C.S M O (Aborigines), Federation of Mala
DARKWA, A A M O, Gold Coast
DUGUID BARBARA, M B Lond M O Northern Region, Nige
GHADIALY D J, M B Bombay, F R C.S orthopædic surgeo Mauritius
HOGAN, J, M B M O Northern Region, Nigeria
LAM PO TANG M.B pathologist Mauritius
NG LUN, T T M B M O, Mauritius
PLOMER E N M.R.C.S M O, Northern Region Nigeria
PRICE S M O L.R.C.P E M O Trinidad
QUAMINA D B E M B Dubl M O (grade C), Trinidad
SCOTLAND W H D, M B Glasg, M R C O G M O (special grade) Uganda

THE CLIMATE OF DISCOVERY*

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Harvey's cardinal achievement was the demonstration that blood circulates—not the assertion or the opinion, but the demonstration that such a hypothesis alone fitted the available observations This achievement of clinical science was all the more remarkable because it was made when the renaissance of the arts and sciences which had been gathering force for nearly two hundred years had encroached but little on the practice of medicine which still consisted in general, of the vigorous peddling of the absurd superstitions and the revolting nostra of the medieval medicine man

In remembering Harvey we are under an obligation actively to promote his tradition and to do all we can to create a climate in which discovery is favoured. Let us not be beguiled by such catch phrases as genius will out,' meaning that no special provision is necessary and that the real scientist will triumph against all odds Few would deny that the store of human knowledge would be immensely wider today if an unknown number of men had not been frustrated at a critical point in their careers. The fact that some have overcome formidable obstacles of grinding poverty, ill health, stifling tradition, and professional jealousy does not mean that such obstacles can always be conquered For every scientific fruit that has ripened an unknown number must have been blighted.

I propose therefore to consider briefly whether the conditions of practice and our system of medical education, both undergraduate and postgraduate provide a climate which is favourable or unfavourable to the development of medicine as a science eager to discover quick to apply and intolerant of intellectual dishonesty

* * *

Medicine in all its activities must be a scientific discipline—that is, a compound of observation, deduction and the proof of validity of deduction Proof may be obtained either by direct experiment or (more often in clinical sciences) by the planned examination of a hypothesis in the light of phenomena of health and disease as we see them in the course of our care of the sick Scientific principle requires us to be ever watchful for the unexpected and the anomalous for those may imply imperfections in our concepts and are often a stimulus to discovery

It is surprising how many apparently educated people including many doctors, regard science as an affair of laboratories, apparatus, and formulæ rather than as an attitude of mind which relates hypothesis and plan to controlled observation It is because of this misconception that some mistakenly hold that the qualities of solicitude and compassion are incompatible with the scientific method. But in fact, it is as much a crime against science as it is against humanity to neglect those qualities of kindliness which are essential to the care of the sick and the supervision of the health of the individual.

The reasons for these criticisms of science in medicine are not far to seek. They are made by those who recoil from the obligations and discipline of science It is easier to make a facile diagnosis on inadequate evidence than it is to defer final judgment till the evidence is as complete as it can be. It is much more nourishing to the amour propre to believe that we have cured a patient than to recognise that his natural recovery has coincided with our treatment

There is still too much of the appeal to authority as a source of inspiration—much in the same way as questions were put to the oracles in the cave at Delphos The laity and to some extent the profession still think of the consultant as someone who gives opinions rather than as one who reviews evidence, checks its validity perhaps finds new clues and then outlines with appropriate action, the possible solutions in their order of probability

* * *

A major intellectually demoralising influence to which we are exposed is that in the important business of making sick people well there operates the *vis medicatrix naturæ* Everyone survives all illnesses except his last often uninfluenced by medical care, not infrequently hindered by medical care, sometimes decisively helped by it. That is the cold unpalatable truth. Fortunately lay people have little appreciation of this and I cannot say that we make any great effort to enlighten them. This element of deception may be in the patient's best interests and is not inherently unscientific or immoral but scientific apostasy sets in when we ourselves fail to recognise when we have only played a passive rôle It is often hard for us to realise that the peptic ulcer has healed spontaneously without aid from our dietetic régime of cod and sago We readily ignore the fact that the good season the hay fever patient has enjoyed after our course of pollen inoculations is due to the weather We readily believe that our series of recoveries from myocardial infarction is due partly at least to our régime of strict bed rest

To suffering humanity this unscientific credulity on our part brings a heavy burden because so many of the nostra we give and the restrictions we impose mean for the patient serious curtailment of liberty discomfort and even danger How many promising careers have been cut short by the unwarranted advice to change employment? Think of the untold millions of private and national wealth squandered on unnecessary drugs, indiscriminate physiotherapy and above all needless rest Nobody will ever know how many attacks of homologous-serum jaundice have been induced by irrational vaccine therapy or the long courses of gold therapy that used to be popular

Sins of this sort (*it is worth noting*) are usually those of commission When in therapeutic doubt—and in our present state of knowledge that must be often—we readily yield to the fallacious maxim 'something must be done' Why do we yield so readily? One reason is that in all of us there lurks a power complex a desire to dominate our fellow men to order their uprisings and their downsittings Presented with the issue to do or not to do we are hopelessly biased towards action The defence so often professed that the patient demands action has something to it, but at the same time we make little attempt to educate the public in this respect

Another reason is inherent in the economics of our profession It would be hypocritical to maintain that we are totally indifferent to our rewards and where every incident of illness, every act of therapy is of direct gain to the doctor, it would require a breed of saintly altruists to prevent this vested interest in illness exerting some influence on judgment We may, indeed feel some satisfaction that the moral standards of our profession keep the effect of this vested interest as weak as it is However the right way to treat this cause of scientific and moral embarrassment is not to ignore it, but to welcome the extension of a system which removes this direct association There is much to be said for the old Chinese system of paying the doctor to keep the patient well. In this respect medicine is at the cross-roads.

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* From the Harveian oration given to the Harveian Society of Edinburgh on June 3 1955

In our country education of the public in medical matters is beginning to follow the line of encouraging patients not to seek medical aid for each and every complaint but to learn the sort of troubles which need medical aid and the sort which are self-righting In the United States health education tends to make the public so disease-conscious that some have a complete "check up" every year There are obvious dangers in both systems, but I feel that ours ought to develop a public more health conscious and more self-reliant and a profession capable of developing to the full the increasing resources of scientific medicine

* * *

In education today we hear much about principles—always "fundamental" or "basic" principles, the teaching or inculcation of which is the proud prerogative of this school or that department A good deal of snobbery is attached to these terms The more basic or fundamental the principle is deemed to be, the nearer are all those concerned to some mystic state of academic grace Much of this is little more than an example of the limitations of language Logically it presupposes that there exists somewhere a finite body of fundamental truth The detailed curricula of medical schools, the itemised requirements of examining bodies, even the recommendations of the General Medical Council, tend to be regarded as a supreme polypharmaceutical prescription, the accurate dispensing of which will result in the "compleat physician"

At the risk of being hoist with my own petard I venture to emphasise that the fundamental objective of medical education, indeed of all education, is to develop the human mind as an instrument of observation, deductive and inductive reasoning, and rational expression in word and action

The first step in medical education is the selection of candidates These must be willing in the sense that theirs is a free choice they must not be coerced by the State or by their parents, and, if their ability is adequate, funds must be available for their training And obviously, if there is to be selection there must be more applicants than student places

The inducements to choose this career are many Though medicine as a profession is not so prosperous as in the days before the late war, it has more than maintained its relative position among the other professions In respect of pecuniary reward, its members are the envy of other professional groups in the service of the community, such as Civil Servants or teachers But its appeal as a career does not rest to any great extent on its material attractions Above all it promises an interesting life, full of variety, repeated challenges to intellectual endeavour, and high esteem for work well done

Now, I maintain that medicine demands, in general, people of above average intelligence, and a certain number of the very best But the proportion of the community in any intelligence bracket is relatively fixed, and there are other more pressing calls on the intellectually gifted The intensely competitive circumstances of modern industrial life show that the survival of a nation such as ours depends on the greatest possible development of the sources of true wealth—that is the harnessing and efficient use of power, the garnering, processing, and synthesising of materials, their fabrication into articles in wide demand, and above all the organisation of society on a world-wide scale into a contented, well-fed, healthy, and happy community The Government's appreciation of these needs is shown by their preoccupation with the development of technological education at the highest level The survival of *Homo sapiens* as a social animal depends on an adequate supply of applied scientists, among whom medical men and women have an important but not dominant place This position of secondary importance must be kept mind when considering recruitment to medicine, allotment of material resources to medical educati to the health service, and in the deployment of profession

Meanwhile we must evidently take as much care possible in student selection, and, in order to tell how to select correctly, we need more organised quan tative studies, by such methods as the cohort techniq This procedure consists in the sustained observation a group of people from the point at which they en medicine until they are established in their chos branch of the profession Only by such means shall discover what truth there is in the persistent rumo that quite often the poor student, who is the desp of his teachers and the sorrow of his examiners, turns o to be a wonderful family doctor I suspect, but have proof, that this is merely an expression of our inhere compassion for the weaker member and is just anoth version of the Cinderella legend The more inform tion we have about the candidates, the more careful we interview them, the more use we make of those facul members who have an aptitude for selection, the few *mistakes will be made Very close attention should then* paid to performance during the preclinical years so th misfits can be discouraged from proceeding furthe Most of these will have awaiting them a successf career in some other walk of life

* * *

Since the war medical schools have accepted onl students reading for a degree, and, though a few fa to gain a degree and have to be content with the diplom of one of the licensing bodies, they still have had the sam training as the graduates In principle, this is entirel satisfactory, but unfortunately much of the curren practice in medical education falls short of the tru ideals of a university education It is all too possibl for a student to attend lectures, fulfil laboratory an clinical schedules, pass examinations, and in due cour wear the bachelor's hood, without acquiring the faintes glimmering of what constitutes a university Even wors he can later acquire sufficient purely vocational com petence to gain him a place as a teacher in a universit medical school, from which position he may promot the continuation of this travesty of the university ideal I am sure many of us at times must be acutely and anxiously aware that the claims of medicine to take a worthy place alongside the humanities and the sciences as a university discipline are at times more traditional than contemporary Much lip service to the university ideal is combined with ignorance of—and occasionally cynical disregard of—what it stands for

The medieval Latin word *universitas* means a society or community—that is, a group of people banded together One of the uses of the term was in connection with a *studium generale*, in which sense it was used in the context *universitas magistrorum et discipulorum*—that is a community of scholars, senior and junior, *socii et discipuli*, joined together for the promotion of scholarship The "universal" or "general" concept has reference to the fact that such corporations may be joined by anyone capable of profiting by them, without distinction of class, age, or rank The *studium generale* has come to have attached to it another sense in its implication of breadth of scholarship This recognises the many factors common to all branches of learning and the stimulation of intellectual communion between scholars of varied disciplines Prof E Allison Peers, who under the pseudonym of "Bruce Truscott" wrote *Red Brick University*, therein defined a university as "a corporation or society which devotes itself to a search after knowledge for the sake of its intrinsic value" It is this seeking after knowledge which is neglected in many university medical schools It should be a basic article of faith of all university teachers that critical scholarship and search for new knowledge or research as it is now called is the primary aim of a university—' not merely actual discovery not merely even the attempt to discover but the creation and cultivation of the spirit of discovery "

Without research a university cannot exist in anything but name it would be simply a cramming institution or a craft school. There could perfectly well be a university like All Souls College Oxford or the Institute for Advanced Studies at Princeton, which had no undergraduates but devoted itself entirely and exclusively to the pursuit of knowledge recruiting its members from scholars who had been trained elsewhere. Nowadays in medicine the highest embodiment of the basic principle of the university ideal is often to be found not in the medical schools, but in such communities as the Medical Research Council's institutes at Hampstead and Mill Hill and the Institutes of Public Health at Bethesda, Maryland

* * *

How then are these twin ideals of vigorous research and good teaching to be welded into an effective instrument of university education in medicine? One thing is crystal-clear—it cannot be done by planning alone One of the diseases of our society is this erroneous belief that the brave new world will come to pass by miracles of structural design and intricate organisation alone Plans there must be but personalities must take precedence of plans The basic essential is to ensure that medical students, both undergraduates and postgraduates, are associated with (not just taught by) those whose lives and work are examples of excellence in scholarship and professional skill. These teachers must be ever dissatisfied with their efforts critical of themselves and others forever scheming and striving to test the truth of what appears to be known, and planning to enlarge knowledge Among such there is no room for the complacent the arrogant the staunch upholder of tradition and the stout defender of the status quo The quality of our teachers is all important and a heavy responsibility rests on those who have to select the academic staffs and consultants responsible for medical education

So many qualities are necessary in the university clinician that it is rarely possible to find them all highly developed in one person but two seem to me essential first, devotion to the care of people in sickness and health; and secondly intellectual humility Someone endowed with these two qualities will always be seeking new knowledge which will make him a better doctor and will realise the constant obligation to prosecute and instigate investigation The limitations of human ability are such that only a few will achieve outstanding discoveries; but all can promote such discoveries by facilitating fruitful associations with the pure scientist and fostering by kindly criticism and patient discussion the spirit of inquiry in his students and associates. Such a person should reserve his impatience and intolerance for those who are complacent intellectually dishonest, jealous and above all unfeeling and harsh to patients. The enumeration of such qualities arouses in me profound disquiet as I realise how often and in how many ways my practice falls far short of my precepts.

Promotion to academic and consultant posts in the clinical subjects has been handicapped by the fact that until the introduction of whole time clinical units and the health service, these posts did not offer a livelihood and could seldom be accepted by anyone who had not already sunk economic roots in the locality As a result standards have varied greatly from place to place and from time to time in the same place. Those responsible could often have chosen better if the field of candidates had been nation wide instead of parish wide The recent severance of geographical and economic bonds, and the consequent interchange of clinicians, has greatly revived teaching and research in clinical subjects and has already largely corrected the inbreeding with inevitable decadence which was clearly evident in many schools

* * *

Large classes much formal lecturing didactic teaching elaborate compulsory time tables and slender staff student contacts make the basic university concept of a community of scholars difficult or impossible to attain

Clinical teaching and the community life of the teaching hospital should be an ideal environment for scholarly communion That it has often failed is due to a variety of reasons. Prominent among these has been the fact that staff members have not spent enough time in leisurely discussion with their colleagues—from their seniors down to the junior students—and in forming discussion groups with laboratory clinicians and non-clinical biologists from preclinical or even premedical departments. A sure sign of intellectual vigour in a teaching hospital is regular meetings variously organised as clinicopathological conferences or as grand rounds By these meetings—the exact label does not matter—the visitor can soon gauge the intellectual climate of the community If he finds the attendance good the discussion natural and easy with the most junior free to speak and assured of a patient hearing the dubious or unsupported assertion, whoever makes it, promptly firmly and courteously criticised and the quality of exposition and deduction scientifically sound—then he can be sure that the climate is healthy Only a few years ago this favourable atmosphere was a rare phenomenon in a British medical school but now it is quite often to be found

Formerly, what I call "the chief complex predominated Teaching hospitals tended to be divided into separate firms and departments the headship of which was achieved automatically by the passage of years (Surely it is a biological absurdity to assume that ability any more than somatic growth, continues through life?) The system demanded that the chief should receive respect amounting almost to servility from his juniors. His word was law and it was unheard of for a junior to engage him in debate. This order of things harmed all but the best of the senior clinicians. They were deprived of the modulating stimulating and corrective influence of keen young minds They came to rely too much on their own judgment and ability For many the attainment of senior-staff status with its attendant retinue of yes men initiated premature intellectual senility At its worst this system sometimes resulted in a nonentity filling senior office for many years Those of us who wish to preserve our faculties in some sort of useful working order surround ourselves with no men to ensure that our standards shall not sag with our waist line

* * *

If medicine is to play a worthy part in the *studium generale* of our universities it must maintain the same standards of scholarship the same rigorous quality of research as other faculties That clinical practice is usually exhausting and distracting may explain but cannot excuse relaxation of scientific standards Nature has no bargain basements or bonus hand outs in her storehouse of knowledge The cost of knowledge is the same to a clinician as to a theoretical scientist Away with all this sentimental obscurantism that masquerades under the euphemism of the art of medicine' and in so doing preserve and enrich the heritage of William Harvey

CONTROL OF WOUND INFECTION IN A THORACIC SURGERY UNIT*

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THE infection of a surgical wound with pyogenic organisms is common and often has serious results Yet Goodall (1952) found that the generally accepted methods of controlling cross-infection are often ignored in hospital wards Our own experience confirms this and suggests that the same criticism may be made of the procedures in operation theatres It is often said that to maintain the highest standards of aseptic practice calls for an extra effort and a disturbance of normal routine which is out of proportion to the advantages gained , but in this paper we shall show how an outbreak of serious wound infection was controlled by more stringent application of the old-established principles of asepsis, with results that justified the measures taken

The hospital concerned is a modern sanatorium in rural surroundings , it was completed in 1942 There is a three storeyed building of concrete and brick housing 260 adult male and female beds and a separate single-storeyed block containing 60 children's beds Most of the rooms hold 4 beds, but on the surgical floor there are also single-bed cubicles It represents the modern trend in hospital design

From 1942 selected patients with pulmonary tuberculosis were admitted to the ground floor for medical treatment Bronchoscopy and (more recently) bronchography were completed there before a decision on the surgical treatment was made The patient was then moved to the surgical ward on the first floor After recovery from the operation he convalesced on the top floor before discharge The average stay in hospital was nine months, and surgical collapse formed the mainstay of treatment From 1943 to 1949 the operations were usually thoracoplasties, but from 1949 the proportion of lung resections steadily increased

When major surgery was first performed in the hospital the operative mortality was low, septic complications were rare, and the sputum conversion-rate was good The morale of the patients, which plays an important part in the treatment of tuberculosis, was excellent It was therefore particularly upsetting to staff and patients alike when a serious rise in the incidence of pyogenic wound infection occurred in 1952

The postoperative wound infections were of three types (1) parietal infections involving the cut edges of the skin and deeper tissues , (2) intrathoracic infections such as empyema after lung resection and extrapleural space infections after thoracoplasty , and (3) infections arising as a result of bronchopleural fistulæ

The features which we have accepted as evidence o infection include

(a) Persisting or climbing temperature associated wit increasing malaise and sweating The temperature eventuall swings to the “ septic ” type

(b) Increasing pain in the wound area associated wit œdema along the line of incision

(c) Increase of the effusion in the space, evident on radiography

(d) Space fluid leaking from the wound

(e) The development of bronchial fistulæ in resection cases with the coughing up of space fluid

(f) The isolation of the infecting organism from the discharging wound or aspirated space fluid.

During the early part of the period under review th interval between operation and the appearance of clinica signs of infection was often as long as three weeks Th interval became progressively shorter and by 1952 i was rarely more than two or three days

The aftercare of the infected patient has undergone many changes, and optimism resulting from the successfu use of antibiotics in one case has often led to disappointment when it has failed in others Generally, surgica drainage has proved the most effective, but infected chest spaces take a long time to obliterate by granulation tissue The patient may have looked forward to a smooth convalescence after operation , instead, he is often doomed to months or years of continual wound dressing punctuated by “ redrainages,” “ unroofings,” and sinograms Two cases of fatal secondary hæmorrhage from large thoracic vessels reminded us, in a most dramatic manner, of the serious consequences which may follow these infections

It was against this background of virulent infections, arising in a modern hospital despite the use of the generally practised aseptic techniques and the modern armamentarium of antibiotics, that this investigation was carried out

Incidence of Infection

The histories of all patients undergoing major chest surgery have been examined and from them the incidence of wound infection for each year has been derived Operations that were performed for the treatment of already existing pyogenic infection have not been included in this series Table I shows the number and type of operations for each year from 1943 to 1952 with the number of wound infections There was a considerable increase in these infections from 1950 onwards until the alarming figure of 10 9% was recorded at the beginning of 1952

TABLE I—INFECTION-RATES BEFORE REORGANISATION

Year	No of major operations				No of infections
	Thoraco plasty	Lung resection	Other	Total	
1943	26			26	
1944	65		8	73	2
1945	42		9	51	
1946	54	1	3	58	1
1947	56		5	61	
1948	76		2	78	
1949	194	25	7	226	2
1950	181	62	24	267	10 (3 7%)
1951	294	61	23	378	8 (2 1%)
Jan –May, 1952	95	30	13	138	15 (10 9%)

At first, infection was more frequent after lung resection than after thoracoplasty, but in 1952 there was little difference between the infection-rates for these two types of operation

The Investigations

Careful inquiry was made into the hospital procedure that might have a bearing on cross infection and at the same time bacteriological examinations were carried out on material from patients and staff, as well as on air, dust, and bedding in various parts of the hospital

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* This work forms part of an investigation by the Public Health Laboratory Service for the Newcastle Regional Hospital Board and is partly financed by a grant from the board.

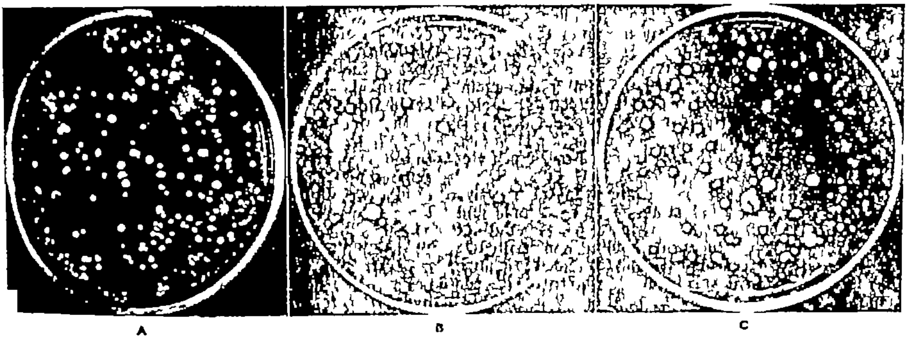

Fig 1—Sweep-plates from blankets: A from patient's bed B in ward store-room; C after return from laundry

THE INFECTED PATIENTS

During the early part of the period under review aterial from almost every infected wound yielded aphylococcus aureus During March, April and May of 52 material from 10 patients each with a serious post perative infection was examined in more detail In ch instance *Staph aureus* was isolated

The organisms were tested for sensitivity to penicillin, lortetracycline (aureomycin) and chloramphenicol and ere bacteriophage typed by the method of Williams and ppon (1952) (table II) Most of them were resistant to penicillin, and, though not giving identical bacteriophage sensitivity patterns, they all fall into group III of Williams et al 1953)

ABLE II—BACTERIOPHAGE AND ANTIBIOTIC SENSITIVITIES OF *Staph aureus* ISOLATED FROM INFECTED PATIENTS

Phage pattern	No of strains	Sensitivity to		
		Penicillin	Chlortetracycline	Chloramphenicol
6	1	R	S	S
3 76 77	5	R	S	S
47/53/ 75/76/77	3	R	S	S
E 7/47/76	1	S	S	S

S = sensitive R resistant.

The Staphylococcus Reference Laboratory no longer includes phage 76 in the routine typing set

THE WARDS

loor Dust

The wooden floors were not oiled, and were swept each orning either dry or after being wetted with tea leaves r damp newspaper Dusting was done dry in the usual anner

From various parts of each of the surgical wards amples of dust were examined with the results shown in able III

The dust was collected directly on to the surface of a culture edium. $3^1/_2$-inch Petri dishes containing phenolphthalein hosphate agar (Barber and Kuper 1951) were held in a dust puffer This instrument is so designed that a jet of air causes floor dust to be blown against and to adhere to the surface of the slightly moist culture medium After incubation of the plates phosphatase positive colonies were subcultured and tested for coagulase production by the slide technique (Cadness Graves et al 1943) It is not possible to express the result of each test in a quantitative manner but when *Staph aureus* was isolated numerous colonies were often present.

ABLE III—RESULTS OF DUST SAMPLING FOR *Staph aureus* BEFORE REORGANISATION

Situation	No of rooms examined	No of rooms positive for Staph
ccupied surgical bedrooms	6	4
Unoccupied surgical bedroom	1	0
Linen store-rooms	3	4
rgical ward corridors	3	0
X ray department	3	2

One colony from each positive plate was examined for antibiotic and bacteriophage sensitivity 7 strains were penicillin resistant and of the phage pattern 75/76/77 The remaining strain belonged to an unrelated phage type and was sensitive to penicillin.

Bedding

Sheets were changed and laundered each week Blankets were sent to the laundry only when they were visibly soiled with excreta blood or other discharges from the patient and also when the patient died But in the normal course of events a blanket remained on the bed throughout the whole of the patient's stay in hospital When he was discharged his blankets were used to make up a bed for another patient or were put into the ward store room for future use

Sheets and blankets removed from the beds were taken in canvas bags to the ward sluice room where they were sorted and counted by nurses before being sent to the laundry or otherwise disposed of

Examining sheets by the ' sweep plate ' technique (Blowers and Wallace 1955) we found that even after a period of use, they liberated only a small number of particles yielding *Staph aureus* Clean sheets in the ward linen rooms were very nearly sterile and never yielded pathogenic organisms Examined by the same method blankets on the patients beds were found to be heavily contaminated with organisms These were mostly non pathogens, but *Staph aureus* was easily isolated from almost every blanket examined and sometimes the colonies of this organism were too numerous to be counted Reserve blankets in the ward store rooms were in most instances bacteriologically indistinguishable from those in use. Blankets sampled immediately after their return from the laundry were never sterile and often yielded as many *Staph aureus* as the dirty blankets Fig 1 illustrates this.

Examination of *Staph aureus* isolated from these sources revealed a great predominance of penicillin resistant strains having the phage sensitivity pattern 75/76/77 By this time organisms with these properties were regarded as being hospital types "

Air

With a slit sampler (Bourdillon et al 1948) and phenolphthalein phosphate agar air in the various parts of the hospital was examined for its general bacterial content and for *Staph aureus* The interpretation of general colony counts in ward air proved extremely difficult Samples taken under apparently similar conditions gave such variable results that attempts to interpret them were eventually abandoned It was clear, however, that *Staph aureus* was very easy to isolate from the air in the wards and corridors of the hospital Here again, there were great variations between individual samples, but over the whole series 161 colonies of *Staph aureus* were isolated from 470 c ft of air This is an average of 1 particle infected with *Staph aureus* in 2 9 c ft of hospital air

This was our first experience of the quantitative examination of air for *Staph aureus* and we could find no reference to previous work of this type We did not know, therefore, whether this finding represented a dangerous degree of contamination We decided to assume that it did, and to do all in our power to reduce the *Staph aureus* content of the hospital air

Wound Dressing

Dressings were normally done in the ward The techniques used were generally satisfactory but there was considerable variation in method and efficiency None of the nurses had seen the Medical Research Council memoranda (1941, 1951) on the control of cross infection in hospitals, and some of the surgeons were unaware of the existence of these publications

Sterilising Methods

The methods were selected by the sister in charge of each ward and varied from relative inefficiency such as the use of glycer thymol co *B.P C* for clinical thermometers, and surgical spirit for syringes, to the enthusiastic use of neat 'Lysol' for cleaning baths and storing instruments

Preparation of Patients for Operation

On the day before operation the skin of the operation area was shaved and then treated with a disinfectant (several different disinfectants were tried between 1942 and 1952) After this preparation the skin was covered with a sterile towel This treatment was done in the ward with the patient in his own bed The process was repeated on the morning of operation The patient was than transferred from his bed to a trolley, covered with blankets, and taken to the operation theatre

During the patient's absence his bed was remade with clean sheets but the same blankets, and it was taken to the theatre at the end of the operation

Use of Antibiotics

All major operations were performed under an "umbrella" of penicillin This was begun on the day before operation and, when the patient made an uneventful recovery, was continued until about the tenth day, or until the risk of wound infection was thought to have passed After 1948 most patients were also receiving streptomycin for the treatment of tuberculosis

Isolation of Infected Patients

Patients with infected wounds were usually, but not always, put into single rooms The rooms, however, were part of the general ward unit and communicated with the main ward corridor These patients were attended by the same nursing and domestic staff as the uninfected patients

THE LAUNDRY

Cotton articles were washed in the conventional rotary machines with an anionic detergent During this process the temperature was maintained at 100°C for ten minutes or more After drying, the articles were steam-pressed and again reached a temperature of 90 to 100° C "Sweep sampling" showed them to be sterile at the end of the process

Woollen articles, including blankets, were washed with the same detergent but at a temperature of only 37–40°C and were not steam pressed

Articles marked by the ward sister as being taminated " were soaked in a cresolic disinfectant so of uncertain concentration before going throug washing process These items represented only a part of the work undertaken by the laundry

Blankets were examined at various stages i laundering process, and it was abundantly clear th methods used were not able to rid the dirty blank *Staph aureus* Other woollen articles gave results s to those from the blankets, although the initial and the residual contamination was not so heavy results were not surprising, since the orthodox temperature wash for woollens at 37°C could n expected to destroy micro-organisms

Air sampling in the laundry readily yielded *S aureus* It was therefore thought possible that recon*nation of* washed articles might occur in the centr hydroextractors in the manner described by Churcl Loosh (1953) , but in the type of machine used i laundry we found no evidence of this

THE PATIENTS AND STAFF

In May, 1952, swabs were taken from the nose hands of all the surgical patients and from all the in the surgical wards and operation theatre The re are summarised in the first line of table IV This shows that the *Staph aureus* carrier rate, and the pr tion of persons in the hospital carrying penicillin resi strains, is greater than that for the general popula This is a well-known phenomenon and has been desc by several authors It is particularly significant that of the hospital population were carrying *Staph a* of the phage types which caused most of the infect and which were easily recoverable from the air and of the hospital Dr R E O Williams tells us that tl types do not form a large proportion of the stra isolated from persons outside hospitals

TABLE IV—NOSE AND SKIN CARRIAGE OF *Staph aureus* AMO PATIENTS AND STAFF BEFORE AND AFTER REORGANISA

—	Persons examined	Staphylococcus found in				Persons carr	
		Nose and skin	Nose only	Skin only	Total	"Hospital *types*"	Pe cill re ta stra
May, 1952	50	20	7	10	37 (*74%*)	25 (*50%*)	21 (
December, 1952	40	7	7	1	15 (*37 5%*)	1 (*2 5%*)	8 (

THE OPERATION THEATRE

General Construction and Ventilation

A plan of the theatre suite is shown in fig 2 The t theatres and the sterilising room were ventilated by plenum system which delivered filtered and heated air ceiling level This plant was designed to deliver into ea room eight changes of air per hour In the main theat air was extracted by fans at both ceiling and floor leve These extractor fans were intended to remove only tw thirds of the incoming air so as to ensure, a positi pressure in the theatre The situations of the air inle and outlets in the main theatre are shown in the figure

Equipment

A good deal of apparatus was normally kept in th theatre Some of this was used infrequently and th cleaning of it made heavy demands on the staff

The main *lamp* was suspended from the ceiling in *the* nor position over the table, and could be tilted during an operatio We thought it possible that when this was done dust particle which had settled on it might roll off into the wound. Gissan (1953) has drawn attention to this danger

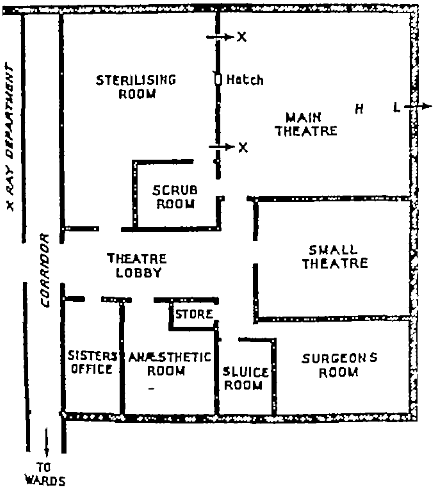

Fig. 2—Plan of operation theatre unit. X = sites of high level air inlets in main theatre. H = site of high-level air outlet in main theatre L = site of low-level air outlet in main theatre.

During an operation, blood and sometimes pus was aspirated with a *sucker* an electrically driven pump being used to evacuate a glass bottle into which the material was drawn On one occasion, when an empyema was being evacuated it was noticed that the pus entered the bottle in the form of a coarse spray and it was thought likely that some of this spray might pass through the pump and out through the exhaust outlet into the air of the theatre A few experiments with liquid cultures soon showed that this in fact did happen with certain types of pump and might therefore lead to serious contamination of the theatre air

Cleaning and Sterilisation of Instruments

Used instruments were washed and then sterilised by a nurse working in the sterilising room This handling of potentially infected and of sterilised instruments in the same room, and often by the same person seemed unwise.

Sterilising techniques were examined Although no serious faults were found the device fitted to the autoclave for recording the time and pressure was not working so defects which might develop in the apparatus could pass unnoticed.

The Clothing of the Staff

The surgeons and table nurses changed from their everyday outer garments into freshly laundered cotton clothing before entering the theatre and putting on sterile gowns. But some anæsthetists nurses and porters did not change in this way We felt that the clothing of hospital staff might contain pathogenic staphylococci and we were able to demonstrate that in some instances this was true Duguid and Wallace (1948) showed that an ordinary surgical gown could not be relied on to prevent the dissemination of organisms from underlying infected clothing

Not all the masks in use contained a layer of impervious material as recommended in the M R C memorandum of 1941 and by Devenish and Miles (1939) The value of an impervious layer is that it reduces the projection of droplets during speech

Glove punctures were common and often passed unnoticed during the operation Tests suggested that more than half of the gloves used by the surgeons and their immediate assistants became punctured

Movement of Staff during Operations

Careful observation of staff during operations showed that a good deal of unnecessary movement took place We noticed that nurses and porters tended to rush about when engaged on urgent duties and to wander about when unoccupied Bourdillon and Colebrook (1946) have already shown that the passage of a gowned person across a room causes an appreciable rise in the number of airborne organisms We have confirmed this observation

During an operation lasting one and a half hours the doors between the theatre and the sterilising room or corridor were opened 60 times Repeated observations in this and in other theatres showed that this was not unusual Nurses frequently went to fetch equipment which could have been brought in before the operation started or removed equipment which could well have remained in the theatre until the operation had finished Some of the journeys served no apparent purpose at all Anæsthetists sometimes left and returned to the theatre several times during an operation and often bobbed about in an undesirable way The opening and closing of a door in an operation theatre causes an immediate rise in the number of airborne organisms It does this firstly by causing a draught which raises particles from the floor and secondly by allowing contaminated air to enter the theatre from the adjacent room or corridor

There was sometimes more talking than seemed desirable, especially if no senior member of the surgical staff was present. The talking, usually by those in the immediate vicinity of the wound was sometimes continuous and often of a social rather than a technical nature

The Handling of the Patient

When the patient reached the theatre unit he was taken to the anæsthetic room and anæsthetised on the trolley He was then wheeled into the theatre lifted on to the table turned into the required position and covered with the blankets from the trolley These procedures, as will be shown were followed by an enormous rise in the number of airborne organisms At the end of the operation the patient's bed was brought into the theatre and he was lifted into it directly from the table

At the beginning and end of operations for resection of the lung bronchoscopy was often performed in the theatre During bronchoscopy the patient coughed a good deal, and as a result heavy contamination of the theatre air appeared to be inevitable

Air Sampling

Bearing in mind the work of Bourdillon and Colebrook (1946) we felt that the main investigations here should consist in air sampling during operations These showed that conditions were far from satisfactory and that the counts did not fall within the limits suggested by Bourdillon and Colebrook

Fig 3 shows that very high plate counts were obtained immediately after the arrival and departure of the patient and that during the quieter periods of the operation the counts were well above the 2 0 colonies per c ft recommended by Bourdillon and Colebrook. From 95 c ft of sampled air 21 colonies of *Staph. aureus* were isolated (1 colony to 4 5 c. ft of air) this seemed to us to represent a dangerous degree of contamination

Culture plates exposed in different parts of the theatre during an operation showed that infected particles were settling at the rate of 5 1 per sq ft per min.

The ' die-away ' rate of airborne organisms in the theatre indicated that the effective ventilation did not exceed two to three changes per hour, which was very much less than the intended capacity of the plant Furthermore smoke tests showed that air flowed into the theatre from the lobby and corridor and not in the reverse direction as was intended A fluorescent powder scattered in the corridor was detected within a few minutes by an

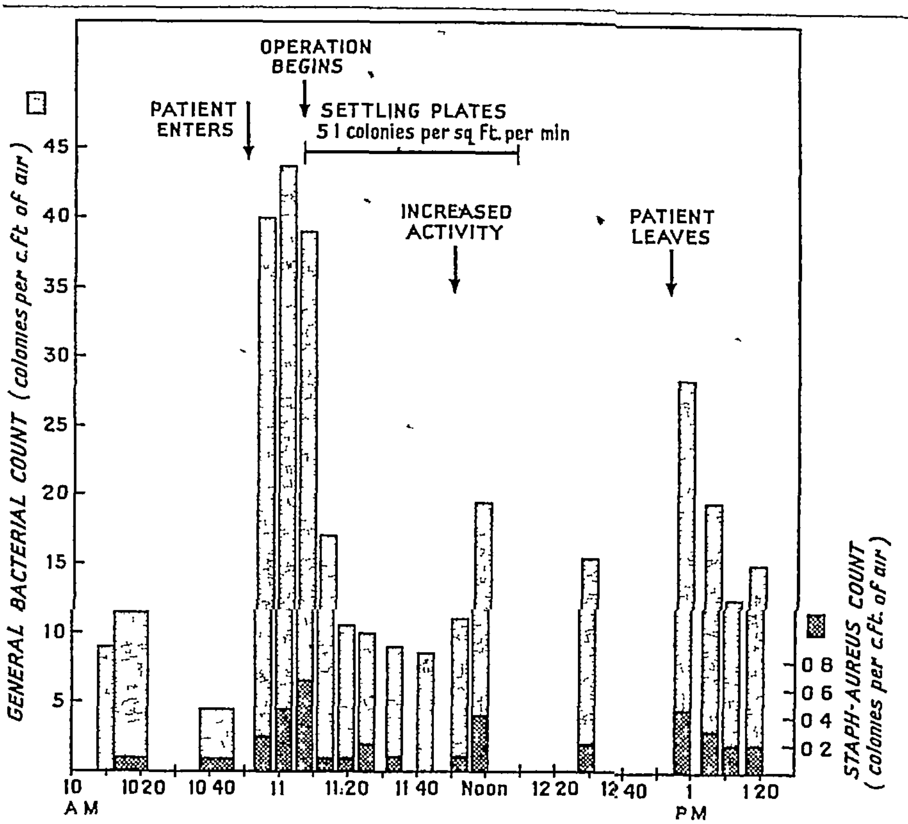

Fig 3—Air-sampling in theatre before reorganisation

ultraviolet lamp inside the theatre The speeds of the fan motors were then checked, and it was found that the extractor fans were removing more air than was being delivered by the inlet fan, thus accounting for the flow of air into the theatre from the corridor After much inquiry it was discovered that alterations to the plant had been made by an engineer who did not realise the need for a proper relation between the air inlet and outlet rates

We also felt that the situation of an air outlet in the ceiling at the same level as the inlet was a bad arrangement Smoke tests confirmed this opinion, for they showed that most of the incoming warm air passed across the ceiling and out through the high-level outlet, having made little or no contribution to the ventilation of the main body of the room

CONCLUSIONS

These investigations led us to believe that infection of the air in the wards and operation theatre was a likely cause of the high rate of wound infection

Remedial Measures

The surgical wards were closed, cleaned, and redecorated, and all the bedding autoclaved Plans were made to modify each of the hospital procedures which seemed likely to be responsible, even in a minor degree, for the spread of infection These modifications were explained to the doctors and nurses in a short series of lectures, in which each proposed change was supported by reference to the bacteriological findings The recommended procedures were then set out in the form of a pamphlet which was issued to all medical and nursing staff We think it is essential that the approved methods for hospital procedures should be available to junior staff in written form, for otherwise there is a tendency for minor modifications to be introduced without the permission or knowledge of the senior staff

Of the changes made we shall mention the more important

THE WARDS

Cleaning Methods

The ward dusting was done with a wet cloth Wooden floors were oiled with "Puremor 210"† and were re oiled every three weeks This led to a noticeable reduction in the spread of dust when the floors were swept Terrazzo floors cannot be satisfactorily oiled and dust was removed from these with vacuum cleaners, brooms were used

No attempt was made sterilise walls and floors Sc bing and washing, when ne sary, were done with ordi soap and water

Bedding

Nurses were asked to gowns when making beds *to handle the bedding with* little disturbance as possi Blankets were moved ge rather than flung about, mattresses were turned rather than thrown over

All wards were equipped linen blanket covers which so designed that all the blankets of each bed were co pletely enclosed These co replaced the normal top sheets and were changed weel

Whenever blankets were removed from a bed on discharge, transfer, or death of a patient they were to the laundry for sterilisation, washing, and oil before being returned to the ward Patients who remai in hospital for more than three months were given fr blankets at the end of that time We originally reco mended that this be done every two weeks, but, beca the supplies of blankets and the available laundry sterilising facilities were insufficient to meet this dema we had to accept the longer interval

Pillows and mattresses were sent for sterilisation at same times as the blankets

Bedding was taken to the laundry in canvas ba unsorted and uncounted, so as to reduce the disseminati of organisms in the wards

Wound Dressing Techniques

The advantages of dressing wounds in a specia designed and plenum-ventilated dressing room ha already been pointed out (Bourdillon and Colebro 1946, Colebrook et al 1947, 1948), but, as it w not immediately possible to provide such rooms, dre ings continued to be done in the wards The reco mended technique was that described for one dresser a one assistant in M R C War Memorandum no 6 a summarised in M R C Memorandum no 11 Salie points were emphasised in the ward instruction sheet

Sterilising Methods

Metal instruments, syringes and needles, bowls, dishe and rubber articles were boiled for five minutes immed ately before use Thermometers were kept in liq borac et formaldehydi, each patient having his own thermo meter Baths were cleaned with cetrimide immediatel after use Patients' handkerchiefs were discarded int 2% cresol solution Crockery was not sterilised but wa washed with soap and very hot water, then rinsed in clea hot water The washed articles were left to drain and dry drying cloths were not used (Higgins and Hobbs 1950).

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† Manchester Oil Refinery

Handwashing

Members of the staff were asked to wash their hands before starting work at the beginning of each spell of duty, before leaving the ward at the end of a spell of duty before preparing patients meals, before and after doing dressings after attending to a patient's nasal or oral toilet after dealing with excreta after collecting material for pathological examination after handling or emptying sputum mugs, after bedmaking after sneezing or blowing the nose after using the toilet and whenever else common sense suggested that the hands may have become contaminated

For most of these purposes an ordinary ' social wash was deemed adequate but at the beginning of each day and before doing dressings fingernails were scrubbed thoroughly and the hands were scrubbed lightly with a soft brush It was emphasised, however that this will not sterilise the hands and that regular vigorous scrubbing with a stiff brush makes the hands rough and more liable to carry infection After being washed hands were always dried and the old practice of doing dressings with wet hands was forbidden

Members of the staff with staphylococcal lesions on the hands and forearms were not allowed to remain on duty in surgical wards

Preparation of Patients for Operation

On the evening before operation the patient s head was washed and the skin of the operation area was shaved if necessary No disinfectants were applied to the skin at this stage since there is no substance available which will keep the surface of the skin sterile for more than a few hours. On the day of his operation the patient was given a bath or if he was unable to go to the bathroom a blanket bath. This was arranged so that it was finished about an hour before the time of the operation After the bath the patient did not return to the ward or his own bed, but went on a trolley to a ' preparation room, ' where the skin of the operation area was cleaned with 0 5% aqueous cetrimide solution dried with surgical spirit then ether and painted with 1–2% iodine in 70% ethyl alcohol. Gardner and Seddon (1946) and Gardner (1948) have shown that iodine is the most effective of the usual skin disinfectants A 2% solution is bacteriologically preferable, but skin reactions are less common if a 1% solution is used The area was not bandaged and the patient was dressed in a freshly laundered operation gown or pyjama suit and a cap which completely covered the hair He then waited on the trolley in the preparation room until he was taken to the theatre

During his absence, the patient s bed was stripped wiped over with 2% cresol, and remade with autoclaved mattress, pillows, and blankets, and freshly laundered sheets.

The Use of Antibiotics

The routine penicillin cover for " clean operations was abandoned but *before some operations involving* the division of a bronchus, suitable antibiotics were used Established pyogenic infections were treated with antibiotics to which the responsible organisms were found to be sensitive whilst streptomycin of course continued to be used for the treatment of tuberculosis.

Isolation of Infected Patients

A special ' emergency ward was set aside for the reception of infected patients. It was, fortunately possible to use for this purpose part of a building separate from the main surgical block

Patients were transferred to it when infection seemed likely on clinical grounds without waiting for bacteriological confirmation The nursing and domestic staff looking after these patients were not allowed to work in any other part of the hospital.

THE LAUNDRY

Articles were sorted and counted after arriving at the laundry Blankets were autoclaved at a pressure of 5 lb per sq in for thirty minutes before being washed The washing process remained as before but care was taken that the canvas bags in which the articles were transported were themselves washed. After washing blankets were treated with an anionic self-emulsifiable oil (Leslie 1953) *The washed articles were returned to the wards* in baskets which were never allowed to be used for dirty laundry

THE OPERATION THEATRE

Ventilation

The faults in the ventilation plant were rectified and the ceiling air outlet was closed Twelve room changes of air per hour were provided and smoke tests showed that no air entered the theatre unit except by the inlet ducts At all local points the flow was outwards

Equipment

No more apparatus than was necessary for the operation was kept in the theatre All major items of equipment were wiped with 2% cresol solution each day and the surfaces of the theatre lamp were smeared with liquid paraffin to immobilise dust particles

The sucking machines were modified so that the exhaust was conveyed through rubber tubing and a brass pipe in the window frame to the outside air

Cleaning and Sterilisation of Instruments

Used instruments were washed in the sluice room and boiled before being taken to the sterilising room The faulty recording device on the autoclave was repaired so that the theatre sister had a permanent record of the temperature pressure and duration of each sterilising operation Regular bacteriological checks on the efficiency of the autoclaves were made

The Clothing of the Staff

It was arranged that no person would enter the theatre during an operation session without first changing into freshly laundered cotton clothing and putting on theatre boots, gown cap and a mask containing cellophane Female members of the staff made sure that all their hair was covered by their caps.

The surgeon and his assistants scrubbed their finger nails with a soft brush and then washed their hands for ten minutes before drying them with spirit and a sterile towel and putting on gloves If a glove was known to be punctured during an operation another was immediately put on over it Some surgeons wore thin cotton gloves over the rubber ones in the hope *that this would* reduce the number of punctures. These precautions were considered important but in spite of them unsuspected punctures remained numerous

Movement of Staff During Operations

During the operation movement of staff was reduced to a minimum, and to encourage this seats were provided for all occupants of the theatre

Some of the dangers of *opening theatre doors during* an operation can be reduced by the use of air locks But we preferred to forbid the opening of doors during the period of exposure of the wound At first it was objected that this would be impossible but once the nursing staff had accustomed themselves to the idea they found no difficulty in making their preparations accordingly

Talking was reduced to a minimum

Handling of the Patient

When the patient reached the theatre unit he was transferred to the operation table which was waiting in the anæsthetic room He was then covered with a large piece of freshly laundered turkish towelling We preferred this to blankets because it may be boiled and is thus sterilised during the normal laundry process Even when not sterile it is less liable to scatter infected particles than is a woollen blanket The taking of blankets into the theatre was strictly forbidden , and we believe that this is a rule of great importance which should be applied in every operation theatre

The patient was anæsthetised on the table and, *whilst still in the anæsthetic room,* was turned into the required position for operation The theatre doors were then opened gently and the table was pushed slowly in with a minimum of fuss This routine was designed to avoid the manipulation of the patient and his coverings inside the theatre

The patient's skin was painted with 1–2% alcoholic iodine This was applied three times and each application was allowed to dry before the next was applied We had no reason to believe that three applications were more effective than one, but this routine ensured that the iodine was allowed at least three minutes in which to act

After the operation, bronchoscopy, if necessary, was performed in the small theatre. Transfer of the patient from the table to his bed or to a trolley was done in the lobby These procedures were never carried out in the main theatre

Results

After the hospital had been working to the new routine for a year, the situation was reviewed, and some of the bacteriological investigations were repeated

The Wards

Floor dust was examined as before *Staph aureus* could still be isolated, but only occasional colonies were found, 3 being the greatest number seen on any one plate

The load of organisms in used blankets was much reduced *Staph aureus* was still easily isolated from the blankets of some patients but the number of blankets yielding this organism was very small

Air sampling revealed a striking reduction in the numbers of airborne *Staph aureus* From 320 c ft of air collected in representative parts of the surgical wards and corridors, 3 colonies of *Staph aureus* were isolated This represents 1 colony to 106 c ft of air and compares well with 1 to 2 9 c ft obtained a year earlier Of the 3 colonies isolated, 1 was resistant and 2 were sensitive to penicillin

The Patients and Staff

Nose and skin swabs taken six months after the reopening are shown in table IV The *Staph aureus* carrier-rate was almost halved, and there was a striking reduction in the frequency of the types previously prevalent When swabbing was repeated after twelve months' work under the new conditions, the results were essentially the same as those at six months, but on this occasion phage-typing was not done

The Operation Theatre

Air sampling was done on numerous occasions during the twelve months after the reorganisation An immediate improvement was observed and this was maintained during the year Fig 4 shows the results from one of these samplings During the whole series 27 colonies of *Staph aureus* were isolated from 1390 c ft of air This represents 1 colony to 51 c ft , compared with 1 colony to 4 5 c ft during our first observations The settling rate of infected particles was 0 6 per sq ft per minute

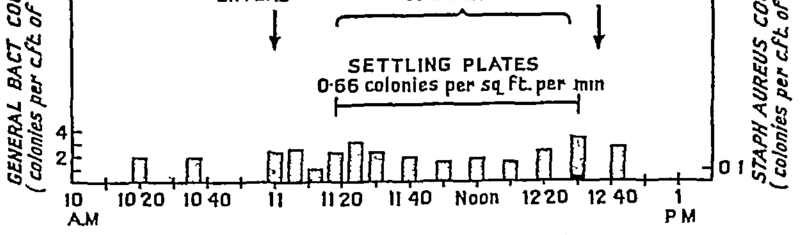

Fig 4—Air-sampling in theatre after reorganisation

TABLE V—INFECTION RATES AFTER REORGANISATION

Year	No of major operations				No of infections
	Thoraco plasty	Lung resection	Other	Total	
August–December, *1952*	*95*	*25*	*16*	*136*	*7 (5 1%)*
1953	340	86	4	436	17 (3 9%)
1954	*284*	*63*	*20*	*387*	*24 (6 2%)*

Infection rates

Comparison of table V with table I shows an immediate reduction in the infection-rate During the latter part of 1952 the rate was about half that recorded at the beginning of the year A further small but welcome reduction followed in 1953 and continued into 1954, until a sharp outbreak of 9 infections occurred during a period of eight weeks The outbreak coincided exactly with the attendance in the theatre of an assistant who was temporarily a nose and skin carrier of *Staph aureus* of bacteriophage type 79 This was the type isolated from each of the 9 infected patients It had not been isolated before and only appeared once again after the assistant concerned had been freed from it Apart from these 9 cases, the infection rate in 1954 was almost exactly the same as that in 1953

Discussion

We do not believe that our experience of wound infection is an isolated one , the problem probably arises in many surgical units, and the excellent surveys of staphylococcal infection by Howe (1954) and Spink (1954) show that it is not restricted to this country

The first important point which we had to decide was whether the wounds became infected at the time of operation or afterwards in the wards It is possible that during the earlier period, when sepsis became apparent two to three weeks after operation, ward infections were responsible It is also possible, however that at that time penicillin was still sufficiently effective against the prevailing organisms to delay sepsis which it was not able to prevent The progressive shortening of the interval between operation and sepsis could be due to the waning efficacy of penicillin against these infections , or alternatively to a steady increase in the virulence of the responsible organisms as a result of serial passage through the human subject We have no evidence to support either of these hypotheses , nor have we any other explanation to offer

It did seem that, in 1952 at any rate, infection in the theatre was more likely, because symptoms and signs of infection usually appeared about the fourth day after operation Dressings were not normally changed until the tenth day (when the stitches were removed) and until this time the wound was well sealed with adhesive plaster Moreover, it seemed unlikely that an infection acquired in the *ward would penetrate* from the surface of the skin into the deep spaces of the chest without giving rise to signs of infection in the superficial parts of the wound. We do not exclude the possibility of wounds becoming infected in the ward and we have noted the absence of efficient isolation of patients and dust suppression in the wards But we believe that these mainly acted by permitting the earlier septic wounds to infect bedding and the noses and skins of patients and staff, thus providing an increasing reservoir of dangerous organisms We therefore did all in our power to reduce the dissemination of bacteria in the wards. The measures adopted were probably responsible for the observed reduction in the *Staph aureus* carrier rate and they may have reduced the numbers of airborne organisms which reached the theatre by way of the corridors

Our next problem was to decide what was the mechanism by which the organisms entered the wound Our reasons for believing that airborne infection was of prime importance were based on the observations (1) that bacterial counts on the theatre air were very high and (2) that until 1954 we were not able to find any consistent association between the infecting organisms and a surgeon (or assistant) who was a known skin carrier Furthermore, there was no evidence of a serious breakdown in the traditional surgical aseptic techniques or in the theatre sterilising methods We therefore directed our attention to reducing the numbers of airborne organisms in the hospital in general and the operation theatre in particular The immediate results seemed to justify this action

We could find no explanation for the 1954 incident ier than contact infection from the known carrier We l not, however determine the mechanism of this ntact No special precautions such as those evolved Devenish and Miles (1939) were being taken at that ie to prevent infection through the sleeves of the gown l we think that this fault may have been responsible hough the surgeon concerned (a nose and skin carrier the responsible organism) had no demonstrable septic ion.

This incident was important because it reminded us it whilst our attention has been focused on airborne ection we had overlooked another method of infection ich had already been described We draw attention this point because investigations in several other gical units show that insufficient attention has been id to the important paper of Devenish and Miles We ree with these writers that the sleeves of a surgeon's wn should be waterproof though we have not yet ind a satisfactory way of achieving this with any mfort The passage of skin organisms through unsus ted glove punctures is also a possibility and we ard this problem of glove punctures as serious Many geons are known to be skin carriers of *Staph. aureus* d our observations suggest that they must often rform operations during part of which they are wearing nctured gloves. We have evidence suggesting that the nctures sometimes occur as a result of a shearing strain ther than a direct prick. The solution seems to lie in e use of thicker gloves, but we suggest that manufac rers should give urgent attention to the production of better quality glove

The fact that many of the infecting organisms were sistant to penicillin was probably due to the large nounts of penicillin which were being used as a routine r all operation patients. This explanation is supported r our more recent observations not reported here, that e proportion of resistant strains from these sources is clining now that the routine administration of enicillin has been stopped Association between the revalence of resistant organisms and the amount f antibiotic used was pointed out by Clarke et al 1952)

The sterilisation of blankets by steam was very effective nd continued throughout the period reviewed in this aper It did however prove expensive because of rious damage to the blankets which shrunk and 'felted' very badly More recently heat sterilisation of lankets has been abandoned in favour of a method using a quaternary ammonium compound in conjunction with normal laundering This method (Blowers and Wallace 1955) is so far proving satisfactory

In calculating the incidence of infection for each year we have included all instances in which *Staph aureus* was isolated When the rates of infection before and after the reorganisation are compared (tables I and V) an important point has to be borne in mind During the period before the reorganisation and before the hospital had become 'infection conscious' only the major infections were investigated and recorded in the patients' notes After the hospital was reopened every slight infection no matter how trivial was investigated and recorded In some instances *Staph aureus* was isolated on one occasion from a small area of redness in a wound This difference of approach during the two periods will of course tend to reduce any apparent success in the prevention of infection In an attempt to assess this discrepancy we have tried to estimate how many of the recent infections were of such a nature that they might have been missed if they had occurred during the earlier period The proportion we think, is about a fifth

We believe that the reduction in the incidence of infection was due to the measures taken The most important of these in our view were the isolation of infected patients the regular sterilisation of all hospital bedding improvement in the ventilation of the operation theatre and the removal of blankets from the theatre In spite of the precautions here described occasional infections still occur and more investigation will be necessary before they can be prevented Meanwhile however we are sure that the line we are taking in relying on strict asepsis is the correct one We believe that it will ultimately be more rewarding than a liberal use of antibiotics—a practice which, if continued may lead to the widespread distribution of strains of organisms resistant to all the agents at our command

Summary

In a chest surgery unit the infection of wounds including intrathoracic spaces with penicillin resistant *Staphylococcus aureus* became so frequent that in 1952 it was necessary to close the unit

Many patients and members of the staff were nose and skin carriers of the responsible organisms.

Staph aureus was easily isolated from air and dust in the wards and corridors. This was mainly attributed to the lack of isolation facilities for infected patients and the use of unsterilised blankets.

In the operation theatre general bacterial and *Staph aureus* counts on air sampled during operations were high Inefficient ventilation the use of blankets in the theatre and excessive activity of the staff contributed to this unsatisfactory state of affairs

As a result of these investigations it was considered that most of the infections occurred at the time of operation and that the infecting organisms were airborne

Correction of faulty procedures was followed by a reduction in the infection rate from at least 10 9 to 3 0% The *Staph aureus* carrier rate among patients and staff fell from 74 to 37% Later the infection rate rose to 6 2% possibly because insufficient attention had been paid to the prevention of infection from the surgeon's skin

Infections cannot be prevented indefinitely by the liberal use of antibiotics, and these should not be used as a substitute for scrupulous aseptic technique

We are greatly indebted to the late Dr R Cunningham who provided the facilities for much of this work. We also wish to thank Dr W G Patterson and Dr G S Wilson for their interest and helpful advice Dr S Wray for his assistance especially during the early stages of the investigation the members of the surgical teams for their many suggestions and their whole hearted coöperation the nursing staff of the hospital and in particular Sister Gladys Jones for the thoroughness with which they carried out our suggestions Dr R E. O Williams for the phage typing for the first air sampling and for the loan of a slit-sampler Mr W H

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INTERMITTENT CLAUDICATION AND SYMPATHECTOMY

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SENIOR SURGICAL REGISTRAR, ABERDEEN ROYAL INFIRMARY

Occlusion of the main vessel of the lower limb secondary to atheroma is commonly segmental (Leriche et al. 1937) and in the great majority of cases affects the femoral artery in Hunter's canal (Lindbom 1950, Krahl et al 1954, Lowenberg 1954, Mavor 1955) In a smaller proportion of cases the popliteal artery is the site of the initial thrombosis (Lindbom 1950, Mavor 1955) It is only under these conditions of limited main vessel thrombosis that the collateral circulation forms an adequate by-pass (Learmonth et al 1944), returning a distal pulse to the main vessel, with the result that blood reaches the periphery at high pressure and with a good volume flow (Learmonth 1950) Thus the resting nutritional needs of the limb are met, and symptoms limited to periods of exercise In these circumstances the classical exercise symptom is intermittent claudication, with pain in the calf muscles (Bouley 1831, Brodie 1846) With propagation of the main vessel thrombosis to involve both femoral and popliteal arteries in continuity, rest pain and ischæmic changes in the foot arise, but intermittent claudication remains the dominant complaint in half the cases (Mavor 1955)

Until recently the treatment of intermittent claudication with pain in the calf has resolved itself into an endeavour to improve the collateral circulation, the most effective way of doing so being by lumbar sympathectomy However, it has always been questionable whether this operation is worth-while in the treatment of exercise pain itself, and when it is undertaken its justification often lies in its probable effect on other manifestations of the disease With the recent advent of direct surgery for the occluded artery (Hufnagel and Eastcott 1950, 1951, 1952, Fontaine and Hubinont 1950, Julian et al 1952, Rob and Eastcott 1953), with its particular application to cases of segmental main-vessel thrombosis, the place of sympathectomy in treatment demands re examination

General Considerations

There is no doubt that lumbar sympathectomy has been used in treating intermittent claudication in atheroma with secondary thrombosis without regard to the extent or the site of the thrombosis or the collateral circulation. There has been no attempt to correlate the results of operation with the level of the main-vessel block (*British Medical Journal* 1952), although the results of sympathectomy are said to be better where the thrombosis is highly placed (Telford and Simmons 1946) As regards the collateral circulation, for a considerable period after an episode of main-vessel thrombosis, possibly as long as six months (Silbert 1938, Boyd, Ratcliffe, Jepson, and James 1949, Hamilton and Wilson 1952), exercise tolerance may show progressive improvement as the collateral circulation develops Sympathectomy should probably not be undertaken during this period (Learmonth 1950), if it is, assessment of its effect will be difficult

There are other difficulties in postoperative assessment The operation itself cannot be "standardised," because of the anatomical variations in the sympathetic chain, and, though most investigators (Leriche and Stricker 1933, Learmonth et al 1944, Pearl and Michels 1952, Atlas 1953, Lilly et al. 1954) are now agreed that the first lumbar ganglion should be removed along with the chain down to the level of the aortic bifurcation, these variations, in particular the presence of ganglia with the psoas muscle (Boyd and Monro 1949), make called "inadequate" sympathetic denervation at tu unavoidable

Probably the greatest problem lies in acquiring reliable postoperative yardstick with which to measu improvement Intermittent claudication is a varial subjective symptom and cannot be considered an accura index of peripheral muscle ischæmia Nevertheless, it is the symptom under treatment, assessment mu relate to its general trend postoperatively This may more readily determined over a period of time on t basis of the patient's own observations than by t employment of exercise tolerance tests made und controlled conditions or with artificial aids (Boyd et 1949, Shepherd 1950, Hamilton and Wilson 1952)

Present Investigation

Taking these points into consideration I have studi the effect of lumbar sympathectomy on intermitte claudication with pain in the calf in 54 cases of main vess thrombosis secondary to atheroma, where (on the bas of arteriography) the site and the extent of the thrombos were known preoperatively

A complete clinical examination, with analysis of urin blood Wassermann and Kahn tests, a full blood-coun estimation of blood urea, radiography of the chest a legs, and electrocardiography, has been done in each cas No abnormalities were found Femoral arteriograph was done in 51 cases, and the diagnosis was based on th clinical and arteriographic findings, supported in eve case by exploration and examination of the main arte of the limb, either femoral or popliteal, with occasion confirmation in difficult cases from histological examin tion of thrombosed arterial segments In the 3 other cas a diminished or absent femoral pulse necessitated aorto graphy, and no main vessel was explored

The main symptom in all the cases was intermitten claudication with pain in the calf This was unilateral in all the cases and had been present for at least six months. The exercise pain was considered stationary, exercise tolerance tests carried out twice daily in hospital fo several days preoperatively confirming this impression Pain was of the classical type, increasing in severity wit walking until the patient found it necessary to rest, wh the pain was relieved

The distribution of age and sex was as follows

Age (yr)	Male	Fem
31–40		
41–50		
51–60		
61–65		

body weight A similar dose in the present case had no clinical effect Histological observations on alloxan treated hyperinsulinic tumours are very rare (Gordon and Olivetti 1947, Conn and Hinerman 1948 Böttger et al 1952 dePeyster and Gilchrist 1954) There is general agreement that alloxan has no effect on the tumour tissue

Summary

A case of rapidly growing cancer of the islets of Langerhans in a woman aged 78 is reported

A new and easy diagnostic test is proposed for the diagnosis of hyperinsulinism—namely the measurement of the rate of disappearance of intravenous glucose

Treatment with cortisone produced only temporary benefit and subsequent treatment with alloxan had no clinical effect

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CERVICAL LUNG HERNIA

REPORT OF A CASE

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HERNIATION of the lung is in itself rare and in the following case it was unusual in both site and causation

Case-report

One morning in the autumn of 1947 Mrs. A, aged 51 who had had no illness since childhood noticed a swelling in her neck. It had subsided by the evening, leaving nothing more than stiffness in the neck ; and by the time she visited her doctor there was nothing beyond her story on which to base a diagnosis.

This sequence of events was repeated once in 1948 and several times in the early months of 1949 The patient was now noticing, too that the swelling gave rise to an annoying cough, with much wheezing and to a sensation of throbbing in the neck

In June 1949 she was able for the first time to show the swelling to her doctor and later in that month she was sent to the chest clinic. Here the only abnormality found was a swelling in the right supraclavicular fossa the size of half an orange It was tense, resonant, and non pulsatile and on auscultation no added sounds were heard over it When manual pressure was applied to the swelling—the patient meanwhile breathing deeply—it shrank in a minute or two to a third of its former size Subsequent radiological examination which included fluorography and barium swallow showed no abnormality

These findings strongly suggested hernia of lung and the patient was admitted to hospital But the condition was occurring only intermittently and for a few hours at a time and, though she stayed in hospital for several weeks, the surgeon got no chance to observe her hernia. Other investigations at this stage were unrevealing

The herniation recurred in September 1949 it persisted for several days, and was accompanied by pain More trying to the patient was a worsening of the sensation of throbbing in the head and neck, which suggested some interference with the return of blood from the head These symptoms were regarded as severe enough to justify an attempt at surgical exploration and relief and the patient was readmitted to hospital where in November Mr W P Cleland performed a right thoracotomy

Operation

No pleural adhesions Upper lobe small otherwise normal The posterior part of the aperture of the thorax appeared intact [illegible] but just in front of the innominate vein [illegible] between it and the internal mammary artery the pleura was lax and redundant and could be elevated [illegible] for about one inch with ease and similarly [illegible] invaginated up into the neck for at least one inch an [illegible] parietal pleura and extrapleural tissues were [illegible] from this area to form a small pouch Into this pouch [illegible] square of tantalum gauze was inserted and fixed by sutures to adjacent structures : this appeared to [illegible] a reasonable area of support

Follow-up

Convalescence was uneventful and the tantalum gauze remained in place Last seen in January 1955 the patient was very well There has been no recurrence of the herniation and she has not been troubled by any other symptoms of chest disease

Discussion

It is not surprising that lung herniation should be rare for the negative pressure within the thorax ensures that if the chest wall is injured the elastic lung will collapse within the thorax rather than extrude itself without [illegible] the literature in 1946 Maurer and Blades found [illegible] 185 cases on record, to which they added [illegible] Since then reports have come from [illegible] and [illegible] (1948) Meakins et al. (1948), Mann et al (1949) [illegible] Wezel (1950) Bass (1950) Palazzo and Garrett ([illegible]), Freitas and Vonfraenkel (1951) and Rheinhardt and Hermel (1951)

Lung hernias are usually classified by site and by etiology and most writers have followed the classical description of Morel Lavallée (1845–47) whose review extended to cases recorded as long ago as the end of the 15th century A more modern survey is that of Montgomery and Lutz (1925), who collected 165 cases from the literature and found that of the 78 in which the site of herniation was mentioned it was cervical in only 16 Of the few cases recorded since Maurer and Blades wrote in 1946 the majority have been of cervical herniations.

The condition may occur at any age. In some cases it is clearly attributable to developmental defects in the chest wall or to defects resulting from intra uterine abnormalities or accidents. The case of Palazzo and Garrett (1951) was that of an infant whose cervical hernia was noticed at the age of 48 days : the child was born with a cleft lip and palate and with other anatomical abnormalities In many cases, however there is a convincing history of trauma—though oddly enough comparatively few cases have been recorded in times of war

Goodman (1933) states that 3 cases of lung hernia were said to have resulted from the American Civil War and that only 5 cases were found among 20 000 instances of chest wounds seen during the Russo-Japanese war Maurer and Blades state that no cases were seen during the 1914–18 war ; but their own series comprised 7 cases resulting from the 1939–45 war

Cleland (1955) has seen an unusual instance of traumatic herniation, occurring between the 5th and 6th ribs in the anterior axillary line in a farmer attacked by a bull Though the animal's horn did not penetrate the skin the blow must have torn the intercostal muscles and the pleura for a hernia of the size of a walnut appeared at the site of impact and eventually required operation. It was then discovered that the parietal pleura in the region of the hernia was abnormally thin.

In Pino and Morganstern's 4 cases the hernia appeared after thoracoplasty these cases were unusual in that the hernia produced severe pain—in one patient so intense as to lead to an attempt at suicide. So called spontaneous herniation is attributed by most writers to a combination of factors—namely, local weakness of the chest wall, associated with abnormally high intrathoracic pressure brought on by such diverse causes as excessive cough, glass-blowing, and heavy lifting

Van Wezel (1950) records an unusual case of bilateral cervical herniation in a man of 39 who had been suffering from a progressively severe winter cough, and postulates congenital deficiency in Sibson's fascia as the underlying factor

Freitas and Vonfraenkel (1951) report a cervical hernia in a boy, aged 4, who had for some months been in the habit of inflating balloons and plastic toys

In the present case no definite cause could be found The patient had little or no cough before the hernia began to appear, and such cough as she had later she attributed to the swelling

The diagnosis of lung hernia should not ordinarily present much difficulty, provided the possibility is kept in mind The presence of a swelling, often painless, which appears only after trauma or after exertions which raise the intrathoracic pressure, is suggestive

Decisions about treatment may be more difficult Though earlier writers describe various conservative measures, such as bandaging, and point to the need for a change of occupation if this has contributed to herniation, the emphasis has now, of course, shifted to surgery In 1946 Maurer and Blades felt that experience had not yet been sufficient to justify the establishment of any single remedial technique, but said that "any defect of the chest wall, regardless of size, can usually be repaired by plastic procedures involving only structures which are part of the chest wall, namely rib, periosteum and muscle" This dictum can hardly apply in cases where herniation is into the neck, and in these, it would seem, some form of prosthesis must be devised

I wish to thank Dr R D Rutherford, who referred this patient, and I am much indebted to Mr W P. Cleland both for his personal note on the operation and for the details of his unpublished case

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New Inventions

A NEW DESIGN OF SYRINGE

THE hypodermic syringe has altered but little in design since it was first introduced about a hundred years ago [1] The syringe described here differs in one essential feature it brings into action the hollow internal space of the plunger—a part of the syringe which has not previously been utilised This modification does not in any way interfere with the normal working of the syringe but greatly increases the number and type of operations that can be effected

There are two holes, on opposite sides, in the wa
of the plunger—one near the bottom, and one ne
the top—and two grooves in the outer cylinder
barrel (fig 1), the plunger can be rotated until th
holes lie opposite the grooves, when the piston indicato
line lies between the barrel indicator-lines (fig 1) Th
needle mount (C) has an incomplete circular groove an
forms a rotating tap or stopcock when fitted on to th
syringe nozzle, and the tap is closed when the need
mount comes up against the nozzle stop (The need
indicator-fin lies in the same line as the barrel indicato
lines) An opening is provided in the head (handle
button) of the piston (D) for filling or mechanical
cleaning the interior of the piston The opening is clos
with a silicone rubber plug which will withstan
sterilisation at 160°C [2]

The syringe should always be manipulated with th
nozzle pointing downwards and should never be fille
above the "Full" mark To set the syringe for ordinar
use both the indicator-fin and the piston are rotated ou
of alignment In this pos
tion the tap is open, th
holes and grooves are ou
of line, and the syringe i
operated by the usual pul
in push-out method To fi
the syringe the piston i
withdrawn, and the liqui
travels into the oute
cylinder just as it would d
with any conventiona
syringe

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[1] Mogey G A. *Brit med J* 1953, ii, 1180

[2] Nairn R C Fraser K B *Ibid*, 1954 ii 171

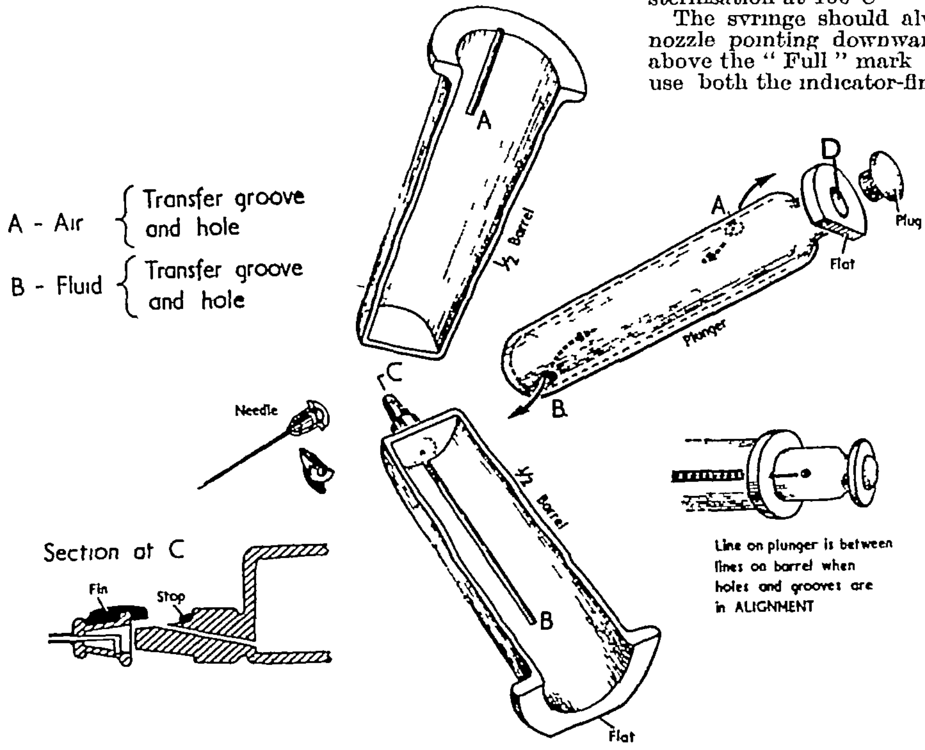
A - Air { Transfer groove and hole
B - Fluid { Transfer groove and hole
A
½ Barrel
D
A
Plug
Flat
Plunger
B
C
Needle
½ Barrel
B
Flat
Section at C
Fin
Stop
Line on plunger is between lines on barrel when holes and grooves are in ALIGNMENT

Fig 1

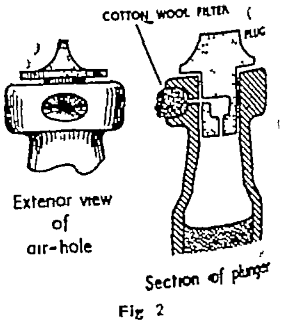

Fig 2

When the syringe is being used for its special purpos he tap and piston are rotated into alignment with th ap closed and the holes opposite the grooves The piston is now pushed in, and this forces the fluid in the outer cylinder to travel through the lower groove and lower hole of the piston into the hollow piston After the liquid has thus been transferred the piston is rotated so that the grooves and holes are out of alignment The piston is now air-locked in this position It cannot slip out by accident, being firmly anchored by vacuum When the injection is to be given, the action is reversed—i.e., the holes and grooves are once more brought into alignment, and withdrawal of the piston transfers the required amount of liquid back into the outer cylinder ready for injection

If the operator is working blind under emergency conditions he can still operate the syringe because the piston and barrel are provided with flats (fig 1) which can be aligned by touch The needle as already mentioned is brought into alignment by rotating it against the stop

The special advantages of the syringe are:

(1) There can be few users of a syringe who have not experienced humiliation and irritation during venepuncture on finding the syringe half full of air and the required quantity of blood unobtainable despite the needle being in the vein This impasse is easily overcome by turning the present syringe for a moment into alignment and pushing in the piston, so releasing the unwanted air Another turn out of alignment and venepuncture may be proceeded with

(2) In general practice it is convenient to be able to pre load the syringe before setting out to give domiciliary injections. Simil r c onsi rat ons apply to injections which have to be [illegible] ler field conditions—e g in veterinary practice

(3) A [illegible] temporary storage container the syringe may be [illegible] ful [illegible] the transport of insulin, adrenaline or other [illegible] drug

(4) [illegible] ts, crystalline suspension, and seminal fluid [illegible] into the syringe through the opening in the [illegible] on (fig 1D)

(5) [illegible] having two compartments, different medica- me [illegible] contained in the barrel and in the hollow p [illegible] in the barrel and a relaxant in the [illegible] ecaments may then be injected separately [illegible] ed in the syringe before use

(6) [illegible] piston compartment doubles the effective [illegible] syringe

([illegible]) [illegible] container has been opened its continuing [illegible] be guaranteed If medicaments are to [illegible] syringe for more than an hour or two [illegible] o be inhibitory to bacterial growth or [illegible] d bacteriostatic This is true of all [illegible] supplied in rubber-capped bottles The [illegible] can be so modified (fig 2) as to [illegible] air alone comes into contact with the [illegible]

The [illegible] nufactured by Messrs S & R J Everett & [illegible] British Provisional Patent nos 10540/53 1510[illegible] [illegible] del available at present is fitted with [illegible]

Research [illegible] at
Charing Cross [illegible]
[illegible]

B CAMBER
M B Glasg

Medical Societies

ASSOCIATION OF CLINICAL PATHOLOGISTS

THE 55th general meeting of this association was held in London on Sept 29–Oct 1 The following are summaries of a few of the many papers read at the meeting

Blood Changes in Toxic Reactions

W M. DAVIDSON discussing blood changes in toxic ions, said that they ranged from eosinophilia mild nia or leucopenia through the more serious acute olytic anæmia, thrombocytopenic purpura and agranulo angina to the dreaded marrow destruction of aplastic nia Lack of accurate knowledge about the size of the of these reactions, of a laboratory test by which they be anticipated and of a real assessment of the importance he prodromal signs, had created a situation in which able drugs might be avoided unnecessarily

me drugs, such as amidopyrine Sedormid and eotin acted directly upon and destroyed the circulating or platelets. The method of destruction of the cells often akin to the ordinary immune reaction in the ence of complement and it seemed that the drug formed mplex with the cell protein which being both antigenic foreign to the individual, excited an antibody antigen tion. In other cases an abnormal pathway might lead he formation of abnormal potentially toxic metabolites er drugs seemed to act indirectly through the precursor in the marrow An abnormally high concentration of drug or its metabolites may be present in the marrow figures suggesting a 20-fold concentration as compared h the serum, had been reported In some cases a type of his phenomenon may develop in and destroy the marrow lind serial blood cell counts were futile in detecting the et of a drug reaction, for the peripheral count might normal on the eve of the fatal aplastic anæmia. Even ing upon the "first signs of toxicity was hopelessly dequate for their appearance was probably either too or a false alarm. Recent work with the antimalarial maquine had suggested the possibility of detecting in o red cells which would be sensitive

Urinary 17 Ketogenic Steroids

Dr ARTHUR JORDAN recalled that Norymberski, introducing determination of the 17 ketogenic steroids into clinical dicine as an index of adrenal cortical activity showed at oxidation would convert some of the metabolites of roids into 17 ketosteroids. 80% of people over the age 16 had outputs of 17 ketogenic steroids ranging from 3 7 to 17 mg [illegible] output increased with administration of [illegible] trophin The output tended to be low in Add[illegible] and Simmonds s disease and high in Cushing s syndrome [illegible] m and in precocious puberty of adrenal cortical origin [illegible] ation of the output following corticotrophin administration appeared to indicate whether the adrenal cortex could respond and was a useful diagnostic procedure in suspected Addison s disease

Hypophysectomy

Dr D N BARON described the use of hypophysectomy and of radiation destruction of the hypophysis in the treatment of malignant disease and the experience gained by the study of patients operated on by Mr E J Radley-Smith at the Royal Free Hospital Of 13 female patients with carcinoma of the breast operated on within the past year in 5 the result had been good, with complete relief of pain and variable regression of the metastases The rationale of the operation was the removal of somatotrophin and luteotrophin as well as of corticotrophin and gonadotrophins; for certain tumours of breast and prostate were dependent on hormones for their continued spread It was too early to say whether hypophysectomy would replace adrenalectomy plus oophorectomy in the treatment of breast cancer

Acid and Alkaline Phosphatase in Prostatic Cancer

Dr STANLEY WRAY discussed an investigation in which the significance of the blood acid phosphatase value was assessed in 00 miscellaneous cases, 407 of which were prostatic disease It was shown that the formaldehyde stable fraction was a better indication of the presence of cancer of the prostate than the more usual investigation of the total value Urinary retention by itself could cause a moderate increase in the acid phosphatase and it must be relieved before reliable results could be obtained The blood alkaline-phosphatase had been estimated and graphically recorded in cancer of the prostate with bone secondaries during stilbœstrol therapy and a definite pattern of response was obtained This response pattern or alkaline-phosphatase kick may be used in cases of prostatic cancer to (1) confirm diagnosis (2) aid in doubtful cases (3) help assess the presence of osseous spread (4) help in choice of therapeutic agent and (5) act as " end point " when assessing the value of treatment in other forms of cancer which give rise to bone secondaries

Complications and Failures of Antibiotic Treatment

Dr K B ROGERS said that some of the failures and complications of antibiotic therapy could be anticipated but often the trouble was an unpredictable reaction by an individual patient or a particular condition that prevented an antibiotic acting The most common complications of antibiotic therapy were due to cross infection by insensitive organisms, such as staphylococci, and to moniliasis of the lungs or intestines If there was fibrosis and loculation, as in pericarditis, empyema, or brain abscess, a theoretically effective antibiotic may not penetrate to the infecting organisms It may be difficult to prove that a pyrexia during prolonged penicillin or streptomycin therapy was entirely due to the antibiotic, and it required a very fine clinical judgment to stop treatment Allergic manifestations to penicillin and streptomycin were relatively common—cutaneous hypersensitivity in those who handled the drugs constantly, local irritation at the site of inoculation, and (relatively rarely) anaphylactoid reactions to penicillin Dr Rogers described 4 cases of anuria which were probably due to penicillin The anuria lasted from 4 to 8 days and the patients involved were children between the ages of 8 months and 5 years All recovered after treatment with Bull's régime, although 1 had a permanent disability after a further complication of monilial cystitis Uncontrolled prophylactic umbrella therapy has produced staphylococci resistant to a wide range of antibiotics and these have caused serious complications in surgical units such as chest centres

Blood-acetoacetate Levels after Operation

Dr L NAFTALIN said that other workers had shown that in the first postoperative days endogenous fat was burned at the rate of about 2250 cals per day—i e, many times the rate observed in semi starvation On the assumption that increased acetoacetate is formed only when 2C fragments are being produced in excess of immediate tissue needs, serial examinations were made of blood acetoacetate[1] in the hope of timing the switch over to fat utilisation In evaluating the results starvation ketosis and certain other variables had to be considered, nevertheless, a sharp rise in blood acetoacetate level appeared regularly soon after operative trauma, and sometimes after intravenous thiopentone only The immediate rise was probably an adrenaline effect the first high peak at 4–5 hours postoperatively might also be due to adrenaline, since corticotrophin and cortisone had been shown to depress blood acetoacetate levels[2] The curve of blood acetoacetate against time might thereafter show a dip before rising to a further peak in excess, sometimes far in excess, of the level produced by simple starvation at comparable time The effect of postoperative infusion of blood or glucose at or immediately after operation was also studied the results suggested that after the immediate calorie value of the material infused had been made use of, the postoperative pattern of high blood acetoacetate returned In 3 well defined cases of postoperative ileus no rise in blood acetoacetate was found Temporary ion poisoning of the aceto CoA inase enzyme system might be responsible

Pathology of Fatal Aircraft Accidents

Wing Commander J K MASON pointed out that until recent years the limitations on air frame and engine structure had confined the human factors in aviation to the sphere of the physiologists But the jet engine had so increased the hazards of flight that aviation pathology had emerged as a subject distinct from aviation physiology and general traumatic pathology The recently formed Royal Air Force section of aviation pathology regarded its main objectives as (*a*) the correlation of post-mortem findings with engineering and other evidence in fatal accidents, thus helping to elucidate obscure causes of accidents, (*b*) the discovery of any recurring injuries which may suggest faults in aircraft design, (*c*) the assessment of new and experimental types of safety equipment in the light of previous post mortem findings, (*d*) the search for pre existing disease in aircrews which might be missed on ordinary methods of medical examination and yet might have a bearing on aircraft accidents, (*e*) the attempt to clarify some of the confusion which surrounded traumatic pathology in general and aviation pathology in particular, and which is mainly due, it was believed, to the fact that no single team of observers had had an opportunity to make a large number of necropsies on persons killed in aircraft accidents Such uncertain aspects of aviation pathology included anoxia, injuries induced by pure accelerative and decelerative forces, the ætiology and prognosis of fat embolism and, most important, explosive decompression. The section was anxious to secure the coöperation of coroners and coroners' pathologists.

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Reviews of Books

The House Physician's Handbook

C ALLAN BIRCH, F R C.P, physician, Chase Farm Hospi
Enfield Edinburgh E & S Livingstone 19
Pp 160 10*s* 6*d*

THIS little book contains much information a practical advice that will be useful to the young reside Though the chapter on clinical pathology covers grou which is also covered in many larger works, the sect on general duties and information has a wide range helpful hints and advice which are not so easily fou In places perhaps rather more detail would be welcom e g, on the subject of filling in the cause of death or death certificate: Again in the chapters on clin procedures those two problems of the house physiciar hysteria and malingering—might have been more fu described Of the newer drugs cortisone is not me tioned, and the account of antibiotics gives little indicat of the respective action of the different preparations their drawbacks But in a book of this size so omissions are inevitable Dr Birch has compressed remarkable amount into his 160 pages

Radio-diagnostic des occlusions intestinales aiguës

CLAUDE OLIVIER, *agrégé de la Faculté de Médecine*
Paris Paris Masson 1955 Pp 258 Fr 3300

THIS excellent review is based on extensive experien

The early chapters deal with technique and indications radiography, the relation of the radiographic appearances the pathological cause are well described and clearly ill trated Succeeding chapters deal in detail with the vari types of intestinal obstruction and with other conditions, su as renal colic and acute pancreatitis, which give rise to chan in the radiographic picture The final chapter, on intest obstruction in the newborn, might with advantage elaborated

This book will be of value to those interested in t subject—clinicians and radiologists alike

Neuro-vascular Hila of Limb Muscles

JAMES COUPER BRASH, M C, M D, D SC, F.R.C.S.
professor emeritus of anatomy, University of Edinbur
Edinburgh E & S Livingstone 1955 Pp 100 3

THE work embodied in this small atlas was started 1941 at the suggestion of Sir James Learmonth, wh foresaw its potential value not only to the vascul surgeon but also to those working in the peripheral ner injuries centres set up during the war Professor Brash aim was to determine the extent to which the princip blood-supply of the muscles is associated with th nerves—i e, the constancy or otherwise of a defin "neuro-vascular hilum" To achieve this, observatio already recorded on the points and mode of entry of th nerves of supply had to be checked and extended

In this long and exacting task the departments anatomy at Aberdeen, Leeds, and Glasgow collaborate with him The data for the upper limb were circulate to the peripheral-nerve injuries centres and others i 1945, but it is only now that it has been possible to collat and analyse the complete data for the lower limb als This atlas is the result In brilliantly clear diagram drawn exactly to a defined scale, it shows the ner and vascular supply of all the principal muscles of th limbs with appropriate notes on the variations found b Professor Brash and earlier investigators It is of cours a highly specialised work but will prove invaluable t all surgeons interested in peripheral-nerve injuries o ischæmia of muscles—quite apart from its merit as contribution to pure anatomy

The Physiological Basis of Medical Practice (6th ed London Baillière, Tindall, & Cox 1955 Pp 1355 91*s* 6*d*.)—Prof C H Best, F R S, and Prof N B Taylor have subjected their notable work to "the most extensive revision since it was first published," so that hardly a page of it has escaped emendation, deletion, or addition A good book kept well up to date can defy the ageing process which afflicts the rest of us "Best and Taylor" has this secret of perpetual youth.

THE LANCET

LONDON SATURDAY, OCT 15 1955

Public Knowledge of Mental Hospitals

THERE are 210 mental and 196 mental-deficiency hospitals in Great Britain and Northern Ireland—not a great number, though they contain nearly half our hospital beds. It should not be impossible to present each year an accurate and comprehensive account of the standards of care, the state of the buildings, the equipment, and the staffing of these hospitals; but no such account is available. Every year fragments of information about them are published in various official documents, such as the annual reports of the Ministry of Health and the Board of Control, the Registrar General's Statistical Review, and the Hospital Costing Returns; but these fragments are scattered through many tables and not at all easy to assemble and collate. Moreover, much of the information is so general as to be almost meaningless. Thus the Board of Control, in their current annual report[1] give us, as they do every year, a figure for overcrowding. In 1954 they tell us the mental hospitals were overcrowded to the extent of 18 032 patients; but they do not say in which hospitals—or even in which regions—overcrowding is worst; and they do not explain what such figures mean in terms of distance between beds, the use of corridors or other unsuitable places as dormitories, or pressure on sanitary accommodation.

Some bold spirit once used to FLORENCE NIGHTINGALE the phrase ' without inconvenient overcrowding.' 'What,' she replied, "is convenient overcrowding?'' In mental hospitals overcrowding is no mere inconvenience but an actively nocent agent. Its effects could possibly be alleviated by much individual care and attention; but how can this be given when all mental hospitals are short of nurses and many lack even a reasonable complement of such auxiliary grades as nursing assistants and orderlies? No official report tells us in which hospitals or regions the shortage is worst, or where nurses and other helpers are sufficiently numerous to ease the ills of overcrowding.

Again, the Hospital Costing Returns for 1954 show that the average weekly cost of provisions per person fed in mental and mental-deficiency hospitals ranged from 9s 10*d* (Franklyn Mental Deficiency Hospital Exeter) to 25s 7*d* (the Coppice Mental Hospital, Nottingham), the usual figure being about 14s–16s, whereas the average weekly cost in general hospitals ranged from 14s (the Carter Bequest Hospital, Middlesbrough) to 38s 9*d* (Abercrombie Hospital Annexe, Chesterfield), the usual figure being about 22s–26s. But one must turn to a voluntary body—King Edward's Hospital Fund for London—for an interpretation of what this low expenditure on food in mental hospitals means in terms of meals and nutriment. Mr D G HARINGTON HAWES,[2] secretary of the Fund's hospital catering and diet committee, found that not only the low outlay on provisions, but out-of-date kitchen equipment, the very large numbers to be served, and the long distances which food must be carried combine to make mental hospital meals poor, unappetising and repetitive. The study was made in the [illegible] mental hospitals in the Metropolitan area (since these alone come within the Fund's scope). Of these 31 have more than 1000 beds, and most of them provide midday meals for both patients and staff—which means that 2500–3000 dinners have to be cooked in the same place and at the same time. HAWES states that the maximum number of meals which can be cooked without loss of nutritive value and palatability in a well-equipped, well-staffed kitchen is 1500. Mental hospital kitchens are seldom adequately staffed or properly equipped. He gave a week's menu, however, from a mental hospital of over [illegible]000 beds where the equipment is good. The cost per head per week of feeding patients and staff was 15s compared with 20s for general hospitals in the same region.

> The main meal (meat, vegetables and a pudding) was taken at midday; breakfasts and suppers were light; butter did not appear though margarine was taken at breakfast and tea; milk appeared only as a component of tea, cocoa, or custard; there were few green vegetables, and no salad, though fruit was taken two or three times in the week, either fresh or stewed.

HAWES commented on the remarkable difference between the standard of feeding in mental and general hospitals, but pointed out that money to buy provisions would meet only half the need: mental hospitals require decentralised kitchens, better equipment, and better catering. Only a detailed survey of all the mental hospitals, he said, could show how much such a programme would cost, and it might well run into millions; nevertheless the need for improvement is so pressing that it must be undertaken.

These things, which do not appear in official analyses of types of disorder, recovery rates, relapse rates, and other matters of medical interest, are of paramount importance to patients and their relatives. This has been strongly emphasised lately, by the League of Friends of Menston Hospital, Leeds, both in a memorandum sent to local Members of Parliament and in their evidence to the Royal Commission on the Law relating to Mental Illness and Mental Deficiency. This league of friends, composed mainly of relatives of patients in the hospital, emphasise the insufficiency of research into the cause and treatment of mental illness, the effects of overcrowding in mental hospitals, the "inequitable allocation of funds to the mental health service," and the nursing shortage. They note the lack of opportunity and encouragement for long-term mental patients to take part in occupational therapy—simply because there are too few staff to help them. "Sitting, or walking aimlessly, in unattractive corridors and day rooms they offer a depressing sight to any visitor and a heartbreaking one to relatives." As the nurses have not enough time to give any patient much individual attention, their reports on his day-to-day welfare are apt to be unsatisfying to his relatives, who may then feel he is being neglected; and this, the memorandum says, reflects unfairly on the nursing staff, who are usually doing their utmost in very difficult circumstances. In mental hospitals it is the task of the psychiatric social workers to take the place of the almoner and to help and reassure the relatives of patients; but this group of hospital friends, in their evidence to the Royal

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[1] London: H.M. Stationery Office 1955 Pp 8 6d

[2] Lancet 1955 i, 1214

Commission, said that they had not had the opportunity to see the psychiatric social worker, and had not been told that they could approach her

Information about the conditions in mental hospitals was recently contributed from another lay source In the *Daily Express*[3] Mr MERRICK WINN reported his investigation of 27 mental hospitals in England, Wales, and Scotland In most of them he was appalled by the gross overcrowding, the lack of simple amenities, the restricted expenditure on food, the famine of nurses, and many other signs of the penurious way in which mental, as compared with general, hospitals have to be conducted He writes of locked corridors used as dormitories or day-rooms, crowded beyond all reasonable capacity (100 women locked into a space which would barely take 70 comfortably , of 150 men in a ward designed for 80 , of rooms " no bigger than a prison cell, with peeling plaster and damp streaked walls," big enough to take 2 beds and containing 4) , of old decaying ill equipped buildings , of " work-house " furnishings (shabby chairs, worn linoleum, dingy paint) , and of the coldness of the wards in winter He describes the herded patients, wearing shapeless hospital garments and without any personal possessions—or indeed any place to keep them if they had them , for beds set six inches apart leave no room for lockers, even if lockers could be supplied These articles are vivid and moving and have been widely read Mr WINN is sincere and thoroughly justified in his determination to create a public demand for the reform of such evils He does not blame the doctors or nurses on the contrary he repeatedly says they are doing a creditable best against great odds He blames an economic policy which ignores the outstanding needs of these hospitals, and of the thousands of our citizens in them —an indictment not, unfortunately, answered by the Ministry of Health's allocation of a " mental million, ' welcome though this was

Of the 27 hospitals he visited he describes favourably only 2—Crichton Royal and Warlingham Park Except presumably the members of the Board of Control, nobody is in a position to say whether the hospitals he visited were a representative cross section of those in the whole country, or whether he had the ill-luck to pick, out of the total of 406, 25 of the worst and only 2 of the best It is absurd that the very necessary information which would enable one to decide this point should not be accessible—both to the medical profession and the general public For each region if not for the nation, there should be an annual report on the mental hospitals, giving such facts as the age of the hospital buildings, the degree of overcrowding, the ratio of nurses and nursing auxiliaries to patients, the number of occupational therapists and psychiatric social workers employed, the sanitary accommodation provided in relation to numbers of patients, the numbers of open and locked wards, the space between beds, the types of mattress, the number of lockers in relation to the number of patients, and the numbers of kitchen and catering staff employed Admittedly such facts are not at present supplied for other kinds of hospital , but mental hospitals particularly require publicity for their work and needs—both because they are little visited and because adverse comments by their patients are easily set aside The data collected at the boar
control's inspections need to be supplemented,
sented more conveniently, and given wider curre

The Commissioners in Lunacy were origin
appointed to look after the welfare of mental pati
and to ensure that they were satisfactorily trea
Inheriting this task, the Board of Control have fo
it beyond their powers the problem has grown
large, the hospitals too old, the nurses too sca
the money too scanty for the board to be abl
safeguard the patient's welfare in all the ways
it needs to be safeguarded The board was not in
constituted to bear the administrative burden
placed on its members But a considerable
forward would be taken if they were enabled at l
to produce a more useful annual report At pre
the picture offered to the public is, to say the le
confusing The Ministry of Health, struggling to
mental patients nursed, puts its spotlight on the m
tal hospitals with the best conditions, and encour
us to hope that conditions in all are coming
steadily, if slowly, to the standard in the best
WINN's spotlight, on the other hand, has been tur
on some of those with the worst conditions, and
writes with just indignation at what he sees Illu
nation of the whole scene is necessary first bec
the public is entitled to know what is, and is
being done in its name, and secondly because co
tions cannot be greatly improved until many m
people accept a share of the responsibility and de
to help

Pneumonectomy

THE operation of radical pneumonectomy
bronchial carcinoma is based on sound surg
principles Its aim is to remove in one block the l
and its fascial connections and lymphatic fi
The first account of the operation—then ca
" block dissection pneumonectomy "—was given
SIR RUSSELL BROCK in 1948[1 2] Since then other ty
of pneumonectomy with block removal of mediast
nodes have been described[3–6] BROCK and WHY
HEAD[7] have now published a full account of th
operation Briefly this comprises division of
bronchus, incision of the mediastinal pleura ove
wide field, dissection of the fascia and nodes b
towards the hilum, opening the pericardium
dividing the pulmonary vessels within it, and remov
the lung with the attached mass of pericardi
mediastinal pleura, areolar tissue, and lymph no
BROCK and WHYTEHEAD emphasise the importa
of securing the pulmonary vessels intrapericardia
so as to minimise interference with associa
lymphatic structures Whenever possible they sec
the pulmonary veins first,[8] in an attempt to av
spread of tumour cells by the blood-stream dur
the operation , but they have found that often t
precaution is not possible or expedient In
patients operated on since 1947 the operative mortal
was 11% This was lower than the 18% mortal

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[3] *Daily Express*, Sept 19 20, and 21, 1955

[1] Brock, R C *Brit med J* 1948 ii 737

[2] Brock R C *In* Recent Advances in Surgery, edited by H
Edwards London, 1948

[3] Cahan, W G , Watson, W C , Pool J L *J thorac S*
1951, 22, 449

[4] Weinberg J A *Ibid*, p 517

[5] Kirklin, J W Jampolis, R. W *Ibid*, 1953, 25, 280

[6] Higginson J F *Ibid* p 582

[7] Brock R C Whytehead L L *Brit J Surg* 1955, 43 8

[8] Aylwin, J A *Thorax*, 1951, 6, 250

in 40 patients submitted to simple pneumonectomy during the same period This simple pneumonectomy group almost certainly contained more poor-risk patients but the mortality with radical pneumonectomy was no higher than has been reported on several occasions with simple pneumonectomy Bignall and Moon,[9] for instance, found a 13% operative mortality in 163 patients who had a pneumonectomy at the Brompton and London Chest hospitals in 1951 and 1952 Brock and Whytehead state that the radical procedure is just as well tolerated as the less radical, even by those in the late sixties they found a higher incidence of cardiac arrhythmias but these usually responded quickly to treatment They admit that the operation may be an extra burden in elderly poor-risk patients, in some of whom they have been content with a less radical removal They compare the fate of the 120 who survived the radical operation with that of the 40 who survived simple pneumonectomy But the two series may not be strictly comparable The reasons for doing one operation in preference to another are not stated, but it is clear that the simple pneumonectomy group contains, for instance more elderly poor-risk patients Of the simple pneumonectomy patients only 13 (31%) survived for longer than two years, whereas in the series reported by Bignall and Moon the survival rate two years after pneumonectomy was 46% and similar rates have been reported by others The patients have, moreover, been followed for different periods All the 40 who underwent simple pneumonectomy were followed up for at least two years—the period during which there is the greatest risk of dying—compared with 100 of the 120 who had the radical operation Only 3 in the simple pneumonectomy group had not been followed either to death or for at least five years after operation, compared with 57 of those submitted to the radical procedure It seems that the numbers who had a simple pneumonectomy decreased during the period as the numbers in the radical group increased. Brock and Whytehead state that 18% of the simple pneumonectomy group are still alive compared with 50% of those who had a radical pneumonectomy But the former group has been observed longer, and the comparison as it stands is invalid The evidence is hardly sufficient to support their admittedly cautious statement that "it seems not unreasonable to say that the figures afford strong evidence that radical pneumonectomy gives better results"

Brock and Whytehead say that "the concomitant variables are doubtless so numerous that it is difficult to draw any firm conclusions" Bignall and Moon[9] have investigated the influence of some of these variables They studied 453 patients who had a lung resection between 1940 and 1951 and confirmed that histological type and the apparent involvement of mediastinal nodes had a notable influence on survival. Thus the five-year survival rate of those with enlarged nodes was only 11% compared with 48% for those without The prognosis was better in women than in men but they detected no regular pattern of survival in relation to age The survival rates were lower in those with symptoms of six to eight months duration than in those with either longer or shorter histories It has previously been observed that the prognosis is worse with tumours in the left lung,[10] and Bignall and Moon found the lowest survival rates in those with cancer involving the left lower lobe the two-year survival rate was 36% compared with 47% for all sites and 57% for the right upper lobe These workers suggest that some of the observed differences are due to selection Probably more patients with upper lobe tumours are rejected for surgical treatment, because of the nearness of the primary tumour to the supraclavicular nodes, recurrent laryngeal nerve and superior vena cava—in which metastases are more easily detected than in the mediastinal nodes draining the lower lobes But [illegible] that the poor prognosis of tumours of the left lower lobe may be partly due to the peculiarities of its lymphatic drainage Most of the lymph from the left lung is believed to pass to the right paratracheal chain of nodes only a small proportion entering the blood stream from the left paratracheal system[11] Metastases from tumours of the left lower lobe may [illegible] be present in the right hemithorax at the time of operation, but they are unrecognised and mac[illegible] and they would not be removed even with the radical pneumonectomy of Brock and Whytehead If this operation does give a higher survival rate than simple pneumonectomy it might be expected that the difference would be smallest in those with tumours of the left lower lobe—a hypothesis that can be tested when more cases have been recorded.

In the surgery of lung cancer the radical approach may be right, but it is unlikely to go unchallenged Simple pneumonectomy with piecemeal removal of suspiciously involved nodes has many supporters Moreover, the merits of lobectomy may be re-examined now that many surgeons have accumulated large series of cases Comparison between the results of pneumonectomy and of lobectomy is especially difficult for in the past patients submitted to lobectomy had in general less advanced disease In the series described by Bignall and Moon many more who had a lobectomy had no macroscopic evidence of node metastases, and their prognosis would be expected to be better But the survival rates of the 30 patients without enlarged nodes who survived a lobectomy were almost the same as the corresponding 20 who survived a pneumonectomy Bignall and Moon conclude that there is "no convincing evidence that the chances of survival of those who lived through the postoperative period were materially affected by the extent of resection the surgeons considered advisable for the particular patient" Comparisons between lobectomy and pneumonectomy must take account of the operative risk, and here lobectomy has a clear advantage During 1950 and 1951 13% of those who underwent a pneumonectomy died within two months of operation but all of the 42 who underwent lobectomy survived During the whole twelve-year period covered by the investigation only 2 of the 74 patients treated by lobectomy died in the early postoperative period Even if the risk of recurrence and death were greater after a lobectomy the operation might still be worth while for the immediate risk of dying is so much smaller than that of a pneumonectomy.

But survival rates tell only part of the story Does a patient with four lobes live a more comfortable and normal life than one with only two or three ? It is reasonable to think that he should , and, although there is no statistical evidence to support this, clinical impressions suggest that he does The radical treatment of lung cancer advocated by BROCK and WHYTEHEAD cannot yet be accepted as the best treatment

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[9] Bignall J R. Moon A J Ibid 1955 10 183.

10 Carlisle J C. McDonald J R Harrington [illegible] J *Surg* 1951 22 74

11 Warren M F Drinker C K. *Amer J* [illegible]

Annotations

TONSILLECTOMY AND RESPIRATORY INFECTIONS

THE indications for tonsillectomy may seem to be based more on intuition than on reason Evaluation of the results, by differing methods of assessment,[1–4] has already cast serious doubt on the value of the operation Among the lexicon like list of reasons for undertaking it, repeated respiratory infections (and what child does not have them ?) has been well to the fore Now McCorkle et al [5] have made a painstaking assessment of the relation of tonsillectomy to the incidence of such infections This study can be faulted at only one point—the small numbers concerned But the 230 children studied were observed for up to five years, during which the mothers kept a daily health record, field workers paid a weekly visit, and physicians assessed all illnesses with the help of extensive bacteriological investigations

The results are presented under two headings Under the first heading " the age specific rate of infection " of two groups of children—tonsillectomised and not, before the period of observation began—is compared Under the second heading is shown " the age adjusted rate of infection " in a group of 26 children who, because they had a higher than expected rate of infection, were operated on during the period of observation McCorkle et al state " Comparison of these data requires the use of either age specific or age-adjusted rates because the incidence of common respiratory illness changes with age, and post tonsillectomy experience is heavily weighted with older children " The outcome of this study was that the operation had no effect at all , and the 26 children with a higher than expected rate of infection continued unchanged at the higher rate after the operation

The great care with which this study was conducted suggests that, though the numbers were small, the results would be the same whatever the total

WEIGHT-GAIN IN INFANCY

THE importance of recording reliable anthropometric data in childhood is only now being fully recognised [6] During and since the late war valuable contributions have been made by H C Stuart, A. H Washburn, N C Wetzel, and others in the U S.A , by workers at the Institute of Child Health, University of London, directed by A A Moncrieff, and by J M Tanner and R W B Ellis

Thomson [7] has studied the weight gain during the first year of life of infants at a child welfare clinic in Edinburgh The observations were made monthly on legitimate, singleton, first pregnancy infants whose birth weights were within the range of over $5^1/_2$ to $9^1/_2$ lb , 1737 observations were made on males and 1605 on females Thomson confirmed that throughout the first year the mean weight-gain of the male is greater than that of the female , for instance, the mean weigh in the male at 26 weeks was not attained until 3 later , by the female, and the weight attained b female at 1 year was reached by the male 8 weeks e Thus there is ample justification for recording assessing the weight pattern separately according t Despite this differing pattern, Thomson found th proportion of the total weight gain in the first ye particular ages was the same in the two sexes instance, in both sexes a quarter of the total weigh was attained at 10 weeks, half at 20 weeks, and quarters at 32 weeks This study strongly suggest in singleton infants born at term birth-weight is unr to the rate of postnatal weight gain Accordin assessing progress the rate of weight gain is much important than the actual weight—a fact appreciat experienced clinicians Comparison with the c recordings of Finlay [8] in Edinburgh thirty year showed that the mean weight at 1 year is now greater This is probably a fair reflection of the imp ment in development and health in infancy throu the country during this period of rising economi nutritive standards Thomson rightly emphasises the standard graph weight-cards used in most authority clinics are out of date, and should be revis provide norms which accurately reflect the imp development of infants nowadays

Parents who show an interest in the weight of infants should be told that standard weight fo charts are based on the average weights of many inf otherwise they tend to be alarmed by weights tha not close to the average but which may be quite n for their infant If their infant is to be weighed at should be weighed methodically and accurately, most child welfare clinics , and the influence of fa such as race, heredity, and prematurity on the a weight should always be borne in mind Provided a looks healthy and seems to be making good progr is a mistake to focus attention on weight gain, normal irregularities in the rate of gain are often understood by parents and cause them much unnece worry Routine weekly weighing is desirable in the month or two of life , but thereafter it should be do lengthening intervals, provided the general progre satisfactory, and between the ages of 6 months a year 2 monthly weighing suffices

THE LUNGS IN EMPHYSEMA

DURING a pause in respiration the pressure at surface of the lungs is lower than that at the m because of the elastic pull of the lungs To pro inspiration, the pressure at the surface of the lungs to be lowered still further and the fall which takes is a measure of the force required This force ha overcome two mechanical factors the elastic pu the lungs, which increases as the lung is distended, the resistance to airflow when air moves through respiratory passages When expiration takes place t factors are again in operation In order to analyse mechanics of respiration it is necessary to separate effects of airflow resistance from those of the el tension of the lungs, and, although technically diffic this can be done graphically or, as Mead et al [9] report, by plotting the variables with a cathode oscilloscope

Mead et al examined the mechanical properties of lungs in 10 healthy people and in 10 patients w emphysema They found that during quiet breath pulmonary flow resistance was greater in the patie than in the healthy people throughout the respir cycle, but especially during expiration when it

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[1] Kaiser A. D *J Amer med Ass* 1930, 95 837.
[2] *Spec Rep Ser med Res Coun , Lond* 1938 no 227
[3] Paton J H P *Quart J Med* 1943 **12** 119
[4] Walker J S *Arch Otolaryng , Chicago,* 1953, **57,** 664
[5] McCorkle L P , Hodges, R G Badger G F Dingle, J H Jordan, W S *New Engl J Med* 1955 **252,** 1066
[6] Tanner J M. *Arch Dis Childh* 1952 **27,** 10
[7] Thomson, J *Ibid,* 1955 **30** 322

[8] Finlay T Y *Edinb med J* 1924 **31** 317
[9] Mead, J Lindgren, I Gaensler, E A *J clin Invest* 19 **34,** 1005

about 30 times as great. Moreover, in the patients the flow resistance during expiration was greater than during inspiration whereas in the controls this was not so When the subjects hyperventilated the pattern changed In patients and controls the flow resistance during rapid inspiration was approximately the same as it was during quiet breathing but during rapid expiration the flow resistance in both patients and controls greatly increased though the peak flow resistance in the patients was about 10 times as great as in the controls The finding that in healthy people expiratory flow resistance is greater than inspiratory resistance during hyperventilation but not during quiet breathing is not unexpected During quiet breathing even in expiration the pressure on the outside of the respiratory airways—certainly the extrapulmonary ones—more closely approximates to the still negative intrapleural pressure than to the pressure within the airways, and the difference tends to keep the tubes expanded. But during rapid forced expiration this pressure difference is reversed and the calibre of the airways is reduced thus increasing the pulmonary flow resistance Conversely during inspiration the pressure on the outside of the airways falls and tends to increase their calibre Bronchoscopists can vouch for the pronounced narrowing of the larger bronchi during forced expiration Mead et al.[9] cite several structural changes that might result in the abnormal compression of the airways which their findings suggest occurs in emphysema reduction in cross section of the smaller airways, increased tissue frictional resistance weakening of the structure of the bronchial walls and a tendency for the airways to collapse due to reduction of lung elasticity[10]

As regards lung elasticity Mead et al found that under "static" conditions the lungs of emphysematous patients were more distensible than normal that is, if the subjects took a slow maximal inspiration and kept their glottis open it was found that for a unit fall in pressure at the surface of the lungs a bigger volume of air entered the lungs of an emphysematous patient than entered the lungs of a healthy person They also confirmed an observation first made by Christie,[11 12] that in emphysematous patients, unlike normal subjects, the lungs apparently become less distensible as the rate of breathing increases. Experimentally they threw some light on this phenomenon. First they measured the distensibility of a dog's lungs and then completely blocked the left main bronchus with a balloon They found that the distensibility of the lungs was almost halved because when a given volume of air was inspired the right lung had to be distended to accommodate all of it instead of accommodating a little over half as it would have done had the left lung been working normally Next they deflated the balloon so that the left main bronchus was only partly blocked During quiet breathing air went in and out of the left lung almost as it did when the left main bronchus was clear and the distensibility of the lungs was normal But when the rate of respiration was increased the picture altered—the faster the breathing the less the volume of air which went in and out of the left lung until at very rapid rates almost all the air went in and out of the right lung and the volume of the left lung scarcely changed. Also, the distensibility of the lungs decreased as the rate of breathing increased until at very rapid rates the distensibility of the lungs fell to what it had been when the left main bronchus was completely obstructed by the balloon. At slow rates of breathing therefore the increase in flow resistance produced by partial obstruction of the left main bronchus was negligible but at rapid rates there was virtually complete functional block of the bronchus If it is supposed that in emphysema there are numerous partly obstructed respiratory channels this mechanism could [illegible] plain why the lungs apparently become less distensible as the rate of breathing increases at slow rates air [illegible] will move with little difficulty in and out of the [illegible] lung but at rapid rates it will tend to [illegible] be accommodated in normal neighbouring [illegible] of the lung In effect therefore, at high rates [illegible] the more normal parts of the lungs will have [illegible] to accommodate air which at lower rates [illegible] received in partly obstructed areas and thus the [illegible] distensibility of the lungs will apparently [illegible] also point out that this mechanism [illegible] development of emphysema in cases of [illegible] and chronic bronchitis During the [illegible] which follows coughing little air [illegible] obstructed areas of lung and the con[illegible] of neighbouring normal areas will [illegible] eventually to structural damage This [illegible] hypothesis.

THE ANAL SPHINCTERS

[illegible] of the anal canal provides a salutary [illegible] perfection of our powers of observation [illegible] description of the anal sphincter [illegible] thirty years until it was utilised [illegible] and Morgan[2], but even then [illegible] continued to take no account of it Thompson [illegible] external sphincter consisted of three parts [illegible] part a superficial part which lay deep [illegible] is the deep external sphincter Milligan and Morgan regarded the subcutaneous part as separate from [illegible] follows it was unattached to perineal body in front [illegible] coccyx behind Was it not this loose [illegible] that was seen in the floor of a chronic fissure and [illegible] traction due to spasm and fibrosis the reason for the persistence of the fissure? The argument was carried a stage further by the suggestion that spasm of the muscle brought about the condition with models in Plasticine to prove the point[3] The subcutaneous sphincter ani externus is the structural cause of fissure in ano Division of the subcutaneous external sphincter ani and enlargement of the skin wound is the radical cure We may now fairly claim to know both the cause and cure of fissure[4] Ball's[5] hypothesis that fissure was due to the tearing down of an anal valve had proved unsatisfactory since many a fissure did not extend to that level besides the treatment suggested by the St Mark's Hospital group[4] cured the condition Meanwhile the internal sphincter wilted under neglect But doubt remained in some minds[6] for why should the muscle seen in dissection undertaken for fissure and termed external sphincter appear so pale—too pale it would seem for somatic origin? Now we have the answer from St Mark's Hospital itself By placing thread sutures before the patient was anaesthetised through the lower borders of external and internal sphincters identified by palpation Goligher et al[7] have shown that with relaxation due to anaesthesia the external sphincter retracts laterally and the muscle seen in the base of a fissure is indeed the lower end of the internal sphincter—an observation confirmed by biopsy revealing smooth muscle They have further demonstrated that this part of the internal muscle is divided into discrete elliptical bundles this accounts for the view[2] that the lower part of the "external" sphincter was a separate entity without attachments The division of the external sphincter into three parts must be regarded as an anatomical observation resulting from the dissection of cadavers, since Goligher et al have observed no clear indication of this and have further noted that the external sphincter is continuous in its upper part with the puborectalis portion of the levator ani muscle

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[10] Fry D L, Ebert R V Stead W W Brown, C C. *Amer J Med* 19[illegible] 16 80

[11] Christie R V *J clin Invest* 1934 13 295

[12] McIlroy M B Christie R V *Thorax* 1952 7 291

[1] Thompson P Myology of the Pelvic Floor London 1899

[2] Milligan, E T C Morgan, C N Jones L E Officer R. *Lancet* 193[illegible] ii, 1119

[3] Gabriel W B Principles and Practice of Rectal Surgery London, 1945; p 130

[4] Milligan E T C *Proc R Soc Med* 1943 36 365

[5] Ball C The Rectum London, 1910

[6] Eisenhammer, S S *Afr med J* 1953 27 266

[7] Goligher, J C Leacock A G Brossy J J *Brit J Surg* 1955 43 51

The wheel has come full circle, for the internal sphincter is reinstated and restored to its full size , it is a muscle to be reckoned with—and cut for fissure The importance of the external sphincter recedes How many decades will elapse before the textbooks of anatomy, which have at last accepted the Thompson-Milligan-Morgan thesis, catch up with these new disclosures ? And what does cause fissure in-ano ?

TREATMENT OF MALARIA

Despite the dramatic effects of the residual insecticides in controlling malaria, this disease is still one of the commonest in the world, and there is a potential danger that sudden abnormal conditions might precipitate an epidemic in circumstances where control by insecticides would be difficult Moreover, it is not certain that anopheles mosquitoes will remain sensitive to the insecticides , indeed there is evidence from Greece that some species are showing resistance Accordingly effective treatment is still essential in parts of the world (including vast areas of Africa) where malaria is endemic, and in countries, such as Britain, where the disease in patients from hot countries may present serious problems to doctors unfamiliar with it After the 1914–18 war there were many cases in which malaria was diagnosed too late for effective treatment , and there must have been many more in which it was not diagnosed at all—with disastrous results when the infection was due to *Plasmodium falciparum* After the 1939–45 war there were again deaths , yet the drugs were there, and treatment is comparatively simple

The wars gave a strong impetus to research for drugs to replace quinine The development of compounds containing the quinoline ring has been most successful in the case of the 8 aminoquinolines, such as pamaquine and related substances including primaquine, and the 4 aminoquinolines, such as chloroquine and amodiaquine These 4 aminoquinolines have largely supplanted mepacrine, in which the quinoline ring of plasmoquine was replaced by an acridine ring in an effort to reduce toxicity , but mepacrine was the first of the new synthetic drugs to be used on a massive scale as a suppressive It proved invaluable during the campaigns in malarious countries in the war of 1939–45 , its remarkable power, when taken in small daily doses, of preventing overt attacks was proved beyond doubt by the classical work of Hamilton Fairley and his colleagues at Cairns in Australia during the war Careful research by British teams has led to the introduction of proguanil and pyrimethamine, whose value is greatest in prevention

With one or other of these substances, or quinine (which still has a place in the treatment of severe attacks), the malaria parasites can now be attacked at most of their life stages For this we are indebted to German, British, and American scientists, who tested enormous numbers of compounds against the malaria parasites of birds The time has come when these massive contributions to chemotherapy can be evaluated—a task that has been successfully accomplished in a W H O monograph [1] This excellent monograph will be especially useful in malarious countries , but it should also be in the library of all hospitals in temperate countries where malaria patients are likely to be treated, and in all medical schools

In this country we have tended to neglect malaria except in war-time, and perhaps only those who have seen the disease are aware of the tragedies which may result from ignorance of it It is important that practitioners in Britain should bear in mind the possibility of
malaria (and indeed of other tropical diseases) ,
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on each hospital case sheet a space in which the p
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CARDIAC AND ŒSOPHAGEAL PAIN

The diagnosis of cardiac pain does not usually
difficulty Such pain may occur in the abs
coronary-artery disease—for example, in rh
valvular disease and in anæmia—or as true
pectoris in coronary-artery disease [1] The ch
distribution, and relation to exercise of angina c
are usually so characteristic that objective evid
ischæmic heart disease is not required—which is fo
since signs are often lacking On the other hand
pectoris *at rest due to cardiac infarction* is almost
accompanied by electrocardiographic abnormalit
angina *may occur at rest without cardiac infar*
acute coronary insufficiency [2] Administration o
glycerin does not help greatly in the diagnosis of
pectoris [1] , for it may relieve pain due to other ca

Gastro œsophageal pain may resemble cardiac p
Whether reflexes from the alimentary tract aff
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the œsophagus as a source of pain resembling
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in the healthy subjects and in the patients , the p
found that it differed from their angina pectoris, b
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found that œsophageal distension did not p
electrocardiographic changes which could be co
with those of myocardial ischæmia , and, like
they conclude that the electrocardiogram is the
reliable special method of distinguishing cardia
œsophageal pain If the resting electrocardiog
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[1] Covell G , Coatney, G R , Field, J W , Singh J Chemotherapy of Malaria W H O Monograph Series, no 27 H.M Stationery Office 1955 Pp 121 17s 6d

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1 Parkinson, J *Lancet*, 1951, ii 695
2 Master, A M *Ann intern Med* 1944, 20, 661
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4 Guyot, R, Blum J *Arch Mal Cœur*, 1949 42, 544
5 Jackson D E , Jackson, H L *J Lab clin Med* 1936, 2
6 Jones C M *New Engl J Med* 1941, 225, 963
7 Jones C M. Chapman W P *Trans Ass Amer I*
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8 Gregg, D E *Coronary Circulation in Health and D*
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9 Baylis, J H Kauntze R Trounce J R *Quart J*
1955, 24, 143
10 Payne W W Poulton, E P *Ibid* 1923–24 17, 53.
11 Master, A M Dack S , Stone, J Grishman, A *Arch*
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12 Master A M., Friedman R Dack, S *Amer Heart J*
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13 Wood P , McGregor M , Magidson O Whitaker, W
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14 Harrington S W *J thorac Surg* 1938, 8, 127
15 Hodson C J *Proc R Soc Med* 1954 47 534
16 Starr, I *Amer J med Sci* 1947, 214 233
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THE DANGERS OF CITRATED BLOOD

A YEAR ago Cookson et al [20] reported the results of massive transfusion of citrated blood in dogs in which they simulated the conditions of cardiac operations They found that citrated blood greatly depressed cardiac action, by comparison with the effect of transfusions of heparinised blood under the same conditions Bunker et al.[21] have carefully studied the chemical changes in the blood during moderate to massive blood transfusions in 130 clinical cases. 33 adult patients in this series received citrate at the rate of less than 0 5 mg per kg body weight per minute and suffered no decrease of serum ionised-calcium But of 15 patients with advanced hepatic disease who received transfusions at the same rate 9 had relatively high serum-citrate levels, and in 5 of these the ionised-calcium level of the serum fell below normal. The serum ionised calcium tended to decrease in both groups of patients if the rate of infusion of citrate was increased to 1 mg per kg per minute Of 28 patients in whom the serum-citrate level rose high enough to depress the serum ionised-calcium level below normal, 5 had serum ionised calcium levels of 0·55 milli mol. per litre or less This level Bunker et al. regard as critical since the isolated frog s heart preparation of McLean and Hastings stops beating when the ionised-calcium level in the perfusate drops to 0 5 milli mol. per litre [22] In 3 of the 14 patients whose blood clotting time was measured this was prolonged, but Bunker et al. could not correlate this finding with depression of ionised calcium in the serum On the other hand Stefanini [23] found distinct prolongation of clotting time in vitro when the ionised calcium level fell to 0 5 milli mol per litre

Treatment of established citrate intoxication is by injection of calcium chloride or calcium gluconate There is danger of overdosage and it is difficult to calculate the right amount Unfortunately treatment does not always alter the serum ionised-calcium level,[24] and calcium gluconate may even increase the serum citrate level still further [25] Citrate is metabolised in the liver [26-28] and muscles [29] and is excreted and concentrated in the urine by the kidneys [30] so the risk of citrate intoxication should be remembered where massive transfusion is necessary for patients with hepatic or renal disease. Citrate metabolism depends on the activity of the Krebs cycle which is depressed by anæsthesia with barbiturates [31] and possibly by hypothermia [31] and the advisability of using citrated blood for transfusion in operations under these conditions should be questioned. Alternative blood preparations have been suggested, such as oxygenated red cells suspended in Ringer Locke gelatin solution [20] red cells suspended in salt free dextran [32] and blood from which the calcium has been removed by passage over an ion-exchange resin.[21] These all have disadvantages, not the least of which is the complexity of preparation

ADDENDUM TO BRITISH PHARMACOPŒIA

THE shrewd observer may now discern the outlines of the *British Pharmacopœia 1958* The *Addendum 1955* to the *British Pharmacopœia 1953* now published [1] is more than a list of amendments it is a substantial supplement The principal alterations are succinctly described in the introduction

> There are monographs on the antimalarial drugs Chloroquine Phosphate and Chloroquine Sulphate the anthelmintic drug Diethylcarbamazine Citrate the ganglion blocking agent Hexamethonium Tartrate the muscle relaxant substance Suxamethonium Chloride the anti-convulsant drug Primidone the local anæsthetic Lignocaine Hydrochloride the radio-opaque substance Iopanoic Acid and on Isoniazid which is used in the treatment of tuberculosis. Other new monographs provide official standards for Ferrous Gluconate the antithyroid drug Carbimazole the anticoagulants Phenindione and Dextran Sulphate and the antibiotics Oxytetracycline Dihydrate and Oxytetracycline Hydrochloride Hormone preparations are represented by Cortisone Acetate Corticotrophin and three preparations of Insulin termed Insulin Zinc Suspension Insulin Zinc Suspension (Amorphous) and Insulin Zinc Suspension (Crystalline) There are also monographs covering the forms in which the new chemical substances are administered namely injections and tablets.

Among other drugs in the list are gallamine triethiodide (Flaxedil) a muscle relaxant, nalorphine, a valuable antagonist to morphine methylamphetamine (presumably included on the ground that it has a more selective action than has amphetamine on the central nervous system) and phenylbutazone (it is noteworthy that the recommended daily dosage is conservative—0 2 g–0 4 g in divided doses). There are also soluble tablets of acetylsalicylic acid—a gesture to present day fashion (vide *National Formulary 1952*) Modern trends in the practice of dispensing are revealed by the fact that in this short list of addenda there are no less than twenty preparations in tablet form but compound tablets are notably absent

The art of describing preparations and procedures concisely accurately and without ambiguity is essential in the practice of pharmacy A hint of the amount of labour that goes into this subject appears in the paragraph on distilled water

> Distilled Water has been described in successive editions of the Pharmacopœia since the first issue in 1864 Water for medicinal and pharmaceutical purposes may now be prepared from potable water by distillation or by treatment with ion-exchange materials. Both methods of preparation are now official and the title of the monograph is changed from Distilled Water' to Purified Water' Additional requirements for purity have been added and the references to Distilled Water throughout the British Pharmacopœia 1953 are changed to Purified Water It is directed that when Distilled Water is prescribed or demanded Purified Water shall be dispensed or supplied It should be noted that Injections are made with Water for Injection and Purified Water is unsuitable for the purpose

We are growing accustomed to the use of English as the main title for substances and their preparations dealt with in the monographs It is easy to exaggerate the virtue of consistency but at the present rate of progress the time may not be far distant when Latin will no longer be used even for the official synonyms of the older galenicals

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[21] Bunker, J P., Stetson, J B Coe, R C Grillo H. C. Murphy A. J *J Amer med Ass* 1955 157 1361.
[22] McLean, F C. Hastings A B *J biol Chem* 1934 107 337
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[25] Hubner, D. Yahn, O *Arq Cirurg clin exp* 1949 12 309
[26] Lanard Koloday S Mayer A. *Ann Physiol Physicochim. biol* 1935, 11 281
[27] Mackay E. M. Karnl O Wick, A. N *J biol Chem* 1940 111, 59
[28] Hedstrom, P *Acta chir scand* 1937 suppl 49
[29] Moppert, A O M *Medicina B Aires*, 1940 6, 380
[30] Natelson, S., Lugovoy J Pincus, J B *J biol Chem* 1947 170 597
[31] Perske, H., Goldstein, M. S Levine R. *J Pharmacol* 1950 100 372
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[27] MacKay E M, Karnl O, Wick, A N *J biol Chem* 1940 132, 43
[28] Nystrom, P *Acta chir. scand.* 1937 suppl. 49
[29] Sheppard, L O M. *Medicina B Aires*, 1946 6, 389
[30] Hardaway, H, Lemeroy J., Phoenix J B *J biol Chem* 1947 170 647
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Special Articles

THE EMOTIONAL DEVELOPMENT OF CHILDREN*

HEDY SYMONDS
M D Vienna, M R C S
CLINICAL ASSISTANT, ST GEORGE'S HOSPITAL, LONDON ,
MEDICAL OFFICER, LONDON COUNTY COUNCIL

Freud's conception of the unconscious and his analytical observations have already shared the fate of other theories—being at first strongly refuted and later diffusely accepted They might be left at that, but for two special features Firstly, if analytical concepts are true and the individual's character is mainly formed during the first five years, it would affect us all equally and directly Secondly, if irrational unconscious forces are active in us all our lives, this might explain why our lives are often so precarious, and so rarely satisfying

We cannot, in fact, afford to ignore a tool which might, used fully, help us to prevent breakdowns and even to know ourselves and shape our destiny But a critical reassessment of these concepts is necessary before they can be effectively applied

THE NEWBORN INFANT

According to analytical experience a newborn baby is as capable of feeling fear and anxiety as of feeling happiness or contentment He does not represent a brand new life, but a continuation of millions of lives before him , and what is more likely than that traces of earlier phases of development and experience have remained, which are active from the moment of his independent existence ? In all organs, earlier, long obsolete, phases of development are recapitulated during intra uterine life Why should the organ showing highest development be uninfluenced by either past experiences, or lack rudiments on which later function is built ? The electro encephalogram shows a steady development from the time of birth to maturity there is no sudden emergence of new waves to suggest a new function appearing later †

If we accept that even the newborn infant has some form of emotional life, we can begin to look at him objectively and experimentally, asking ourselves what form this emotional life takes The adult personality has three components—an instinctual core , a partly conscious, volitional ego , and a critical, demanding part, sometimes called the super-ego Of these three the infant can possess only the first—the instinctual core This is the oldest—the inherited—live core of all personality, round which consciousness slowly develops, and into which impressions of authority become incorporated

In the infant the instinctual drive is expressed through feeling he desires to be fed, loved, protected Instincts are egocentric, know no tolerance, and are timeless and irrational Even at this point the child is linked with the rest of humanity by his capacity for fantasy Physically he is powerless and dependent, but in fantasy he is limitless When his desires are fulfilled and not hampered by his own weakness he feels omnipotent When he is frustrated, however, his fantasies may produce fears
out of proportion to any actual threat This ca
for *fantasy* surely explains why the baby a few
old cries so bitterly when handled by a stranger, ju
a noise, or resents any change If he imagines
things to be wholly good, and bad things—or
which seem bad or unwanted—to be wholly destr
and terrifying, his exaggerated responses b
understandable

THE FIRST SIX MONTHS

During the first three months he must *form hi*
inaccessible, deepest- picture of the world he has
born into His instincts, when satisfied, give him
and repose , when frustrated they become an irr
and a threat What limited means he has at his con
he uses fully to express his inmost feelings He di
rapid interchanges of love and hate, happines
misery, and every other opposite emotion That cl
have very fluid emotions has long been known
feeling while it lasts is of great strength The infant
able at first to control these feelings, but his very
to survive helps him to acquire responses which he
approved, and to discard others which are frowned
Substitute gratifications help him in times of frustr
He sucks his fingers in place of the satisfying b
Later, bits of wool, toys, any object he can la
hands on, will be imbued with magical soothing qua
hence his obvious satisfaction on finding his fav
object, and his distress at losing it He also beg
acquire some of the mental magical tricks whicl
throughout life assist him he turns a blind e
something he does not like, splits the image into
and thereby saves himself the difficult task of discri
tion If he can see separately a good mother a
bad one, he is able to love the good without reserv
and hate the other without guilt

The next three months seem like a truce The
dissatisfied baby settles down somewhat and fi
modus vivendi—a compromise between his own den
and his satisfactions

SIX MONTHS TO TWO YEARS

The period from 6 months to 2 years has been
the phase of maximum aggression

If we consider what is happening in his physical
at this time his violent mental reaction becomes co
hensible In the first place, his teeth are nagging
jaws To the primitive mind physical pain is very
like deprivation Before man had science, he had m
illness was a visitation from an unseen, hostile p
The infant, like a savage, feels angry and resentf
being thus visited Again, the hitherto horiz
creature begins to sit up, then crawl and finally w
he learns to make recognisable sounds , and he acq
the rudiments of toilet training All these major
could not be accomplished without very powerful u
If he was completely happy in his dependent stat
would have no reason to try to change it , but his
strong frustrated desires urge him, push him, to
new attempts at controlling his situation

At this stage, then, instinctual desires become b
urges, and are given added strength by the abilit
bite, chew, touch, reach, and destroy objects
imagination is at its most active, because contr
only slowly being acquired He not only reaches
physically , he also reaches out imaginatively He
"into touch," in every sense of the word with rea
and is able to test his ideas, and discard or mo
them according to experience If, in his imagina
he chews and bites people, as well as objects, and
is concurrently punished for some deed, he takes
to be a reprimand for his own destructive thoug
He feels guilty

But if these instinctual desires are as powerful
we believe how is it that within a few years the c

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* Based on a talk given at Salford on Feb 28, 1955

† To produce electricity at all, there must be two opposing forces We know that in muscular activity the antagonists are as important as the agonists It is the former which provide the smooth basis on which the latter can act purposefully The two groups, "paired off," produce between them flexibility and firmness In our emotions very much the same appears to be the case and every emotion is linked with its opposite This might explain both the quick interchange and the need for establishing, through practice, paths through which our emotions can flow It also explains how one type of feeling has, incorporated at its base, the exact opposite

becomes almost as civilised as an adult—whereas the race as a whole has taken thousands of years to achieve the same result ? *Surely because he is helpless fluid, and* impressionable. His foremost need is for love, without which he cannot survive, and in order to get love he must conform Conformity in every culture takes the form which adults set for him If he did not imagine that *disapproval* means rejection and a threat to his need for love he would hardly be able to counter his impulses as successfully as he does. The child s desire to be loved and accepted is the basis of all civilisation The quality of love which he gets decides in turn how much of his energies will be freed for exploration and how much spent in battles with himself Mental strife is at all times energy-consuming but *at the stage when the* child establishes his first contact with reality, a damming up of energy may be detrimental to all his later development. Energy in the mental world behaves like physical energy denied legitimate outlet it makes its escape through other *channels.*

The child in the time of his physical helplessness, is living a rich and crude fantasy life and interpreting events in the real world in a distorted form He relates all behaviour and all events around him to himself, almost like a paranoiac Good and bad impress him and the adults of his childhood are models for life. Even when he rebels against a particularly hard to attain adult standard such as cleanliness he will have absorbed that attitude and may in later life be obsessed with *the idea* of meticulous orderliness at the expense of his emotional freedom

Being loved and accepted, *mean to him the acceptance* of some degree of badness in himself If all the badness in him is *rejected* he will feel alone and deserted at the very moment when his own antisocial demands are tending to isolate him He responds to demands and prohibitions *just as much as to love* but the result of the two in his mental economy is vastly different. When he discards, or attempts to give up a piece of behaviour which is strongly disapproved he feels that this *disapproval of a part* refers to the whole he feels rejected and frightened *and fears that he may lose the* parent's love His instincts urge him to seek satisfaction, if his parents disapprove he must do battle within him Self being as yet, very loosely organised and having weak defences and strong urges, he is unlikely to succeed He will feel that there is something undesirable bad in him he will in fact know the meaning of guilt It is a characteristic which survives into adult life that we cannot bear internal guilt we must fix it somewhere outside, we *must* try to find someone else to be responsible for it

How can an entirely dependent creature attempt open revolt ? He dare not so he must not only find suitable objects to project his guilt on but must also modify his behaviour in some respects and compromise If for instance particularly great pressure is brought to bear on him with regard to cleanliness he may become constipated—still apt to dirty himself, but only infrequently Thus he submits to one prohibition while at the same time trying out partial revolt

Muscular actions require *many* repetitions before they become reflex and effortless; and in the child's mental life there are many attempts and repetitions before responses are established which finally become automatic and almost ineradicable The great danger of mental responses is that *having once* become established, they are repeated unconsciously and cannot later be changed merely as a result of critical assessment Having worked *out* a faulty adjustment—for instance great repression and fear of authority—the individual is likely to be hampered for all his life by *an excessive* response of fear to a situation which does not warrant it He invests his parents with tremendous power, which they do not really possess, how much less is the power of people with whom he associates later on whom *his dependence is largely imaginary The fact that so* much of our mental life becomes reflex automatic, unconscious, at this early age makes these early years vital

Two outstanding emotions of the first two years are jealousy and the œdipus complex The existence of the first is often denied and the second has met with greater resistance than any other of the analytical theories

Jealousy is a felt threat of loss of love—love which seems at the time essential The infant survives solely by love If we allow him enough feeling to know that he needs this love and accept that he has imagination *we can deduce that many things will* appear to threaten this love The father will at times seem to monopolise his mother s love, the arrival of another sibling *must* appear to him as great deprivation He has strong instinctive drives, designed to serve his own survival and they must all be stirred in situations where he feels threatened or deprived Since any expression of his jealousy is most unlikely *to meet with approval* he has the choice of regressing to an earlier stage (when he could command love through his physical needs), or of becoming a nuisance in other ways, or of inverting his feelings of jealousy and showing excessive concern *for this rival s welfare In all of these* expressions there is a compromise between what he wants to do, but dare not for fear of reprisals and what he finally does as the only way out of a thorny dilemma What he cannot do being human is to be indifferent.

Infantile sexuality, if seen as an overriding demand for love feeds at this stage on fantasy He has as yet no knowledge of how love *operates, he does not* differentiate the zones for the reception of satisfaction His fingers are as capable of giving him satisfaction as any other part of his body, his mouth is particularly satisfying for feeling touching tasting He is aware of his own bodily *needs* and *invests his voice,* his excreta his genital organ with magical qualities; and it is in this magical sense that he also wishes for complete fulfilment *Differentiation* between physical and spiritual love is impossible till much later and *though he* may demand for himself all he *can see,* he is satisfied with very much less We all know that the infant or young child who masturbates does so to allay *his own fears* and if these have been roused in connection with his infantile sexual fantasies, he will nevertheless carry the fear with him *to the time* when he may fulfil himself as an adult

The crucial task at this stage is how to leave the child with enough instinctual drive to make him a happy, rational confident adult *and* how to civilise him sufficiently *for* life as a social being His instincts must be moderately satisfied if they are to serve him as an adult; suppressed, unfulfilled demands in infancy, when his powers of dealing with *them are wholly* inadequate, prevent him from acquiring a rational attitude to them later *It seems there* is an optimum time for acquiring mental attitudes just as much as there is for learning to walk. Throughout this period *compromises* made through love leave a good healthy, happy feeling whereas compromises made through fear produce feelings which are unhappy *distorted,* and dissatisfying

FROM TWO TO FIVE

The years *from 2* to *5* are years of consolidation and the learning of new skills Expansion in the mental sphere includes *increase* of consciousness, the use of reason and a degree of social adjustment The character structure daily becomes better *established* and the child s defences are organised By now predominant traits can be seen and types of difficulties are recognisable Feeding *and sleeping* difficulties often go together and can be traced backwards in the history Some use food and feeding as a major compensation for restricted outlets in other directions, others are ready to attack the world and seem to stand in need of repeated proof of their prowess These have as little real security as those who timorously withdraw

From now on the child is not so plastic as he was, for he has his own ideas, expectations, hopes, and fears and will use his experience selectively to strengthen some and weaken other aspects of his personality His approach is no longer wholly unbiased or inexperienced instead of meeting the world with fantasy alone, he now has some experience of reality, and does not apply fantasy so readily to the outside world

If one doubts the existence of fantasy in children one need only think of the vivid, cruel, imaginative fairy-tales which have survived through the ages only because they appeal to something vital in the child

THE MOTHER

Emotional development of the child would be unimaginable without the presence of the person who loves and cares for him, and on whom his survival depends The importance of the rest of the family, though no less great, is at first indirect

Freud thought that mother-love was perhaps the only love which contained no envy, jealousy, mistrust, resentment, or other negative feeling No doubt it is the most unselfish emotion experienced by humans, but, like other kinds of love, it is a continuation of earlier experiences The mother intends with all her might to love the baby, and think only of his welfare, but, as a human being, she has her hopes, fears, disappointments, and expectations She is undergoing her most intense emotional experience and this rouses earlier associations and renews their vigour She cannot separate her earlier personality from her present one on the contrary, she will derive her strength and weakness from her earlier experiences

There is thus a duality, at least, in the mother, between her conscious wishes and her unconscious established attitudes If these incline her to uncertainty and lack of confidence, she will handle the baby in a way which makes the baby feel anxious and uncertain If she accepts the baby on the condition that he conforms to her idea of a perfect baby, she will inevitably reject him when his behaviour is opposed to her ideas Often she has an exalted idea of the good mother, and entertains some doubt about herself in this rôle The most effective confirmation of her goodness is given her by the baby if he thrives and does what is expected of him, she can feel reassured Should the child respond more to the doubt, than to the warmth and love she offers, this is an equally strong condemnation which she finds very difficult to bear In this situation outside criticism, or what she takes for criticism, also reinforces her own doubts Should her own doubts and disturbance become severe, she will require repeated reassurance and understanding before she can relax sufficiently to see the situation at all objectively

Most mothers see their babies, at first at any rate, as an extension of themselves Physical separation at the birth of the child does not automatically enable them to recognise him as another individual with similar and dissimilar desires to those they themselves possess

Rigid rules are of very little help in this complex, mutually growing dynamic relationship The mother needs sympathy and understanding, just as the infant does, and most important of all, she must feel herself to be good if the infant is to feel her so

CONCLUSION

Babies and infants are believed to possess imagination long before they possess physical strength This imagination makes them feel and respond to outside events in ways far beyond the real significance of these ev Their imagination also provides them with idea omnipotent goodness, and of complete destructive They interpret events as stemming from these pow ideas within When their hostile and destructive imp are met with understanding and sympathy they will modify them, and in the process gain feelings of good and power When these same impulses have to modified under pressure or demand, or threat of reject they find other, tortuous, outlets and plunge the into internal struggles before he is ready They diminish his available energy for meeting the out world, and distort his picture of what is real and imaginary The greater the child's preoccupation his inner life, the more will this unreal imaginary invade reality

The mother's earlier experiences are thought influence her behaviour to the infant If her fears resentments are brought to light, understood, accepted she can deal with it As she is usually una of it herself the doctor's rôle is important

In mental development there is as much flexibi and as definite a tendency *towards improvement* a physical development Moreover, even in the c good acceptable unselfish conduct produces content and integration, whereas bad antisocial conduct g satisfaction only for the moment

Our whole history has been a war of opposed tenden Had we less desire for social and individual improvem we might never have progressed so far Had we fe and less powerful primitive drives, we might not h survived

I should like to acknowledge my gratitude to Dr J J Jacobs and Dr Emanuel Miller of St George's Hospital Dr J A Scott of the London County Council, and to Tavistock Clinic

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RENAL DISEASE

A SYMPOSIUM on Modern Aspects of Renal Dis was held at the Postgraduate Medical School of Lon on Sept 26–30

Prof CLIFFORD WILSON gave a valuable prelimin account of present views of the classification of re disease In a discussion of the nephrotic syndro Prof J SQUIRE stressed the importance of urin protein loss in the causation of hypoalbuminæmia œdema Dr R LIGHTWOOD stated that the present t dency in the use of corticotrophin or cortisone was continue treatment for a considerable time after diur had occurred, and, if possible, until a normal plas protein pattern had been restored

The pathology of renal disease was explained w admirable clarity to an audience composed chiefly physicians rather than morbid anatomists Prof J DIBLE dealt with acute renal tubular necrosis, a Prof C V HARRISON with renal amyloidosis and neph calcinosis Dr P KINCAID-SMITH, in a demonstrat of the pathological changes in malignant hypertens and chronic pyelonephritis, confirmed recent views the importance of nephritis in the ætiology of seve hypertension in patients under the age of thirty T comparatively recent specialised pathological techniq proved of special interest Dr E M DARMADY describ how microdissection of individual nephrons had advan knowledge of the localisation of renal tubular diseas and Dr R C MUEHRCKE (Chicago) told of his expe ence of over 350 renal biopsies by percutaneous need puncture, using slides from cases of the nephrot syndrome and acute disseminated lupus erythematos to demonstrate the value of this method

The relationship between renal disease and hype tension was considered in detail. Prof J MCMICHAE reported favourably on the use of ganglion blockin drugs in hypertension associated with mild uræmi but he considered that benefit was unlikely in patient in whom the blood-urea was consistently above 10 110 mg per 100 ml It was agreed that a unilater renal lesion was a *rare* cause of severe hypertensi in man, but was of great importance in view of the possibility of complete cure by nephrectomy Mr R SHACKMAN thought that detailed investigation of the separate function of both kidneys by inulin and *p*-amino-hippurate clearances was essential in accurate pre-operative assessment

Dr K. G LOWE described the principles of conservative management of acute renal failure; and Prof J HAMBURGER (Paris) discussed treatment by the ancillary methods of exsanguino-transfusion, peritoneal dialysis, intestinal perfusion, and the artificial kidney He considered that the last method was by far the most efficient, and in its present perfected state, was a major therapeutic advance. Dr E G L BYWATERS gave an account of the development of knowledge of the causation and treatment of acute renal failure in air-raid victims during the second world war Prof M L. ROSENHEIM discussed the treatment of chronic uræmia, and emphasised the value of control of diet and fluid intake, and correction of electrolyte abnormalities anæmia and urinary infection

Prof R A MCCANCE, in a description of renal function in infancy, stressed the especial dangers of overhydration at this age Dr LIGHTWOOD discussed the two important conditions of infantile renal tubular acidosis and idiopathic infantile hypercalcæmia The former was thought to be becoming less common in the last few years. Excess intake of vitamin D could not be excluded as the cause of hypercalcæmia, since this condition occurs only in artificially fed infants, and all dried milk and proprietary cereal foods appeared to contain added calciferol. Renal osteodystrophy was well described by Dr C E DENT who dealt with specific renal tubular syndromes, and by Dr S W STANBURY who stressed the bewildering diversity of the bone changes that can occur in association with chronic uræmia

Dr R SOUGIN MIBASHAN (Cape Town) gave an account of 150 cases of gout seen in South Africa; and there was evidence that renal abnormalities were present in 40% of gouty patients. In a discussion of diuretics, Dr R. I S BAYLISS dealt with mercurials and Dr M D MILNE with acetazolamide (Diamox) It was agreed that the latter drug was more useful as an adjuvant to mercurials, rather than as a diuretic in its own right Modern views of electrolyte metabolism were admirably summarised by Professor MCCANCE, Dr D A K BLACK and Dr P FOURMAN The final two sessions were concerned with the relationships of the endocrine glands and the kidneys. Dr C L. COPE discussed the effects of the adrenal cortex and Dr O GARROD the posterior pituitary gland They described practical methods for the diagnosis of deficient adrenal function and of diabetes insipidus, not requiring elaborate laboratory assistance

THE WELLCOME TRUST

THE Wellcome Trust came into being in 1936 under the terms of Sir Henry Wellcome's will Twelve years earlier Wellcome had formed into one organisation his original business of Burroughs Wellcome & Co., London and various overseas branches and subsidiary companies, and the research laboratories museums, and the library of the history of medicine which he had founded He combined all these into one limited liability company, which he called the Wellcome Foundation Ltd Originally the Foundation had a theoretical capital of one million £1 shares and in 1936 these passed to a board of five trustees appointed by Wellcome's will. Their chief duty was the proper expenditure of the Trust's income to support researches in medicine and allied sciences which were very broadly defined and to create, endow or support research museums and libraries dealing with medicine and its history anywhere in the world

Wellcome thus created two related but partly independent organisations and gave them titles that could hardly fail to lead to confusion between the two Indeed at an at home given by the Trust on Oct 5 Sir Henry Dale F.R.S. its chairman since 1936 referred ruefully to the large number of letters he received that should really have gone to the Foundation The Foundation, Sir Henry emphasised was the world wide business and the laboratories, museums and library associated with it the Trust were the holders of the whole share capital of the Foundation and were responsible for seeing that the income was used according to the will s instructions

For the first five years of the Trust s existence all its resources were absorbed in paying the very heavy death duties on the Wellcome estate and by the time they were paid the country was at war For the trustees as shareholders, the abnormal situation continued for some years after the war and under the circumstances Sir Henry said, their policy had to be an opportunist one So far they had only occasionally taken the initiative by themselves proposing a particular benefaction more often they had responded to requests for help But under the more normal conditions that now prevailed they should be able to count on substantial resources being regularly at their disposal and the time had come, Sir Henry said for a longer term policy and more coördinated planning by the trustees And that meant they would need a whole-time administrative staff to deal with the charitable aspect of their functions Dr F H K Green, formerly principal medical officer on the headquarters staff of the Medical Research Council had lately become scientific secretary to the Trust, and he would take chief responsibility for the executive organisation of the Trust's spending policy There was also to be a change among the trustees Prof T R Elliott F.R.S., was about to retire, and he would be succeeded on Jan 1 by Brigadier J S K Boyd, F.R.S. who was leaving his post as director of the Wellcome Laboratories of Tropical Medicine Among some specific prospects in view, Sir Henry mentioned a wider system of travel awards for senior men and he also spoke of plans for a department of research in anæsthesia at a university to be announced presently

MEDICAL PROTECTION SOCIETY

ALTERATION of the periods within which legal actions may be brought were mentioned by Sir ERNEST ROCK CARLING presiding over the annual general meeting held in London on Oct 5 The Law Reform (Limitation of Actions &c) Act, 1954 increases from one to three years the period during which a plaintiff seeking damages for personal injury must commence legal proceedings against a public authority (which includes hospitals and members of their staff) but it reduces from six to three years the corresponding period for actions against private practitioners By enlarging the jurisdiction of county courts and increasing the amount of damages obtainable in them (from £200 to £400 or even £500) the new County Courts Act may increase litigation against the profession, especially as legal aid is likely to cover county-court proceedings.

Turning to avoidable causes of litigation Sir Ernest spoke first of the skin tight plaster which must always be watched with great care: if any doubt whatever is aroused by continuing pain or by a change of colour in the extremities the plaster must be removed or at least completely split On the vexed question of swabs left behind at operation he expressed the view that when a surgeon has made a search for a swab *secundum artem*, he is then entitled to rely upon that part of the hospital organisation to which he appeals by asking the theatre sister Is the count correct ?'

It is, Sir Ernest believes very wrong for any doctor, speaking from a position of comparative safety to criticise the previous action of a colleague working under stress of circumstances and with a full sense of responsibility; and the critic who hands that colleague over to the mercies of the Law thereby demonstrates his own deficiency in appreciating the human relationships which are of the essence of good doctoring Nobody can be sure of always avoiding mistakes, and in paying a subscription to a defence society every member can be regarded as pouring out a libation to the gods, praying *that fate may not lead him into error*

Mr W G HAWKINS, of Messrs Le Brasseur & Oakley, solicitors to the society, spoke of the pressure and strain of conditions under which professional men now live and work None of them can say that they have all the time they want for their work, and in consequence they must often find a quick solution for their problems Nearly always they are right, and it is a pity that they should be stigmatised for the rare error But unfortunately it may be impossible, in a court of law, to explain the nature of the conditions under which the work has been done, for to say, for example, that the doctor was in a hurry is to damage his defence by admitting a degree of failure

The society's annual report shows that during 1954 the number of new cases in which members sought its help rose to 2180 The membership continues to increase and at the end of the year was over 29,000 With the annual subscription at £2, rather more than £7000 was carried to accumulated funds, and the society's financial resources stood at £179,000, besides which it is reinsured for a considerable sum Despite the rise in legal expenses and costs and damages, the council is satisfied that with these reserves there is no need at present to ask members for an increased contribution in order to secure the unlimited indemnity granted them for the protection and defence of their professional interests

Sir Ernest Rock Carling was re elected president, Mr W M Mollison treasurer, and Dr Alistair French secretary The chairman of council is Dr F Harwood Stevenson

Public Health

Sweet-wrapping in Private Houses

THE true incidence of food-poisoning in this country is not known The disease is notifiable under the Food and Drugs Act, 1938, but it was the scheme for reporting, introduced in 1949, that provided more accurate information about outbreaks and sporadic cases Despite this improvement, details are still far from complete More and more attention is being given to food-borne infections, however, and since the war preventive measures have been intensified Increasing efforts have been made to get the public to realise their responsibilities in preventing food contamination The staff of the public-health department make a careful search for the source of infection in every notified case—but with limited success Food campaigns have been launched, directed particularly at manufacturers and retailers The emphasis has been on cleanliness in the handling of food, but the real aim should be to handle it as little as possible or not at all

It has been said that the efforts of medical officers of health and others to educate food handlers and the general public in their responsibilities in the production of safe meals have not been very successful so far[1] This may be true to a considerable extent, but there is evidence that many firms, especially the big ones, are now coöperating more closely than formerly. Perhaps, also, public awareness in these matters is increasing, and for this the health visitor must be given a good share of the credit This is the crux of the problem, for it is the public demand for clean food that will give the retailer the best stimulus to provide it

Food prepared or wrapped by outworkers in their own homes runs a very considerable risk of contamination The Factories Acts require contractors to tell the district council what workers are engaged in specified classes of work at home The manufacture of chocolates and sweetmeats is included in the list, but the packing or wrapping of foodstuffs is not The wrapping of large quantities of children's sweets in private houses in London has recently been brought to notice[2] The are bubble-gum and candy cigarettes and matches. are packed in kitchens and back parlours, and it that the chances of their becoming infected are Standards of cleanliness for rooms in which food int for human consumption is "prepared for sale," a those engaged in the preparation, are laid down Food and Drugs Act Wrapping of sweets is exclude these provisions, but the model by-laws[3] refer to person who handles, wraps, or delivers any food Ch gum, also, is not a "food" for the purposes of th The medical officer of health would therefore ha knowledge of these workers, and what is going South London may well be happening elsewhere.

A first essential is to include "wrapping and p of foodstuffs" in the prescribed form of lists o workers which are open to H M Inspectors of Fa and officers of the district council We understan chewing-gum (which presumably includes the p bubble-gum) is to be classified as a food in the Hygiene Regulations being made under the new and Drugs (Amendment) Act These changes wil the medical officer of health to find out something *the extent of this unhygienic practice, and to take* to stop it

Meanwhile, the coöperation of those sweet manufac who, despite press publicity, continue to allow wares to be wrapped in this way, should be sought should insist on reasonable standards of cleanlin their employees The contractor whose wares referred to in the *Sunday Pictorial* has now, we g given up all home wrapping This result illustrate value of such publicity in a clean-food campaign

Losses of Young Life

Loss of life is still heavy in embryonic and per life, particularly in countries which are econom poor and socially backward The Population Di of the Department of Social Affairs of the United N has made the first detailed comparative study o different aspects of the problem in many diff countries,[4] and its valuable work should pave the for more accurate international standardisatio definitions and their stricter enforcement More re data would aid investigation of the factors respo for early wastage of life The task is formidable, espe in the more backward countries, for the provisi accurate national statistics depends, of course, far on family doctors and other field workers than o relatively small group of statisticians who analyse interpret the facts presented to them

In a monograph from the Institute of Preve Medicine, Netherlands Department of Health, Gelderen[5] focuses attention on mortality in the school child He contends that the mortality rat children between one and four years of age is probal better yardstick of social and hygienic conditions the infant-mortality rate

In the Netherlands mortality in that age group has dec more than tenfold in the past fifty years, but it rem considerably higher than the mortality in children of sc age In the preschool group, mortality varies inversely age, but the gradient is tending to flatten out, becaus decline of deaths from all causes is not accompanied decline from accidents, which are commoner in the c children van Gelderen believes that the small siz families, and good child care, which tend to be com mentary, are now more important than intensive med care as causes of low mortality in the preschool child higher mortality at preschool age in Holland than in o advanced countries is chiefly due to a rather high morta from accidents and common infectious diseases nota diphtheria In this age group the number of deaths from accidents is the same as that for the common infectious diseases and respiratory infections combined: drowning causes as many as 40% (doubtless because of the nature of the country) traffic accidents 30% and burns 10%, and the accident death rate is twice as great in the country as in the towns. van Gelderen showed that the most important single factor in the prevention of accidents in the young child is a high standard of maternal care and he regards systematic instruction of mothers in accident prevention as very important

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[1] Report of the Ministry of Health for 1952 Part II H M Stationery Office

[2] *Sunday Pictorial* July 31, 1955

[3] Series 1 1949 Issued by the Ministry of Food

[4] Fœtal Infant and Early Childhood Mortality Vol 1 Social Statistics Pp 137 11s Vol 2 Biological Social Economic Factors Pp 44 3s Department of Social Af (Population Division) United Nations, New York H Stationery Office 1955

[5] Pre-School Child Mortality in the Netherlands By H VAN GELDEREN M D Leyden H E Stenfert Kroese 1955 Pp 138

Poliomyelitis

Notifications of poliomyelitis in England and Wales in the week ended Oct 1 (39th week) showed little change from the preceding week. The figures were (38th week in parentheses): paralytic 207 (201) non-paralytic 180 (193) total 387 (394) Regionally the figures decreased in the North Midland London and South Eastern (including Greater London), and South Western regions and in Wales. There were slight increases in the East and West Ridings and in the Northern North Western Midland Eastern and Southern regions. In Greater London Willesden notified a further 11 cases and Harrow 4 The following figures give the total uncorrected notifications in the 39th week during the past six years (percentage of paralytic cases in parentheses): 1950, 332 (66·9%); 1951 108 (59·2%); 1952, 162 (61·1%); 1953, 157 (50·3%) 1954, 70 (57·1%); and 387 (53·5%) Although the proportion of non-paralytic cases dropped further to more normal proportions there were still 12 counties in which non-paralytic cases exceeded or equalled paralytic ones This excess was particularly striking in Middlesex Essex, and Surrey In 1955 so far the proportion of non-paralytic cases has been approximately 46·1% of the total The corresponding figures in the preceding four years were: 1951, 41·5% 1952, 29·8%, 1953 31·6%; 1954 32·8%.

It is reported from the United States[1] that the poliomyelitis-rate among children aged 5 to 9 who had had vaccine was 25–50% lower than among those not vaccinated. Preliminary findings are described as very encouraging

Well-water Cyanosis

In this country cyanosis in infancy due to nitrate contamination of well water is uncommon but in 1951 Ewing and Mayon White[1] reported from Suffolk three cases (one fatal) associated with a high nitrate content of water from shallow, insufficiently lined wells, used to make up artificial feeds.

Well-water cyanosis, which is limited to the first few weeks of life is due to the conversion of nitrates to nitrites by coliform bacteria in the intestine The nitrites enter the bloodstream and convert hæmoglobin to methæmoglobin, which is not suitable for transport of oxygen, and reduces the oxygen-carrying power of the blood Taylor[2] suggested that 20 parts of nitrates per million should be regarded as the highest acceptable figure in water used for preparing an infant's milk mixture.

Dr A C Gee in his report for 1954 as medical officer of health for Lothingland, Suffolk, *remarks that in that* area a case of well water cyanosis was detected about the same time as those recorded by Ewing and Mayon White; and he describes a scheme for ensuring the safety of the water used in artificial feeding By this scheme which has now been in operation for some two years, district midwives inform the health department of coming confinements and report on the source of the water-supply If this is a well samples are taken for analysis and when analysis indicates that the water is likely to be dangerous an alternative supply is provided if artificial feeding becomes necessary But, Dr Gee adds, the scheme is proving difficult to administer, since not all mothers come under the care of the midwives He suggests that doctors and hospitals serving rural areas should bear in mind the potential dangers of well water and that, where necessary, the local health authority should be asked to analyse the water-supply in the home.

Western European Union

The Public Health Committee of the Western European Union met in London on Oct 4–7 The meeting was attended by delegates of the five Brussels Treaty countries (Belgium, France, Luxembourg, the Netherlands and the United Kingdom) and of two new member-countries—Italy and the Federal German Republic.

The committee decided to make a preliminary study of air pollution in the seven countries It also decided to extend to Italy and the Federal German Republic the arrangements by which no health control is imposed on an aeroplane or ship between member-countries.

The next meeting of the committee will be held in Paris next April

Statistics for England and Wales

The Registrar General's return for the June quarter of this year appeared last week.[1] The principal births and deaths figures were published in an earlier weekly return[2] Provisional figures of causes of death in the March quarter of 1955 show that measles caused 58 deaths—8 more than for the whole of 1954, which had a record low figure of 50 deaths. The figure for the March quarters of 1951 and 1953 (the last epidemic year) were 15 and 142 respectively There were only 2 deaths from diphtheria. A sharp rise in the number of deaths from poisoning by domestic gases brought the number of deaths from all forms of accidental poisoning to 450 The figures for the preceding three quarters were 278 108, and 218 There was also an increase in the total number of deaths from falls, but while those of women numbered 1030 compared with 971 in the March quarter of 1954 those of men numbered 601 compared with 940

Medicine and the Law

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1. New York Times Oct 2 1955
2. Ewing M. C, Mayon White R. M *Lancet* 1951 i 931
3. Taylor E. W The Examination of Water and Water Supplies London, 1949

In England Now

A Running Commentary by Peripatetic Correspondents

As usual at the beginning of the university year, the narrowing effect of the science courses has been condemned or regretted and many solutions offered But before accepting these would it not be wiser to decide what actually is a "narrow outlook" and what is the object of widening it? With the ever-increasing quantity of knowledge is it better to know a little about a lot or a lot about a little? Is it really true that all those who possess an arts degree are more broadly educated than those with a science degree? Does not the personality and ambition of the student play a part? A man who is going up to the university to complete his education and is still undecided about his future is surely more likely to obtain a wider experience than a man who is studying to fulfil his ambition to be a doctor Is it so wrong that the medical student should read medicine to the exclusion of other subjects, which he feels he can study later, perhaps during his period of National Service? Is it indeed possible for any except the most gifted to cope adequately with extra subjects? To add subjects, such as a superficial knowledge of ancient languages, for their supposed cinemascopic effect, is needless With the correct emphasis placed appropriately within the present syllabus by teachers of wide learning, there is no need for additional subjects

A lecturer can by example encourage students to see knowledge everywhere, to read Shakespeare to learn life, to read novels to study the interplay of personalities and their effect on events The object of widening the student's outlook is to enable him to distinguish a real argument from a false one, to make correct deductions from sound evidence, and to be tolerant and liberal The logical and analytical methodology can be taught through medical statistics and physiological experiment, while tolerance can be taught through psychology These attributes can be developed by group discussions which by introducing other peoples' views further help the broadening process Another step in the same direction is to include people other than medical students in some of the discussions, and to exclude authoritarian teachers Once qualified the medical student's pure pursuit of arts and classics will only be hindered by earning a living, keeping up with recent advances and reading the journals, washing up, tidying the garden, and even painting the house Can it be true that a nodding acquaintance with Greek mythology can shorten the syllabus, run the practice, and abolish the household chores?

* * *

So you read that article in the Education number on practice in Canada and you decided that you would come over, did you? You said to yourself "I can easily qualify again after a couple of evenings' revision, and after all I don't have to learn a new language" But, as we say over here, "you do too" (or "you do *so*") Mind you, some of the North American words are an improvement—such as thumb-tack for drawing-pin—but I still prefer lift to elevator It is easier to understand, I find, than to be understood, because the newcomer is expecting a new sound, whereas the natives are not It is especially noticeable on the telephone, where operators hear numbers half unconsciously I have given up trying to be understood when I say "two two oh oh" now I say twenty-two hundred

I found myself saying *ci*garette and *maga*zine within a few hours, but it took longer to remember that ice here means ice and not ice-cream You get ice-cream, too, if you ask for pie à la mode, or even pie à la A letter-box is a mail-box, a kirby grip is a bobby pin (not that I buy many), and press-studs are dome-fasteners My pants have cuffs, though I had turn-ups on my trousers at home. In the garage the boot is the trunk, and the hood is the bonnet, and goodness knows what they call the hood

The newspapers leave out the subject of the sentence in the headlines—"Says Police Bribed, Charges Corruption." It gets worse when they leave out the comma as well I saw one last week—"Assaulted Man Gets Three Years"—which seemed downright unfair

When I go up in a lift I keep having to walk down
again because most of the buildings start numb
their floors from the ground (which is the first)
hospital prefers the British system, but then I f
that and so have to walk *up* a flight The other
thought I'd play safe and ask for "the top" Even
was wrong The liftman looked at me coldly "Do
mean the *taap*?" he asked I apologised humbly
said "Yes, I mean the *taap*" Then he said "Gor bl
—yer can't understand a fing they say in this b
country, can yer?" He came from Catford I n
kissed him

* * *

What will advertisers do next? On Oct 1 I rec
by post, and in the same envelope, two smaller s
envelopes, one marked "Open immediately on Oct
the other "Do NOT open until Oct 3" I opened
former and found seven little bits of paste board,
of which bore a different letter of the alphabet.
accompanying letter told me that, correctly arran
these spelt the name of a new product to be mark
and that the name was revealed in the second envel
I began to play about with the cards and soon
SELCOAT, which I imagined might be some form of
coated tablet Not much taken with this idea I t
another combination and got ELASTOC—obviousl
surgical elastic stocking Next came SCOT ALE, OCST
(soup), and A CLOSET, which may be regarded as
runners A few minutes later I spelt LACTOSE Su
that was right Hastily I opened the second enve
(without waiting for Oct 3) and found that even
was wrong, the correct answer being TO—— bu
mustn't give them a free advertisement

* * *

The whole family came along to outpatients—fat
mother, and two girls aged 6 and 9 The complaint
that the girls couldn't sleep at night They ref
to go to bed until their parents did, insisted on the
between the children's and parents' bedrooms b
left open all night, and had reduced mother and fa
to near hysteria The suffering parents had obvio
read some books on child psychology warning then
the dangers of repressing their children, I wish
author could have seen them

I tried to point out that children need parents
are not afraid to tell them when to stop that no c
can cope with the idea that it is all-powerful, or the thou
that no-one can restrain its most arrogant demands,
&c Everyone departed looking thoughtful I th
the idea must have caught on because mother c
back next week to report that the results of treatm
had been dramatic That same evening an enraged fat
had gone into the children's room and told them to
to sleep at once on pain of a sound thrashing, and
left the room slamming the communicating door B
children had promptly fallen fast asleep while father
awake all night with a violent headache

* * *

In a doctor's house even the cats should be famil
with sanitation We have a kitten whom we are trying
house-train In common with other cats he had tr
using the sink, the wash-basin, and the bath Today
decided to try a new receptable and a familiar "tink
tinkle" made me look round to see him sitting on
small daughter's pot, with his tail carefully spread o
behind

* * *

She was a fine modern example of her kind Sle
and beautiful she stood, with a shine on her the env
all who beheld her She was equipped with every acce
sory one could wish for One felt that somewhere tuck
away inside there must even be a television set Nothi
for the comfort of her passengers was omitted There w
even a delicate trailing chain from her nether regions

* * *

Last year, after an evening spent in surveyi
mortgage payments, bank overdraft, hire purchase agre
ments, debts to relatives, and unpaid bills, I w
disturbed by the entrance of my Wolf Cub son bearin
aloft a trophy "I won the King Conker competition,
said he I replied absently that I didn't know he ha
any conkers that year, I suppose I might have guesse
he would say, "I hadn't I borrowed one"

Letters to the Editor

ASTHMA CHRONIC BRONCHITIS, AND EMPHYSEMA

Sir,—Dr Lister's welcome article last week has important epidemiological implications If it is true of the fair city of Plymouth how much more unfortunate is the lot of the asthmatic and chronic bronchitic in our industrial towns with their persistent smoky haze and their occasional smog These patients suffer greatly in winter—many are unable to work, and many are sent to hospitals where they block beds which are needed for others. The problem is serious to all concerned the patient his family, his employer his physician—and the nation

I would like to see a simple type of accommodation linked to the hospital service, fitted with air-conditioning where chronic bronchitics could spend part of the winter instead of taking up much needed hospital beds or having expensive convalescent treatment as is often recommended in a favourable climate either in the south country or abroad It is noticeable how quickly these patients improve when they breathe clean air During a winter smog I have advised patients to leave their cheerless rooms put on a smog mask and go to an air conditioned cinema (where there is a continuous performance!) and there breathe clean warm and dry air Once the patient breathes air free from filth and fumes a remarkable improvement takes place in his condition

Alternatively, I do not see why there could not be an extension of Remploy workrooms with air-conditioning, in large centres of population where these patients could attend and have interesting and useful work instead of enforced idleness

During the deliberations of the Beaver Committee I was often surprised to learn from unchallengeable sources the enormous extent of air pollution by noxious gases and particulate matter in this country To take one example there are 5¼ million tons of sulphur dioxide poured into the air every year The main source of this pollution takes place in what we called black areas where 24 million of our people live and where asthma and chronic bronchitis is not only a severe but a frequent condition

It is to be hoped that as part of a preventive programme against chronic chest disease the profession will lend its influence in the reduction of air pollution by all means in our power by declaring in clear terms that *safe* as well as clean air should be our national policy and that smoke smaze, and polluted air must go

Health Department
Salford, 5

J L Burn

Sir,—Dr Lister is to be congratulated on his most mulating and thought provoking paper In fact any ng which excites stimuli or provokes thoughts on the tically important subject of chronic bronchitis is to welcomed in an attempt to clarify some of the fusion which shrouds this common state

As I see it, Dr Lister's thesis is that these conditions e closely related and are indeed an integrated quence of pathological change having a uniform and mmon underlying cause—namely an allergic constitution' with an inherent and hereditary weakness of e respiratory tract both in its upper and lower levels vidence of this weakness is already apparent in childhood as in the catarrhal and chesty children according to Dr Lister it seems to be but a step from this catarrhal stage to the chronic bronchitic of later adult life

If we accept these reasonable views as correct then we may at once have a possible method of preventing chronic bronchitis, by picking out these catarrhal children in our community where they are indeed so common both in general practice and in the E N T and pædiatric departments of our hospitals and seeing to it that they avoid any of the possible stimuli which may cause irritation of their lower respiratory tracts with eventual development of chronic bronchitis

Unfortunately the views propounded do not exactly fit certain of the known clinical facts concerning infections of the upper respiratory tract in children and chronic bronchitis in adults and we must seek answers to the following queries before we can accept the allergic constitutional ætiology without reservations.

Upper respiratory infections in general practice (whence I come) are relatively most frequent in children of preschool and early school years If these conditions are observed however it is most interesting to note that in a great majority of cases the common nasal catarrhs and chronic coughs undergo a spontaneous natural remission around the age of 7–9 years This is well illustrated in table I The incidence of affections of the lower respiratory tract including acute and chronic bronchitis, asthma and pneumonias, shows a different pattern in general practice, rising with age as seen in table II It is somewhat difficult, therefore to correlate the view that the catarrhal chesty child is the forerunner of the elderly chronic bronchitic with these findings—for why should there be this natural remission in upper tract infections at 7–9 and why should the condition recur as chronic bronchitis after a latent interval of many years?

TABLE I—UPPER RESPIRATORY INFECTIONS IN GENERAL PRACTICE

Age	0–4	5–9	10–19	20–29	30–39	40–49	50–59	60–69	70 +
Attendance rate per 1000 at risk	1000	1000	500	400	350	300	275	250	225

TABLE II—LOWER RESPIRATORY INFECTIONS IN GENERAL PRACTICE

Age	0–4	5–9	10–19	20–29	30–39	40–49	50–59	60–69	70 +
Attendance rate per 1000 at risk	250	450	200	175	200	220	400	700	950

It is I believe, generally agreed that chronic bronchitis is largely a disease of men whereas the incidence of chronic nasal catarrh in children and adults is equally distributed in the two sexes why should an allergic constitution be so much more in evidence in men than in women?

Again chronic bronchitis is much more frequent in the lower social classes whereas allergic disorders are if anything more common in the middle and upper classes?

Why is chronic bronchitis so common in this country? So common in fact as to deserve the title of 'the English disease'[1] Are we in fact constitutionally inferior to other nations or are there other explanations?

Other points which are more easily explained are the increased frequency of chronic bronchitis in smokers, in urban and industrial areas, and in the elderly In all these the explanation may be the extra irritation in an already weakened mucosa

How then can we answer these questions if we are to accept the ætiology of an allergic constitution? As I see it there is only one way in which this can be done and that is by following our patients from the cradle to the grave in an attempt to find out whether the catarrhal children do in fact become chronic bronchitics. It is generally agreed that patients histories are unreliable. We should therefore pick out the catarrhal children that we see in general practice and arrangements should be made to record and follow their progress through life Obviously the present generation of practitioners will not be able to follow the children now under their care to their graves, and we should make plans for a continuation of our observations by the next generation Admittedly this is a lengthy method of investigation into the causes of chronic bronchitis and it is very possible that in the years to come some other measures will be found to prevent and treat this disabling condition—but until such a time we would do well to prepare, and start, some such long term study

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[1] *Brit med J* 1953 ii 268 Fry J *ibid*, 1954 i 190

Beckenham, Kent JOHN FRY

THE PHYSIOLOGY OF CHANNEL SWIMMERS

SIR,—The article by Dr Pugh and Dr Edholm in your last issue raises interesting questions on the physiology of heavy muscular work generally

Ivy [1] has stated that in short periods muscular work can be done at twenty times the basal metabolic rate, and that eight times the B M R is as much as can be maintained for 8 hours Dr Pugh and Dr Edholm estimate that J Z's expenditure of energy averaged 750 calories per hour for 16 hours 23 minutes (or just over ten and a half times his B M R) At this rate of energy expenditure, it is probable that, within 2 hours, J Z required to switch over from glycogen to ketone bodies for fuel J Z was, however, in the happy position of having a good supply of that fuel in reserve Despite a lack of some 7½ in in height compared with G P he was some 20 kg heavier, and if, as is probable, this weight was fat, then J Z had a potential source of energy of some 180,000 calories Dr Pugh and Dr Edholm have pointed out that one advantage of fat people over thin people in swimming the Channel is their ability to lose heat less rapidly because of the thickness of body fat May not another reason be their enormous fuel reserve in the form of stored fat?

Dr Pugh and Dr Edholm say that when J Z lay motionless in a bath at 16°C his rate of body-cooling was very low Actually his rectal temperature fell from approximately 37 8°C to 36 5°C in 2 hours, compared with no fall in temperature when swimming (fig 3 of article) Perhaps therefore Glaser's advice to shipwrecked people—that they should struggle [2]—is correct for those who are fat? A person of J Z's build, with a store of 180,000 calories, expending say 600 calories an hour struggling, all being equal, would have enough fuel to last him 300 hours.

An interesting corollary to Channel swimming is marathon-running and cycling Lusk [3] has calculated that cycling 5 3 miles per hour for 15 miles has an energy expenditure of 600 calories per hour The marathon runner—42 km (26 miles) in about 2½ hours—has probably a greater expenditure of energy per hour, though over a shorter period, with a total output in 24 hours less than the Channel swimmer or the cyclist Barach [4] has carried out interesting studies on marathon runners At the end of the race fevers up to 102°F to 104°F were common, there was extreme nervousness, excitement, cold sweat, rapid pulse, facial pallor, and at times unconsciousness lasting 12 hours, all akin to hypoglycæmia (The runner of the first marathon race in 490 B C dropped dead) There was weight loss of 3–8 lb —part of this due to loss of moisture The urinary findings showed albuminuria, ketosis, and the presence of blood and casts In some cases the albuminuria lasted 3 weeks It would be interesting to know whether Channel swimmers also develop evidence of such renal damage One would certainly expect ketosis

It is not easy to compare the relative feats of endurance of Channel swimmers and marathon runners The Channel swimmer needs and has fat enough to provide him with fuel for the journey The problem of the marathon runner is different he carries little fat, yet even that small reserve is called upon The Channel swimmer, as Dr Pugh and Dr Edholm have pointed out, has to contend with waves, wind, and current (also, although not mentioned, water pressure on the thorax equivalent to an 8 kg sandbag, according to Lusk) He has, however, two advantages over the marathon runner—namely, a water cooling system and a great reserve of fuel

Whether or no Channel swimming is the greatest feat of endurance in the world of sport is for others more competent to judge, but no woman (to the best of my knowledge) has yet run the marathon, and certainly not within 3 hours Women, however, have swum the Channel, and at a speed competitive with men (table vi of article)

West London Hospital,
London W 6 J DOUGLAS ROBERTSON

STAFFING THE TRANSFUSION SERVICE

SIR,—Your annotation of July 16, which I regarded a authoritative, stated that several laboratories of th National Blood Transfusion Service were having difficult in finding technical staff, and that technicians d "transfer as soon as they can from these specialise units to hospital laboratories where the work is of wide scope and of more relevance to their examinations" You went on to say that "standards of work have ha to be lowered" and a senior administrative medica officer had asked hospitals to limit their use of blood t urgent cases The "battle" (to which Dr Weine refers in his letter of Oct 1) consisted of an attempt b you, Dr Bowley, and myself to discuss in public certai factors which have resulted in the Sheffield centre' present difficulty, with less than half its establishmen filled

If we omit the demagogic imputations (such as the one where it is implied that I suggested the regional centre should refrain from all antenatal work), there is only one section of Dr Weiner's letter which requires further study, and that is his suggestion that all expectant mothers should be screened for all recognisable antibodies The frequency of Rh antibodies in Rh negative expectant mothers is about 1% (1 in 122 according to Dr Bowley) and these can be detected by an ordinary albumin test which, when done on a large scale, requires only 1–1½ minutes of technicians' and cleaners' time The labour cost for each case of Rh immunisation discovered is thus 120–200 minutes or 2–3¼ hours If one extends the search to the other antibodies, one must use the anti globulin technique because many of these antibodies can be demonstrated in no other way, and the labour cost at once rises to at least 3 minutes per sample, probably more I do not know of any reliable figures for the frequency of those rarer antibodies which are of clinical significance, but I doubt if they are commoner than 1 in 5000, and they may be much less frequent (This is a matter on which Dr Weiner's experience would be of great value, were he to give it to us) If the frequency be 1 in 5000, the labour costs per case discovered go up to some 15,000 minutes, 250 hours, or 35 days, the financial costs rise from less than £1 to well over £50 per case

This, Sir, in the present state of the National Health Service, is a fantastic waste of money For lack of staff and for lack of space I am unable to perform routine estimations of hæmoglobin on our expectant mothers even though in a sample of 227 we found that 44% had hæmoglobin levels below 11 8 g per 100 ml, yet we know that miscarriage and stillbirth are correlated with anæmia, and I hazard a guess that £50 p a spent on this work would save the life of more than one infant I hear of provincial laboratories still using chemical methods for the estimation of sodium and potassium—and in some such places a flame photometer would save not one but several lives each year

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1 Ivy A C J Amer med Ass 1942 118 569
2 Glaser E M. Nature, Lond 1950, 166 1068
3 Lusk, G The Elements of the Science of Nutrition. Philadelphia, 1928
4 Barach J H Arch intern Med 1910, 5, 382, Amer J dig Dis 1943 10, 131

This correspondence illustrates a matter which has troubled the leaders of our profession for some years—the stultifying effect of concentration on a narrow specialty The recent development of blood serology has caused a minor revolution in clinical medicine, but the ultra specialisation which has accompanied it has led to senior appointments sometimes being given to persons with little laboratory experience outside their super specialty Such persons are unable to compare the value of work within their specialty with that of work outside it—just as the Schoolmen could debate lucidly on the number of angels who could dance on the point of a needle, but regarded the new art optic as a device of the devil. All the money spent by the National Blood Transfusion Service comes from the National Health Service, and if spent on the rarer antibodies is not available for common tests like the estimation of hæmoglobin, which, though less spectacular and less likely to lead to a new paper, may well save more lives Some of my colleagues are straining out their gnats and leaving me to swallow camels

Central Middlesex Hospital
London, N W 10
GEORGE DISCOMBE

GENERAL PRACTICE

SIR,—Dr Hunt in his review of the possibilities of general practice (Oct 1) says that 'crowded outpatient departments and shortage of hospital junior medical staff might be remedied by enlisting the help of family doctors in the work of outpatient departments.' This of course, is often done and can be very valuable but there are disadvantages, some of which he notes later

The increase in outpatient lists in recent years is to a considerable extent due to follow up work only a small proportion of which is part of any organised clinical research It has become accepted that the continued periodic supervision which is so often needed is the function of the outpatient clinic rather than of the doctor s consulting room and the doctor has been so busy that he has hardly noticed that this, which could and should be a most interesting and rewarding part of his work, has been very largely taken away from him He does not, at least seem to complain about it very much

It is this—follow up work—which he will generally help to do in the outpatient clinic and there might be a great deal to be said for the idea that instead of following his patients into the hospital he should demand to have them back after consultation or assessment and that we in turn whenever possible should refer cases needing follow up back to him and only see them again at his request

I have often discussed this which is increasingly my own view with both general practitioner and consultant colleagues It is sometimes argued that if such cases —the baby who may become anæmic or the child who may be developing bronchiectasis are two among many possible examples—are referred to the family doctor with the suggestion of weekly, monthly or six monthly follow up in the surgery precisely nothing happens and the patient may suffer This is sometimes true perhaps because the organisation in the past has been that of expediency and planned and recorded follow up over months or years has not been in the tradition of surgery work. But it becomes steadily less true as more doctors in general practice have diagnostic facilities at their disposal, as the bad general practice of the Collings report is replaced by the good general practice of Stephen Taylor and as the old morning and evening surgery begins to be replaced by the custom of seeing patients by appointment

The more effective integration of hospital and general practitioner services, about which so much has been said and written, will surely be better achieved by making them more closely complementary than by each trying to invade and take from the work of the other This surely, too is a further and most important way of improving the scope and development of general practice on which Dr Hunt writes with such enthusiasm It is also immediately practicable, whereas the provision of his general practitioner beds in greater numbers may have to wait until there are enough beds for cancer cases to be admitted at once and enough effectively to reduce the long waiting lists for such procedures as hernia operations and perineorrhaphies, and enough nurses for the beds which already exist

Royal Berkshire Hospital
Reading
J J KEMPTON

THE LUNGS IN MITRAL STENOSIS

SIR—I thought your leading article of Oct 1 dealt with the rapidly expanding literature in a remarkably comprehensive and helpful way I would however, question your statement: 'Absence of the changes [i e. in the lung] does not exclude a tight stenosis but their presence virtually establishes it '

I believe the first proposition is untrue I have yet to see a patient with serious mitral stenosis who had normal lung fields. Indeed I concluded my paper [1] to which you referred with the words A normal lung architecture is inconsistent with a diagnosis of severe mitral stenosis.

The second proposition is also untrue in my experience The changes you described are not diagnostic of severe stenosis Similar radiographic appearances may be found, at a single examination in left heart failure Persistent changes of the mitral type indicate serious obstruction at the mitral valve but this obstruction may be due to rigidity of the valves without severe stenosis

The matter is one of great practical importance, for if my observations are correct patients with normal lung fields do not require surgical treatment Those with persistent abnormalities of the mitral type should be recommended for valvotomy, provided there are the signs of a pliant valve [2] and no absolute contra indications

Purley Surrey
D S SHORT

TREATMENT OF SHOCK

SIR—The papers by Dr Murray and Dr Bruce and Dr Danziger (Oct 1) were stimulating and their publication in the same issue made interesting comparisons possible. The diagnosis of irreversible shock as described by Dr Danziger and in particular the feeble and evanescent pressor effect of noradrenaline, conflicts with the continued response to infusion of noradrenaline described by Dr Murray and Dr Bruce. The latter were able to maintain a blood pressure of 110/80 mm Hg with continued infusion of noradrenaline although when the infusion was stopped the blood pressure was unrecordable

In both articles the noradrenaline was given in the blood-drip but in this method the rate of transfusion is determined by the response to noradrenaline It would seem better to give the noradrenaline separately so that the blood or other fluid can be administered at a chosen rate to suit the patient s requirements

Dr Danziger employed noradrenaline at a time when his patient was bleeding profusely, whereas Dr Murray and Dr Bruce did not use the drug until the uterus and vagina were packed and the bleeding was presumably controlled It must be admitted that in their patient bleeding began one hour later and continued until hysterectomy was performed although with the uterus packed the quantity of blood lost was probably adequately replaced by blood transfusion It is certainly a possibility based on numerous published reports and a limited personal experience that had Dr Danziger employed noradrena line after the bleeding had stopped and the blood-volume was approximately restored (at the time of the "failed" intra arterial drip) he would have had a different response

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[1] Short, D S *Brit Heart J* 1955 17 33

[2] Sellors T H Bedford, D F Somerville W *Brit med. J* 1953 ii 1050

The relative merits of noradrenaline and intra-arterial transfusion deserve close investigation, and the indications for using one or the other are by no means clear Dr Murray and Dr Bruce were confronted by so alarming a collapse in their patient that they chose noradrenaline as the most readily available means of restoring the blood-pressure Their choice was vindicated by the response, although Dr Danziger obtained a similar result with intra arterial transfusion in equally desperate circumstances

One point in resuscitation seems to stand out prominently As long as serious hæmorrhage persists, the treatment is adequate blood replacement, with two drips if necessary If, when bleeding is controlled and the blood-volume adequately restored, the blood-pressure cannot be raised, the choice of intra arterial transfusion or noradrenaline remains More information on this subject is required

Leith Hospital,
Edinburgh I E W GILMOUR

SIR,—There are several points in the article by Dr Murray and Dr Bruce which merit comment and discussion, but for the sake of brevity I would like to draw attention to two especially

The profound hypotension during the packing of the uterus and vagina under ether and oxygen anæsthesia does not appear to be due, as the authors suggest, to the shock engendered by this procedure, but rather to the cardiovascular depressant properties of ether in the presence of adrenergic blockade, in this instance brought about by intramuscular chlorpromazine and pethidine half an hour before the anæsthetic

> The experiments of Brewster and others [1] have shown that "a critical myocardial depression with resultant hypotension or cardiac arrest may result from the direct depressant effect of diethyl ether upon the myocardium of a patient in whom the reflex increase of epinephrine and nor-epinephrine from the adrenal medullæ and sympathetic nerve endings is reduced or abolished This danger is present under the following conditions (*a*) pathological or surgical ablation of the adrenal medullæ, or pathological hypofunction of the adrenal medullæ as in bilateral adrenalectomy, Addison's disease, Cushing's syndrome, adrenogenital syndrome, etc, (*b*) surgical sympathectomy or pharmacological sympathetic ganglionic blockade, (*c*) otherwise subnormal or 'exhausted' sympatho adrenal response to stimuli, (*d*) in the hypothyroid individual and (*e*) during deep Pentothal anæsthesia" *This is no reason why chlorpromazine should be an exception to this statement*

Dr Murray and Dr Bruce preface their discussion by indicating that I and several others advocate "this type of potentiated anæsthesia" (presumably hypothermia *and* intravenous chlorpromazine, promethazine, and pethidine) "as a means of allowing surgery on patients formerly considered unfit for operation" For my part, I would like to make it quite clear that I do not consider that hypothermia is either necessary or useful when these drugs are used On the other hand, there is a danger of hyperthermia if these patients are overheated, and for this reason it is advisable to work in cool theatres, and avoid artificial heating when the patient returns to the ward

I do not wish my remarks to be taken as adverse criticism of a bold and courageous attempt to deal with an admittedly desperate situation The means at our disposal of preventing and treating severe shock are at present meagre, and the ætiology of the condition becoming more and more confused, as Dr *Danziger's* discussion (Oct 1) indicates There is a growing amount of clinical and experimental evidence that chlorpromazine without hypothermia has valuable preventive properties against shock and the non specific responses to aggressio There are, however, many points needing clarificatio *I would suggest for a start that* hypothermia be omitte until we can assess the value of the drug itself und normal working conditions Furthermore, there is case against using ether, and possibly the more tox general anæsthetic agents, in conjunction with chlo promazine

Lambeth Hospital,
London, S E 11 D A BUXTON HOPKIN

SIR,—After reading the article by Dr Murray and D Bruce recounting their management of a case of pos partum hæmorrhage, I wondered whether the possibilit of fibrinogenopenia had been considered It seems distinct possibility in a 5 gravida, who early in th resuscitation received 0 57 litre of dextran, and in who laparotomy revealed a firmly retracted uterus

Burntisland,
Fife D E B POWELL

NUMBERING OF FINGERS

SIR,—Will you please tell Dr Forbes (Oct 1) that whi (like many others) I have only eight fingers, I hav ten digits on my hands If we always used the corre term in describing these organs mistakes would be fewe

After all, even if the "ordinary" man says gasteriti casuality, lumbar punch, penicillian, and flat feet, there no need for doctors to imitate them It was not Ali but the Mad Hatter who said, "You might as well sa 'I say what I mean' is the same thing as 'I mean wha I say'" It is nearly everyone who says, "My hair want cutting" when they mean "My hair needs cutting Nearly everyone says, "Can I have a piece of cake?" when they mean "May I have a piece of cake?"

It is not pedantic to be exact—it is scientific—an much simpler—and shorter—and certain

Manchester, 3 W SAYLE CREER

POLIOMYELITIS AND TONSILLECTOMY

SIR,—Laryngologists will be very interested to rea Dr James Melvin's letter last week, and members of th British Association of Otolaryngologists know that ou council keep this problem under review and from time t time call our attention especially to "relevant passages" in official memoranda

My senior colleagues will remember that the old fashioned operation of tonsillotomy with removal o adenoids brought relief to many children suffering from lymphadenoid-tissue "stenosis" and *also* reduced th incidence of recurrent acute infections more readil attacking the enlarged palatine tonsil, though they coul not approve of so uncertain a technique I believe tha this objection was one of the reasons why principal schoo medical officers were advised to call upon some of us in the early days after the first world war to assist them in our capacity as specialists, though at the *same* time providing us with the opportunity to persuade education authorities to establish rational E N T clinics rather than departments for T and A operations

The problem of the physiology and clinical patholog of the lymphadenoid tissue of the pharynx continues be of great importance to our specialty, and Dr Melvin experience is most stimulating

For some time I have nursed a secret heresy that o day part removal of the enlarged and pedunculate palatine tonsil may return to favour, but in the form deliberate selective tonsillotomy I have very occasional dared to perform such an operation, and I remember th loud cries of disapproval from a full house of the sectio of laryngology of the Royal Society of Medicine whe speaking from the rostrum, I confessed that for one o my own children I had done a deliberate selectiv tonsillotomy for which I had unearthed a discarde reversed Heath's guillotine and sharpened it for th occasion The clinical result has been excellent; the very frequent acute attacks with fever ceased at once and the architectural result is most pleasing

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[1] Brewster W R jun, Isaacs, J P, Waino Andersen, T *Amer J Physiol* 1953 175 399

For many years I have respected a theory of Torsten Skoog[1] of Stockholm that the lymphadenoid tissue of the pharynx has a sensitising effect on the reticulo endothelial system of the body Dr Melvin now postulates that these tissues may act as a filter and buffer protecting over the 9th and 10th cranial nerve offshoots in the area,' presumably against the ascent to the central nervous system of the virus of what used to be called more often "infantile paralysis"

Liverpool 1 H V FORSTER

THE UNCONQUERED STAPHYLOCOCCUS

SIR—Your leading article last week gives many admirable suggestions for attacking this most tenacious of microbes. One point however seems to me to need qualification

You suggest that the use of typing methods will tell us which strains are actually dangerous. I do not think this is necessarily the case Although there is some evidence to suggest that certain phage types of staphylococci are associated with certain types of infection coagulase-positive staphylococci of all phage types can cause suppurative lesions and strains belonging to each of the three phage groups have been isolated from fatal cases of septicæmia

It seems probable that all strains of coagulase positive staphylococci become increasingly virulent by passage through infective processes and recent studies suggest that virulence decreases when a strain is harboured in the anterior nares in a community devoid of sepsis If this be true it is more important to know the source of a strain than its phage-type It is of course true that a single strain of *Staph aureus* may be responsible for most cases of infection occurring in a given ward or institution, in which case phage typing studies may help to show how the infection is being spread It would however, be dangerous to assume that certain phage types are invariably less virulent than others.

Department of Bacteriology
St. Thomas's Hospital Medical School
London S E 1 MARY BARBER

ANOXIA IN RESPIRATORY INFECTIONS OF CHILDHOOD

ir—Dr Brenda Morrison must be congratulated the effective oxygen concentrations that she has duced in the high tension oxygen box described her article last week

The graph in which performances of the experimental x and the standard oxygen tent are compared does thing to upset the fallacy that to introduce a flow of litres of oxygen per minute into a standard tent nstitutes effective oxygen therapy

The reverse is usually the case The patient who side a tent might have received a reasonable oxygen pply by mask or catheter is placed in an atmosphere air when presumably his oxygen deprivation is at its ghest, and the oxygen concentration is raised slowly t the rate of approximately 1% per minute. To flush ll a standard oxygen tent by increasing the main upply usually results in the blowing off of the rubber onnections because the flow is limited at the Venturi jet.

In my experience a double oxygen supply is the most ffective method of achieving a satisfactory clinical result. In the case of patients requiring the maintenance of a previous high concentration such as is found during anæsthesia, the secondary supply is delivered to the patient inside the tent by means of an oxygen mask or catheter and this is not removed until the tent oxygen concentration is deemed satisfactory Alternatively the secondary supply is flushed into the tent by a tube inserted through one of the service flaps or through one of the cooling ports

It needs to be impressed upon the nurses that this routine must be repeated each time that the tent is opened widely for nursing attention

Plastic Surgery Centre
St. Lawrence Hospital
Chepstow Mon HARRY MIDDLETON

ADRENALINE OVERDOSAGE

SIR,—I should like to comment on two of the recommendations made by Dr Freeman (Sept 17)

He very reasonably suggests that piperoxan or phentolamine should be kept at hand for the treatment of adrenaline overdosage He might also have mentioned that when it is used systemically, adrenaline should be injected into one of the limbs, so that a tourniquet can be applied above the site of injection if necessary Even if no adrenaline antagonist is available the intermittent release of the tourniquet for a few seconds, at 5–10 minute intervals would probably enable the patient to inactivate an otherwise lethal dose of adrenaline

I must disagree with Dr Freeman when he wants to restrict the use of adrenaline for inhalations to solutions containing 0 4% or less Many patients derive no benefit from such solutions, and more powerful inhalants are often needed There is, however a good case for substituting isoprenaline for adrenaline in all inhalants, it is at least as effective and is much less likely to be injected

Department of Therapeutics,
St Thomas's Hospital Medical
School, London, S E 1 ANDREW HERXHEIMER.

VESICO CŒLOMIC DRAINAGE

SIR,—Mr Desmond Mulvany's vesico-cœlomic operation for relief of ascites would appear to be an ingenious procedure of undoubted value when a diagnostic laparotomy is being performed However where surgical proof is not required, it may be questioned whether a major operation is justifiable when the span of life is usually so short

Why so large cost having so short a lease
Dost thou upon thy fading mansion spend.

Experience of a recent case prompts me to suggest a very simple procedure which is likely to be of more general application and which should make repeated paracenteses unnecessary

In a woman of 50 in whom a diagnosis of carcinomatosis peritonei was made on clinical grounds, the presumptive evidence was sufficient to obviate a diagnostic laparotomy She had been tapped three times at increasingly frequent intervals until 8 pints of fluid (containing 2 5 g per 100 ml of protein) had to be removed after an interval of five days. I then introduced a size one Polythene' tube through the paracentesis cannula into the abdominal cavity and removed the cannula leaving the tube in position with a small glass olive-shape-ended rod as a spigot Inexperience in the first instance led me to pierce the tube with a holding safety pin but this was a mistake and ascitic fluid leaked round the pinholes. After re-introducing another length of tubing, no further snags were encountered the tube never became blocked (a little manipulation was sometimes necessary) there was no sepsis hardly any skin reaction, no pain or discomfort and positively no leakage round the wound The patient remained completely comfortable with a daily drainage of one to two pints of fluid until her death seven weeks later Her gratitude at not being subjected to the frequent ordeals of paracentesis—followed as they were by a day of complete exhaustion and then a crescendo of distension discomfort and anticipation until the next tapping—was a consoling factor in the conduct of her illness. Nor with the simple daily manipulation of removing a spigot, was it difficult to disguise deterioration from her so that she died in some comfort and contentment

London, W 1 S CHARLES LEWSEN

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[1] Skoog T ta Otolaryng Stockh 1930 22 fasc 1

SEQUELS TO ANÆSTHESIA

SIR,—Recent discussion in your columns seems to have established (1) the safety of nitrous oxide properly administered, (2) the danger of anoxia, and (3) the intolerance of the elderly to hypotension Yet it would seem that more than passing mention should have been made of the rôle of nutritional deficiency in the production of cerebral metabolic disturbance

A recent case, which is by no means the first we have witnessed, may illustrate the unexpectedness, and importance of early treatment, of this condition

A healthy, active old gentleman of 78 was admitted with nine months' history of hæmaturia, frequency, and dysuria He was in otherwise sound mental and physical condition, without evidence of biochemical upset, anæmia, or urinary infection, nor was there anything in history or examination to suggest dietary deficiency

On admission his blood pressure was 160/80 mm Hg It had fallen to 110/70 after premedication with morphine gr $^{1}/_{6}$ and atropine gr $^{1}/_{100}$ immediately before induction of anæsthesia for Wilson Hey prostatectomy on Sept 9, 1955

The anæsthetic technique was a modification of that described by Gray[1,2] in which spinal analgesia is induced under light thiopentone/pethidine/nitrous oxide anæsthesia, the patient tilted into the Trendelenburg position, and the labile blood pressure controlled by intravenous infusion of noradrenaline In this instance analgesia was obtained up to the costal margin with 1 5 ml of 0 5% hyperbaric cinchocaine before establishment of sleep with 250 mg thiopentone and a gas flow of nitrous oxide of 5 litres per min. and of oxygen 2 litres per min in semi closed circuit

The blood pressure was measured at least twice every 5 minutes until stabilised, and was kept closely to the pre operative level except for two brief periods when it was permitted to fall to 90/60 to facilitate surgery Towards the end of the operation methoxamine, given intravenously and subcutaneously, was substituted as vasopressor, this briefly raised the blood pressure to 165/110, with accompanying nausea and retching, upon which inhalation anæsthesia was discontinued before any hypoxia could arise from laryngospasm or aspiration He was awake before the end of the $1^{1}/_{2}$ hour operation Measured blood-loss was less than 10 oz

Postoperatively, in the ward he appeared drowsy but orientated An infusion of blood was started, but stopped on the appearance of rigors These made accurate blood-pressure readings impossible, but there does not appear to have been any hypotension at this time

There was no postoperative vomiting or headache, urine secretion was free, with fluid intake matched to output by oral and intravenous administration Prophylactic chemo therapy with penicillin (0 5 mega unit) and triple sulphonamide (1 g) every 6 hours was started

About 24 hours after operation it became obvious that he was confused, childish, and restless On the second postoperative day full diet was resumed, but there was an episode of restlessness and disorientation controlled with phenobarbitone sodium gr 3 The third day saw a serious deterioration in his condition, necessitating restraints, and paraldehyde was used to control him at night The following day his condition was worse, so that he could be induced to eat or drink little He was apyrexial. On the evening of this day, in the belief that a cerebral metabolic disturbance was the cause, he was given intramuscularly thiamine 10 mg, riboflavine 4 mg, nicotinamide 40 mg, pyridoxine 4 mg, and ascorbic acid 100 mg The following morning found him greatly improved, he was rational and a normal diet was resumed Parenteral vitamin therapy was continued daily in the same doses, and chlortetracycline (aureomycin) (500 mg twice daily) was substituted for the previous chemotherapeutic agents Uneventful recovery proceeded, and he was discharged on the 12th postoperative day, apparently unimpaired mentally, although it is still too early for his family to assess whether personality changes have occurred

A single such report proves nothing, but the dramatic halt of a progressive mental deterioration by parenteral vitamin therapy is extremely suggestive, although the good original physical state, the absence of vomiting, and the small quantity of depressant drugs used might all suggest that the hypotension permitted during anæsthesia was the primary cause

Many possible reasons for the development of post operative avitaminosis can be adduced, including the influence of antibiotics on intestinal flora, interference with diet, or the increased demands for "stress factor" vitamins during intravenous carbohydrate infusion and the metabolic demands of tissue breakdown and repair Anoxia, also, will cause increased vitamin loss from the enzyme systems of affected cells, to reconstitute these cells such vitamins are needed

Old people are presumably more susceptible through their decreased dietary intake of frequently inferior soft foods, and their greater liability to cerebral derangements

The essential point surely is the danger of controlling such a patient with sedatives only their use make mental confusion frequently worse confounded, and continued reliance upon them in place of specific therapy might well lead to permanent cerebral change in view of the worse prognosis of nutritional dementias in the aged

Dr Bedford's cases no 1, 4, and 6 (Aug 6) might therefore cast suspicion as much upon postoperativ management as upon anæsthetic technique

For permission to publish this case-report our thanks are due to Prof C A Wells, under whose care this patient was admitted

PATRICK A FOSTER
AUDREY M HILLARY

Liverpool Royal Infirmary

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[1] Gray, T C *In* Prostatectomy, by C A Wells Edinburgh, 1952 chapter VII

[2] Gray T C, Marcus, R. *Brit J Anæsth* 1949, 21, 182

CONTROL OF INFECTION IN A UROLOGICAL WARD

SIR,—In connection with our article, of Aug 13 we would like to point out that the 'Dettol' used in the bacteriological investigations was that sold commercially in 1950 The manufacturers have advised us that the dettol formula was modified in 1952 and that it now has greater efficiency against *Pseudomonas pyocyanea* They further state that the bacteriological report on this formula from a London teaching hospital is available to those interested

L N PYRAH
W GOLDIE
F M PARSONS
F P RAPER.

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St James Hospital, Leeds

EXPELLING TAPEWORMS WITH MEPACRINE

SIR,—I agree with Dr Beatty and Dr Idris Jones that Dr Seaton's sweeping condemnation of filix mas (Sept 24) calls for a word in defence of this time-honoured anthelmintic

There are several reasons why filix mas is undeservedly falling into disrepute, chief of which are (1) the use of old instead of fresh material, (2) inadequate dosage, and (3) neglect of the all-important principle of starvation before treatment In addition, treatment by duodenal intubation will fail if it is not appreciated that nearly half the extract sticks to the inside of the tube. A test with a Rehfuss tube will show that 15 ml of the liquid extract has to be administered in order to deliver 8 ml. (120 minims) at the distal end Our experience has been, however, that treatment by tube is no more effective than by mouth

At this hospital we insist on starvation and saline aperients for three days before treatment in adults, and we have been able to cure at least 7 out of every 10 patients with one treatment by mouth or by tube We have found that emulsions by mouth are more effective than capsules, but even better results are now being obtained by the addition of glycerin.

24 patients have recently been treated here, under the care of the consulting physicians, with an emulsion containing

0-140 minims of liquid extract of male fern and $^1/_2$ oz of glycerin, given by mouth in 3 divided doses at fifteen minute intervals. $^1/_2$ oz. magnesium sulphate was given two hours later followed by a pint of fluid 23 of the patients harboured *Tænia saginata*, and 1 *T solium* 22 treatments were successful (two scolices being passed in one case) 1 *was doubtful, and 1 failed Our 1 failure was successfully* treated at the second attempt

This represents a cure rate of at least 90% at one single treatment and compares favourably with Dr Seaton's report of 3 failures out of 15 using mepacrine by duodenal intubation—i e 80% success The manner in which glycerin exerts its beneficial effect has yet to be determined

Hospital for Tropical Diseases
London, N W 1

W H JOPLING

PIPERAZINE AS ANTHELMINTIC

SIR,—The results of our investigations in the tropical medicine department of Alexandria University Hospital serve to amplify previous findings in the treatment of ascariasis with piperazine hydrate [1-3]

Of the anthelmintics commonly used santonin, tetrachloroethylene, and oil of chenopodium are not devoid of toxicity and are somewhat unreliable Hexylresorcinol, though almost non toxic may irritate the upper gastro intestinal tract. All these agents require preliminary starvation of the patient and purgation afterwards to rid the bowel of the drug as well as the worms.

In contrast piperazine citrate (Antepar) has little toxicity, and does not kill the worms. Goodwin and Standen showed by in vitro experiments that 1/500 solution gradually immobilised the worms in six to eighteen hours. They concluded that such immobilisation of the worms lessened the risk of occlusion or perforation of the gut, or migration to the bile-ducts during treatment Starvation or purgation was unnecessary with this form of treatment

The object of our recent study was to decide whether it is better to give piperazine citrate in one single dose or in a course of seven daily doses.

Method—Only patients passing numerous ascaris eggs of normal fertilised appearance were selected. Stools were examined by the direct smear and by the salt flotation technique. Each patient was asked to report next day and tell us how many worms had been passed and stool examination was then carried out weekly for four weeks. Magnesium sulphate was not given after the piperazine citrate

Patients were divided into two groups Those in the first group of 50 were given a single dose—namely, 5 g. for adults and for children weighing over 25 kg, and 2 5 g for children weighing less than 25 kg Only 26 patients from this group were followed up for one month, and of these 22 were clear of worms

30 patients in the second group were given a daily dose for seven days—0 75 g for children 2-3 years old 1 0 g for those of 3-10, and 1 5 g for those patients over 10 Of the 20 followed up for one month all were cured The effects of this treatment on other associated helminthic infestation in this group were

Infestation	Total no of cases	No of cured cases
Oxyuriasis	4	3
Trichocephalus dispar	2	1
Hymenolepis nana	2	1
Trichostrongylus	3	1
Ancylostoma	3	0

Thus the course of seven daily doses gave a cure-rate of 100% and also cleared three-quarters of the oxyuriasis, half of the trichocephalus and hymenolepis and a third of the trichostrongylus infestations but it was ineffective for ancylostoma.

Though the results of the single dose treatment are inferior, it has of course considerable advantages when one is dealing with large numbers of patients whose attendances are unreliable The absence of toxic reactions from the doses we used suggests that larger single doses could safely be tried in the hope that they will give a higher rate of cure

I wish to express my appreciation to Dr H H. Salem professor of tropical medicine for his assistance and suggestions and to Dr A. Khidr for his help in this work

Faculty of Medicine
Alexandria

ALY Z SHAFEI

SIR —White [3] and Dunn [1] found that a three-day course of treatment with piperazine (citrate or adipate) could cure ascaris infestation Goodwin and Standen [2] on the other hand, used single doses—3 g of the citrate for persons weighing over 20 kg and 2 g for those weighing less In many of their cases the ascaris worms were expelled, but the significance of their findings is reduced because in some cases stools were examined only once (five to seven days after treatment) and in some they were not examined at all.

Our own investigation was designed primarily to assess the value of these two piperazine salts (piperazine citrate and piperazine adipate) when given in single large doses for the removal of ascaris, but their effect on other helminthic infestations was studied incidentally Cases comprised mainly patients above 14 years of age with body weights between 40 and 80 kg Dosage of the adipate ranged from 4 5 g given in one dose to 8 1 g given over three days In the case of the citrate, the single doses were 3 to 5 g Repeated treatment with single doses was also given

No toxic symptoms or signs were observed at any time apart from slight dizziness, mild colicky pains, and a sensation of "something moving inside"

Stool examination was done by the saline flotation technique Stool examination (and in cases of oxyuriasis, swabbing of the perianal region) was performed daily during the two weeks following treatment The results were

Drug	Infestation	No. of cases treated	Total dose given (g)	Duration of treatment (days)	Cases in which worms were expelled	No of cases cured
Piperazine adipate (Entacyl)	Ascaris	8	4 5	1	6	2
		3	8 1	3	3	3
	Ancylostoma	4	4 5	1		
		1	8 1	3		
	Trichostrongylus	3	4 5	1		3
	Heterophyes	1	12 6	7		1
	Tænia saginata	1	4 5	1		
	Hymenolepis nana	3	4 5	1		
	Oxyuriasis	5	12 6	7		
		1	25 2	14		1
Piperazine citrate (Antepar)	Ascaris	11	3	1	7	1
		3	5	1	2	
		2	6	3	2	
		2	9	3	2	
		2	10	2	2	1
	Ancylostoma	8	3	1		
		3	5	1		
		3	9	3		
		1	8 5	3		
	Trichocephalus	1	3	1	1	
	Trichostrongylus	2	5	1		2
	Heterophyes	1	14	7		1
	T saginata	1	5	1		
	H nana	1	5	1		
	Oxyuriasis	10	14	7		

In ascaris infestation the single-dose treatment with the adipate and the citrate caused the expulsion of most of the worms but the number of cases cured was small. On the other hand, all 5 cases treated with the three day course of the adipate were cured as also was 1 case treated with the heavy dose of the citrate (two doses of 5 g daily) All 5 cases of trichostrongylus were cured No cures, however, followed the treatment of the remaining helminths with either salt, apart from one case of oxyuriasis, which was free of infection one month after treatment with 25 2 g of the adipate spread over fourteen days, and the 2 cases of heterophyes which were cured by a seven day course of either salt

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[1] Dunn, T L. *Lancet* 1955 i 592
[2] Goodwin, L G Standen O D *Brit med. J* 1954 ii 1332
[3] White R. H R. *Lancet* 1954 ii 315

H F NAGATY
M A RIFAAT
S SALEM

Department of Parasitology
Ein Shams University, Cairo

ILIO-INGUINAL BLOCK DISSECTION

SIR,—Mr Downie has indeed blinded me but his rhetoric illuminates by the dazzle of undipped head lamps rather than by the sudden clear light of day I am most interested to see how he has altered his views since his first letter (Sept 17) in which he suggested that radical-mastectomy flaps healed well because their blood supply entered from the periphery, whereas the inguinal block dissection wounds healed badly owing to the fact that the blood-vessels in the groin "are arranged like the spokes of a wheel with its hub at the saphenous opening" and are divided in the course of an adequate dissection He is now (Oct 1) apparently prepared to dispense with all the arteries that emerge from the saphenous opening, inferring that the collateral circulation from the periphery is just as important But how does this collateral circulation arrive at its destination if not via the underlying subcutaneous tissues—the very point that I wished to make (Sept 24)

I am puzzled, too, by Mr Downie's reference to Trendelenburg's operation [1] The site of this outmoded and outdated procedure—a simple division of the internal saphenous vein at the junction of the upper and middle third of the thigh—lies some distance away from the area under discussion

London W 1 STANLEY RIVLIN

MODIFIED ELECTROCONVULSION THERAPY

SIR,—We have read with interest the article by Dr Kelleher and Dr Whiteley (Sept 17) We feel that their practice of giving electroconvulsion therapy without anæsthesia is a step in the right direction, but we know from our experience during the past year that muscle relaxants can also be safely discontinued when the 'Ectonus' technique of E C T is employed

In this technique, the stimulus is controlled manually in a special manner with the ectonus apparatus This gives a gradual onset of the tonic phase, and eliminates the clonic phase

We find this method successful in avoiding fractures and muscle strains, and it is appreciated by patients since they are relieved of the anxiety associated with muscle relaxants

R J RUSSELL
L G M PAGE
T M MOYLETT
R L JILLETT
A BUCKLEY

Three Counties Hospital,
Arlesey,
Beds

SIR,—The investigations recorded by Dr Kelleher and Dr Whiteley on modified electroconvulsion therapy with suxamethonium chloride or suxethonium bromide without anæsthesia, as compared with the use of thiopentone and suxamethonium, may be considered a valuable contribution to the problem of modified electric shock treatments However, I think the authors' statement, "in view of the risk of fractures and a death rate of 0 8% it is difficult to justify the use of E C T without muscle relaxants," is too positive and sweeping There are special cases requiring muscle relaxants with or without anæsthesia but the number of these cases is so small in relation to the great number of cases given E C T that it should not justify the application of these drugs as a routine In this hospital, for example, there have been no fatal complications for the last ten years in more than 3000 convulsive treatments per annum, and the rate of bone complications is a mere fraction per thousand cases, although muscle relaxants with or without anæsthesia are being used only in a very small number of selected cases I would like to quote a remark by Sargant and Slater [1] on this topic "To add pentothal and a relaxant to E C T is to add two potential sources of danger, each carrying its own risks of death. The added dangers must be balanced against those eliminated, and all related to the availability or lack of skilled help" Even by eliminating the risks of anæsthesia and adding the possibility of carrying out treatment without skilled help, there is still a risk superimposed to that inherent to the E C T, a fact which should be considered in applying modified E.C.T

The Hospital for Mental Diseases,
Brandon Manitoba

MILO TYNDEL.

Obituary

THOMAS JONES MACKIE

C B E , M D , LL D Glasg , M R C P E , F R S E

Dr T J Mackie, professor of bacteriology and dea of the faculty of medicine in the University of Edinburgh died on Oct 6, at the age of 67

He was born in 1888, the son of the late James Mackie of Hamilton, and he was educated at Hamilton Academy where he became dux At Glasgow University h graduated M B with first-class honours in 1910 an was awarded the Brunton prize as the most distinguishe graduate of the year He held surgical house-posts at th Western Infirmary, Glasgow, under Sir George Beatson At first, at the suggestion of Dr Freeland Fergus, h considered specialising in ophthalmology, but eventuall he decided to follow pathology as a career and he returne to the Western Infirmary in the university patholog department as Coats research scholar and Carnegie fellow under Sir Robert Muir

Mackie's early work included a study of surgical wound infections which led to research on the serological reactions of the coliform group This was the first study of its kind and he obtained evidence that coli-agglutinin was strain-specific and that lactose fermentation by itself is of no more importance than other sugar reactions as a criterion in typing *Bacterium coli* During this period he also collaborated with Prof Carl Browning on the properties and constitution of complement, and on the principles of the isolation of the enteric group of organisms by th use of selective media incorporating brilliant-green

After he had taken the D P H at Oxford in 1913 Mackie went as assistant in bacteriology to the Bland Sutton Institute of Pathology at the Middlesex Hospital where Carl Browning was director But he was there onl a few weeks before he was mobilised as a member of th Territorial Army at the outbreak of war He spen part of his time in the R A M C at the military hospita at Mudros and subsequently as officer commanding the sanitary section of the 52nd Division He als served at Gallipoli and later was in charge of the bas bacteriology laboratory at Alexandria During the wa he continued his research on the coliform strains, and his studies on the diagnosis of dysentery and enter fever, by both bacteriological and serological methods corrected the rather doctrinaire teaching about the value of the Widal reaction current at that time and did much to establish the "atypical dysentery bacillus" as true causal agents of the disease The loss of most of his records in a torpedoed ship prevented full publication, but much of the work was included in his M.D thesis on intestinal bacteria for which he was in 1921 awarded the Bellahouston and the Straits Settlements gold medals.

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[1] Trendelenburg F *Beitr klin, Chir* 1890, 7 196

[1] Sargant, W , Slater E An Introduction to Physical Method of Treatment in Psychiatry London, 1954

During the latter part of the war he contracted dysentery and hepatitis and was invalided home Early in 1918 he was released from the Army to take up the duties of Wernher Beit professor of bacteriology in the University of Cape Town He was the first occupant of this chair, and shortly after his arrival Blair Martin, who had come to South Africa at the same time to the chair of pathology died of influenza, so that for a time Mackie was responsible for both departments

In 1923 he succeeded James Ritchie as Irvine professor of bacteriology in the University of Edinburgh His department at that time had heavy teaching commitments. The staff was small but included J E McCartney as lecturer and L S P Davidson and A Joe as assistants With great energy Mackie rapidly expanded his department. The number of undergraduate and postgraduate classes increased as did the number of senior students studying for higher degrees He also continued his research notably on immunity mechanisms especially those of whole blood He carried out extensive investigations into the nature of complement and the mechanisms of serological tests used in the diagnosis of syphilis. A great deal of work on the serological typing of streptococci and the part played by the hæmolytic streptococcus in disease was done by himself and co-workers, while the series of investigations he carried out into postoperative tetanus showed the care and thoroughness with which he approached a problem Even in later years when administrative duties within and beyond his department absorbed much of his time, he continued to foster research by his staff

In 1926 he was appointed to the council of the Lister Institute In the autumn of the same year he started the bacteriological services for the health authorities in Scotland and became adviser on pathology and bacteriology to the Department of Health, Scotland He was active in directing research on disease in fish and in 1928 was appointed chairman of the furunculosis committee of the Fishery Board In 1931 he was appointed a member of the Agricultural Research Council and chairman of the research committee of the Animal Diseases Research Association A great deal of work on *Brucella abortus* infection was carried out in his department and this was recognised when in 1933 he was made chairman of the Scottish committee on contagious abortion.

At the outbreak of the second world war his organising ius was put to good use, and as regional director of Emergency Bacteriological Services for South East tland he expanded the services available to practi ners and hospitals. For over thirty years he was orary consultant bacteriologist to the Edinburgh yal Infirmary and after the start of the health service 1948 he became consultant bacteriologist to the ttish South Eastern Regional Hospital Board After war he became chairman of the Scottish Hill Farm earch Committee He was well fitted for this appoint nt by his wide knowledge of many aspects of animal ease His interest in the agricultural and veterinary e of his subject extended further and he became a mber of the board of directors of the Edinburgh and st of Scotland Agricultural College and chairman the Scottish Board of Research in Veterinary ence

Mackie will long be remembered by many outside inburgh for his part in the production of "Mackie & cCartney" a book which is to be found in practically ery laboratory in the English-speaking world and on any another bookshelf It first appeared in 1925 as n *Introduction to Bacteriology* and went through a tinuous and rapid evolution In collaboration with ofessor Browning he also took over Muir and Ritchie's xtbook, and when fully revised this became "Browning nd Mackie."

Mackie was appointed C.B.E. in 1942 and Glasgow University conferred on him the honorary degree of LL.D in 1917 After a serious illness in 1930 he returned to full work as soon as possible and took over an increasing number of senior administrative duties in the university until in 1953, he became dean of the faculty of medicine on the retirement of Sir Sydney Smith

A colleague writes "In his earlier days Mackie was interested in the sailing of small yachts, and for some years this was one of his few outside interests. He was passionately fond of the Highlands of Scotland and especially of the Western Isles through which he made several sailing trips He was a wide reader and enjoyed travelling, and when relaxed he was an excellent conversationalist and a good companion Music attracted him and he was a close friend of the late Sir Donald Tovey Mackie helped to diagnose a serious illness in Tovey, who showed his appreciation by composing a piano representation of the war between his body and the parasite and its final defeat, but unfortunately the work was never written down

The standard he set was always high and many bacteriologists immunologists, and virologists in high posts today were trained in Edinburgh under Mackie His teaching was extremely thorough and critical He often appeared stern and even forbidding to the young undergraduate, but a glint in his eye showed that this was only superficial and in reality he could be easily approached by all"

Professor Mackie married Edith, daughter of the late James Warner of Birmingham, and she survives him with a son and a daughter

CYRIL HUTCHINSON WALKER

M.B Camb., F.R C.S

Mr C H Walker, who died on Sept. 20 at the age of 94 had been consulting ophthalmic surgeon to Bristol General Infirmary since 1921, but he was still a well remembered and well liked figure in the city, for until a few years ago he continued to serve on committees of the Bristol Eye Hospital and to drive his car on shopping expeditions.

He was born at Malton Yorks the youngest son of John Walker rector of Bradwell Norfolk. He was educated at Haileybury College Jesus College, Cambridge, and the London Hospital where he was a dresser to Sir Frederick Treves and a contemporary of Sir Wilfred Grenfell, who was his cousin.

After qualifying in 1886 Walker held resident appointments at the London Hospital and at the Royal London Ophthalmic Hospital In 1890 he moved to Bristol on his appointment as ophthalmic surgeon to the Bristol General Hospital In 1893 he took the F.R.C.S and soon afterwards he joined the staff of the Bristol Eye Hospital He was also lecturer in ophthalmology to the University of Bristol During the first world war he was attached to the 2nd Southern General Hospital with the rank of major in the R A.M C His colleagues in Bristol and in his specialty welcomed his guidance and he was at various times president of the Bristol Medico-chirurgical Society, master of the Oxford Ophthalmological Congress, and a vice-president of the Ophthalmological Society of the United Kingdom

G B W W writes: "Cyril Walker thoroughly enjoyed the active life with which his growing family and their student friends filled his house in Clifton and in the country He took great pleasure in doing jobs well and on them he brought to bear his ingenuity and invention The exact technique of ophthalmic surgery the care and precision in which he was so well trained by Lang and Sir Anderson Critchett, he applied to carpentry motor-cars, and electric and domestic gadgets His quiet sagacity made him counsellor of many, but he modestly withdrew in the face of flamboyance or extravagance rather than express disapproval of a way that was not his. In his knowledge of the English countryside, particularly of flowers, shrubs, and insects he delighted in the resource and contrivance of Nature to adapt and to succeed. There seemed to him no need to justify the works of God to Man Though he outlived his own generation his youthful figure and lively humour made any mention of geriatrics inappropriate to his old age

In 1900 Mr Walker married Dr Theodosia Caroline Green She died two years ago and they leave three daughters and two sons, one of whom is a doctor

Notes and News

GENERAL PRACTICE IN NORTHERN IRELAND

THE latest report by the Northern Ireland General Health Services Board[1] shows that in the year 1954–55 the numbers of doctors, including assistants, on the board's medical list rose from 732 to 739, and the average number of persons on a doctor's list decreased from 1906 to 1883 The number of medical partnerships increased from 122 to 135, and the number of doctors engaged in partnership practice from 255 to 282—an increase from 37 to 39% of the total number of principals At the same time the total number of assistants employed fell from 139 to 133, and the number of assistants whose names are included in the medical list from 25 to 21, in each case the fall was due mainly to the promotion of assistants to principals in partnerships Concerning health centres, "the board remain of the opinion that they would not be justified in proceeding with the establishment of any full scale centre in Northern Ireland but should consider the possibility of a small centre when fuller information is available of the working of such a centre now built at Stranraer in Scotland"

SHORTAGE OF MENTAL NURSES

AT the annual meeting of the Royal Western Counties Institution hospital group management committee, held on Sept 27, Dr David Prentice, the medical superintendent, said that the group's campaign to recruit mental nurses had resulted in "almost complete failure" "Conditions of service and hours of work" he said, "cannot compete with those offered in industry until the mental deficiency nurse is offered shorter hours, better amenities, and more attractive remuneration, our problem is likely to persist"[2]

A similar warning was given by Dr W G Masefield, a member of the South East Metropolitan regional hospital board, following the resignation from St Francis Hospital, Haywards Heath, of five male nurses and two student male nurses[3] Families, it was stated, cannot live on male nurses' pay "If the country is not prepared to face up to this situation," said Dr Masefield, "wards will have to be closed in quite a number of mental hospitals"

A HOME FOR ELDERLY LADIES

MANY practitioners will be glad to hear of a home to be opened shortly in Dorset "for elderly ladies suffering from a mild degree of mental infirmity" In establishing it, the National Association for Mental Health is attempting to secure suitable care "for those who cannot, without difficulty and considerable hardship to their families, fit into the modern home The object of the scheme is to prevent the unnecessary admission of such people to mental hospitals and the resulting distress of their relatives" A night and day nursing staff will be provided under medical supervision

Parnham House is a modernised manor house, with central heating throughout and a garden of 12 acres, situated in the small country town of Beaminster, which is equidistant from Crewkerne and Bridport The charge to residents will range from 6 guineas a week for accommodation in a large bedroom (6–8 beds) to 10 guineas for single bedrooms 'No extra charges are made for services, but residents are expected to provide their personal clothing and pocket money" A room can be booked by visitors making an overnight stay

Inquiries should go to the secretary of the residential services department, National Association for Mental Health, 39, Queen Anne Street, London, W 1

EXTENSION TO A MENTAL HOSPITAL

SOME five hundred people attended the opening, on Oct 8, of a 44 bed admission block at Moorhaven Hospital, Ivybridge, South Devon This mental hospital, which with smaller hospitals in its group is responsible for the mental health service in the Plymouth clinical area, is (like other mental hospitals) troubled by overcrowding, and one effect has been that new patients have had to be received and treated in wards which also accommodated long stay patients who were physically sick or infirm In the new block patients can be received and treated apart from the main hospital. The new building, of one storey, can accommodate 20 male 24 female patients in wards connected by a large comm room for both sexes It has been named the Marshall Ch after Mrs J Marshall, who is serving her 30th consecu year on the management committee and has been chairm since 1948

DEFENCE AGAINST INSECTS

THE film unit of the Shell Petroleum Company Ltd., made *The Rival World*, a film emphasising the threat human life and food supplies from members of the in world, which comprises four fifths of the Animal Kingd and outnumbers man by fifty million to one

The production is of a high standard. The film illustra in colour, both victims and vectors of malaria, elephantia trypanosomiasis, and trachoma, but much of it deals w the destruction of the insect legions which damage cr "To half the men who die, death is brought by insec of all the food we grow, one third is taken by insects. I a toll which mankind cannot afford." We are sho insecticides (made from petroleum by products) being spra on crops and on anopheles infested water, and one seque records an attack on a flying swarm of locusts by airc using sprays

The World Health Organisation, and the Food and A cultural Organisation of the United Nations have d much, but the film concludes that man must organise his resources to counter "the greatest single threat to ma health and to his harvest"

The film, which runs for 25 minutes, is available, free charge, for showing to appropriate audiences In Engla application should be made to the Petroleum Films Bure 29, New Bond Street, London, W 1, and in Scotland to Scottish Films Office, 16, Woodside Terrace, Glasgow, C.3

CRASH' HELMETS

REMARKS by coroners have cast doubt on the efficacy protective hats for motor-bicyclists made according to requirements of British Standard 2001[1] Last week at meeting of experts called by the British Standards Institut it was remarked that before 1953 (when the standard w issued) the proportion of motor bicyclists killed was 28 1000 injured, in 1955, it was 24 This meant that abou hundred lives were saved in 1954, and, it was claimed, th could be little doubt that much of this saving was due to wearing of protective hats Since the standard had been in 1953 research had continued, mainly at the Road Resear Laboratory

IMPRISONMENT

ALTHOUGH the prison and borstal population has fal from the peak figure of 24,000 in 1952 to about 21,000 t year, overcrowding is still a problem in local prisons,[2] and t annual report of the Howard League for Penal Reform[3] sa that "of all methods of penal treatment, imprisonment in t ordinary, local, closed prisons has made least progress." The prisons have had to bear the burden of overcrowding, lack staff, and shortage of work for the prisoners, many of wh are first offenders serving periods of one week to a few mont and those on remand who might be found not guilty, or p on probation. On the other hand, they also harbour harden criminals serving long sentences of preventive detention, a men who are "too far gone in crime" to be sent to open regional training prisons, and the report adds "even if the were no other reasons, it is not surprising that in many lo prisons the regime remains negative, the approach impersonal Stress is laid on the importance of rehabilitating the fir offender, and the League suggests a personal approac to each prisoner and his problems by the prison st along the lines of the work done by probation officers.

The report points out that one out of every two prisone receives a sentence of less than three months, and many o them periods of less than five weeks, which seems too sho either for constructive training or as deterrents. In place o these short sentences, the League has suggested to the Hom Secretary some alternative penal methods to help in relievi the pressure on local prisons

A scheme of attachment of wages could be employed fo the many civil prisoners, including those convicted in conne

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[1] Northern Ireland General Health Services Board Seventh Annual Report, 1954–55 H.M Stationery Office Pp 31 1s

[2] *Exeter Express and Echo* Sept. 28, 1955

[3] *Sussex Daily News*, Sept 23, 1955

[1] See *Lancet* 1954, i 1226

[2] *Lancet*, 1955, i, 102

[3] The Howard League for Penal Reform annual report for 195 5s From Parliament Mansions, Abbey Orchard Street, Londo S W 1

Diary of the Week

OCT 16 TO 22

Monday, 17th

University College, Gower Street, W C 1

5 30 P M Prof J F Danielli, D SC Nuclear and Cytoplasmic Sites of Drug Action

Postgraduate Medical School of London, Ducane Road, London, W 12

4 P.M Dr W A. Briscoe Why Do Respiratory Function Tests ?

London School of Hygiene and Tropical Medicine, Keppel Street W C 1

5 P M. Madame Alva Myrdal The Interplay of Factors in the Development Process (First of five Heath Clark lectures)

Institute of Neurology, Queen Square, W C 1

5 P.M Dr Leonard Kurland (U S.A) The Etiologic Significance of Epidemiologic Research in Multiple Sclerosis and Amyotrophic Lateral Sclerosis

Institute of Obstetrics and Gynæcology

3 P.M (Chelsea Hospital for Women, S W 3) Mr H J Fisher Postoperative Electrolyte Balance

Hunterian Society

8 30 P M. (Talbot Restaurant, London Wall, E C 2) Mr A Dickson Wright How Patients Have Deceived Me (Presidential address)

University of Edinburgh

5 P.M (University New Buildings, Teviot Row) Prof R. A McCance F R.S Chemical Structure of the Body (Sharpey Schafer lecture)

Tuesday, 18th

Royal College of Physicians of London, Pall Mall East, S W 1

3 P M Sir John Charles The Contrivance of Collegiation (Harveian oration)

Royal College of Surgeons of England Lincoln's Inn Fields, W C 2

3 45 P M Dr L W Proger Pneumatosis (Erasmus Wilson demonstration.)

The London Hospital Medical College, E 1

5 P M Prof L J Witts Anæmia and the Alimentary Tract (Schorstein lecture)

St Mary's Hospital Medical School Paddington, W 2

5 P.M Mr Arthur Bell Third Stage of Labour and Postpartum Hæmorrhage

Royal Army Medical College, Millbank, S W 1

5 P M Dr H A Burt Minor Joint Complaints

Institute of Neurology

5 30 P M Dr Macdonald Critchley Psychological Aspects of Pain

South West London Medical Society

8 30 P M (Bolingbroke Hospital) Dr Mary Wilmers Allergic Diseases of Children

Royal Institute of Public Health and Hygiene, 28, Portland Place, W 1

5 P M Prof G P Crowden Environmental Factors Affecting Comfort, Health and Working Capacity (Bengué lecture)

Wednesday, 19th

University College

5 45 P.M Dr James V Neel (Michigan) Genetic Control of Hæmoglobin Synthesis (Galton lecture)

Royal Society of Medicine, 1 Wimpole Street W 1

5 P M. *Comparative Medicine* Prof James McCunn Liaison Between Two Professions with Similar Interests (Presidential address)

8 15 P.M *General Practice* Dr R J Minnitt A Surgeon and Seven Pieces of Old Silver (Valedictory address)

Postgraduate Medical School of London

2 P.M. Dr J D N Nabarro Diabetes and Carbohydrate Metabolism (First of two lectures)

Institute of Diseases of the Chest, Brompton Hospital S W 3

5 P.M Mr T Holmes Sellors Diaphragmatic Hernia

Eugenics Society

5.30 P.M (Royal Society Burlington House, Piccadilly, W 1) Dr J F Loutit Biological Hazards of Nuclear Fission

St Marylebone Hospital for Psychiatry and Child Guidance, 48, Cosway Street, Marylebone Road N W 1

5 30 P M Dr E H Larkin Major Psychiatric Syndromes

Hypnotherapy Group

8 P M. (1, Wimpole Street W 1) Dr A G Davies Scope and Limitations of Hypnotherapy

Midland Medical Society

8 15 P.M (Midland Hotel) Sir Ernest Finch Leonardo da Vinci

Nottingham Medico Chirurgical Society, 64 St James's Street Nottingham

8 30 P M Dr H J Parish Recent Trends in Preventive Inoculation.

Royal College of Surgeons of Edinburgh, Edinburgh 8

3 30 P M Sir Clement Price Thomas Conservative Resection of the Bronchial Tree

Thursday, 20th

Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W 1

7 30 P M Prof R M. Gordon The Host parasite Relationship in Filariasis (Presidential address)

West London Medico Chirurgical Society

9 P M (Fellows' Restaurant, Zoological Gardens) G B Woodd Walker Man Alive (Presidential address)

British Institute of Radiology, 32, Welbeck Street W 1

8 P M Mr E Cotchin, M R C V S Neoplasia in Domesticated Mammals

Liverpool Medical Institution, 114, Mount Pleasant, 3

8 P.M Mr Ronald Edwards, Prof Charles Wells Hiatus Hernia

Manchester Medical Society

8 P.M. *Anæsthetics* Dr J McAuley Two Schools of Thought (Presidential address)

University of St Andrews

5 P.M (Queen's College, Small's Wynd Dundee) Professor McCance Metabolism and Renal Function in the First Two Days of Life

Friday, 21st

University College

5 P.M Dr R W Sperry (California) Neural Mechanisms Underlying Perception

Postgraduate Medical School of London

2 P.M Mr Sol Cohen Limb Gangrene

4 P M Prof W D M. Paton Application of Synaptic Pharmacology to Clinical Practice

Institute of Laryngology and Otology, 330, Gray's Inn Road, W C 1

3 30 P M Mr William McKenzie Tonsil and Adenoid Problem.

Institute of Obstetrics and Gynæcology

3 P M (Hammersmith Hospital) Prof. R J Kellar Placental Dysfunction

Royal Society of Medicine

5 P M *Epidemiology and Preventive Medicine* Dr J C McDonald Miss Ruth E Charter *B coli* sero types in a Nursery Dr J G Holmes Epidermophytosis in Miners

8 15 P M *Radiology* Dr Drew Thomson, Dr A M. Jelliffe Possible Significance of the Thymic Origin of Hodgkin's Disease

Faculty of Radiologists

5 P.M (Royal College of Surgeons) *Radiotherapy* Dr E F Scowen Indications for the Ablation of Endocrine Activity in the Ovaries Adrenals, and Anterior Pituitary in the Treatment of Breast Cancer

Sigerist Society

7 30 P.M (45, Russell Square, W C 1) Dr Brian Kirman The Problem of the Backward Child

West Midlands Physicians Association

11 A.M (Queen Elizabeth Hospital, Birmingham, 15) Autumn meeting

Medico Chirurgical Society of Edinburgh

8 30 P M (Royal College of Surgeons 18, Nicolson Street) Mr R B Wright, Dr R W D Turner Assessment of Fitness for Operation in the Elderly (Joint meeting with the Royal Medico Chirurgical Society of Glasgow)

Appointments

CROW, JOHN L.R C P E, D A whole time asst. anæsthetist (S H M O) based at the Inverness hospitals

DODDS, R J, M B Durh D.P H M O H and principal school M.O. Smethwick

GEORGE, J T A, M D Birm, D.P H deputy county M.O Yorks

MILLAR, I B M D Belf. D.P H M O H, Welshpool, Montgomery, and Llanfyllin boroughs

O'MALLEY A G M CH ORTH Lpool, F R C S E consultant orthopædic surgeon, Royal Southern Hospital, Liverpool

PIERCE, H L, M.B Camb appointed factory doctor, Keighley Yorks

SCADDING F H M.D Lond, F.R C P asst consultant physician Brompton Hospital London

Birmingham Regional Hospital Board

ALEXANDER, M K, M.B Lpool, D.PATH whole time consultant pathologist South Warwickshire group

DOLTON, E G F R C S part-time consultant thoracic surgeon, Dudley, Stourbridge and Lichfield, Sutton Coldfield and Tamworth groups

GRAY I R M.D Lond part time consultant physician, Coventry group

JACOBS, PHILIP, M.B Brist, D M.R D part-time consultant radiologist Birmingham (Selly Oak) group

MARSHALL, A T, F R.C.S E part-time consultant obstetrician and gynæcologist, South Worcestershire group

RICHARDS, D G, M D Birm. part time consultant physician Walsall and West Bromwich groups

THORN, P A M.D Lond part time consultant physician, Wolverhampton group

WALKDEN, W J, M.B Birm whole time consultant in gerontology and medicine, West Bromwich, Dudley and Stourbridge groups

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Births, Marriages, and Deaths

MARRIAGES

FLYNN—WARRICK —On Sept 24, at St John's, Blackheath, Frederick Flynn M.D, to Ann Warrick, M B D C.H

O REILLY—DALEY —On Oct 8, at Wimbledon J N O'Reilly, M.R C P to Doreen Daley, F R C.O G, daughter of Sir Allen Daley, F R C.P and Lady Daley

THE USE OF HORMONES IN THE MANAGEMENT OF PREGNANCY IN DIABETICS

REPORT TO THE MEDICAL RESEARCH COUNCIL BY THEIR CONFERENCE ON DIABETES AND PREGNANCY *

SINCE the introduction of the use of insulin in diabetes mellitus, the mortality rate among the offspring of diabetic mothers has declined but not as markedly as had been expected With better control of diabetic complications the rate among viable fœtuses is now less than 25% in many clinics (Tolstoi et al 1953) In a recent report however, Nelson Gillespie, and White (1953) claim that by the use of the sex hormones stilbœstrol and progesterone (Proluton) they have achieved a survival rate among viable fœtuses of 90% The rationale of this addition to the usual details of the management of pregnancy in diabetics is based on the work of Smith and Smith (1935) who claimed that in toxæmia of pregnancy a state of hormonal disequilibrium exists An abnormally low level of œstrogen in the blood at the fifth month of pregnancy and a subnormal increase in pregnandiol excretion during the succeeding months was noted in many toxæmic patients. This pattern was associated, later in pregnancy with unduly high levels of chorionic gonadotrophin in the serum Since much of this early work was done on diabetics among whom the incidence of toxæmia was believed to be excessive, White and Hunt (1943) suggested that the abnormal hormone pattern could be rectified by the regular administration of stilbœstrol and progesterone in the hope that toxæmia could be minimised and fœtal death prevented Their earlier experience indicated that the fœtal mortality rate for diabetic patients with an abnormal hormonal balance was 40% In a later series of patients whose abnormality was corrected by appropriate hormone administration the fœtal mortality rate fell to 8% (*Ibid*) In their recent paper Nelson et al conclude that in diabetics ' female sex hormone therapy has reduced the incidence of spontaneous abortion, decreased the number of premature labours, and greatly reduced the occurrence of toxæmia of pregnancy and re hydramnios.'

n view of these results, the Medical Research Council ointed a committee to conduct a controlled clinical l designed to assess the effect, if any of treatment the oral administration of stilbœstrol and ethisterone m the fœtal survival rate in pregnancy among betics. Although in her earlier work she had used l preparations, White s (1949) opinion is that bœstrol and progesterone should be given intra sculary and that is now her practice For widespread tine use however repeated injections are irksome, d the present trial was not designed to duplicate cisely her procedures, but to assess the results of a sage schedule based on oral preparations of ethi rone which in combination with stilbœstrol might be expected to have physiological effects similar in nature and intensity to those of the parenteral dosage of stilbœstrol and progesterone used by White

Although in a controlled trial it is not essential to ensure comparability with the results of other workers, such comparisons will inevitably be made and the clinical criteria for accepting a patient for inclusion in the trial are given below White claims that the outcome of pregnancy in the diabetic is affected by three major factors—the age of the mother at the onset of diabetes, the duration of the disease, and the extent of any vascular renal complications The control of the diabetes itself is generally thought to be important, although more difficult to assess

In the present trial the following criteria were used

1 Patients were not more than 40 years of age at the date of the last menstrual period

2. The pregnancies were not more advanced than 16 weeks when cases presented for inclusion in the trial

3 Diabetes was considered to be present (*a*) when there was a well authenticated past history; (*b*) when, in the presence of diabetic symptoms a single fasting blood sugar of 180 mg per 100 ml or over was observed; or (*c*) when in the absence of symptoms, and in their presence if the fasting blood sugar level was below 180 mg per 100 ml., a sugar tolerance curve after 50 g of glucose by mouth done in the fasting state in the morning after ten days on a full diet showed a level above 140 mg per 100 ml at the start and did not fall below the starting level plus 20 mg at 2½ hours.

Patients were not accepted although otherwise suitable in the presence of:

(*a*) *Gross retinal changes*

(*b*) Persistent elevation of the diastolic blood pressure to 90 mm. Hg or above (The finding of albuminuria was not in itself a reason for rejection.)

(*c*) Other general diseases, apart from such acute conditions as pyelitis, which on their own account would necessitate special management of the pregnancy

Design of Clinical Trial

Owing to the relative infrequency of the simultaneous occurrence of pregnancy and diabetes in the population no one hospital or clinic in this country is likely to accumulate enough patients for a soundly based assessment to be made within a reasonable short time. Accordingly nine centres were asked to coöperate in a centrally planned and controlled investigation On the assumption that within any one centre the standards and details of obstetric medical, and pædiatric care would be equal for each group patients were allocated at random to hormone treated (H) and ' non hormone treated ' (NH) groups Since prognosis for fœtal survival is in general affected by maternal age and parity, the patients records were first stratified, centre by centre into age and parity groups Within each age parity group patients were allocated at random to hormone and non hormone series Because of the small numbers involved in any one group equality between the two series was ensured by allocating the first of the patients to be presented at random to one or other form of treatment, the second to the opposite form and so in pairs The resultant distribution of cases in any one centre might thus have appeared

Centre A

Primiparæ			*Multiparæ*		
20	20–24	25–29 &c	20	20–24	25–29 &c
H NH	NH H		NH H	H NH	
H NH	H NH		H NH	NH H	
NH H	&c		H NH	&c	

When accepted and allocated patients were given a series number which was attached to the clinical record sheet and to every bottle of tablets required by each patient throughout her pregnancy Neither patient nor

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* Members of Conference: Sir Harold Himsworth F.R.C.P F.R.S. (chairman) Mr H. H Fouracre Barns, F.R.C.S F.R.C.O.G., Dr J C Eaton, Dr Russell Fraser Prof W F Gaisford, F.R.C.P., Prof C H Gray M.D Dr F Avery Jones, Dr R D Lawrence Dr O Lindan Prof N F Maclagan F.R.C.P Dr J M Malins, Mr G D Matthew F.R.C.O.G Dr M E Morgans, Prof W I C. Morris, F.R.C.O.G Dr W G Oakley Prof T H Oliver F.R.C.P., Mr J H Peel F.R.C.O.G Dr D D Reid Dr G O Richardson Dr C F Rolland Mr Linton Snaith F.R.C.O.G Mr C P Stewart D.SC Dr G I. M Swyer Prof R E Tunbridge F.R.C.P

This report was prepared by Dr D D Reid and the conference is glad to acknowledge his services in arranging the trial. The conference is greatly indebted to Miss L. M. Colwell for assistance in the analysis of the data

TABLE I—MATCHING OF HORMONE AND NON-HORMONE TREATED GROUPS

Characteristic	Hormone group	Non hormone group
No of patients	76	71
Mean age (years)	22 4	20 4
Proportion of primiparæ (%)	32 9	43 7
Fœtal loss rate (all causes) % in previous pregnancies of multiparæ	52 0	53 4
Mean duration of diabetes mellitus (years)	8 0	8 5
Mean stage in pregnancy at acceptance for trial (weeks)	12 5	12 6
Mean number of weeks in hospital before delivery	2 0	2 0

clinician knew the type of preparation given, and the tablets, active and inert, were identical in size, appearance, taste, and packing On the other hand, participating clinicians explained to their patients the nature and intention of the trial and the need for regular reporting and consistent treatment

Management of Patients

Specific hormone therapy, commenced before the end of the 16th week of pregnancy, was given orally according to the following daily dosage schedule

Stage of pregnancy	*Stilbœstrol (mg per day)*	*Ethisterone (mg per day)*
Up to end of 19th week	50	25
20th–23rd weeks inclusive	100	50
24th–27th weeks inclusive	100	75
28th–31st weeks inclusive	150	125
32nd week until delivery	200	250

These doses were dispensed in differently coloured tablets of suitable size

No strict regimentation of the details of management in several centres is practicable Some general rules were, however, laid down to ensure reasonable equality of method between the cooperating centres

1 In the event of obstetrical complications, termination of pregnancy should be carried out when judged desirable by the obstetrician

2 Otherwise, when the baby was of adequate size and there were no such complications, termination should be at the 36th week by the method most desirable on obstetric grounds

TABLE II—OUTCOME OF PREGNANCY ACCORDING TO TREATMENT

—	Hormone treated		Non hormone treated	
	No	%	No	%
Living children	53	69 7	49*	68 1
Stillbirths	9	11 8	7	9 7
Neonatal deaths	8	10 5	10*	13 9
Abortions	6	8 0	6	8 3
Total	76	100 0	72	100 0

* Including 1 of a set of twins.

3 If the baby were smaller or larger than usual, the date of termination might be varied up to a fortnight on either side of the 36th week

4 Pædiatric emergencies were to be treated entirely at the discretion of the clinician in-charge, but routine care was to be based on the assumption that the babies were premature and they were to be kept in oxygen tents for at least forty eight hours after birth

All the children born alive were followed up for at least six months except when death occurred before that age There was 1 death in the non-hormone treated group at two months and 1 in the hormone treated group at seven months, but practically all fœtal deaths occurred within a month after delivery For that reason we have adopted the usual convention used in discussion of this subject and state our results in terms of abortions, stillbirths, and neonatal deaths alone

Fœtal deaths before the 28th week of amenorrhœa w classified as abortions The term "stillbirth" followed b usage—i e, an issue after the 28th week of amenorrh "which did not after being expelled from its mother brea or show any other signs of life" An issue dying after show clear signs of life was classified as a neonatal death. A fœtus showing viability by surviving longer than twe hours was, irrespective of the duration of pregnancy, c sidered to have been born alive, later death put the outco into the "neonatal death" group Children surviving for least one month after birth were described for the purpo of this study as "living children.".

In all, 161 patients were referred for inclusion in t trial Of these, 5 aborted before commencing treatme 2 had already gone beyond the 16th week of pregnan before treatment could be begun, in 3 the diagnosis pregnancy proved to be in error, and in 4 lack of coöpe tion in treatment or some other complication supervene Of these 14 patients, 4 had been allocated to the hormon treated group and 10 to the other Thus 147 patien were left for the study

Special Investigations

In three of the hospital centres assays of urina pregnandiol were made on all patients at roughly fo

TABLE III—OUTCOME OF PREGNANCY ACCORDING TO PARI AND TREATMENT

—	Primiparæ				Multiparæ			
	Hormone treated		Non hormone treated		Hormone treated		Non-hormone treated	
	No	%	No	%	No	%	No	%
Living children	17	68 0	21*	65 6	36	70 6	28	[illegible]
Stillbirths	3	12 0	4	12 5	6	11 8	3	[illegible]
Neonatal deaths	3	12 0	6*	18 8	5	9 8	4	10
Abortions	2	8 0	1	3 1	4	7 8	[illegible]	1
Total	25	100 0	32	100 0	51	100 0	40	100

* Including 1 of a set of twins

nightly intervals by the method of Sommerville, Marra and Keller (1948) At two of these centres, assays we made of urinary chorionic gonadotrophin using th prostatic weight method of Loraine (1950), in the thir the blood-levels of chorionic gonadotrophin were assaye 79 patients had X-ray photographs taken of the leg an pelvis at some time after the 16th week of pregnanc Post-mortem reports and material were collected but n detailed discussion of these findings or of the other speci investigations is made in this report

Summary of Results

Although the system of stratification by age and parity and random allocation to hormone treated an control groups within each hospital should produc reasonably equivalent groups, we have verified this b comparing, as in table I, the mean values in each grou with respect to characteristics of past experience an present condition which may be relevant to fœtal survival The discarding of some patients, as mentione

TABLE IV—OUTCOME OF PREGNANCY
(Abortions excluded)

—	Hormone treated		Non hormone treated	
	No	%	No	%
Living children	53	75 7	49*	71
Stillbirths	9	12 9	7	10 6
Neonatal deaths	8	11 4	10*	15 [illegible]
Total	70	100 0	66	100 0

* Including 1 of a set of twins

TABLE V—DURATION OF PREGNANCY IN WEEKS AT TIME OF DELIVERY

—	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	Total	
Hormone-treated																	
Living	–	–	–	–	–	1	4	4	14	10	6	5	–	3	–	53	70
Dead	1	1	–	–	1	1	1	1	5	1	1	1	4	1	–	17	
Non hormone treated:																	
Living	–	–	–	–	–	–	–	4	14	15	9	3	1	1	1	48	64*
Dead	–	–	–	–	–	1	1	1	6	6	1	–	–	–	–	16	

Mother of twins *not* included
Week 37—non hormone treated—1 living 1 dead

above, resulted in a smaller proportion of primiparæ in the hormone treated groups but otherwise the trial design has provided adequately matched groups of 76 hormone-treated patients and 71 patients otherwise treated in the same way but not given hormones.

The outcome of the 147 pregnancies is given in table II Of the "non hormone" primigravidæ 1 produced twins one of whom died after birth so that survival and loss rates are calculated on 76 and 72 fœtuses Clearly, the proportion of conceptions producing children surviving one month after delivery is at about 60%, almost identical in the *two groups* Similarly *the differences in* abortion stillbirth and neonatal fatality rates are in view of the small numbers involved quite insignificantly different Nor as shown in table III does there appear to be any important difference between hormone treated and non hormone treated groups when they are divided according to parity

The observed frequency of abortion in different series must depend in part on the duration of observation during early pregnancy If such abortions are excluded and only potentially viable fœtuses already at 27 weeks are followed up the results obtained are those given in table IV Again, the difference between the groups is negligible

Table V shows the duration of pregnancy in weeks at the time of delivery in *the two groups* Although 3 of the patients in the hormone treated group were delivered before the 32nd week of pregnancy compared with none among the others, the mean dates of delivery (36 0 and 36 4 weeks respectively) were substantially the same in e two groups. Premature birth was not, therefore s common among the hormone treated patients

TABLE VI—DISTRIBUTION OF BIRTH WEIGHTS IN POUNDS

(Live and still births)

—	1–	2–	3–	4–	5–	6–	7–	8–	9–	10–	11–	Total
Hormone-treated	–	1	–	2	9	18	20	9	6	3	1	69
Non hormone treated	–	1	–	5	7	17	10	17	2	1	–	64
Total	–	2	–	7	16	35	30	26	8	4	1	133

1 stillborn fœtus not weighed

etal Condition

Table VI shows the distribution of weight at birth in e two groups The mean weights of all the children eighed in the hormone treated group is 7 lb 4 oz and the other group 7 lb 1 oz —an insignificant difference hich does not suggest that hormone therapy reduces the xcessive weight of the fœtus in pregnancy among iabetics. (According to data published by Karn et al 1951) the mean weight of infants born in the 36th week f pregnancy is 6 lb 10 oz) Again, this equality implies hat immaturity was not more common in the non hormone-treated group

There were 4 congenital abnormalities (5 3%) in the hormone treated group and 7 (9 7%) among the others (a difference within chance limits $\chi^2 = 0 54$ P = 0 50) and the defect was associated with *fœtal loss*, although not necessarily its cause, in 3 cases in each group There was no consistent difference in the pattern of causes of stillbirth or neonatal death in the two groups. Neonatal loss was most often due to pulmonary atelectasis and intracranial hæmorrhage

Maternal Health

The quality of diabetic control during pregnancy was summarised by the attending physicians as "good," "moderate" or "poor" and the distribution of patients into each of these categories in the two groups is shown in table VII Again there is little difference between the groups Incidentally the fœtal survival rates were almost *identical in the three groups.*

Table VIII gives the frequency of the various complications among those patients who went beyond the 27th week Hydramnios is equally common in both series Patients were classified as toxæmic by the attending obstetricians usually on the basis of the presence of two or more of the classical signs of the condition—œdema albuminuria and hypertension The apparent excess of toxæmia, which was usually mild in severity in the non hormone treated group was within chance limits ($\chi^2 = 1 7$ $0 2 > P > 0 1$) Moreover, irrespective of whether the diagnosis of toxæmia was actually made the proportion of patients in whom albuminuria was reported was almost equal in the two series the same is true of the reporting of œdema There was no divergence in the trends in blood pressure during pregnancy between the 50 patients in each group for whom complete readings were available

TABLE VII—DIABETIC CONTROL DURING PREGNANCY

—	Hormone treated			Non hormone treated		
	No	%	Fœtal loss rate	No	%	Fœtal loss rate %
Good	48	68	2.	45	69	24
Moderate	18	26	22	19	29	25
Poor	4	6	25	1	2	100
Total	70	100		65	100	

There were 2 maternal deaths during the trial a non hormone treated patient died from ventricular fibrillation five days after delivery by cæsarean section and a hormone treated patient died twelve weeks after cæsarean section after a completely normal convalescence

Discussion

In the present controlled investigation a clinically homogeneous group of patients distributed over a number of centres was divided at random into two groups equivalent in all material respects They were then *treated identically* except that one group were given oral stilbœstrol and ethisterone in increasing doses while the others were given similar but inert tablets Such tests of the adequacy of the trial design as have been applied suggest that a balanced allocation had accounted for the major sources of variation and that the results can be accepted with reasonable confidence

The outcome in each pregnancy was classified according to the definitions given above, into abortions, stillbirths neonatal deaths and live births surviving at least one

TABLE VIII—DISTRIBUTION OF COMPLICATIONS OF PREGNANCY

—	Hormone treated (70)		Non hormone treated (65)	
	No	%	No	
Œdema	41	59	40	61
Albuminuria	16	23	13	20
Toxæmia	10	14	16	25
Hydramnios	28	40	26	40

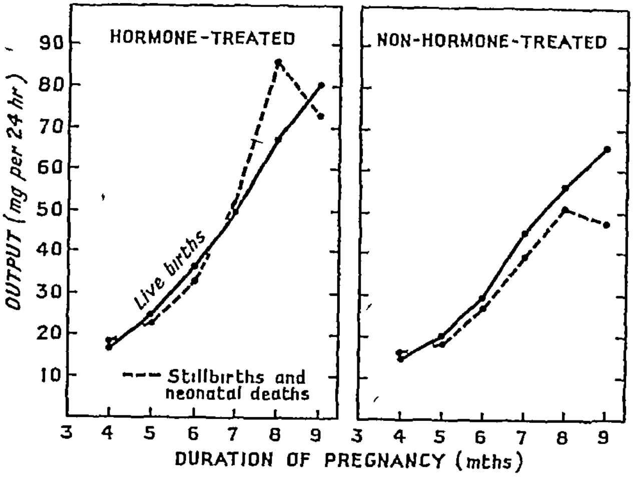

Fig 1—Urinary output of pregnandiol like substance

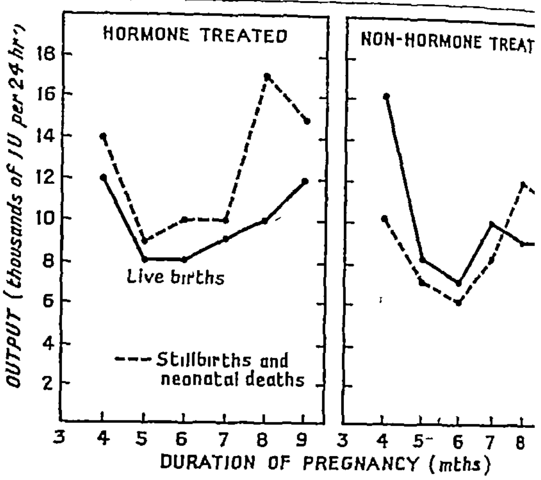

Fig 2—Urinary output of gonadotrophin

month after delivery The main criteria used were the fœtal survival rate and the incidence of complications of pregnancy among the mothers

The results obtained were disappointing The proportion of pregnancies ending in live births was practically identical at nearly 70% in each group When abortions were omitted, the survival rate among viable fœtuses rises to about 75% in both series Although this is comparable with the rates achieved, for example, by Tolstoi, Given, and Douglas (1953), who also cite total stillbirth and neonatal death-rates of between 14% and 25% as typical of the results obtainable without hormone therapy, Nelson, Gillespie, and White (1953) claim that a fœtal survival-rate of 90% can be attained by additional hormone administration As indicators of hormone output, these workers have used assays designed to measure the amount of pregnandiol in the urine In this trial we have used similar methods, but it should be noted that these methods are not specific and that the results are liable to be affected, particularly towards the end of pregnancy, by contamination with substances other than pregnandiol which give a colour with sulphuric acid Nevertheless, there was evidence of significant differences during the few weeks before delivery between the output of such pregnandiol like substances in pregnancies ending in stillbirth or neonatal death and in the successful pregnancies The mean results obtained at different stages of pregnancy are set out in fig 1 where it is obvious that the level of pregnandiol-like substances tended to rise after the eighth month in successful pregnancies but fell in those ending in stillbirth or neonatal death Similarly, the chorionic gonadotrophin levels in unsuccessful pregnancies seen in fig 2 tended to fall in the last month This ominous pattern of declining output of the substances assayed by the tests used occurred in unsuccessful pregnancies in both groups Thus although there was some evidence of a significantly higher output of substances giving colour with sulphuric acid at the 8th month in the hormone treated group, this disparity was not followed by any difference between the groups in the pattern of later decline in output associated with fœtal loss We may suggest, therefore, that one or other or both of the oral preparations were absorbed, and that although they had some effect, direct or indirect, on the urinary excretion of substances giving a colour with sulphuric acid, they made no appreciable difference to the fœtal survival rate nor to the incidence of the complications of pregnancy among the mothers

Summary and Conclusions

Fœtal mortality in the pregnancies of diabetic mothers is notoriously high A controlled clinical trial was therefore made of the value of oral stilbœstrol and sterone in the correction of the alleged hormone equilibrium which has been suggested as a cause of excessive fœtal wastage Comparable groups of pat suffering from diabetes, but free from major ca vascular complications, attending nine hospitals in United Kingdom were stratified by age and parity randomly divided into "hormone treated" and " hormone treated" groups One group received ta containing graduated doses of ethisterone and stilbœs the others were given inert but otherwise identical tal In all other respects the management of pregnancy the same All the patients, 76 hormone treated an non hormone-treated, were followed for at least six mo after delivery

The frequency of stillbirth and neonatal death in two groups proved to be almost the same, with a death-rate of viable fœtuses of 24% in the horm treated group and 26% in the other Although b weights were on the average equal, there were 4 genital malformations in the treated group and 7 an the controls, the frequency of malformation associ with fœtal loss was, however, the same, being 3 in group

Diabetic control during pregnancy was equally in the two series, and the incidence of hydram œdema, and albuminuria was equal There was significant excess in the incidence of toxæmia in non-hormone treated group and the trends in bl pressure readings during pregnancy were identical

Assays designed to measure the urinary output pregnandiol and chorionic gonadotrophin were car out Although the methods of pregnandiol estima are not specific, the assay results suggest that ei one or the other, or both, of the oral preparati given were absorbed, but that this had no effect the pattern of hormone excretion associated with fœ loss

From these observations it is concluded that stilbœstrol and ethisterone, in the doses here prescrib do not reduce fœtal mortality in diabetic patients, have little, if any, beneficial effect on maternal health pregnancy

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EFFECTS OF EXPERIMENTAL HYPOTHERMIA ON VITAL ORGANS

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With illustrations on coloured plate

FOR well over a hundred years experimentalists have studied the effects of cold upon the body As long ago as 1797 Dr James Currie of Edinburgh reported that he had succeeded in lowering a patient's temperature to 83 F by immersion in a brine bath at 40°F In 1832 Larrey described operations on Napoleon s half frozen soldiers Norman Lake (1917), from his investigation of the effects of cold on the body concluded that reduction to a temperature of −6°C brought about a state of suspended animation in which for considerable periods the tissue could be preserved intact and its potential vitality maintained at the normal standard.'

Smith and Temple Fay (1940) were among the first to apply their knowledge of hypothermia to the treatment of patients. From experiments on the growth of embryonal cells they were aware that cold reduces the metabolism of cells in vitro, they therefore cooled cancer patients in an attempt to check the growth and spread of the tumours. Their investigations stimulated a host of clinicians and research workers to examine the effects of cold on laboratory animals Pioneers in this field were Dill and Forbes (1941) Fuhrman and Crismon (1947) and Bigelow et al (1950*a* and *b*)

From the wealth of experimental data thus gained certain basic facts emerged Cooling of the body reduces etabolic activity as is shown by slowing of the heart, crease in the respiratory rate a fall in the arterial ood pressure, and a consistent reduction in oxygen nsumption With continued cooling the animal adually approaches a state in which voluntary movement is absent respirations cease the peripheral pulse imperceptible, and the slowly beating heart alone dicates that life is not extinct

It seemed that a true state of suspended animation ' ad been achieved, and it was not long before the possibilities of such a state were recognised For years cardiogists had been searching for safe ways of shutting off he circulation during heart surgery To dry the eart " by temporarily occluding both venæ cavæ is a imple matter, but the organs deprived of oxygen apidly succumb So extracorporeal pumps and oxygenators had been devised to simulate heart action but uch had serious drawbacks With the advent of hypohermia it appeared that the search was at an end nstead of trying to provide the tissues with oxygen by means of an extracorporeal circulation it should be possible to reduce the oxygen requirements of the cells to a minimum by cooling It was thought that the cooled tissues, needing little or no oxygen would not suffer during the period of circulatory arrest occasioned by temporary occlusion of the venæ cavæ. Bigelow et al (1950a) did in fact succeed in keeping refrigerated dogs alive despite exclusion of the heart from the circulation for fifteen minutes or more—though 32 out of 39 died

Stimulated by this poor recovery rate Cookson et al. (1954), elaborated a technique for the safe occlusion of the venæ cavæ for twelve minutes only, in hypothermic dogs and cardiac surgeons looked forward to being able to work in a dry heart and unhampered by cumbersome and uncertain artificial pumps

But despite the theoretical promise of hypothermia a strong impression is gained from the literature that the whole technique, comprising hypothermia, vena caval occlusion, and subsequent rewarming is uncertain and hazardous. As recently as 1954 Ross, reporting on rapid extracorporeal cooling in dogs stated that several of the animals died during the warming stage despite various efforts to halt their downhill course Though accepted opinion is that no gross alterations in tissue structure can be ascribed to the effects of refrigeration, it seems likely that delicate changes in the cell must take place and if demonstrable these might give early warning of serious damage to come

The present investigation was undertaken to determine whether any histochemical changes during hypothermia could be demonstrated As being most likely to show such changes the vital organs studied were the liver, the kidney and the adrenal glands

Materials and Methods

30 dogs of either sex were used, 8 of them acting as controls. All were mongrels the only requirements in their selection being a weight of about 40 lb and a general appearance of good health. They were fed about four hours before refrigeration and the only preparatory treatment given was a dose of atropine gr $^{1}/_{100}$

Anæsthesia

Anæsthesia was induced with veterinary pentobarbitone sodium (strength 60 mg per ml.) in the routine dosage of 1 ml per 5 lb body weight A cuffed endotracheal tube was passed immediately and connected to a supply of pure oxygen, complete with rebreathing bag and soda lime absorber Polyethylene catheters were tied into the femoral artery and passed into the vena cava through the femoral vein to record the mean arterial and venous pressures, and standard electrocardiograms (leads I and III) were taken. All the recordings were made on a four-channel direct writing Sanborn ' Poly Viso Recorder —temperatures being measured with a rectal mercury thermometer

Preliminary Biopsies

Before the induction of hypothermia biopsy specimens were taken from the edge of the right lobe of the liver the greatest convexity of the right kidney and, in some cases, the inferior corner of the right adrenal gland.

Each specimen was divided into two one half being fixed in 4% formalin for frozen section and the other placed in alcoholic picroformol solution for dehydration and embedding in wax. To avoid the sequelæ of an open peritoneal cavity the parietal peritoneum and abdominal wall were closed with a continuous suture thus restoring the animal to as near normal as possible during the ensuing phase of hypothermia.

Hypothermia

Hypothermia was now induced by laying the dog on an ice-bed maintained at 4°C (39 F) and packing it round with ice chips. As soon as the respiratory rate fell below 6 per minute assisted respiration was instituted.

In the early experiments freezing was continued until death supervened the aim being to discover the type of cell damage The knowledge gained was used in a search for similar changes in animals cooled only to the point where cardiac surgery is normally undertaken—i e when the arterial blood and the venous blood are identical in colour denoting that the cooled tissues are utilising the minimum of oxygen This is regarded as the ideal time to arrest the circulation and is usually about 25°C (77°F) At this point in the later experiments further biopsy specimens were taken and treated as before.

Histological Methods

Throughout this study the frozen sections were stained with a mixture of Sudan III and Sudan IV for lipoids and the tissues fixed in picroformol were dehydrated embedded in wax, and used in the study of glycogen cytoplasmic granules, and cell structure Glycogen was stained by the periodic-acid Schiff reagent ; Mallory s triple stain was used for the adrenal gland and Mayer s standard hæmatoxylin and eosin for other tissues. All the sections were cut 5 µ thick.

Results

This preliminary report will be limited to some of the striking and constant changes observed All but two of the colour photographs reproduced were taken from the organs of dogs, which had not been cooled beyond the point regarded as the "ideal surgical stage" of hypothermia The two exceptions are figs 12 and 14, which were taken from a dog which underwent more cooling The changes seen in the adrenal gland of this animal were particularly suitable for colour reproduction, but they differed only in degree from the changes seen in the adrenal glands of all the other dogs

Liver

The normal dog liver (fig 1) has a lobular pattern in which can be distinguished central hepatic-vein radicles and peripheral portal tracts Frozen sections stained with hæmatoxylin and Sudan show an absence of fat in the liver cells, with only occasional droplets present in Kupffer's cells and those of the bile duct epithelium The liver cells are polyhedral, with remarkably distinct cell membranes, the nuclei are round and central and have prominent eccentric nucleoli, and the cytoplasm is pale (fig 3)

After hypothermia had been maintained for two and a half hours, changes were visible in frozen sections The whole tissue took on a blush from the Sudan stain, and contained coarse fatty droplets lying away from the portal tracts (fig 2), the liver cells lost their former definition, and the nuclei stained more faintly with hæmatoxylin, the nuclear detail being lost (fig 4) The fat lay in great droplets, each larger than the average liver cell, and many of the droplets did not stain completely, as though composed in part of non-sudanophil substance

The normal dog liver is full of glycogen, which, when stained by the periodic acid Schiff reagent, appears as granules ranging from brilliant purple to red and distributed throughout the entire tissue (fig 5) In these wax embedded sections the liver cells are present in obvious cords with clear blood sinusoids between In the normal liver the sinusoids are narrow, being far less than the average liver cell in width

After about two hours' refrigeration of the animal, sections of the liver stained for glycogen showed very constant changes (fig 6) The blood sinusoids were widely dilated and congested with red cells, and the liver cells adjacent to these sinusoids had lost their glycogen granules The impression gained was that the liver cells in these areas had been "washed" free from glycogen by the increased amount of blood in the sinusoids

Adrenal Glands

The normal dog adrenal gland stained with Sudan shows a distinct zonation of fat in the cortex The outermost zona glomerulosa contains a moderate amount of sudanophil substance, the broad middle zona fasciculata a great deal, and the innermost zona reticularis only a little (fig 7)

When hypothermia had been maintained for two and a half hours in the anæsthetised dog, the sudanophil substance of the adrenal cortex was greatly increased (fig 8), the greatest increase of lipoid being in the zona reticularis, whereas the zona glomerulosa, if anything, had less fat than normal

Wax embedded sections of the adrenal gland of the normal dog, when stained with Mallory's triple dye, again show a distinct zonation of the cortex (fig 11) The outer zona glomerulosa is narrow and consists of large pale staining cells in nests, the middle zona fasciculata is made up of smaller cells, which also possess pale staining cytoplasm, and the inner zona reticularis comprises slightly larger cells characterised by mauve staining cytoplasm High-power microscopy of these cells shows that the cytoplasm consists of mauve staining granules so numerous that they give the impression of a "smoky" homogeneous background (fig 13)

After prolonged hypothermia the adrenal cortex los its zonation when stained with Mallory (fig 12) Th zona glomerulosa was still evident, but the zona reticularis changed its character completely and no longe showed as a definite mauve staining band This was du to the loss of cytoplasmic granules in the cells of the zon reticularis and to the presence of vacuolation in the place (fig 14) Vacuolation of these adrenal cells was constant finding after hypothermia of any considerabl duration, and its appearance paralleled the large increas of fat in these cells during cooling

Kidney

Frozen sections from the control kidneys, and biops specimens from the experimental group, all show th presence of some fat in the tubules (fig 9) In additio aggregations of round cells are commonly found in al the kidney sections examined Fat in the kidney cell and round cell infiltration are not normal findings, bu considering that these animals have not been speciall bred for experimentation we have accepted the presenc of finely divided fat as normal for our average experimental animal In effect this probably signifies that th majority of our dogs commence with a minor degree o tubular damage before being subjected to any experimental procedure

After the dog had been cooled to 26°C (79°F), th sudanophil substance in the kidney was much increase (fig 10) Like the liver, the frozen kidney took on uniform "blush" with Sudan, and much coarse lipo had accumulated in almost every distal tubule. Onc again the nuclei took up the hæmatoxylin with difficulty In many instances the cells of the lower nephron wer so full of fat that the lumen appeared totally occluded The glomeruli and upper nephron were remarkably fre from lesions

Discussion

Despite the wealth of information on physiologica responses to cold, very little has been published on th microscopic changes induced Strangely enough, such references as there are refer to hypothermia applied t man In 1940, Lawrence Smith reported the effects o cooling more than 100 cancer patients, and Sano an Smith (1940) reported on 50 more cancer patients undergoing either local or general hypothermia Talbott et al (1941) published a very full description of a mental patient who died during therapeutic hypothermia, they wer largely of the opinion that no serious microscopic damag was caused to the organs during hypothermia in man Similar views have been expressed on the experimenta side Delorme (1952) says of extracorporeal cooling of dogs that "no histological damage has been found in any tissue following cooling and the functional change are completely reversible"

In the present hypothermic dogs the chief change were accumulation of fat in the liver, kidney, and adrenal glands, depletion of glycogen in the liver, and vacuolation of the granular cells of the zona reticularis of the adrenal cortex The implications of these delicate histochemical changes may well be extensive

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LEGENDS TO ILLUSTRATIONS ON PLATE

Fig 1—Biopsy specimen of normal dog liver (Hæmatoxylin and Sudan ×100)

Fig 2—Liver of same dog as in fig 1 after 2½ hours' cooling (Hæmatoxylin and Sudan ×100)

Fig 3—Same liver as in fig 1 before cooling (×400)

Fig 4—Same liver as in fig 2 after cooling (×400)

Fig 5—Biopsy specimen of normal dog liver stained to show glycogen (Periodic-acid-Schiff ×100)

Fig 6—Same liver as in fig 5 after 2½ hours' cooling (Periodic-acid-Schiff ×100)

Fig 7—Normal dog adrenal gland (Hæmatoxylin and Sudan. ×40)

Fig 8—Adrenal of dog after 2½ hours' cooling (Hæmatoxylin and Sudan ×40)

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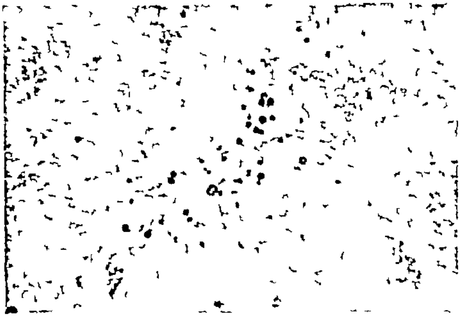
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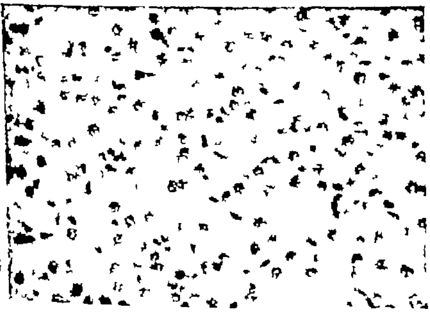
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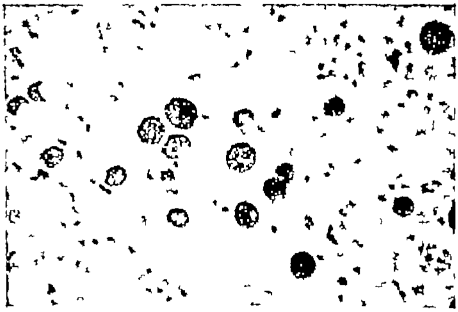
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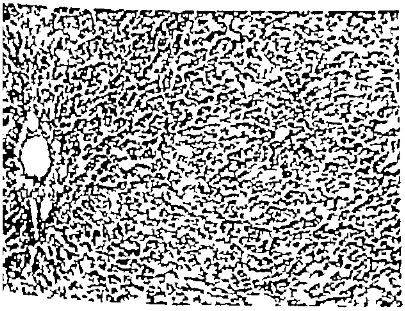
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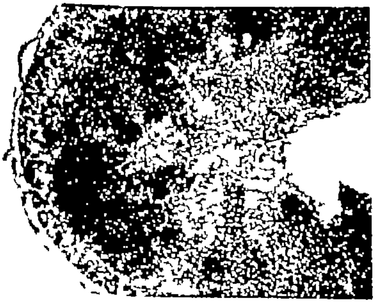
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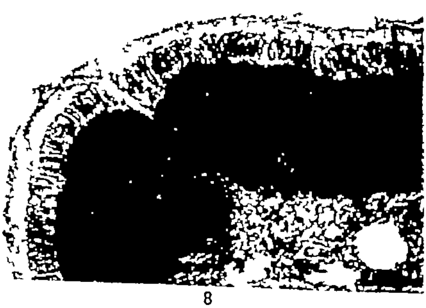
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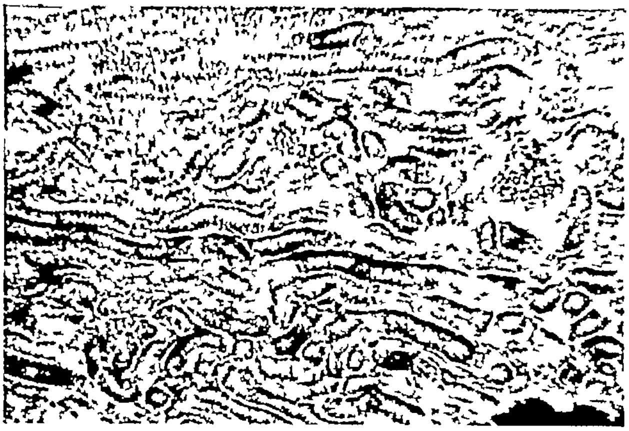
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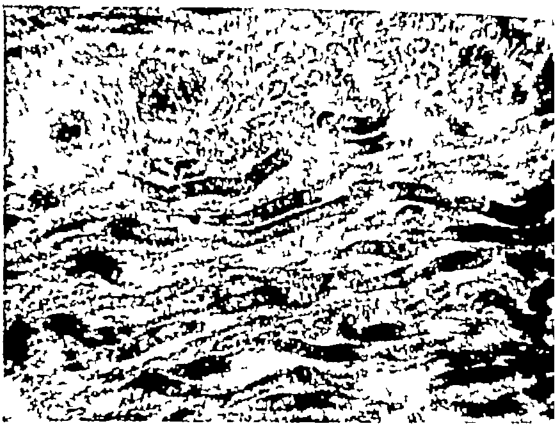
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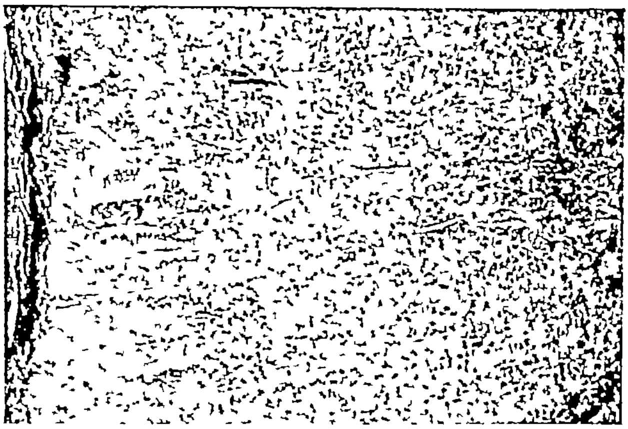
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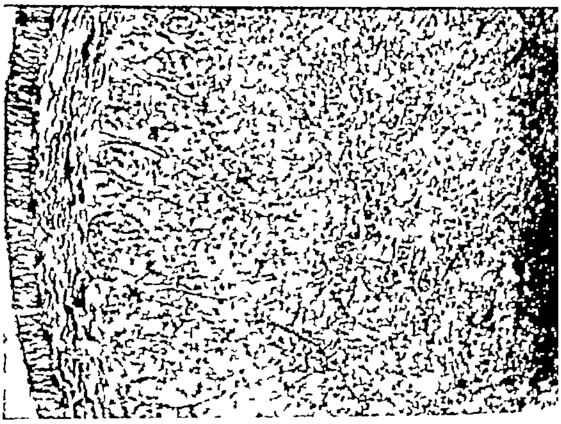
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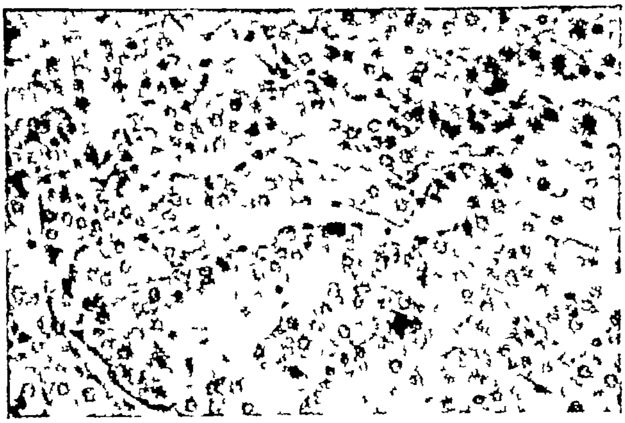
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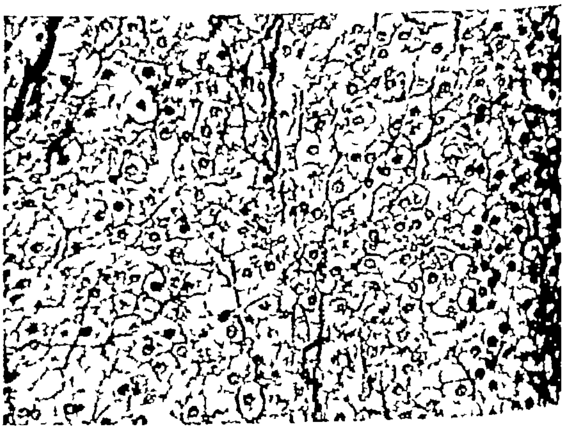
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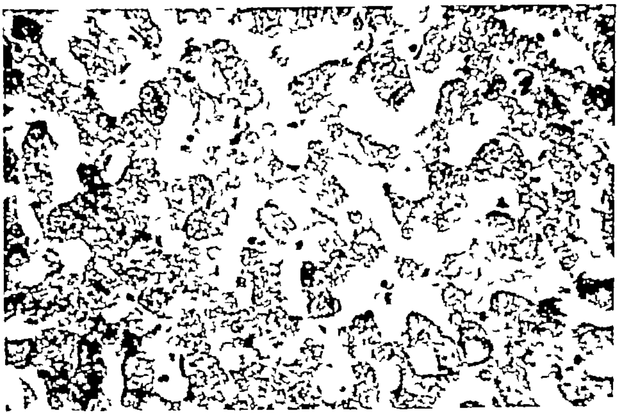
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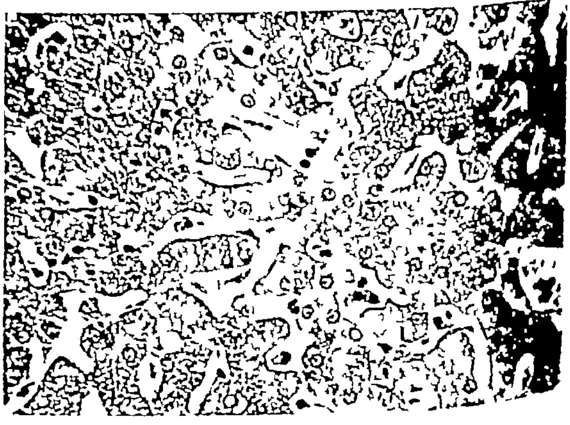
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Changes in Liver

Accumulation of fat in the liver is always serious and is found in the livers of chronic alcoholics and of animals poisoned with carbon tetrachloride chloroform and a host of other liver toxins It is a common finding in cirrhosis and is present in congestive cardiac failure presumably as a result of cell anoxia Accumulation of fat to the extent shown in fig 2 was not found in the liver of any of the control group even after anæsthesia maintained for four hours with pentobarbitone sodium and gas and oxygen, and must be accepted as a sign of damage to the hepatic cells.

During the course of hypothermia the liver also consistently loses glycogen As glycogen protects the liver cell—a fact well known to the biliary tract surgeon—the cells thus depleted of glycogen are liable to injury During hypothermia the liver glycogen is lost in the region of the central vein the same area in which the fat accumulates It seems very likely that the liver having lost its glycogen is falling prey to some toxic process during the cooling and it is of interest in this connection that Cookson et al. (1952) describing their safe technique for hypothermia and caval occlusion, specifically mention the use of 50% glucose intravenously In using the glucose they are undoubtedly sparing the liver glycogen and indirectly saving the liver cell from injury

In considering the mechanism of damage to liver cells during hypothermia it is difficult to suggest anoxia as a causal factor in face of the evidence produced by Bigelow et al. (1950a and b), who concluded after exhaustive study that prolonged hypothermia did not produce an oxygen deficit in dogs. Anoxia however can and does cause fat to accumulate in the liver cells—hence the classical nutmeg liver of congestive cardiac failure More convincing still is the fact that whereas hypothermia reduces a rapid and considerable depletion of liver glycogen accompanied by a well marked rise in the blood sugar level (Fuhrman and Crismon 1947) experimentally induced anoxia also results in a considerable rise in the blood sugar level of dogs (Stickney et al. 1948)

Finally in the present investigation several dogs were anæsthetised for from two and a half to three hours to make them comparable with the refrigerated ones, and anoxia was then induced by the inhalation of nitrous oxide. Sections of their livers stained for glycogen (fig 16) revealed a loss of this substance in the cells abutting on the central vein—a picture almost identical with that obtaining in hypothermia (fig 15)

This may not necessarily indicate that hypothermia exerts its harmful effects through anoxia but it is of interest that the two states are attended by similar results Possibly although oxygen may be readily available to the liver cells hypothermia in some way upsets delicate enzyme systems preventing the cells from utilising the oxygen despite its ready availability If this were true it would mean that the high venous oxygen content characteristic of successful hypothermia is due to an inability of the cells to utilise the oxygen rather than to their not requiring it This would upset our whole concept of the effect of cold on cell metabolism for instead of reducing the oxygen requirements by cold we should merely be paralysing some system which normally makes oxygen available to the cell In our efforts then to prepare the organs for the insult of anoxia we should be using a technique which itself causes anoxia

Changes in Adrenal Cortex

The adrenal changes found in the present investigation are in direct contrast to those described by other workers as the effect of cold on the adrenal glands

Bacchus (1951) described a depletion of cholesterol from the cells of both the zona fasciculata and the zona reticularis after an hour's exposure of rats to low temperatures Robinson and Yoffey (1950) claimed that depletion of cholesterol in these two zones can be demonstrated after five minutes exposure of adult male rats to cold Bacchus (1951) and Robinson and Yoffey (1950) used rats which were not anæsthetised

In the present investigation the adrenal glands constantly showed increased amounts of cortical fat after refrigeration

Depletion of cortical fat is an accepted sign of the 'alarm reaction to stress (Selye 1946) Cold is undoubtedly a stress factor, and in the unanæsthetised animal appears to evoke the expected response It is conceivable that anæsthesia particularly with control of shivering alters the animal's response. This is one explanation of the increase of fat repeatedly found in the adrenal cortices of the dogs in this experiment

Selye (1946) describes an increase of cortical fat as indicating the resistance phase of the adaptation syndrome The question arises whether the increased fat present in these adrenal glands represents this resistance phase ' or in common with the changes in the liver and the kidney constitutes further evidence of a generalised fatty metamorphosis

The vacuolation of cortical cells (fig 14) visible in the wax embedded preparations paralleled the increased fat very closely When animals are cooled to extinction the vacuolation is at its height and the normal granularity of the inner zone cells is lost. Lawrence Smith (1940) observed coarse vacuolation of the cytoplasm of cortical and medullary cells in the adrenal glands of patients who had died after attempted therapeutic hypothermia.

Vacuolation was a constant finding in the present experiments The more prolonged and damaging the cooling the more vacuolation was evident, until at death it was very considerable It seems more than likely that the increased fat in frozen sections and the vacuolation in the dehydrated sections are one and the same process Whatever its causation it appears as a serious omen increasing more and more as death approaches.

Changes in Kidney

During hypothermia fat accumulates in the lower nephron This may be due to the direct effect of cold on the tubules or to the indirect effect of cold on the kidney such as shunting of the circulating blood excluding the lower nephron During the progress of hypothermia urinary secretion gradually diminishes (Ross 1954) until at about 25°C (77 F) there is little or none

Nedzel (1952), who measured the urinary flow of cooled dogs, states that the normal kidney secretes little or no urine during cold immersion of the animal; and that the output of urine is diminished invariably in renal ischæmia He has shown that renal cortical ischæmia occurs during refrigeration and it seems possible that this reduced cortical blood flow may result from a shunting of the renal circulation as observed by Trueta (Trueta et al 1947) in his investigations on the effects of limb trauma on the renal circulation It seems possible that a similar shunting of the renal circulation takes place during hypothermia

LEGENDS TO ILLUSTRATIONS ON PLATE

Fig 9—Biopsy specimen of normal dog kidney (Hæmatoxylin and Sudan. ×100.)

Fig. 10—Same kidney as in fig 9 after 2¾ hours cooling (Hæmatoxylin and Sudan. ×100.)

Fig. 11—Normal dog adrenal gland (Mallory's triple dye. ×100.)

Fig. 12—Adrenal gland of dog that died after 3¼ hours refrigeration (Mallory's triple dye. ×100.)

Fig. 13—Cells of zona glomerulosa of adrenal gland shown in fig 11 (×400).

Fig. 14—Cells of zona glomerulosa of adrenal shown in fig 12 (×400)

Fig 15—Liver of dog cooled to 25°C. (Periodic-acid-Schiff ×400)

Fig 16—Liver of anoxic dog (Periodic-acid-Schiff ×400)

possibly in compensation for the fall in arterial pressure Such a diversion of the cortical blood-flow would render the cells of the kidney tubules relatively anoxic and might be responsible for the swelling and fatty accumulations in the cells of the tubules

It is well known that exposure to cold can produce nephritis in man "War nephritis" was seen mainly in soldiers who were chilled In an attempt to elucidate its mechanism Lewis and Thompson (1951) produced cold injury in rabbits by immersing one hind limb for thirty minutes in an alcohol bath at 5–25°C The rabbits were killed after periods ranging from less than a week to more than a month after injury These workers reported that the kidneys of all the animals exhibited both gross and microscopic lesions Macroscopically they found pallor of the cortex and pitting of the kidney surface, whereas microscopically there was tubular epithelial damage involving groups of nephrons These groups showed hydropic degeneration, fatty metamorphosis, exudation, and even necrosis and casts in individual tubules The distal convoluted tubules were mainly affected, but there was also damage in the thick loops of Henle and the collecting tubules Few glomeruli were involved Being initiated by localised cold trauma only, these changes allow one to predict the likelihood of similar damage if the whole body is cooled.

Without survival experiments one cannot say that these changes are irreversible However, there is no doubt that they take place during hypothermia, and there is no denying that they represent pathological change

Significance of Changes

It is essential to draw attention to the similarity between the tissue changes induced by hypothermia and those described by Selye (1946) as bodily reactions to stress Selye has produced adrenal pictures almost identical with fig 12 by subjecting animals to the stress of repeated doses of formaldehyde by injection, and has published plates showing well-marked fatty infiltration of the liver following the stress of exposure to cold Of great interest are the pancreatic changes he has produced with the stress of forced muscular exercise in rats

Although pancreatic tissue was not studied in the present series, references to acute pancreatitis following cooling have been published Sano and Smith (1940) reported that 10% of their cancer patients treated by hypothermia had signs of acute pancreatitis when they died As none of the untreated cancer controls showed signs of pancreatitis at death these workers concluded that the cold therapy was responsible for the pancreatic changes When one recalls that Selye was able to produce disseminated areas of pancreatic necrosis by merely over-exercising his rats, it seems likely that the stress of severe cold could induce similar changes

There is obvious similarity between Selye's results, induced by exposure of animals to stress, and those discovered during the course of surface cooling in dogs

One is thus driven to the conclusion that contrary to our scientific expectations, hypothermia is at best an exposure to severe stress This stress excites certain fairly stereotyped reactions in the tissues These cellular changes may not all be permanent, but they are undoubtedly pathological and almost certainly account for some of the hitherto unexplained deaths of laboratory animals undergoing cooling or subsequent rewarming

There is no proof that the changes are due to anoxia, but there is much evidence to show that cellular anoxia can lead to similar change

The aim of hypothermia has always been to diminish the metabolism of the cells before temporary occlusion of the circulation After seeing the tissue changes induced by the accepted degree of hypothermia one questions whether the insult imposed upon the tissues by cold is sound preparation for ensuing anoxia Furtherm there is evidence of tissue damage during hypother combined with temporary suspension of the circulati

Bigelow and McBirnie (1953) cooled 12 monkeys and su quently arrested their circulations for one or two hours the monkeys developed serious wound sepsis and died or to be killed on this account

If hypothermia really induced a true state of pended animation, such serious tissue damage sh not occur even after a period of circulatory arrest the contrary, this failure of primary healing is v reminiscent of that observed in patients underg operations during the course of cortisone therapy, may be due to the liberation of large quantities of cort hormone as a normal reaction to the stress of hypother This is a question for serious consideration

Conclusions

When hypothermia is induced in dogs, histopatholog changes take place in vital organs These changes seen even when the animals are not cooled beyond point generally regarded as ideal for surgery

The tissue changes seen in liver, kidneys, and adr glands are such as to make it questionable whet hypothermia ought to be used as a means of enab patients to withstand circulatory arrest during operati on the heart

The cell changes resulting from hypothermia clo resemble those reported by other workers as resul from various forms of stress, and are perhaps attribut to tissue anoxia

If, as seems likely, they may readily become irre sible, this would account for some hitherto unexplai deaths of animals during experimental hypothermia

I am much indebted to Sir Charles Dodds for his adv to Prof W E Underwood, in whose department this work done, for his constant help, criticism, and encourageme and to Dr Vernon Wilson, my senior associate in this stu for his coöperation, guidance, and comradeship during many tedious hours of experimentation. I want also to rec my thanks to Dr Hugh Foord and Dr Roy Allen for t assistance with problems of anæsthesia , to Dr F A Bra of the South African Institute for Medical Research, for colour photography as well as frequent technical aid, and Mr R L Caunter, senior technician in the department surgery, University of Witwatersrand, for valuable help w the physiological aspects of the experiment

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THE RESPONSE OF THE HEART IN ACUTE NEPHRITIS

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Although acute nephritis is regarded as primarily a renal disease circulatory disturbances form a conspicuous part of the clinical picture The systemic hypertension which is generally present, and the acute increase in plasma volume, are both factors which may embarrass the heart and manifestations of left heart failure and acute pulmonary œdema are not unknown

Acute nephritis affects healthy young people and is one of the few conditions in which heart failure occurs but complete recovery is the rule This paper reports studies on the circulation in acute nephritis from early in the disease to recovery using the Valsalva manœuvre as the test procedure This manœuvre has previously been shown to be a simple and repeatable method of differentiating between the normal and the failing circulation (Sharpey Schafer 1955)

Material

Eleven consecutive patients with acute nephritis were investigated All gave a history of skin or throat infection from 1 to 4 weeks before the onset of symptoms in five the infection was proved to be streptococcal

In three of the patients dyspnœa was a presenting symptom but several others when specifically questioned admitted breathlessness on exertion Initially in all cases the jugular venous pressure was raised and the hæmoglobin level was decreased in most of them the blood pressure was raised (see table) Serial radiographs showed that the heart was enlarged initially in all the patients and there were increased vascular markings in the lung fields (fig 1) Serial electrocardiograms were normal in all the patients Four had no albuminuria casts, or red cells in the urine when first seen in two of these, subsequent examination of every specimen of urine throughout the illness showed albumin in one or two specimens, but in the other two cases the urine was normal throughout.

It is well known that about 5% of patients with classical acute nephritis have minimal abnormal urinary findings. Abnormal urinary constituents are however a crude index of disturbed renal function, and their absence should not lead to the assumption that the kidneys are healthy The continuous retention of water and salt in such cases shows that renal function is altered

The rate of recovery was very variable In many patients diuresis began within a few hours of being put to bed In a few however, recovery took place gradually over several weeks

Methods

The first observations were made within a few hours of admission to hospital and repeated every few days until recovery was complete.

The Valsalva test was made by blowing a mercury column to 40 mm Hg for 10 seconds, while the effects on the systemic blood pressure were recorded continuously with capacitance manometers (Hansen 1949) The effects of the Valsalva manœuvre are as follows

ANALYSIS OF CASES

Case no	Age (yr)	Sex	Day of illness since first symptom	Jugular venous pressure (cm. blood above sternal angle)	Arterial pressure (mm Hg)	Hæmoglobin %	Weight (lb)	Valsalva manœuvre: % decrease in pulse pressure	Valsalva manœuvre: % increase in diastolic pressure
1	10	M	7	14	184/116	76	116	11	5
			25	N	136/71	94	105	65	64
2	30	M	4	12	105/58	90	104	0	4
			14	4	110/58	112	146	20	27
			28	N	113/56	110	118	56	61
3	40	M	6	9	112/80	74	160	8	0
			14	1	139/63	80	136	43	41
			30	N	112/44	94	138	62	72
4	33	F	5	11	160/79	74	141	9	0
			13	4	171/98	88	135	27	15
			33	N	142/73	94	1°2	46	43
5	27	M	7	8	164/96	78	141	9	0
			0	2	142/86	88	137	24	22
			21	N	120/73	96	120	68	75
6	28	F	11	4	160/90	83	101	21	20
			16	N	146/77	105	151	52	35
			29	N	104/30	104	152	67	1*0
7	27	M	4	11	145/80	91	147	0	5
			6	5	118/67	110	133	23	22
			9	N	114/68	110	122	39	44
8	*4	M	9	1	189/116	70	150	17	15
			18	N	160/71	106	112	57	55
9	31	M	3	14	183/100	76	210	0	0
			7	2	190/91		207	37	41
			13	N	181/100	104	180	55	54
10	10	M	4	6	131/73	82	84	4	0
			15	N	125/70	106	76	48	43
11	29	M	7	5	187/101	96	161	5	2
			21	N	119/98	86	149	63	82

N, normal

The method of calculating the decrease in pulse pressure and the increase in diastolic pressure is explained in the caption to fig 3

Owing to the raised intrathoracic pressure blood accumulates in the periphery and the central effective venous pressure falls (Lee et al. 1954) In normal subjects, this decreases the stroke output and pulse pressure with consequent vasoconstriction and rise of diastolic blood pressure Persistence of the vasoconstriction after the intrathoracic pressure has been released is largely responsible for the subsequent observed 'overshoot' In heart failure on the other hand reduction of the cardiac filling pressure causes either no change in stroke output or (in severe cases) an increase: if the stroke output is unchanged the arterial pressure record has a square-wave pattern whereas if the stroke output is increased there is an increased pulse pressure with resulting 'undershoot' (Sharpey-Schafer 1955)

Judson et al. (1955) also found a square wave pattern in heart-failure They thought that the high venous pressure in heart-failure prevented the normal obstruction of venous return during the Valsalva manœuvre and that venous return was

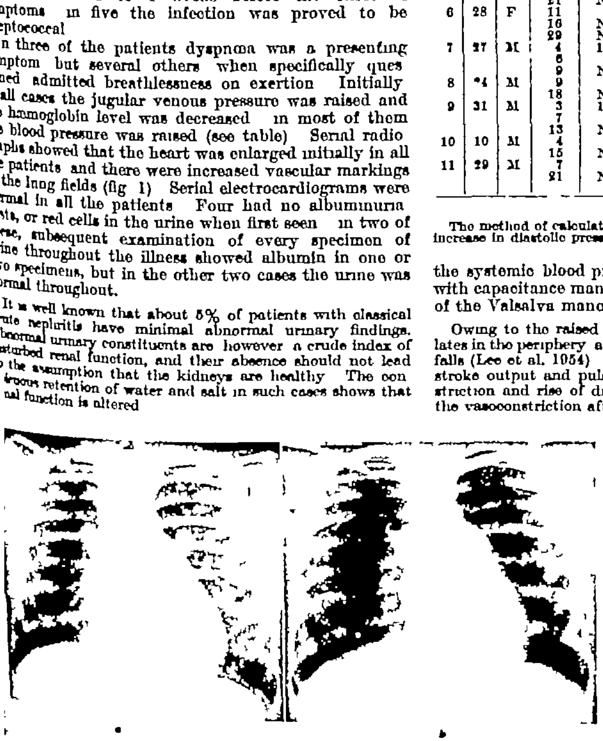

Fig 1—Case 11: a 7th day of illness; b 19th day

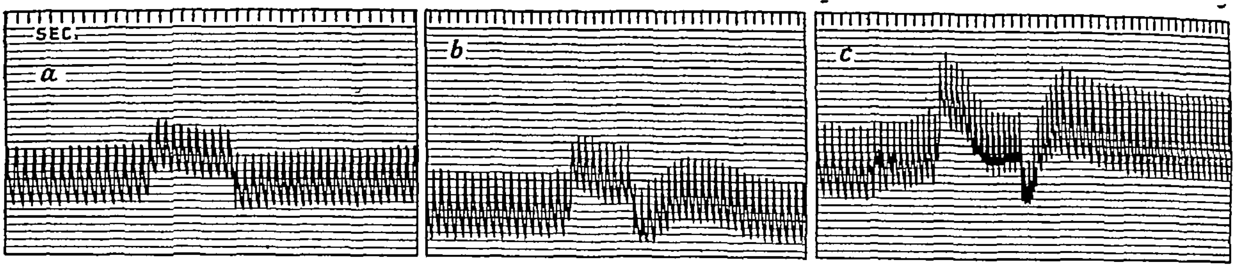

Fig 2—Arterial pressure in case 5 a, 7th day of illness, b, 9th day, c, 21st day

maintained in congestive heart failure This seems to be an example of the usual confusion between venous return and filling pressure, which can be shown to fall by direct measurement Judson et al did not observe that the most severe cases of heart-failure show an increased stroke output and pulse pressure during the Valsalva manœuvre and a subsequent vasodilatation—a finding incompatible with their explanation

Results

Results are shown in the accompanying table Fig 2 shows examples of the different types of response to the Valsalva manœuvre recorded during the course of the illness

Patients admitted to hospital early in acute nephritis, with maximum weight-gain, all showed the type of response characteristic of heart failure, there was no decrease in pulse pressure and no "overshoot" Cases 6 and 8, when first seen, were already in diuresis with decrease in pulse pressure and a small "overshoot," but serial records afterwards showed that this initial response was abnormal for them In all the cases the response returned to the normal pattern on recovery

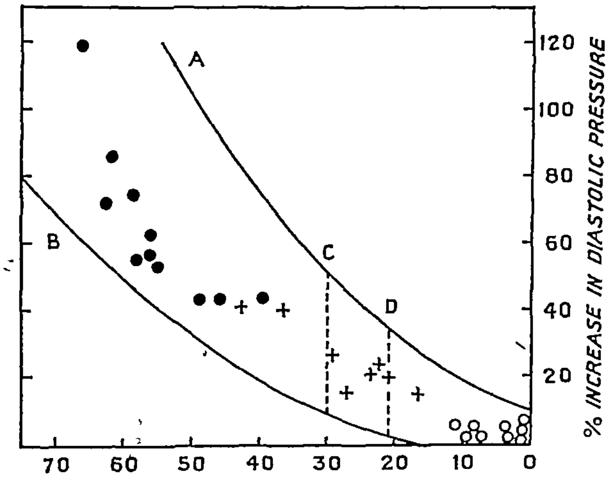

Fig 3—Summary of results

Open circles, data obtained up to 8 days from first symptom
Crosses, data from 9 to 16 days after onset
Black circles, data after recovery

Similar data from 62 normal subjects and 63 patients with heart-failure lie between curves A and B, the vertical line C indicating the lower limit of normal and D the upper limit of heart failure

Percentage decrease of pulse pressure =

$$\frac{\text{Control pulse pressure} - \text{maximum change in pulse pressure during Valsalva}}{\text{Control pulse pressure}} \times 100$$

Percentage increase in diastolic pressure =

$$\frac{\text{Maximum change in diastolic pressure after Valsalva} - \text{control diastolic pressure}}{\text{Control diastolic pressure}} \times 100$$

The results are summarised in fig 3, in which the percentage change in pulse pressure during the phase of *raised intrathoracic pressure is plotted against the* subsequent change in diastolic pressure These points lie on the curve obtained from similar data from 62 normal subjects and 63 patients with chronic heart failure (Sharpey-Schafer 1955)

The results are compatible with the view that baroceptor responses to acute changes in pulse pressure give rise to change in peripheral resistance, a decrease in pulse pressure causing vasoconstriction, and an increased pulse pressure vasodilatation (Ead et al 1952, Sharpey Schafer 1953, 1955) When the pulse pressure does not change, the diastolic blood pressure also does not change

Discussion

In acute nephritis at the height of the illness, the heart responds to a decrease in filling pressure in the same way as the failing heart The increase in blood pressure and in plasma volume would appear the most obvious factors causing failure, but abnormal cardiac responses have been recorded in the apparent absence of both. Possibly some other factor may be present, electrolyte changes or the streptococcal process may affect the myocardium, although electrocardiographic and histological evidence of myocardial damage is absent

A rise in jugular venous pressure in acute nephritis was reported by La Due (1944) It was present in the acute stage not only in the eleven cases here summarised but also in all of thirty five others seen by me in hospital practice, and it is a useful physical sign Mild cases of nephritis may exist with a normal venous pressure, but they are either undiagnosed or not admitted to hospital In the differential diagnosis from pericarditis, in cases with little abnormality in the urine, the absence of tachycardia and electrocardiographic changes is a helpful point

Summary

The circulation was studied in eleven consecutive cases of acute nephritis, using the effect of the Valsalva manœuvre on arterial blood pressure as a criterion.

Early in the illness the response was of the square-wave type recorded in all forms of chronic heart-failure Serial records showed a progressive return to a normal response

The data are compatible with the theory of baroceptor responses to acute pulse pressure changes

All the patients had a raised venous pressure early in the disease, as had thirty five others seen in hospital. Two had no albuminuria

Increased arterial pressure and plasma volume may not be the only factors causing heart failure

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CHRONIC BRONCHITIS

THE EFFECT OF CIGARETTE-SMOKING

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AT least six factors contribute to the development of chronic bronchitis These are infection, polluted inspired air the accompaniments of poverty allergy heredity and the degenerative changes of advancing years In addition, chronic bronchitis may be secondary to various pulmonary and general diseases

Assessment of the relative importance of any one factor is likely to be hazardous, and can best be undertaken by selecting a group of people as similar as possible in all other respects In the present instance the factor of cigarette-smoking was investigated, and comparison was made of the prevalence of minor respiratory symptoms and of bronchitis in smokers and non smokers. Inevitably the two groups are self selected so that any innate quality which may cause some people to smoke and others not to smoke and the bearing that such a quality might have on the subsequent development of bronchitis, cannot be assessed Possible differences between men and women and the greater frequency of bronchitis in older people necessitate subdivisions by age and sex

Method

In the Civil Service considerable numbers of employees are available for questioning and groups may be selected of similar age, sex occupation, exposure to respiratory infections and atmospheric pollution, income and domestic circumstances As only a small proportion have bronchitis, a large number need to be interviewed For this reason a simple card was devised which could be completed by trained full time welfare workers after the first few hundred cards had been completed by them under the supervision of one of us (V C M) The accuracy with which the forms were completed was checked fortnightly throughout the trial

Smokers were regarded as those who had smoked five re cigarettes a day for five or more years further ons within the smokers were not made because this have meant a great increase in the number of yees interviewed The rest were regarded as non ers. The number who had smoked pipes and not ttes was not noted

l and Hill (1950) found that among patients with oma of the bronchus the proportion who had smoked but not cigarettes was 5·7%, while among controls other diseases it was 9·7%; so perhaps the proportion ure " pipe-smoking males in our series was of the order o. As these were regarded, for present purposes, as mokers, any effect that pipe-smoking may have on the opment of bronchitis will tend to lessen the difference rent between smokers and non-smokers (as already ed) as regards the prevalence of the disease

e completed form included the following informa name age sex smoker or non smoker former iratory diseases, and year of last radiograph of the t The grading of respiratory symptoms was done placing each person in one of the following five gories:

) *Complete freedom from pulmonary symptoms* No cough, tum or breathlessness No colds going down to the chest

) *Occasional or habitual morning cough or sputum especially r colds* No breathlessness Negligible pulmonary disability

) *Mild bronchitis* Usually habitual cough and sputum. he same breathlessness, often only during exacerbations. d disability May cause sick absences of a week or two

(4) *Moderate bronchitis* As above but moderate disability; capable of doing moderate work, but often with sick absences of a month or so

(5) *Severe bronchitis* As above but severe disability capable of no more than light or sedentary work.

The emphasis in the grading was on symptoms and disability, and bronchitis was never diagnosed unless there was disability from exacerbations or breathlessness or both Usually the symptoms referred to the previous five years. No physical examination was made

The investigation was limited to the London office staffs of the Treasury and the Ministry of Supply and of these 6245 clerical workers were taken as a suitable group of sufficient size Of this number, 5844 (93·6%) were interviewed Of the remainder 34 (0·6%) refused to coöperate and 367 were either on leave or away on temporary duty (about half) or off sick A review of the sickness records of a sample of 1400 clerical workers included in the survey showed that about 13% of the time lost through sickness was due to bronchitis hence the number of bronchitics who were lost to the survey was probably small The forms were completed during the period from December, 1954 to May 1955, upon 3602 men and 2242 women Only employees between the ages of 15 and 65 were included so no opinion can be given about the effect of smoking on the large and important group of bronchitics over the age of 65

As regards the accuracy of the diagnosis the completed forms revealed that 76% of the employees had had radiographs of the chest within the previous five years and that the only significant " former respiratory diseases were asthma and tuberculosis which between them were noted in slightly more than 1% of the employees A check of the reliability of the diagnosis in the moderate and severe grades of bronchitis is afforded by our experience in the bronchitis clinic at the Brompton Hospital A clinical and radiological review of 513 Civil Servants who had been repeatedly absent from work with bronchitis, almost all of whom were men over 40 showed that 5% had had pulmonary tuberculosis, 3% had bronchiectasis usually of minor degree and 1% had a carcinoma of the bronchus in addition to the bronchitis

Undoubtedly some of the clerical workers under review had respiratory diseases which were potential causes of bronchitis the numbers could not be determined by the method of investigation but Brompton Hospital experience suggests that not more than 10% of them had other important respiratory diseases.

Results

The accompanying table shows the results of the survey The three grades of bronchitis have been grouped

PREVALENCE OF MILD RESPIRATORY SYMPTOMS AND BRONCHITIS IN 5844 CLERICAL WORKERS IN THE CIVIL SERVICE IN LONDON (3602 MALES 2242 FEMALES)

—	Aged 15–39		Aged 40–65	
	Smokers	Non smokers	Smokers	Non smokers
Males:				
No respiratory symptoms	276 (40·6%)	255 (49·9%)	674 (34·8%)	260 (54·9%)
Mild symptoms	340 (50·0%)	235 (46·0%)	926 (47·8%)	139 (29·3%)
Bronchitis	64 (9·4%)	21 (4·1%)	337 (17·4%)	75 (15·8%)
Total	680	511	1937	474
Females				
No respiratory symptoms	159 (40·6%)	352 (54·1%)	198 (34·3%)	317 (51·8%)
Mild symptoms	193 (49·2%)	258 (39·6%)	271 (46·9%)	220 (35·9%)
Bronchitis	40 (10·2%)	41 (6·3%)	109 (18·8%)	75 (12·3%)
Total	392	651	578	612

together so that the figures shall be large enough for statistical analysis Of the 782 employees regarded as having bronchitis 74% fell into group 3 (mild), 22% into group 4 (moderate), and 4% into group 5 (severe) The distribution of the groups between smokers and non-smokers was similar, the figures for group 3 (mild) being 80% for those under 40 years of age and 72% for those over 40

The most striking feature in the table is that in every instance the proportion of employees having "mild respiratory symptoms" and "bronchitis" is consistently higher among smokers than among non smokers The greater prevalence of bronchitis in the older age group is clearly shown

For the entire series, 36% of the smokers were free from respiratory symptoms, compared with 53% of the non smokers

About 48% of the smokers and 38% of the non smokers had "mild respiratory symptoms" This difference must be accounted for to some extent by the so-called smoker's cough

The prevalence of "bronchitis" was 15 9% in the smokers and 9 4% in the non smokers, the over-all prevalence being 13 4%

The prevalence of bronchitis in smokers of the two sexes is very similar, the differences in non smokers are small These findings suggest that sex is not an important factor in the development of bronchitis among persons living and working in similar circumstances

Discussion

Chronic bronchitis is difficult to define, and even more difficult to classify into grades of severity Clearly there are many people who have no respiratory symptoms and are devoid of any evidence of bronchitis Others have an occasional or habitual morning cough or sputum, with no breathlessness and with a negligible pulmonary disability There is a tendency to regard such persons as bronchitics, especially if colds in the head are accompanied by an increase in sputum, but this is inadvisable in the absence of disability indeed, in this series, had all the employees with respiratory symptoms been regarded as bronchitics, more than half would have been so diagnosed

In an investigation such as this, in which physical and radiological examinations were omitted and no physiological function tests were done, the criteria of "disability" are hard to standardise Cough and sputum are unreliable indices because they often occur in persons without disability, and may be absent in chronic bronchitis (Oswald et al 1953) Hence, reliance was placed on the two outstanding causes of disability—namely, breathlessness compared with normal people of the same age and sex, and exacerbations of infection of sufficient severity to interfere with the normal mode of life, the degree of disability being then assessed as mild, moderate, or severe This grading has the merit of simplicity, and it was felt that any more complicated scheme would have been unsuitable for the non medical workers who completed the questionnaires In practice there was no difficulty in determining which employees had no respiratory symptoms, but some doubt must exist about the accuracy of allocation of employees into grades 2 and 3—i e, in determining whether or not a real disability existed The welfare workers who completed the forms were very carefully supervised throughout the investigation, but the fact remains that 74% of all those regarded as bronchitics fell into grade 3 (mild), presumably this figure would have had to be modified if full clinical and radiological examinations had been done Happily there is no reason to suppose that the grading of the employees was in any way influenced by their smoking habits, in fact, when they completed the forms, the welfare workers were unaware that any special importance was being attached to the relation between smoking and bronchitis Thus the figures may be taken to represent truly the differences in prevalence bronchitis in the smokers and non-smokers under revie

The consistently higher percentages in smokers bo for minor respiratory symptoms and for bronchitis lea little doubt but that smoking is conducive to the develo ment of bronchitis To what extent it is so cannot deduced even from this highly selected population indeed, with so many variable factors to be considere an accurate answer to this question is unlikely ever be forthcoming The survey gives no information abo the type of bronchitis in the two groups, but the small difference between smokers and non-smokers among th bronchitic males in the older age group suggests that th effect of smoking wanes with increasing years

The strikingly similar percentages in males and female especially for smokers, indicate that sexual difference are not important in the age group 15–65 when perso of similar living and working conditions are compare The excess of bronchitis in men in this series can explained entirely by the fact that smoking is muc commoner in men than women

Summary

The prevalence of minor respiratory symptoms an bronchitis in 5844 Civil Service clerical workers compared with their smoking habits

The proportion of clerical workers having mino respiratory symptoms and bronchitis was consistentl higher in smokers than in non smokers

The prevalence of bronchitis was similar in males an females It is suggested that, when men and women li and work in similar circumstances, they are equall likely to develop bronchitis, but, since men smoke mor than women, more men than women are likely to hav bronchitis

Our thanks are due to Dr D D Reid for assistance i interpreting the statistical aspects and to Dr W E Cluesman Treasury Medical Adviser, for his continued interest an support This investigation was made possible by the kin coöperation of the Establishment Officers of the Treasury an Ministry of Supply, together with their welfare workers

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CONGENITAL AGAMMAGLOBULINÆMIA

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A FAMILIAR problem to the physician is that of the child who is subject to frequently recurring upper respiratory infections These first make their appearance when their host reaches an age at which he begins to mix with the community Though the physician may feel somewhat helpless in the face of this troublesome sequence of infections, none of which are of any great severity, he can offer the anxious parents the assurance that the child's immunity responses are normal, and that in time he will outgrow this phase in development

In recent years there have been reports of children, subject to recurring infections, who fall into a different category In them the infections have been severe and almost always bacterial, they have usually appeared early in life, before their hosts can have had much contact with the community at large, and they have not been confined to the respiratory tract (Bruton 1952, Bruton et al 1952, Janeway et al 1953, Hayles et al. 1954)

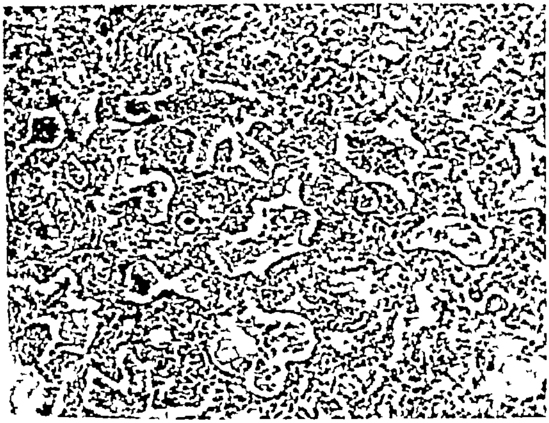

Fig. 1—Case 1: acellular substance in many alveoli and inflammatory cells in other parts of the lung (× 110)

It seems that in these children who have all been boys, there was a congenital defect in the formation of γ globulin analogous to the hereditary defect of specific proteins seen in hæmophilia Christmas disease, and afibrinogenæmia

I have encountered one proven case and one probable case of this hereditary deficiency within the same family Both ended fatally but earlier recognition of the disease might have prevented at least one of those deaths.

Case-reports

FIRST CASE

On March 18, 1950 a male infant aged 6 months was admitted to hospital severely ill with bronchopneumonia. The total white-cell count was 11,400 per c.mm. (differential count normal) To our dismay there was no response to penicillin, sulphonamide and chlortetracycline (aureomycin) and the infant died on March 22 1950

The peculiar nature of the lung changes seen post mortem was not understood at the time but they should be compared with those found three years later in case 2. There was no infection of the upper respiratory tract The right lung weighed 120 g., the left 98 g Both lungs were evenly congested and firm, and their cut edge was hard. The appearance would have suggested bronchopneumonia but for the absence of pus. Several blocks were cut for histological examination The bronchioles had a thin exudate with macrophages and polymorphonuclears mingled with a variable quantity of blood. The alveolar picture was of four types (1) frankly hæmorrhagic; (2) containing a polymorphonuclear exudate (3) containing an exudate in which the inflammatory cell was a macrophage; and (4) extensive areas where a protein acellular substance filled the alveoli. The alveolar walls were thickened and only the mildest interstitial fibrosis was seen. Often the alveolar lining cells were cuboidal (fig 1) Culture of the lung was sterile

SECOND CASE

On Oct. 27 1953 a male infant aged 5 months was admitted, who was a brother of the first There were two other surviving brothers, aged 5 years and 2 years, and both the parents were in good health.

Illnesses with Recovery

When admitted he had been unwell for three weeks with vomiting, diarrhœa and loss of weight He was a well nourished but remarkably hypotonic infant There were no localising signs of disease Stool culture yielded no pathogens. The plasma-carbon-dioxide content was 38·0 volumes per 100 ml The plasma-chloride level was 551 mg per 100 ml and serum calcium level 11·2 mg per 100 ml. Hæmoglobin 14·6 g. per 100 ml. Red cells 5 400 000 per c.mm. White cells 8400 per c mm The symptoms subsided on dietetic treatment and the baby was discharged from hospital on Nov 3 1953

On Dec 6 1953 he was admitted to a fever hospital with meningococcal meningitis from which he made a good recovery on sulphonamide treatment

In July 1954 while on holiday in Ireland he was admitted to hospital gravely ill with pneumonia This did not respond to penicillin, but a rather slow recovery took place on chlortetracycline Radiography of his chest in Glasgow on Sept 9 1954, showed only somewhat prominent vascular shadows at the lung roots.

Final Illness

On Nov 1 he again became ill with cough fever and dyspnœa. He was put on oral benzathine penicillin by the family doctor When his illness did not respond to this, treatment was changed to crystalline chloramphenicol 250 mg six hourly on Nov 4 He was admitted to hospital on Nov 7 He was rather dyspnœic and had a spasmodic cough with slight pyrexia. Radiography of his chest showed extensive bilateral bronchopneumonia. The peculiar muscular hypotonia noted in October 1953 was again obvious A Mantoux test was negative Hæmoglobin 14·7 g per 100 ml Red cells 5 200 000 per c.mm. White cells 14 100 per c mm. (polymorphs 54%, lymphocytes 38% smear cells 1% metamyelocytes 2%, primitive lymphocytes 2% monocytes 3%) The duodenal juice contained trypsin

In view of the recurrent severe infections in a child with excellent home conditions the serum was subjected on Nov 7 1954 to electrophoretic analysis which showed

Total serum protein level 7·52 g per 100 ml
Albumin 5·22 g per 100 ml (69·4%)
α_1-globulin 0·08 g per 100 ml (1·1%)
α_2-globulin 1·35 g per 100 ml. (17·9%)
β-globulin 0·80 g per 100 ml (10·6%)
γ-globulin 0·07 g per 100 ml (1·0%)

These figures should be contrasted with the normal distribution of serum proteins (Hayles et al 1954)

Albumin 59·2%
α_1-globulin 5·9%
α_2-globulin 11·0%
β-globulin 11·8%
γ-globulin 12·1%

In hospital chloramphenicol was continued for eight days, during which time, although afebrile the baby was unimproved He was then given intramuscular soluble penicillin plus oral sulphasomidine ('Elkosin') six hourly for seven days followed by a daily intramuscular injection of benzathine penicillin for twenty days During this period he became progressively more dyspnœic and cyanosed even in an oxygen tent. Serial radiographs showed progressive spread of the pneumonic process until the lung fields showed almost no aeration at all. From Dec 12 he was given chlortetracycline 75 mg six hourly Intramuscular γ globulin 500 mg on Dec 18 and 1000 mg on Jan. 5 1955 was without obvious benefit Erythromycin started on Jan. 13 was equally unimpressive in its effects Other therapy included digoxin and vitamin B complex.

The serum proteins were again estimated on Dec 30 after sixty days severe infection:

Total serum-protein level was 4·70 g per 100 ml
Albumin 3·60 g per 100 ml. (73·0%)
α_1-globulin 0·05 g per 100 ml (1·1%)
α_2-globulin 0·58 g per 100 ml (12·2%)
β-globulin 0·56 g per 100 ml (11·6%)
γ-globulin 0·07 g per 100 ml (1·5%)

On Jan. 10 the boy developed œdema He died on Jan. 16

Other Investigations

A Schick test gave a positive reaction although he had been immunised against diphtheria at the age of 8 months

His blood group was O and both anti A and anti B isoagglutinins were present Each of these antibodies had a titre of 1 in 4 at room temperature and at 4°C and a titre

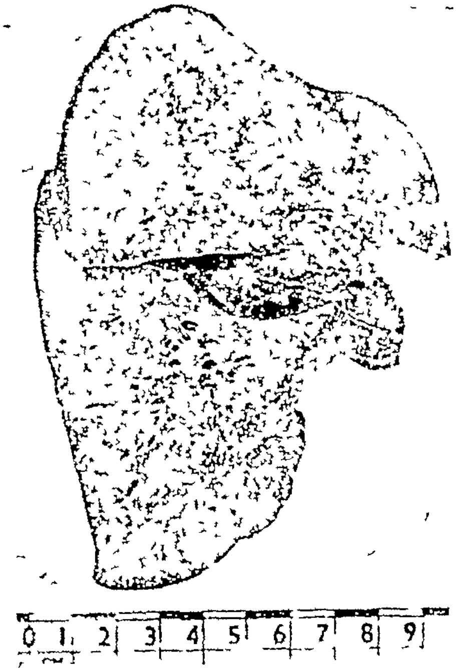

Fig 2—Case 2 cut surface of lung, showing homogeneous appearance and lack of usual lung pattern

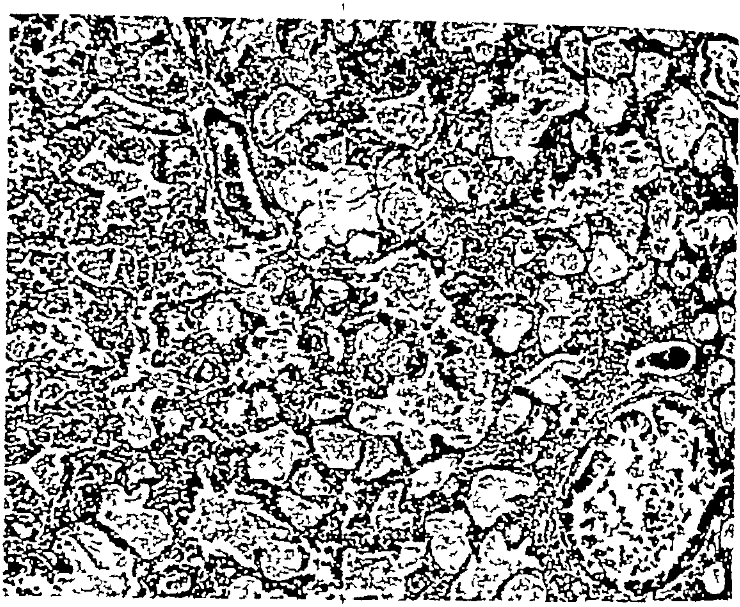

Fig 3—Case 2 : alveoli filled with acellular exudate, and some inflammatory cells in interstitial tissues (× 65)

of 1 in 2 at 37°C, which is abnormally low The inhibitory effect of the baby's serum on rabbit's anti human globulin serum was also much smaller than usual

The baby had been vaccinated at the age of 4 months He had a typical scar on his left upper arm and had apparently reacted normally to inoculation with vaccinia virus His serum was examined for vaccinia antibody by Dr N R Grist, of Ruchill Hospital, Glasgow The pock counting method was used the chorio allantoic membranes of fertile eggs are inoculated with serum virus mixtures, and the amounts of surviving virus are calculated by counting the numbers of virus lesions produced on the membranes Several tests produced the following results

Serum	*No of eggs inoculated*	*Average no of lesions per egg*
Patient's inactivated at 56°C for ½ hr	5	70
Patient's unheated	4	18
Normal rabbit's inactivated	3	107
Normal rabbit's inactivated	3	> 96
Normal inactivated of unvaccinated adult	3	80
6th-day serum from vaccinated infant, inactivated	3	31

There was considerable neutralisation by the baby's unheated serum but not by the heated serum—which fact indicates the activity of heat labile neutralising factors other than antibody (*non specific neutralising or potentiating factors*) The baby's heat inactivated serum did not give the 50% neutralisation of vaccinia virus which should be observed if antibody is present Serum from an infant vaccinated six days previously, *which had not been expected to contain* antibody, neutralised the virus to a significant degree, vaccinia hæmagglutination inhibition tests with this serum confirmed the presence of antibody *It is obviously more* difficult to prove the complete absence of antibody than to demonstrate its presence, but the results of the tests fit in with the absence of vaccinia-neutralising antibody from the baby's serum

Post-mortem Findings

The abnormal findings were confined to the lungs Each lung was heavier than usual and had a smooth pleural surface The right lung weighed *300 g, the left 250 g* On section the cut surface was homogeneous in appearance and lacked the usual lung pattern (fig 2) The fine honeycomb appearance of the normal lung was absent, and when the tissue was squeezed no air escaped Several pieces taken for histology sank in the fixative The histology of the lung indicated an interstitial type of infection, the inflammatory cells being a mixture mainly of round cells with a few polymorphs and some macrophages *The alveolar walls were greatly* thickened owing to this increase in cellularity, but there was no fibrosis. The alveolar capillaries were slightly congested but did not contribute materially to the thickening of the alveolar wall. Nearly every alveolus and respiratory bronchiole had an albuminous plug which had a fine reticular appearance not showing the staining reactions for fibrin as demonstrable by Gram's method (fig 3) The periodic *acid* Schiff reagent stained this plug pink There was no blood pigment in the alveolar wall, and no bacteria were found Culture of the lung was sterile

The histological picture of the lung is quite unusual and very *similar to that found in case 1, although* there is less evidence of frank alveolar infection It seems to indicate a type of interstitial pneumonia, but the nature of the exudate remains puzzling The lung lesion had been present for some weeks, and the lack of fibrosis, which one would expect from a more usual *type of* interstitial pneumonia, is remarkable

Discussion

Case 2 probably had the same type of agammaglobulinæmia as that described originally by Bruton (1952) and later from the same and other American centres (Bruton et al 1952, Janeway et al 1953, Hayles et al 1954) All the patients had been boys The disease is probably congenital and may be a sex linked inherited recessive characteristic The histological appearances of the lungs in cases 1 and 2 are so similar and so unusual as to make it extremely probable that case 1 also had congenital agammaglobulinæmia The appearance of two cases in a family of four boys would be quite in keeping with a sex-linked recessive *mode* of inheritance Martin (1954) has reported the absence of γ globulin *from* the sera of very small premature infants born at or *before* the twenty sixth week, *and* has suggested that the syndrome of agammaglobulinæmia may be due to the persistence of the early fœtal pattern of the serum proteins

A perusal of the literature suggests that the absence of γ globulin is rarely complete, and that there are several different types of deficiency *All* the *patients* mentioned so far (including my own) have been boys who showed undue susceptibility to bacterial infections By contrast they have shown an apparently normal *response* to the common virus fevers On the other hand, although vaccination has led to a normal primary reaction in most of the patients antibodies *against* vaccinia were absent, or present only in very low titres (as in case 2) Keidan et al (1953) have reported a female *infant* who developed *fatal* generalised *vaccinia after* vaccination in association with agammaglobulinæmia and it is likely that this is not the same disease as that under discussion. Martin (1954) points out that only certain antibodies are associated with that area of the γ globulin pattern which is observed to be deficient in the male cases and which appears to correspond to γ_2. It is reasonable to suppose that in the case described by Keidan et al (1953) the nature of the deficient γ globulins was not identical with those lacking in the boys. This selective deficiency of γ globulins presumably explains the cases such as that described by Schick and Greenbaum (1945), in which the absence of serum γ globulin was not associated with undue susceptibility to infection but with episodic œdema. Martin (1954) mentions the case of a woman with an almost complete absence of γ globulin who produced antibodies on challenge. There have also been cases of agammaglobulinæmia in adolescents or adults (Grant and Wallace 1954, Sanford et al 1954) who were subject to severe bacterial infections and showed evidence of deficient formation of antibody and in whom the deficiency may have been acquired rather than congenital.

Finally, it is pertinent to observe that, if the diagnosis had been reached in case 1 it would probably have been possible to avert case 2's final illness by giving regular injections of pooled serum γ globulin. Janeway et al (1953) found that their patients could be kept free from infection with 0·1 g of γ globulin per kg of body weight once a month. Agammaglobulinæmia may be less rare than has been supposed and no doubt other sufferers have died from their first severe infection as did case 1.

Summary

The case of a male child subject to recurring severe bacterial infections one of which proved fatal is described. Electrophoresis showed an almost complete absence of γ globulin from his serum.

This patient's brother had died previously of pneumonia. The histological appearances of the lungs from both patients were so similar and so unusual as to make it highly probable that the brother too had had agammaglobulinæmia.

Serological studies revealed that the patient had failed to produce diphtheria antibodies in response to toxoid and that, although his primary vaccination reaction had apparently been normal vaccinia antibody could not be demonstrated in his serum. There was an abnormally low titre of isohæmagglutinins anti A and anti B.

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"Disablement irrespective of the nature of the disability necessitates a readjustment of a person's mode of life. Readaptation to this new world like any other of a similar kind, e.g., transplantation of an individual into a foreign country is difficult. The foreigner for instance may hanker so much for his country of origin that he lives in the past and repudiates the present or he may join the minority of those who are in a similar position; or if he decides on adapting himself to the new environment he may either make himself acceptable or by overdoing it may make a fool of himself. All four modes of behaviour occur in the disabled. There is the ex regular who still clings to the life that he loved, the embittered person who alleging that fit persons fail to understand him, withdraws into the world of the disabled, the person who joins the fit and is accepted by them almost as one of them; and there is the disabled person who frantically alas in vain, tries to pretend that he is not different."
—E. D. WITTKOWER, *Canad med Ass J* 1955 73 371

EFFECT OF PROLONGED LABOUR ON THE SERUM-UREA

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TOXÆMIA of pregnancy is well known to interfere with renal function, and this may be evidenced by a rise in the level of urea in the body fluids of both mother and fœtus. Urea diffuses so readily across the membranes which separate the one from the other that so long as the placenta remains in situ the level is always the same or very nearly the same in both.

Work in this department has shown that a prolonged and/or difficult labour may have an unfavourable effect on the tissue breakdown and renal function of the infant during the first two days of its life (McCance and Widdowson 1954). In the course of this work it was noticed that the cord serum tended to contain more urea after a prolonged and/or difficult labour than after a normal straightforward labour and delivery. This must have been a reflection of maternal not of infantile renal function and in order to establish the truth or otherwise of this observation further material has been investigated.

UREA LEVELS IN BODY FLUIDS OF NORMAL WOMEN AT THE TIME OF DELIVERY

Nature of labour and delivery	No of cases	Urea level (mg per 100 ml)	
		Range	Average and S D
Normal	24	12·3–31·?	20·0 ± 1·92
Cæsarean section	11	12·5–2?·7	17·6 ± 3·39
Prolonged and/or difficult	13	18·3–68·3	37·5 ± 16·63

Significance of difference between Normal and prolonged and/or difficult labour t = 4·50 p = < 0·01. Cæsarean section and prolonged and/or difficult labour t = 3·74 p = < 0·01

The results are shown in the accompanying table. The women were either primiparæ or multiparæ all without albuminuria or hypertension, and the cæsarean sections were 'planned' and carried out before labour began for reasons such as disproportion. All the women who had prolonged and/or difficult labours were primiparæ. Eleven of these women were in labour between 31 hours and 5 days. Of the remaining two one had a normal first stage of labour but a prolonged second stage ($3^1/_2$ hours). The other had a 24 hour labour complicated by premature rupture of the membranes (12 hours) and a prolonged and very difficult second stage which lasted 6 hours. The twenty four normal deliveries included ten primiparæ.

It is evident that a prolonged and/or difficult labour may raise the level of urea in the maternal body fluids. The cause may be some interference with renal function due to muscular exertion a deviation of blood from the kidneys or a fall in glomerular pressure but it may also be due as it is in the infants born after such labours, to an increased destruction of tissue protein. This in turn may be the result of 'stress' or (in the mother) even of carbohydrate starvation. Only further work can decide.

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THE RENAL FACTOR IN THE ALKALOSIS OF POTASSIUM DEFICIENCY *

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WHEN the cells of the body lack potassium, the extracellular fluid may become abnormally alkaline, though the cells are themselves more acid than normal (Cooke et al 1952, Black and Milne 1952, Gardner et al 1952) Studies made during the correction of potassium deficiencies suggested that a movement of H^+ ions from the extracellular fluid to the intracellular fluid accounted for the extracellular alkalosis, and that its production did not depend on the kidneys (Orloff et al 1953) But it has always seemed that the kidneys must play some part in allowing the alkalosis to arise at all (Darrow et al 1948)

The production of the extracellular alkalosis in a clinical deficiency of potassium can best be investigated in a patient who has not already got an alkalosis, and for our study we selected a patient whose deficiency of potassium accompanied a renal acidosis

Case-report

A woman, aged 38, who weighed 64 kg , was admitted to hospital because she had become paralysed after a period of increasing weakness, which had lasted 5 weeks Before that she had been well except for an attack of renal colic 5 years before, when she had passed a stone , she also admitted to having been unusually thirsty for some months

The level of potassium in her serum was only 1 8 m eq per litre, with sodium 139, chloride 111, and bicarbonate 14 m eq per litre In spite of this extracellular acidosis her urine was nearly neutral (pH 6 5) and contained very little titratable acid or ammonia, indicating that her acidosis was of renal origin The urine contained a trace of albumin but no pus cells, and cultures were invariably sterile Neither stones nor calcification could be demonstrated in the kidneys, and an intravenous pyelogram revealed no structural change in them The blood urea level was 58 mg per 100 ml The clearance of inulin was 60 ml per min , and that of *p* amino hippurate 214 ml per min In spite of the low plasma potassium level she was excreting about 40 m eq of potassium daily in her urine The administration of 100 m eq of ammonium chloride daily for 2 days did not increase her excretion of acid or of ammonia and did not change the pH of her urine An infusion of neutral phosphate also had no important effect (cf Milne et al 1952) Her serum calcium level and her urinary excretion of calcium were normal

When this patient was treated with potassium chloride and sodium bicarbonate, her potassium deficiency and her acidosis were rapidly corrected But when we treated her acidosis with sodium bicarbonate alone, 30 g daily, without correcting her potassium deficiency, this rapidly produced a severe extracellular alkalosis, and her plasma bicarbonate rose to 45 m eq per litre The same dose of sodium bicarbonate did not produce an alkalosis after her potassium deficiency had been treated with potassium chloride Several weeks later she readily consented to an experimental study After letting her become deficient in potassium again we investigated the ability of her kidneys to dispose of a large dose of bicarbonate—first sodium bicarbonate, and then potassium bicarbonate

Methods

The procedure for the metabolic balance followed that of earlier experiments (Fourman 1952) Aliquots of urine were analysed from daily collections and f pooled collections from each experimental pe The latter values were used to compute the cumula changes Blood was drawn from a wrist vein, wit stasis, into heparinised tubes The following chen methods were used

Potassium and sodium were estimated by flame pl metry (Wallace et al 1951), chloride in plasma and urin potentiometric titration (Sanderson 1952) and in the fæce Van Slyke's method (Hawk et al 1954), phosphate by Gom (1942) method, nitrogen and urinary ammonia by m diffusion (Conway 1950), organic acids in the urine by Slyke and Palmer's method (Hawk et al. 1954) after urine had been stored for some time with hydrochloric 2% *v/v*, creatinine according to Roscoe (1953), plasma with a Stadie glass electrode at room temperature (a correc of –0 014 pH unit per °C was applied for the differ from body temperature), and urine pH colorimetric with capillary tubes

The experiment lasted 32 days, during which patient took the same daily diet containing 59 m of potassium, 122 m eq of sodium, 111 m eq of chlor 1 26 g of phosphorus, and 9 1 g of nitrogen The st was divided into three parts

(1) 18 days without treatment ,

(2) 3 days with 357 m eq (30 g) daily of sodium bicarbo added to her diet ,

(3) 11 days with 100 m eq (10 g) daily of potass bicarbonate, as well as the sodium bicarbonate, added to diet

Results

Period 1

When at the beginning of this period, the patie treatment with potassium chloride and sodi bicarbonate was withdrawn, she excreted more sodi and potassium than her diet provided Table I sho her losses of potassium, sodium, and chloride and t resulting changes in the composition of her plasm Her deficit of potassium at the end of the period w 340 m eq , too small to produce any clinical chang but sufficient for the purpose of the experiment S lost a much smaller amount of sodium and very lit chloride Her plasma potassium level fell from 4 4 to 3 m eq per litre , her plasma sodium level hardly change Her plasma chloride level rose and her plasma bica bonate level fell correspondingly, and the pH of her bloo at the end of the period was 7 26 , hence the deficit potassium was accompanied by an acidosis in the plasm The packed cell volume was 41% of her whole bloo Her clearance of endogenous creatinine, a measure of th glomerular filtration rate, was 76 ml per minute this period

TABLE I—LOSSES OF K, NA, AND CL DURING FIRST PER OF 18 DAYS WITHOUT TREATMENT, AND COMPOSITIO PLASMA AT BEGINNING AND END OF PERIOD

—	Balance (m eq)	Plasma (m eq per litre)	
		Beginning	End
K	Loss 340	4 4	3 6
Na	Loss 114	139	135
Cl	Loss 63	101	110
HCO_3		26	16
pH			7 26

Period 2

When we added sodium bicarbonate 357 m eq dail to her diet, she became thirsty and drank more wate but excreted less urine , in 3 days she gained 3 kg in weight and her face and legs became œdematou (cf Fourman and Hervey 1955) On the 2nd da Trousseau's sign was elicited, and on the 3rd day she ha spontaneous tetanic spasms in her hands and feet Table II shows the chemical changes in this period She continued to lose potassium, but her kidneys excreted only a fraction of the sodium she had taken, and in the

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* Paper presented to the Association of Physicians of Great Britain and Ireland in May, 1955

TABLE II—CHANGES IN AMOUNTS OF K NA, AND CL IN BODY AND COMPOSITION OF PLASMA AFTER ADDITION OF 357 M.EQ OF $NAHCO_3$ TO DIET FOR 3 DAYS

—	Balance (m eq)	Plasma (m eq per litre)
K	Loss 35	2 5
Na	Gain 780	145
Cl	Gain 23	91
HCO_3		39
pH		7 55

3 days of this period the amount of sodium in her body increased by 780 m.eq ; the amount of chloride in her body did not increase Her plasma potassium level which had already fallen in the first period, fell further now to 2 5 m.eq per litre Her plasma sodium level rose by 10 m eq to 145 m eq per litre but her plasma chloride level fell by 19 m eq to 91 m eq ; and her plasma bicarbonate level rose by 23 m eq to 39 m eq The pH of her blood was now 7 55 so she had a severe extracellular alkalosis The packed-cell volume was 36% of her whole blood Her glomerular filtration rate was 74 ml. per minute virtually the same as in the first period

Period 3

When we now added potassium bicarbonate 100 m eq daily to her intake of sodium bicarbonate, her tetany promptly diminished and after 4 days there was no sign of it. Her weight then decreased and in the following 7 days she lost her œdema

Table III shows the chemical changes in the first 4 days of this period She gained 265 m eq of potassium. Her kidneys were now excreting all the sodium she was taking and more with the result that her body lost 90 m.eq of sodium and they excreted less chloride than she was taking with the result that she gained 155 m eq of chloride. The analyses of each day's collection of urine revealed that the excretion of chloride decreased on the first day that potassium bicarbonate was given Her plasma sodium level fell to its original value of 135 m eq per litre, her plasma chloride rose and her plasma bicarbonate fell Her alkalosis was largely corrected, and the pH of her blood became normal again

Table III also shows the chemical changes in the last 7 days of the experiment when she lost weight (see figure) She gained a further 258 m eq of potassium more than enough to correct her original deficit and she lost 302 m.eq of sodium and 132 m eq of chloride At the end of the experiment the composition of her plasma was normal. Her glomerular filtration rate was 71 ml per minute

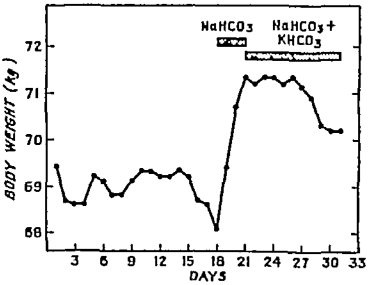
The results of the other chemical analyses need not be described in detail. During the whole experiment the excretion of nitrogen did not change significantly The excretion of phosphorus did not change appreciably until the second period, when sodium bicarbonate was given The amount of phosphate in the urine then decreased by 240 mg daily and it remained small at the beginning of the third period The pH of her urine was 7 2 initially and decreased to 6 8 before the sodium bicarbonate was given It then increased to 8 3 and remained about the same after that The excretion of ammonia averaged 31 m.eq daily in the period without treatment At the height of the alkalosis it was 20 m.eq daily, and it averaged 9 5 m eq daily while potassium bicarbonate was given The changes in the excretion of organic acids though small were in the same sense as found by Cooke et al (1954) The excretion was initially 93 m.eq daily and decreased to 60 m eq daily during the first period. In the second period it was 84 m eq daily during the first 4 days that potassium bicarbonate was given it increased again to 82 m eq daily and it averaged 72 m eq daily after that

TABLE III—CHANGES IN AMOUNTS OF K NA AND CL IN BODY AND COMPOSITION OF PLASMA AFTER ADDITION TO DIET OF 100 M EQ OF $KHCO_3$ AS WELL AS 357 M.EQ OF $NAHCO_3$ FOR 11 DAYS

—	Balance (m.eq)	Plasma (m.eq per litre)
First 4 days		
K	Gain 265	3 3
Na	Loss 90	135
Cl	Gain 155	96
HCO_3		31
pH		7 34
Subsequent 7 days		
K	Gain 258	5 5
Na	Loss 302	135
Cl	Loss 132	101
HCO_3		29
pH		7 32

Discussion

The administration of sodium bicarbonate 30 g daily produced rapidly a severe extracellular alkalosis on the two occasions the patient was deficient in potassium This amount of sodium bicarbonate does not normally produce an alkalosis (van Goidsenhoven et al 1954), and we have also established that it did not do so in our patient when her stores of potassium were nearly normal



Changes in weight during 3 periods of experiment.

The experimental observations suggest the following mechanism for her alkalosis :

(1) In 3 days she retained 780 m.eq of sodium out of 1070 m.eq taken. Her glomerular filtration rate had not fallen, and her failure to excrete the sodium could only be explained by assuming that her renal tubules absorbed too much of it

(2) At the same time she retained 3 litres of water shown by her sudden gain in weight. She became œdematous, and from the change in her hæmatocrit it can be calculated that (if the total volume of her red cells did not change) the volume of her plasma increased by 23%. Thus the volume of her extracellular fluids had increased

(3) She did not retain a significant amount of chloride hence the chloride in her extracellular fluid became diluted, and her plasma-chloride level fell—by 17% of its original value The concentration of the bicarbonate ion increased to take the place of the chloride ion, and her extracellular alkalosis was established.

The part played by her kidneys in the production of her extracellular alkalosis was therefore to reabsorb too much sodium and too little chloride from the glomerular filtrate Rats kidneys seem to do the same when they are deficient in potassium (Cooke et al 1954 Schwartz et al 1953 Orent Keiles and McCollum 1941) but the changes in the function of the rats kidneys was not measured directly

Sodium is reabsorbed either in exchange for another cation or with an anion In our study the sodium reabsorbed in excess of chloride could not have been reabsorbed by an exchange with H K or NH_4 ions (whose excretion hardly changed) and it must have been reabsorbed with an anion Only some of this was phosphate so most of the excess of sodium reabsorbed must have formed bicarbonate The result would be an apparent increase in the reabsorption of the bicarbonate filtered through the glomerulus, as Roberts et al (1955) found when they infused sodium lactate into patients deficient in potassium

The renal response we found during an extracellular alkalosis with potassium deficiency is what might ordinarily be expected during an acidosis, and the intracellular acidosis of potassium deficiency may determine the paradoxical response of the kidneys to the accompanying extracellular alkalosis, as Roberts et al (1955) have also suggested

When the patient was given potassium bicarbonate, her kidneys excreted sodium and retained chloride—i e, they were responding normally to an alkalosis and in this way were able to correct her extracellular alkalosis It is quite remarkable that they began to do this on the day she first had potassium and therefore before there had been any great change in the total deficit of potassium in her body When potassium is given to a healthy animal, a disproportionate amount is taken up by the kidneys, to be released to the rest of the body only later (Emery et al 1955) This might enable the kidney cells to return to a normal composition before the other cells of the body during the correction of a deficiency

The therapeutic implications of this experiment may be mentioned Firstly, the abnormal alkalosis produced by sodium bicarbonate in patients with pyloric stenosis (van Goidsenhoven et al 1954) may possibly be related to a deficiency of potassium (Black and Jepson 1954) as well as of chloride Secondly, it may be dangerous to treat an acidosis with free doses of alkali if the patient also has a deficiency of potassium An extracellular alkalosis may result which the kidneys cannot rectify, and it may be advisable to add potassium to the treatment

Summary

Sodium bicarbonate 30 g daily given to a patient with potassium deficiency produced a severe extracellular alkalosis During the period of this extracellular alkalosis her kidneys reabsorbed too much sodium and water, and she gained 780 m eq of sodium and 3 litres of water But her kidneys did not reabsorb chloride in corresponding amounts, and there was no gain of chloride

When potassium bicarbonate was subsequently added to her treatment, her extracellular alkalosis was rapidly corrected, her kidneys were then excreting sodium and retaining chloride This is the normal response to an alkalosis

The abnormal response of the kidneys during a potassium deficiency may perhaps be ascribed to the intracellular acidosis which accompanies a potassium deficiency

We are indebted to the patient, first of all, for her willing coöperation, to Dr J W Keyser and Mr S E Nethercott, of the Biochemical Laboratory, for many analyses of plasma, to Miss G H Powell and Miss J W Hosegood for help with the diet, and to Mr E Morgan and Miss M Williams for their technical help M G F holds the Cardiff Royal Infirmary research fellowship in medicine

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PENNYROYAL POISONING

A FATAL CASE

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PENNYROYAL has long had a reputation as an ab facient, although its action is known to be unpredict and even dangerous In the following case it prod abortion, vaginal bleeding, hæmolytic anæmia, and a tubular necrosis of the kidney, with death from uræ

Pennyroyal is a volatile oil and belongs to the s group as apiol, turpentine, and the oils of savin, ta saffron, and rue It is prepared by distillation of *Me pulegium* which is found in Spain, the south of Fra and Algeria (*Extra Pharmacopœia* 1952) Its ac constituent, pulegone, is one of the several ket belonging to the monocyclic terpenes In the rat, its administration leads to the formation of menthol, w is excreted in the urine as a glucuronide (Williams 19 Volatile oils owe their reputation as abortifacients to fact that they irritate the genito urinary tract and c pelvic vascular congestion which may stimulate uterus to abort Their action is essentially a toxic and may produce severe abdominal pain, hæmatem diarrhœa, hæmaturia, oliguria, anuria, convulsions, loss of consciousness (Goodman and Gilman 1941)

When, formerly, oleum pulegii was given by doc to encourage menstruation, the dosage was ab 1–3 minims One teaspoonful of the oil has been kn to produce convulsions, and at least one case is on rec where a patient recovered from coma following inges of 15 ml of the essence of pennyroyal (prepared dissolving oil in rectified spirit) (Braithwick 19 Pennyroyal was deleted from the *British Pharmaceut Codex* in 1934, but it is still quite easily obtainable by public from a chemist's shop It used to be sold "obstructed menstruation," hysterical complaints, whooping cough

Case-report

Mrs A., aged 24, was admitted to a general medical w at 8 15 P M on Oct 15, 1954, with a tentative diagnosi drug sensitivity reaction She had visited her doctor on previous day, complaining of general malaise, for which gave her some codeine tablets Three hours before admission he was called to see her because she had sudde developed a widespread rash and pyrexia

The ward sister discovered she had severe vaginal bleedi and her story was elicited Wishing to terminate a th months' pregnancy, she had bought a bottle of pennyro mixture and had taken this on the evening of Oct 14 N morning she had bought a further bottle, consumed contents, and had a hot bath Several hours later she had l an abortion, followed by heavy bleeding, and shortly af this she developed a widespread rash

On admission, she complained of nausea, vomiting, abdo nal pain, and diarrhœa There was no history of ill heal and she was the mother of two healthy children

She was a well nourished woman temperature 100 pulse rate 130 per min, respirations 30 per min On her fa trunk, and upper limbs and the proximal third of the low limbs, there was a diffuse, non itching, slightly elevat erythematous rash. The conjunctivæ were injected. There was slight tenderness in the loins and the suprapubic zone. Blood pressure was 120/70 mm. Hg. There was some vaginal bleeding, and the findings on pelvic examination were compatible with a three months' complete abortion. The other systems appeared normal.

Course of Illness

She passed 2 oz. of urine that evening, but no more until shortly before her death, when she had a brisk diuresis.

On the day after admission she continued to vomit occasionally and complained of some headache. There was still moderate vaginal bleeding, but her colour was remarkably good. Her blood urea was 88 mg. per 100 ml. Next day (Oct. 17) she looked rather pale, and slightly icteric. Her hæmoglobin was 24% (3·8 g. per 100 ml.) and the leucocyte count was 25,400 per c.mm. (polymorphs 19,500, lymphocytes 3250, monocytes 1750, eosinophils 250) with normoblasts 250 per c.mm. A film showed anisocytosis, microcytosis, and moderate reticulocytosis. The blood serum was dark brown and methæmalbumin was seen on spectroscopy.

On Oct. 17 she was transfused with 2 pints of packed cells and placed on Bull's régime: fluids were restricted to 1 litre per day, all her vomitus being filtered and returned to her stomach by Ryle's tube. She was also given antibiotics.

Next day (Oct. 18) her blood urea was 410 mg. per 100 ml. Her rash had faded to a coppery brown and there was no vaginal bleeding, but her liver was now palpable three finger-breadths below the costal margin. The liver-function tests (alkaline phosphatase, colloidal gold, and serum-albumin globulin ratio) were repeated on several occasions, but apart from a slight elevation of the serum-bilirubin (of the order of 1·8 to 2·2 mg.) they were normal. Estimations of electrolytes and of the CO_2-combining power of the serum remained nearly within the normal range until three days before death.

Her general condition was fairly satisfactory until Oct. 25, when she had epistaxis and became increasingly drowsy. She next developed pneumonia with acidotic respirations, and she died on Oct. 28. Shortly before death her blood urea was 646 mg. per 100 ml.

Necropsy

The kidneys were swollen and dark red. The capsule stripped easily, and the exposed surface showed numerous pin-point hæmorrhagic spots. The cortex and medulla showed fair differentiation, and the cortex appeared hæmorrhagic. The ureters showed minor inflammatory changes. The suprarenals were normal.

There was a considerable degree of gastritis and petechial hæmorrhages in the gastric mucosa. The duodenum, ileum, and colon were normal. The liver showed slight fatty changes with some purpura in the right lobe. The brain was œdematous. The pleural cavities contained a pint of dark, serous effusion and there was patchy consolidation of the lower lobes of both lungs. The myocardium appeared degenerate, and there were petechial hæmorrhages in the endocardium of the left ventricle.

Histology

The collecting tubules of the kidneys contained large amounts of brown, hæmatogenous pigment, and a few pigment-laden macrophages. There were collections of inflammatory cells in the medullary interstitial tissue (mainly lymphocytes with a few plasma-cells, histiocytes, and eosinophils). Most of the distal convoluted tubules were packed with hæmoglobin or protein casts. There was considerable degeneration of the proximal convoluted tubules. The glomeruli and blood-vessels were normal apart from some congestion of the medullary vessels. The picture was that of acute hæmolysis or "transfusion kidney."

The liver appeared relatively normal apart from slight centrilobular cloudy swelling. The uterus showed normal postpartum changes.

Comment

It has not been possible to ascertain how much pennyroyal this patient took, but, as mentioned earlier, the effect of the drug on any particular person is unpredictable. Analysis of the liver, kidney, bladder, and intestines did not show the presence of any volatile oil, but as the examination was made 14 days after ingestion a negative result was not unexpected. In this case there was no lesion of the central nervous system, and all tissues damaged, apart from the kidneys, appeared to recover fully. The anæmia was due to severe blood-loss and also partly to intravascular hæmolysis; but the patient did not look as though she had lost much blood, and her initial hæmoglobin of 24% came as a considerable surprise; possibly the formation of methæmalbumin partly masked her anæmia. It seems that the renal lesions were caused partly by a toxic effect of the pennyroyal, and partly by the hæmolytic reaction.

The patient survived for a relatively long time, and her terminal blood-urea of 646 mg. per 100 ml. was unusually high.

I wish to thank Dr. J. K. Rennie for permission to publish this case, and Dr. H. S. Kellett and Dr. J. Eastwood for help with the histological and necropsy findings.

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PROLONGED TREATMENT OF THE SCHÖNLEIN-HENOCH SYNDROME WITH CORTICOTROPHIN

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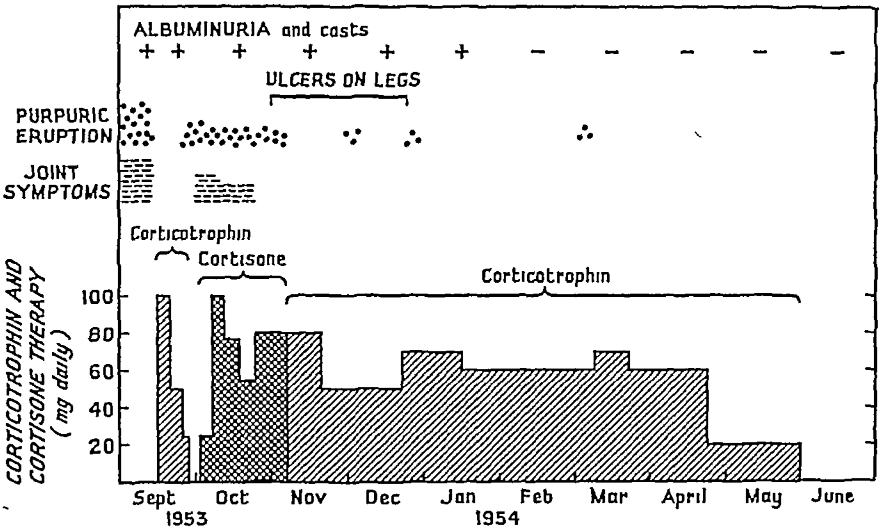
CLINICALLY, pathologically, and ætiologically the Schönlein-Henoch syndrome has been linked with other allergic diseases—acute nephritis, rheumatic fever, and polyarteritis nodosa (Gairdner 1948). Two of these diseases may coexist, and various allergic manifestations may occur in the same patient at different times. The following report is of a man who has suffered from three major allergic conditions during his lifetime and has made a good recovery on each occasion. His most recent illness was the Schönlein-Henoch syndrome, and his recovery seems to have been assisted by prolonged therapy with corticotrophin.

Case-report

A man, aged 55, was admitted to the Central Middlesex Hospital on Sept. 2, 1953, with the following history. At the age of 2 years he had scarlet fever. At the age of 6 years he was in bed for several weeks with a severe illness characterised by aching in the joints and muscles; the condition was called rheumatic fever. He slowly recovered, and his heart was not permanently damaged. At the age of 40, three weeks after a sore throat, he was admitted to hospital in left ventricular failure. He then had a blood-pressure of 210/130 mm. Hg, œdema of his face and legs, and a large amount of blood and albumin in his urine. He made a good recovery from this illness (Ellis type 1 nephritis). Two months later his urine was clear and his blood-pressure had dropped to 130/90 mm. Hg; it remained at this level. An electrocardiogram was normal, and a chest radiograph showed no cardiac enlargement. The patient remained well for six years, but in August, 1953, he had a sore throat. A week later he developed colicky abdominal pain and swelling and aching of the knees, ankles, and wrists, followed in two days by a purpuric eruption on the limbs. There was no history of drug-taking.

On examination his throat was inflamed. The purpuric eruption appeared in crops, and individual lesions ranged from the size of a pin's head to 1 cm. in diameter; some of the lesions were on an urticarial base and were palpable. His wrists and knee-joints were painful on movement and swollen. No abnormality was found in his heart and lungs; his blood-pressure was 140/90 mm. Hg. Shortly after admission he passed a melæna stool.

Investigations.—His urine on admission contained no excess of red cells, no casts, and no albumin. Examination of his blood showed white cells 18,000 per c.mm. (neutrophils 74%, lymphocytes 24%, eosinophils 1%, monocytes 1%) and platelets 160,000 per c.mm. His bleeding-time was 3½ minutes, clotting-time 9 minutes, and erythrocyte-sedimentation rate 7 mm. in the 1st hour (Westergren). A chest radiograph was



Correlation between corticotrophin and cortisone therapy and signs and symptoms of Schönlein Henoch syndrome (1 mg of corticotrophin = 1 i u)

normal The Hess test was negative after 5 minutes, but half an hour later a large crop of purpuric lesions appeared on the hand and forearm distal to where the cuff had been Schönlein Henoch syndrome was diagnosed

Progress and Treatment —His joint symptoms persisted, and further crops of purpura developed during the next fortnight in spite of rest in bed and anti histamino therapy In addition, further specimens of urine were found to contain hyaline and granular casts He was therefore given intramuscular corticotrophin 25 mg six hourly Improvement was rapid twenty four hours later his joint pains had gone, and no further purpuric eruptions developed His improvement was maintained until the dosage of corticotrophin was decreased to 12 5 mg twice daily, when a few purpuric spots reappeared on both feet (see figure) More eruptions appeared, and his knee joints and ankle joints became swollen again, although cortisone was substituted for corticotrophin and the dosage raised to 100 mg daily by mouth Casts continued to appear in his urine As soon as intramuscular corticotrophin therapy was started again in doses of 25 mg thrice daily the condition again became controlled. Two ulcers, each 4 cm in diameter, developed just above the ankles , these were due to purpuric eruptions breaking down in the early stage of the disease Such ulcers are uncommon in the Schönlein Henoch syndrome (Horler and Truelove 1955) They healed within three months on corticotrophin therapy A protective dressing was applied locally, and the legs were supported by stockinet bandages The abnormal constituents of the urine disappeared within five months, and no further evidence of renal damage developed.

Follow up —The patient returned to his work as a caterer within three months of the onset of symptoms and has remained well, except that at the end of a very busy day he occasionally gets a few purpuric spots on his feet Corticotrophin therapy was continued, with an average daily dosage of 50 mg , for nine months and was then stopped because he remained symptomless There has been no relapse during a further period of nine months At no time did he develop any untoward side effects of therapy

Discussion

Prolonged therapy with corticotrophin and cortisone of the Schonlein-Henoch syndrome has not previously been reported , their value has been variously assessed when they have been given for short courses

Adamson et al (1953) reported rapid improvement in a girl, aged 13, after the administration of corticotrophin 10 mg twice daily , the improvement was later maintained on oral cortisone and persisted after the end of treatment, which lasted fourteen days, and there was no nephritis For the following fortnight small crops of petechiæ were the only complication

Kugelmass (1951) reported four cases in which children responded well on cortisone therapy for up to three weeks ; in one case he was treating a relap and renal symptoms had b present on both occasions.

Levinson et al (1951) found t each of two courses of corti trophin was followed by prom and progressive improvement constitutional, joint, and skin sym toms in a girl aged 15 The fi course was 100 mg a day for f days , the second started w 100 mg daily, and the dos was gradually reduced over e weeks Exacerbations occurr after the withdrawal of corti trophin on both occasions, a there was no beneficial effect renal manifestations already prese

Stefanini et al (1950) repor that corticotrophin 210 mg fourteen days given to a boy a 3 years was associated with impro ment in the abdominal and s lesions but did not prevent a m chronic glomerulonephritis.

Woolley (1952), however, fou no response in a boy, aged years, who received 640 mg corticotrophin in nineteen days , crops of petechiæ a abdominal colic continued during the treatment and t renal condition did not improve.

Similar failures were reported by Philpott and Biggs (19 in nine children treated with corticotrophin and cortiso These workers concluded that, when these drugs were us for three weeks or less, they neither prevented relapses a the onset of nephritis nor had any effect on the nephritis

There were two reasons for the prolonged use corticotrophin in the present case Firstly, the treatme produced a dramatic cessation of symptoms both initial and when it was given again in adequate dosage aft a relapse This therapy kept the disease quiescent a enabled the patient to return to and remain at f employment within three months of the onset of illness

Secondly, corticotrophin was given to prevent t development (in the present case a recurrence) nephritis, which is a major complication of the Schönle Henoch syndrome In Gairdner's (1948) series eleven twelve patients developed hæmaturia, one died of neph tis, two were left with chronic nephritis, and two othe had persistent albuminuria In the present case t finding of granular casts in the urine indicated ren involvement, and, after the start of treatment, no oth signs of nephritis developed and the abnormal const tuents of the urine gradually disappeared

Summary

The case is reported of a man who has at different tim had three major allergic diseases—rheumatic fever, acut nephritis, and the Schonlein Henoch syndrome—an apparently recovered from each

The Schonlein Henoch syndrome was treated wit corticotrophin There was a dramatic improvement a the beginning of treatment and again when corticotrophi was given again in adequate dosage after a relapse durin treatment with a small dose of corticotrophin and late with cortisone

Prolonged therapy with corticotrophin was given i an attempt to prevent further relapses and because ther were signs of renal involvement When therapy wa finally discontinued after nine months, the patient wa apparently cured, and he has remained so for a furthe nine months

My thanks are due to Dr K P Ball for permission to publish and for helpful criticism , and Mrs I Prentice for the chart

References at foot of next column

Medical Societies

ROYAL SOCIETY OF MEDICINE

Hypersensitivity and the Collagen Diseases

THE section of experimental medicine with Dr E F POCHIN in the chair met on Oct 11 to discuss Hypersensitivity and the Collagen Diseases.

Dr E G L BYWATERS *outlined Klemperer's concept* of a group of collagen diseases with the characteristic fibrinoid changes in their lesions. A list of such conditions would include disseminated lupus erythematosus rheumatoid arthritis, rheumatic fever Schönlein Henoch syndrome polyarteritis nodosa and possibly calcinosis scleroderma and dermatomyositis Hypersensitivity was an abnormal reactivity to antigen or haptene due to antibody The generalised features of the phenomenon were first recognised clinically in Von Pirquet s description of serum sickness in 1903 The clinical manifestations *subsequently recognised could be classified in* three main groups (1) asthma hay fever infantile eczema and hives (2) serum sickness contact dermatitis and drug allergy and (3) bacterial allergy A fourth group was possibly the result of auto immunisation Evidence that the collagen-disease group resembled the known hypersensitivities was not striking Experimentally streptococcal infections often produced myocardial lesions said to resemble Aschoff bodies but was this type of observation relevant ? The strongest case for hypersensitivity was found in disseminated lupus erythematosus, where a serum *gamma globulin* fraction (probably an inactivator of desoxyribonuclease inhibitor) was responsible for the well known L.E cell phenomenon The fibrinoid in disseminated lupus was probably derived from the hæmatoxylin bodies found in the connective tissue In some cases, a positive Coombs test was found and purpura or hæmolytic anæmia might be present Although there was a relation between lupus erythematosus and rheumatoid arthritis in a few cases, the only evidence for hypersensitivity in the latter was the presence of plasma cells and raised gamma globulin

Future work would include extension of the simple measure of removing the patient from suspected antigens in his environment Patch and scratch tests and passive transfer of cells or serum supposedly containing antibody were unlikely to be useful *even if more knowledge of* the related antigens was forthcoming The classical in vitro methods of immunology were useless progress awaited an enlargement of our knowledge of cell fixed antibody

Dr G A ROSE *spoke of infections and their treatment* in the ætiology of polyarteritis. He said that although the textbooks categorically incriminated hypersensitivity in this condition there was little good corroborative evidence of this Drugs especially sulphonamides were much blamed, but it was seldom clear whether drug treatment had really preceded the true onset of polyarteritis, or whether exacerbations were consistently produced by the drug The evidence was strongest against thiouracil In a survey of 111 cases of polyarteritis for the Medical Research Council Dr Rose had reached tentative conclusions. There was a frequent association with bronchiectasis, chronic bronchitis, and acute streptococcal respiratory infections. The infection itself and not the drug used in treatment was the probable cause of the onset of the disease in these cases Where sulphonamides were apparently associated, it was usually because of a respiratory infection that they were used A disproportionately high incidence of rheumatic fever or a history of it in his series (12%) supported the ætiological rôle of the streptococcus

Prof G PAYLING WRIGHT *dealt with three examples* of experimental allergic lesions in animals. In diffuse serum arteritis of rabbits intravenous serum protein gave rise eventually to acute intimal and medial vascular lesions which showed swelling of collagen fibres and the appearance of fibrinoid followed by reparative processes Such experiments had been amply confirmed, but nearly always using horse serum in rabbits The *vessels affected* were mainly those in the heart The resemblance to human polyarteritis was not close. Studies with other antigens and other species might throw more light on the problem The second example was experimental acute encephalomyelitis produced originally in monkeys injected with homologous brain emulsion The later use of adjuvants enabled the lesions to be produced in dogs, rabbits and guineapigs, and much accelerated their appearance and increased their incidence The cellular reaction of which the lesion consists is usually centred upon a venule *and is often accompanied by demyelination* , subsequently gliosis occurs There was little doubt that such lesions are allergic in character but it seemed very unlikely that the group of human demyelinating *diseases of the central* nervous system were also all allergic in origin The experimental conditions of the animal diseases were highly artificial

In experimental acute glomerulonephritis, his third example, Professor Payling Wright described two techniques used Masugi ' nephritis was produced by a cytotoxic anti rat kidney serum fixation of antibody on the glomerular membrane had been shown by the fluorescein labelling technique of Coons Serum nephritis was produced in rabbits rendered hypersensitive by large quantities of intravenous horse serum

In human glomerulonephritis, there was the possibility that there was kinship between a streptococcal antigen and a component of the glomerular membrane The association of type 12 streptococci with nephritis might be due to such a coincidence Alternatively a streptococcal antigen might become fixed in the kidney and its combination with the antibody it evoked might lead to the lesion

Dr D A LONG described the clues which he thought, in general, the experimental pathologist might find worth following in the collagen diseases, which were systemic diseases of primitive mesenchyme affecting heart blood vessels and serous membranes and associated with hyperglobulinæmia and lymphadenopathy Neuberger had shown that gamma globulin (which was anabolised outside the liver) was closely associated with collagen *in the rat* .

A common factor in these diseases was their response to cortisone In choosing an experimental animal, one should consider that man was resistant to cortisone and in this respect the monkey and the guineapig were similar The mouse rabbit rat and ferret were relatively sensitive Species were similarly divided in their susceptibility to delayed bacterial allergy of the tuberculin *type* Although majority opinion favoured immediate anaphylactic hypersensitivity as the probable causal reaction in say rheumatic fever Dr Long took the opposite view that delayed allergy was more *likely to be operating* He described some of his own experiments relating these considerations to ascorbic acid metabolism to sulphydryl metabolism and to the relationship between the adrenal cortex and the islets *of Langerhans.*

Prof R J V PULVERTAFT showed two short films of time lapse cinematography showing some stages in the formation of L.E cells in the bone marrow and the absence *of toxicity* of an *isoniazid-sensitised* patient s serum on the marrow granulocytes This included a striking demonstration that megakarocytes rotate

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New Inventions

A RETRACTOR FOR CHOLECYSTECTOMY

SELF-RETAINING retractors for abdominal surgery have had a limited scope They are commonly used for the incisions through or near the midline, and they work best in thin patients, for whom they are hardly required All the many types—even the frame retractors—often fail miserably in adipose patients The usual answer, therefore, is multiple assistants holding retractors with very long blades—a practice not always conducive to easy safe manipulations at a depth

For about twelve years I have used for cholecystectomy a prototype of the retractor here illustrated, and I am convinced that it has added to the ease and therefore safety of the operation, especially in very fat patients

The retractor works best with a Kocher incision with slight lateral tilt of the operation table to the left, but no elevation of the bridge is required Any adhesions to the fundus of the gall-bladder should be divided before the usual packs and the retractor are inserted The smaller upper part of the larger blade retracts the muscular part of the abdominal wall the larger lower portion retracts the intestines covered by the packs The distance between the anterior and posterior parietal peritoneum does not vary very much it is the depth of subcutaneous fat which varies considerably The smaller blade merely retracts the costal margin, which acts as a fulcrum without interfering with the mobility of the liver and gall-bladder A third blade can be inserted which leaves the assistant's hands free for his other essential duties besides retraction The shafts of all the blades are cranked so that the handles are clear of the skin and subcutaneous fat

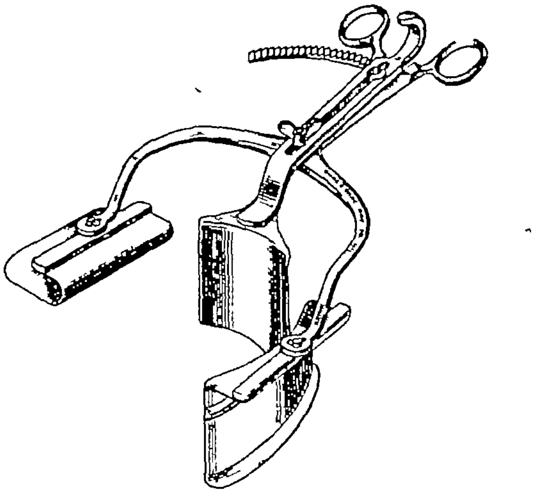

Fig 1—The retractor

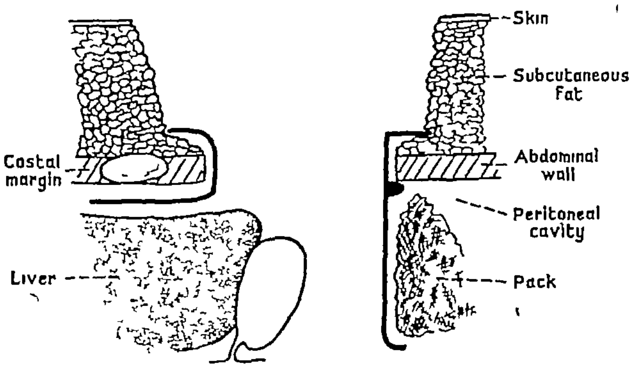

Fig 2—Diagram showing how the two main blades of the retractor are placed

I am grateful to Messrs Chas F Thackray for their patience in constructing the retractor after two previous models, one on the Gosset principle, had not proved quite satisfactory

M J BENNETT JONES
CH M Lpool, F.R C.S

United Liverpool Hospitals

DISSECTOR AND LIGATURE-PASSER

THE pattern of dissector and "ligature passer" described here has been in use now for over twenty years I have found that it greatly facilitates the ligaturing of vessels when performing operations upon the stomach and colon

The idea of an instrument of this type occurred to me while watching Prof Hans Finsterer perform a partial gastrectomy for duodenal ulcer in Vienna in 1931 Professor Finsterer was very careful to detach the great omentum from the stomach without interfering with the omental blood-supply, and he did this by passing under each gastric branch of the epiploic artery a pair of long narrow dissecting-forceps, cleanly isolating each branch for ligature before division The method seemed ideal, but the use of the forceps appeared to me to have many disadvantages Subsequent trial of Brunner's open wire dissector, and various modifications of Kocher's dissector, including that of the late Mr Cecil Joll, showed that they too were not quite suitable for the purpose

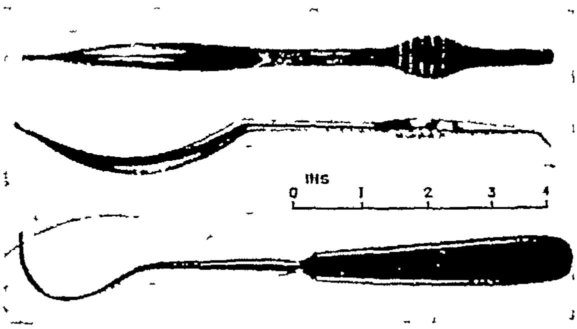

Fig 1

The ligature-passing end of my instrument has a blunt point which enables the hollowed-out curved end of the dissector to be pushed through the mesentery on either side of the vessel, so that the latter is straddled across it This allows two ligatures to be passed with an aneurysm needle, which is curved conveniently for the purpose and, after tying, the vessel can be cut between them without any risk of damage to tissues lying deep to it The other end of the dissector is shaped like a Macdonald's blunt dissector (fig 1) This instrument we have found particularly useful when ligaturing vessels obscured by fibrous tissue—e g , the left gastric artery when doing a resection for gastric ulcer For ligature of vessels which lie deeply, the dissector and aneurysm needles have been modified as in fig 2

Fig 2.

The dissector, which at King's College Hospital is known as "the boat," is now made by Messrs Down Bros

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Reviews of Books

High Blood Pressure

GEORGE WHITE PICKERING F.R.C.P professor of medicine University of London. London J & A Churchill 1955 Pp 547 65s

RECENT developments in the treatment of high blood pressure by medical or surgical devices make the publication of this book timely and Professor Pickering's work on hypertension during the past twenty years makes him especially qualified to write it. Its scope is comprehensive and covers the physiological, pathological and clinical aspects of the problem but the greater part is concerned with the causation and course of essential hypertension

The early chapters deal with measurements of the blood pressure and factors affecting it in health Nine chapters describe essential hypertension with particular reference to genetic and environmental factors in its production morbid anatomic features, and the clinical phenomena of the benign and malignant phases. A useful section on treatment deals critically with modern drug therapy and surgical measures Hypertension due to renal and endocrine disease is considered more briefly but in a manner both clear and practical.

Professor Pickering's main purpose is to produce a more informed concept of the nature of essential hypertension by statistical studies of population samples He concludes that essential hypertension is quantitatively and not qualitatively different from normal blood pressure, that this difference is inherited as a graded characteristic, and that it is determined largely by a combination of imperfectly understood environmental factors of which those operating through the mind and the diet appear to be important It is perhaps a little difficult to see how this thesis differs appreciably from the generally accepted concept of benign hypertension derived from the study of individual patients. It does however emphasise the need for close discrimination in treating high blood pressure, and it provides a conclusive argument against the view that essential hypertension is due to organic renal disease, arterial or otherwise Professor Pickering writes in a personal style which though nowadays unfashionable in scientific literature is well suited to a book written around the author's own researches It is reassuring to note that with the accumulation of new evidence his controversial views on such topics as hypertensive encephalopathy, the mechanism of papillœdema and the occurrence of vascular spasm are becoming less unshakable

No-one can read this book without realising that it embodies many years of continued careful observation shrewd thinking and an untiring determination to attack the problem of hypertension from every possible angle Clinical observation, animal experiments and the statistical method have all been used in an attempt to throw light on the genesis of this common disorder If no final and satisfying answer has been produced, we are at least given a penetrating and imaginative assessment of the situation

The Physician and His Practice

Editor: JOSEPH GARLAND M D Editor of the *New England Journal of Medicine* Boston Little Brown. London: J & A Churchill. 1954 Pp 270 36s

THIS account of medical practice in the United States has been written as a work of reference for the newly qualified man or woman who is about to enter independent practice The chapters composing it are contributed by experienced doctors only one of whom is described as a general practitioner the others including professors of medicine surgery therapeutics, and legal medicine in different American universities. The overlapping which might be expected in a book of this nature has been largely avoided by careful editing

For the British reader the interest of this book lies in the insight it gives into conditions of medical practice in the United States. The same needs are there for the presentation of illness in an American community is unlikely to differ very much from that in a European community of similar type The ways in which American medicine meets these needs are well described The reader will judge for himself whether the patient can receive as high a standard of medical care in an environment of unrestricted financial competition and the authors themselves while supporting the principle, may perhaps have some misgivings in this respect

The new entrant to medical practice in the United States will find this book a necessity The visitor from this country will find it a valuable introduction to the American pattern of medical practice, both in general and more specialised fields

Diseases of the Ear Nose and Throat in Children

T G WILSON M D LITT D F.R.C.S.I M.R.I.A ear nose and throat surgeon Dr Steevens Hospital Dublin. London Heinemann Medical Books 1955 Pp 291 70s

THIS book is, in Mr Wilson's words the first textbook to be written on diseases of the ear, nose and throat in children Though he does not set out to be comprehensive, he dismisses some subjects perhaps too briefly—e g, furunculosis of the ear which is by no means uncommon in children But his discussion of the tonsil and adenoid problem will probably meet with the approval of most laryngologists and many pædiatricians, and he provides considerably more information about congenital defects than is to be found in larger works

Methods in Enzymology

Vol I *Preparation and Assay of Enzymes* Editors: SIDNEY P COLOWICK NATHAN O KAPLAN McCollum Pratt Institute Johns Hopkins University, Baltimore New York and London: Academic Press 1955 Pp 835 $18 00

THE title of this book implies that it was designed as a laboratory manual but in fact it is much more Though about five-sixths of this volume is given to detailed descriptions of methods for purifying individual enzymes, these are preceded by a valuable series of short articles on the underlying principles of a number of techniques which are the stock in trade of the enzymologist. Furthermore the accounts of the individual enzymes are not mere recitations of the steps in preparative and analytical procedures (though these are fully set out) but usually include a short review of the biochemical context of the enzyme

It is perhaps a pity that the adequacy of the descriptions of laboratory manœuvres does not appear to have been checked in institutions other than the author's, since this precaution often reveals the inadvertent omission of important details which have become second nature to the originator Another questionable point is whether there is a need to recapitulate in a book of this type lengthy sets of technical instructions which are already available in the periodical literature But the editors point out that enzymes are now established as analytical reagents and the necessity to prepare one or more of them may therefore crop up quite incidentally in some project not primarily concerned with those particular enzymes Hence it is convenient to have a reference book explaining how to prepare the catalyst and the advantage is of course all the greater for workers who have no ready access to a library containing the original literature

This first volume covers the enzymes of carbohydrate and lipid metabolism including the tricarboxylic acid cycle and the aim has been to include so far as practicable all that are known. In some cases the purification procedure is described up to the point of crystallisation but where this cannot be done identifiable features of the product are mentioned, together with information on substrate specificity cofactor requirements and such characteristics. Among the introductory articles those by A A Green and W L Hughes on protein fractionation and by R R Porter and C H W Hirs on partition and ion-exchange chromatography respectively are particularly good. Vol II is to deal with the enzymes of protein and nucleic acid metabolism, together with others not included in vol I vol. III with the preparative and analytical chemistry of substrates coenzymes, and products and vol IV with miscellaneous techniques such as those used in studies with isotopes.

Methods in Enzymology will be helpful to endocrinologists, bacteriologists, pathologists, and others who seek occasional guidance on problems of enzyme action The subject-matter, as part of the still poorly systematised science of protein chemistry, must include much that is provisional or empirical, but, with this book's aid, anyone who has some basic acquaintance with biochemical enzymes should be able to prepare and assay any of the technique described—though possibly the yield may not be good at the first attempt

The Technique of Psychoanalysis

EDWARD GLOVER, M D London Baillière, Tindall & Cox 1955 Pp 404. *35s*

Dr Glover has made valued contributions to psychoanalytical theory, notably in his conception of the development of the integrated ego from primitive nuclei It is, however, as a gifted expositor, a formidable controversialist, and a candid examiner of some of the weaknesses as well as the strength of present-day psychoanalysis that he occupies a foremost position among the second generation of psycho-analysts The present work is complementary to the textbook in which he set out the basic theory of psycho-analysis and its application to the understanding of mental disorders, psychopathy, and crime

The first part is an expanded version of the lectures which he published twenty seven years ago With a stronger tang of individuality and the boldness that comes with experience and independence, they now provide a more vigorous, at times more unconventional and uncompromising, guide through the labyrinth than they previously did They illuminate many practical matters which are of daily concern to psycho therapists of every complexion Part 2 reproduces the book which appeared in 1940 as a research supplement to the *International Journal of Psychoanalysis* It includes the frank and startling findings that came out of a questionary on technique circulated to British psycho analysts by Dr Glover when he was director of research to the Institute of Psycho analysis Apart from minor stylistic changes, the only additions to the text are some sentences and footnotes underlining his conviction that the inbreeding which is common in the form of training analyses within a local group leads to attachments —"a hierarchy of post-analytic transferences"—which tend to hamper free discussion and the development of new ideas At the end of the book three characteristic articles are reproduced—one on the effects of inexact interpretation, another on therapeutic criteria, and a third on the theory of psycho analytic treatment These stress existing gaps and uncertainties, and point out that treatment is by no means as yet based on a large body of accepted principles Some psycho analysts have diametrically opposed views on mental mechanisms and content, this, Dr Glover holds, can be accounted for only by supposing that one or other of the disputants must be practising suggestion, through inexact interpretation, in his psycho analytic work.

By many bold admissions of this kind Dr Glover indirectly assures the reader that he is more concerned with portraying warts and furrows, as well as symmetrical charms and happily congruous features, than has been customary among practitioners of psycho-analysis when engaged in painting its portrait

The Rôle of Humoral Agents in Nervous Activity

BRUNO MINZ, M D, research professor, department of general physiology, National Centre of Scientific Research, Sorbonne, Paris Springfield, Ill Charles C Thomas Oxford Blackwell Scientific Publications 1955 Pp 230 *55s 6d*

THE concept that chemical agents are essential for the transmission of nervous impulses is, in its modern form, some fifty years old, though somewhat similar but vague ideas had been put forward earlier The subject is of great practical as well as theoretical interest, since certain diseases (such as phæochromocytoma) are caused by excess of a humoral agent, and others (such as myasthenia gravis) by the deficiency of an enzyme system, or a short chain of chemical reactions Peripheral structures are obviously more open to investigation than central ones, and a great deal of work has been done on the neuromuscular junction and on transmission in autonomic ganglia Of late, the central structures to have been made to yield information—not only the spina cord but the higher centres also From this work ha come much of practical value, including tubocurarin and ganglion-blocking agents Professor Minz is a experienced worker in this field, and his readable an stimulating book gives an interesting account of wha has been discovered and of how much remains t be discovered

The first chapter tells of the earlier work, and of how th idea has grown since T R Elliott, in 1905, suggested tha adrenaline might be the sympathetic transmitter The worl on the autonomic nervous system stemmed from this, an from Loewi's classical observation on the "vagus Stoff" o frog's heart The amount of work done is monumental, but as Minz points out, the exact part played by acetylcholin and adrenaline in autonomic ganglia, and the ways in whic each modifies the activity of the other, are still far from clear The formation and destruction of acetylcholine, an the newer observations on the site in the motor end plate where this occurs, are described Experimental work has no reached the point where it is possible to make a tentativ synthesis of the functions in neuromuscular transmission o acetylcholine, sodium, and potassium. The hypothesis i certainly not the final one, but it offers a step to furthe progress The story of sympathomimetic substances, too, i unfinished and fascinating, both adrenaline and noradrenalin have important and different activities, the former clearl intervening in metabolic processes, and the latter in cardia and vascular reactions Exactly how the work is divide between them is still unknown, but recent experiments sugges that each can be individually released from the suprarena glands hence each must have its own specific rôle

The last chapter deals with the latest and most difficult part of the subject—namely, humoral agents i the central nervous system The study of these agents may, it is hoped, throw light on many mental processes and their disorders

Les arthroplasties de la hanche

JEAN DEBEYRE, professeur agrégé, Faculté de Médecine de Paris, PAUL DOLIVEUX, aide d'anatomie et chef de clinique chirurgicale, Faculté de Médecine de Paris. Paris Editions Medicales Flammarion. 1955 Pp. 91 *Fr 1700*

WE are still a long way from an arthroplasty of the hip that will endure as long as the opposite unaffected joint This monograph is a thoughtful exposition of the problem, based on Professor Debeyre and Dr Doliveux's experience of some 200 hip arthroplasties using acrylic-resin prostheses or vitallium cups

They have had the same disappointments as other surgeons, the same later deterioration after early good results, and the same trouble with fractured prostheses, though the French acrylic resin seems to be stronger than ours In osteo-arthritis, arthroplasty led to no improvement or to aggravation in nearly a quarter of the patients, results were poor in nearly half the cases of old congenital subluxation, and even worse in the high posterior congenital dislocations They now prefer some form of cervico capital prosthesis and have abandoned the classical Judet type

In a useful chapter, the mechanics of the forces affecting the upper end of the femur are reduced to their simplest terms—even so, complicated enough—with special emphasis on the importance of length and inclination of the femoral neck The analysis of the causes of the poor results is helpful, and the authors admit they are conservative in their indications for operation As in all monographs on a rapidly developing subject, this book will soon be of no more than historical interest, but it gives a sound account of present problems and progress as seen through French eyes The general production is pleasing, but the price is high

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Biological Specificity and Growth (Princeton University Press London Oxford University Press 1955. Pp 233 *40s*)—The proceedings of the symposium on this subject, held by the Society for the Study of Development and Growth and the committee on developmental biology of the National Research Council at the University of New Hampshire in 1953, have now been published under the editorship of Elmer G Butler

THE LANCET

LONDON SATURDAY, OCT 22, 1955

An Incomplete Victory

BETWEEN 1948 and 1954 the annual number of deaths from respiratory tuberculosis in England and Wales declined from 10,088 to 7069 and notifications from 43 971 to 38,303—a drop of 63% and 13% While confirming that the disease is on the wane these figures indicate that the battle for control is by no means over, mortality has declined rapidly but morbidity is still high Nor is the picture one of uniform improvement throughout the country, for as a committee of the Joint Tuberculosis Council points out,[1] " National experience interpreted statistically is an average of urban and rural experience and there is a wide scatter of observations from the mean" (For instance in London and in Devon the notification rate in clear contrast to that in most other areas has been steadily falling for a decade or more) The report rightly emphasises that if national trends are to be interpreted correctly local statistics must be analysed in detail A comparison of what is happening in town and country city and suburb new estate and slum particularly with regard to the annual number of notifications for each sex in the different age groups would be both instructive and rewarding

The difference in rate of decline between mortality and morbidity is undoubtedly due largely to better treatment and intensification of diagnostic effort but it would be unwise to accept the fact that tuberculosis is often diagnosed earlier and more precisely than ten years ago as a complete explanation of the still relatively high level of notifications The J T C report implicates a number of factors

> " (a) The increasing frequency of primary infection in ung adults, the increasing risk of infection arising from dustrialisation the increasing number of surviving fectious persons, the rising percentage of elderly tuber lous persons, variation in environmental standards) Intensification of case-finding efforts, variability in andards of notification, immigration of susceptible rsons."

hese observations suggest that prevention lags ehind treatment We have in fact been so long on the efensive that we are failing to recognise that the time or attack is upon us The preventive approach is ometimes hampered by the division of command which eparates diagnosis to one authority and prevention to another, local initiative accounts for commendable allies here and there, but there is insufficient coör ation in the expanding field of epidemiology evention is inseparably linked with epidemiology t a multitude of local authorities acting individually e unlikely to provide epidemiological material for e strategic planning of a national or even a regional mpaign Again we have not yet agreed on the best ethod of tuberculin testing so this, one of our chief idemiological weapons is not used to full advantage nd we are still in doubt regarding the rôle of B C G The inquiry by the British Tuberculosis Association's research committee into methods of tuberculin testing, and the Medical Research Council's investigation on B C G, will doubtless provide much needed help, but meanwhile indecision prevails

Finally, we deceive ourselves if we assume that improved methods of diagnosis and treatment will necessarily bring about a rapid fall in morbidity Fresh infections continue to arise mainly from the undetected sputum positive patient, who presents a continuing problem while in the two thirds of the adult population who already harbour the tubercle bacillus breakdowns due to stresses of various kinds cannot be expected to cease Here such factors as the large amount of overtime that is being worked and the increasing practice of the wife going out to supplement the family income may take their toll Such social factors are not dispelled by detecting tuberculosis earlier or by treating it more effectively In reorganising our forces to deal with the new phase of attack on tuberculosis we should bear in mind that this subtle and stubborn foe is still a disease with strong social implications

Treatment of Cushing's Syndrome

WHATEVER the true source of Cushing's syndrome (perhaps it usually originates from the anterior pituitary as CUSHING himself thought, or from the hypothalamus[1]), we now know that the manifestations —the round congested face, the peculiar obesity of the trunk the acne hairiness, and purple striæ of the thin bruisable skin, the mental changes, the sexual depression the osteoporosis the raised levels of blood pressure blood sugar and blood count—are associated with an overflow of corticosteroids from an adrenal cortex swollen either on both sides by diffuse hyperplasia or more rarely on one side by a benign or malignant tumour

The brilliant modern cures of this disfiguring and lethal disease are not achieved without some diagnostic pains Though Cushing's syndrome is three or four times commoner in women than in men, the diagnosis will be warranted in only a very few of the many women afflicted by obesity, hirsutism, and menstrual disturbances[2] In the established case every care must be taken to exclude an adrenal cortical tumour The " cortisone test "[3] is based on the hypothesis that in cases of bilateral adrenal hyperplasia cortisone will produce a fall in 17 ketosteroid excretions (presumably by inhibiting pituitary corticotrophin) but that in cases of tumour it will not (suggesting the tumour's independence of pituitary control) Radiographically the adrenals may be outlined by perirenal or presacral insufflation of air or oxygen, though well taken plain films may give as much information.[4] At surgical exploration, an atrophic adrenal on one side will point to a tumour on the other[2]

It is agreed that adrenal tumours should be resected whenever possible, but there are two different lines of approach to the treatment of Cushing's syndrome associated with bilateral adrenal hyperplasia either the pituitary is attacked by surgery or radiotherapy to suppress its corticotrophic stimulus, or enough of

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The Changing Character of Tuberculosis Report by a Committee of the Joint Tuberculosis Council 1955 Copies obtainable from Dr R. L. Midgley Hawkmoor Chest Hospital Bovey Tracey Devon. Pp 28

[1] Heinbecker P *Medicine* 1944 23 225
[2] Sprague R G *Proc R Soc. Med* 1953 46 1070
[3] Jailer J W Gold J J Wallace E Z *Amer J Med* 1954 16 340
[4] Cope O Raker J W *New Engl J Med* 1955 253, 119 165

the adrenal cortex is removed to induce remission of the disease Electrocoagulation of the hypophysis has been advocated in Sweden,[5] but the value of this measure has not yet been established There have been many conflicting opinions about the efficacy of pituitary irradiation Thus BISHOP and his associates [6] had little success with this method alone, but think it logical to follow adrenal surgery by radiotherapy, whereas SKRIMSHIRE,[7] who obtained by radiotherapy remissions in 4 out of 6 cases, suggests that this should be the first therapeutic choice and that operation on the adrenal should be reserved for the failures American opinion, backed by a considerable weight of evidence, has come down heavily in favour of adrenalectomy as the most effective therapy SPRAGUE [2] and his colleagues at the Mayo Clinic operated on 58 cases of Cushing's syndrome due to bilateral adrenal hyperplasia, usually removing 85–90% of one gland and the whole of the other, there were 46 cures, 1 failure, 7 postoperative deaths (5 before the introduction of cortisone) and 4 later deaths In an authoritative report from Harvard, COPE and RAKER [4] review 46 cases studied in the past nineteen years They were disappointed in pituitary irradiation, which gave remissions in only 1 out of 17 cases Their patients treated by operation on the adrenal included 5 with malignant tumours, all of whom died, 11 with benign tumours, 10 of whom are alive and cured, and 25 with hyperplasia Of these 25 with hyperplasia 7 were operated on before the cortisone era, when only 30% of the total adrenal tissue was resected, 2 died, 2 had incomplete remissions, and 3 are well In the other 18 cases the average estimated resection was 89%, 2 died, 1 was lost to follow-up, and 15 are cured, only 5 of these now requiring cortisone COPE and RAKER give 100 mg cortisone intramuscularly twelve hours before operation and again before the anæsthetic, but indicate that intravenous hydrocortisone may be used during future operations They prefer an extrapleural transdiaphragmatic approach, and, for hyperplasia, subtotal resection since total resection entails complete dependence on substitution therapy They remove 90–95% of each adrenal, usually in two stages Postoperatively, no supplementary cortisone is necessary after the first stage, but after the second operation (and after removal of a tumour) 300 mg cortisone is given daily until the postoperative course is smooth The dose is then reduced gradually to some 50 mg daily by the tenth to fourteenth day Patients must be kept under the closest observation when attempts are made to reduce the cortisone still further, or to stop it, during the ensuing weeks, because such curtailment is liable to be complicated by a peculiar stormy reaction whose manifestations include weakness, anxiety, dermatitis, anorexia, nausea, abdominal pain, vomiting, muscle and joint pains, fever, lymphocytosis, and hypercalcæmia, without the characteristic diarrhœa, hypotension, and cramps of the typical addisonian crisis This illness may be lengthy and even fatal, but it has been found to respond promptly when adequate doses of cortisone are resumed [2 4 6 8] COPE and RAKER consider that these patients pass very quickly positive cellular balance after adrenalectomy, that the stormy reactions are related to rapid regro of tissues and consequent nutritional needs

The way is now open to further advances in management of Cushing's syndrome Meanw workers in this field are to be congratulated on remarkable progress which they have made in short a time

"Displaced Persons"

IN the long-stay wards of most of our me hospitals may be found a mixed group of patients f the European mainland Most of them are men, in many the schizophrenic process is reinforced social isolation Even more than the English chr patient, they give the impression of having abando the attempt to communicate with their environm Their companions do not speak their language, and staff understand their mental processes less than t understand those of the English patients Deplor in itself, the plight of these immigrant patients h wider significance in that it is only an acute form of plight of thousands of other people who have b uprooted by the second world war The difficul these people encounter in facing new ways of life ar new cultural environment are discussed in a report UNESCO drawn up by thirteen doctors and psych gists, at least two of whom have themselves experien persecution, terror, and uprooting The strik photographs which accompany the report show empty, hopeless expression on the faces of the m women, and children—an emptiness following m suffering in concentration camps and later in ca for displaced persons

One of the biggest difficulties the immigrant has face is the hostility of the people in his new s roundings Even where this does not show itsel overt behaviour, there are often undercurrents runn counter to the avowed intentions of sympath people who wish to help him to settle down Admitte this hostility is not exclusively psychological instance, the British miners' opposition to the propo employment of Italians in the pits could be explai on grounds of economics and the vagaries of the lab market But this kind of unfortunate situation ar wherever men are sent to begin a new life, and if reactions of the newcomer require modification also do those of the native population, with their f of being "displaced by the arrival of the displace The need to combat differences and emphasise brotherhood in a common predicament was ne more urgent than at this time when the tender towards some sort of world federation races tortoi like with the hare of atomic weapon developme Mankind has long been told that "all men brothers," and we have now only a short time which to accept and act upon this belief The sur and cross currents produced in a community by t arrival of displaced people reflect this wid contemporary need

A difficult situation is often made more diffic by the confusion of tongues The brighter of the ne comers quickly gain a working knowledge of the ne language, but their alien intonation remains prominent sign of "difference" The displaced person can soon succeed in melting into the crowd and looking like one of the local population But when he speaks, there is usually a reaction within the group—a kind of reappraisal. Perhaps there is a subtle and barely conscious attempt to "make allowances" for the foreigner, which gives rise to an equally subtle counter reaction—a feeling of being excluded and of hopelessness of ever really "belonging " This may be an over refined observation, but it is part of the "we—they" reaction which tends to displace the sense of common humanity and brotherhood even in the best-intentioned The effect is sometimes aggravated by the "depressive-manic" tendency in some of the younger displaced persons who have overcome their depressive apathy only to acquire euphoric attitudes, sometimes verging on the aggressively bumptious, which jar on the indigenous population. For a displaced person who is mentally ill things are of course even worse Bewildered and already lost in the complex labyrinth of a psychosis, he can make nothing of the attempts of doctors and nurses to communicate with him His smattering of English, if any, remains a smattering Thus when the Polish medical units in this country were broken up and the patients distributed among our mental hospitals, the arrival of a considerable number of patients with severe psychotic disabilities, and little knowledge of any language save Polish, created grave difficulties which have not been overcome

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[5] Arner B, Luft R, Olivecrona, H, Sjögren, B *J clin Endocrin* 1953, 13 1101

[6] Bishop P M F Glover, F N de Mowbray, R. R, Thorne, M G *Lancet*, 1954, ii 1137

[7] Skrimshire J F P *Ibid* 1955 i, 270

[8] Beck R N Montgomery D A D, Welbourn, R. B *Ibid*, 1954, ii 1140

[1] Flight and Resettlement H M Stationery Office 1955 231 10s 6d

As a nation we are not without experience of immigrants, Through the centuries we have successfully, and with benefit absorbed invaders and refugees from all over Europe But what was once a problem for individual nations has now become a common global challenge and we ought to be sure that we take our full share in helping the uprooted, whose misfortunes cut across national boundaries and encircle the world

Annotations

THE HARLOW EXPERIMENT

AFTER the late war many interested in general practice hoped that experience of the first experimental health centres would be followed by the construction of such centres throughout the country In this way it seemed the stultifying isolation of many practitioners might be ended and a better service offered These hopes are now dimmed, for it has become clear that serious obstacles stand in the way of establishing centres in areas where practices are already in being, and the high cost of some of the experimental centres built (perhaps rightly) as models of the best, may have daunted local authorities, who would bear the brunt of the cost Accordingly attention has been largely transferred to the promotion of group practice Yet health centres are still likely to be useful and welcome in new towns growing suburbs, and rebuilt urban areas and that the initial cost need not be prohibitive has been shown at Harlow Here, owing to the initiative and generosity of the Nuffield Provincial Hospitals Trust three centres have already been finished and last Monday these were officially opened by Lord Nuffield.

These three centres form part of a £200 000 scheme by the Trust to provide a comprehensive service for the eventual population of 80 000 This scheme is especially interesting and important because under it the family doctor service is to be integrated with an industrial health service (in addition to three further health centres of the type already built, two industrial health centres are planned) and because a central specialised centre is to be set up near the site of the proposed Harlow Hospital. This will house (in addition to general practitioners) special local authority clinics for orthopædics ophthalmology speech therapy and child guidance and perhaps investigation units provided by the regional hospital board Hitherto there has been some doubt whether a pathology laboratory and X ray department should be included in health centres it has been suggested that an X ray department might be "uneconomic, and that supervision of technicians in charge of either department might not be easy Hitherto there has been no opportunity to test the orth of a central laboratory and X ray department rving a group of centres At Harlow the opportunity as arisen and we hope it will be seized We need to now whether such a service would notably aid practi tioners and their patients, and whether it would also ably relieve the burden of hospital departments which now offer open access even if they had to second a technician whole-time and a consultant part time to the centre. At Harlow whatever the result these two units at the centre could be transferred if desired, to the hospital when it is completed

The centres at Harlow are not 'health centres' according to the terms of the National Health Service Act since dental surgeons may practise privately there Nevertheless the lessons that are now being learnt at Harlow will be of inestimable value to those planning centres proper under the Act, On p 863 of this issue Dr Stephen Taylor and his colleagues describe some of these lessons in a lively account which is perhaps especially valuable for the light it throws on the need for good human relations and the ways in which these have been established

DECOMPRESSION IN BELL S PALSY

THE term Bell s palsy is now generally reserved for facial palsy of peripheral type and of sudden onset whose ætiology is obscure (Sir Charles Bell originally described a series of cases of diverse origin, including local sepsis) Histological material is hard to come by In about 80% of cases there is never any clinical or electrical evidence of nerve degeneration the disorder remaining a neurapraxia and in these histological change would not be expected, Even in cases where denervation occurs, the disease is never fatal and the cause has usually to be surmised from clinical and electrical evidence From such evidence it is now fairly widely accepted that the primary palsy is due to some local factor such as ischæmia of the nerve sheath or more rarely a virus infection (e.g herpes zoster) and that consequent œdema in some cases causes secondary compression of the nerve in the confines of the facial canal If this view is correct then decompression of the nerve might help if undertaken promptly before swelling has led to more extensive neural damage such as axonotmesis But the problem is how to select the right cases at this stage Once there is evidence of denervation most of the damage has been done but if this evidence is found early, immediate decompression might prevent further damage, and in particular avert the very rare permanent palsies or the severe associated spasm and mass movements which seem to be due to severe neuronal damage Taverner[1] points out that electromyography will provide clear evidence of denervation, and he has found this as early as the fourth day after the onset of palsy Taverner himself considers that decompression is never indicated since the gradations of recovery and variations of associated movement after Bell's palsy cannot be explained by compression This reasoning may not be generally accepted, but in any event the place for decompression will be small, since even denervation, when it does occur, is rarely so substantial as to cause disabling spasm or associated movement

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[1] Taverner D *Brain* 1955 78 209

Thus, unless we are to submit many to unnecessary operation, we need a method of identifying cases in which denervation is going to be severe Improvements in the technique of electromyography may provide such a method, but meanwhile most patients will be content to let the condition take its natural course In the very occasional case where palsy is apparently permanent and some mechanical blockage to regeneration seems possible, exploration may be useful, but in this group it can be logically undertaken only after any chance of recovery by regeneration has been excluded by the passage of months without improvement

VANISHING LUNGS

RADIOGRAPHY sometimes reveals the development, in the course of pulmonary tuberculosis, of cyst like spaces in areas where the disease is regressing, and this feature has been observed much more commonly since the introduction of effective chemotherapy Rappaport[1] discusses it under the piquant title "vanishing lungs" Some of these spaces are no doubt thin-walled cavities, but the consensus of opinion seems to be that most are emphysematous bullæ caused by a check-valve mechanism set up by partial bronchial obstruction This mechanism can sometimes be convincingly demonstrated at operation for the removal of large bullous cysts of lung,[2] and it is almost certainly responsible for the cyst like lesions which so commonly come and go in the course of staphylococcal pneumonia in children Sometimes an emphysematous tension cyst may reach such large dimensions that there appears to be nothing but air in the hemithorax, but the lung has not really "vanished"—it is merely compressed by the cyst—and the thoracic surgeon can conjure it back again by removing the cyst and thus enabling the sound lung tissue to re expand If the air-spaces which develop in tuberculous lungs after treatment are tension-cysts of this sort, the term "vanishing lung" is misleading, but Rappaport suggests that in some instances, perhaps the majority, it is truly descriptive He points out that exudative tuberculous lesions may occasionally undergo spontaneous healing by actual resolution rather than by fibrosis[3], and that this process is common and much more complete when antituberculous drugs, especially isoniazid, are given—a view which appears to be amply confirmed by Dick's[4] pathological studies Rappaport submits that there is every reason to suppose that as they clear away debris caused by the disease scavenger cells will likewise remove alveolar septa damaged by toxins, so that air spaces will appear which may increase in size owing to normal lung traction or to secondary obstructive hyperinflation

Whatever the nature of these air spaces, how to deal with them is an important current problem Some take the view that since an emphysematous bulla cannot be distinguished from a thin walled cavity the lesion should be regarded as a cavity and collapsed or resected Others argue that since "open" healing of a cavity may follow chemotherapy (that is to say, the cavity may become lined with epithelium derived from the bronchus of supply or be left with a clean fibrous lining) the lesions should be looked on as innocent unless tubercle bacilli are recovered from the respiratory secretions Rappaport advocates resection because he believes that, even if there is no recrudescence of lurking tuberculous foci, t emphysema, once started, is likely to extend On t other hand, a growing number of physicians are impressed with the results of long term chemothera in pulmonary tuberculosis that they are reluctant consider surgery until there is clear evidence that co servative treatment has failed

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[1] Rappaport, I *J Amer med Ass* 1955, 158, 1436

[2] Allison, P R *Thorax* 1947 2, 169

[3] Pinner M Pulmonary Tuberculosis in the Adult Springfield Ill 1945, p 39

[4] Dick J C *Lancet*, July 30 1955, p 216

TRAUMA AND ADRENAL HÆMORRHAGE

SINCE Roux and Yersin[1] described "hæmorrhag congestion" of the guineapig's adrenals in diphther adrenal hæmorrhage has usually been ascribed to toxic infectious process, the clearest example is t Waterhouse Friderichsen syndrome, due to meningococ infection Adrenal hæmorrhage has been found in ass ciation with many different disorders, ranging fro acute alcoholic poisoning[2] to ulcerative colitis treat with corticotrophin[3], but accounts of it are still so fe as to warrant detailed reports of individual cases A macroscopic diagnosis of adrenal hæmorrhage is n always borne out by detailed histological examination The series of 17 cases of post-traumatic adrenal apople reported by Sevitt[6] is therefore of great clinic interest

Sevitt found these 17 cases in 60 necropsies of patien who had met with various accidents The hæmorrhag was bilateral in 5, and unilateral (mostly on the rig side) in 12, and in some cases hæmorrhage into t adrenal was associated with hæmorrhage or bruising the periadrenal tissues Histologically central hæmo rhage had destroyed the medullary tissue, necrosis the cortical tissue, probably the result of ischæmia, w also seen Thrombosis of the adrenal veins, describe by several workers,[7–9] was found in only 1 case, b small tears, fissures, or ruptures of the walls of t venules were present in 12 out of 17 hæmorrhag glands Sevitt suggests that these result from tempora compression of the gland

Traumatic hæmorrhage of the adrenals might be judge to be uncommon from the scanty references to it published work, particularly if, as Gruenwald[5] insist the not uncommon adrenal hæmorrhage of the newbor is no longer to be ascribed to trauma Some textbooks pathology[10 11] do not mention adrenal hæmorrhage all Martland[12] merely states that massive hæmorrhag into one or both glands can be seen after blunt for compression injuries to the abdomen or lower part of th chest Adrenal hæmorrhage might be expected to b fairly common in air raid casualties, but, although th lesion has occasionally been found in laboratory animal exposed to blast and in an air raid victim,[13] recen accounts of observations in the 1939–45 war[14 15] do no mention the lesion, nor has adrenal hæmorrhage bee seen in the victims of the recent Comet disasters[16] I would therefore seem that such hæmorrhage is produce by trauma of a particular type (presumably rathe localised), leading to rupture of medullary vessels th high proportion of unilateral adrenal lesions associate with ipsilateral injuries to the chest or abdomen i

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[1] Roux, E, Yersin A *Ann Inst Pasteur* 1888, 2, 629

[2] Santo E *Frankfurt Z Path* 1941, 55 115

[3] Wilson D A Roth, D *J Amer med Ass* 1953, 152 930

[4] Mackenzie D H *J Path Bact* 1955 69 333

[5] Gruenwald, P *Arch Path (Lab Med)* 1955, 60 150

[6] Sevitt S *J clin Path* 1955 8, 185

[7] Snelling Ch E Erb, I H *J Pediat* 1935, 6 22

[8] Hall, E M Hemken, L *Arch intern Med* 1936, 58 448

[9] Keele, D V K, Keele, K D K *Brit med J* 1942 ii, 6

[10] Anderson, W A Pathology London 1953

[11] Moritz A R Pathology of Trauma London, 1954

[12] Martland H S *Arch Path (Lab Med)* 1944 37, 14

[13] Zuckerman, S *Proc R Soc Med* 1941, 34, 171

[14] Benzinger, Th *In* German Aviation Medicine, World War II vol 2 Department of U S Air Force Washington

[15] Schubert W *Virchows Arch* 1952, 321 295

[16] Armstrong J A Fryor D J, Stewart W K Whittingham H *Lancet* 1955 i 1135

Sevitt's series bears this out Traffic accidents figure prominently in Sevitt's list of causes and the single instance reported by Snelling and Erb[7] was in a child killed in a motor car accident

Sevitt[8] points out that the other injuries sustained by the casualties in his series were severe enough to account for death but in at least 2 cases there may have been an element of adrenocortical failure as well (these 2 patients were the oldest in his series) Histological evidence of adrenocortical overactivity was found in other cases but, as Martland[12] has pointed out extensive hæmorrhage in the central portions of the adrenal gland may obstruct the blood flow so it is conceivable that despite such evidence of adrenocortical overactivity there may be signs of a peripheral deficiency of adrenocortical steroids It would be well to keep in mind this possibility of mechanical obstruction of adrenal blood flow with sometimes direct or reflex inhibition of adrenocortical secretion in deciding whether a suspected case of adrenal injury should be treated with corticotrophin or with adrenocortical steroids Now that Sevitt has shown that traumatic adrenal hæmorrhage is not uncommon it should be possible to save at least an occasional patient in whom untreated adrenocortical failure would otherwise hasten or determine a fatal outcome

SMOKING AND THE HEART

THE effects of smoking on the heart and circulation have excited interest for many years Nicotine by stimulating sympathetic ganglia, causes a rise in systolic and diastolic blood pressures, an increase in pulse rate, cutaneous vasoconstriction[17] and occasionally ectopic contractions Dizziness, nausea and vomiting are not infrequent in susceptible or unhabituated people The action of smoking on the coronary circulation is still uncertain It is known that nicotine stimulates the hypothalamic pituitary axis causing release of vasopressin,[18] which causes constriction of the coronary arteries certainly in animals[19] and probably in man[20] In this way smoking might cause a reduction in coronary blood flow[21] There is no direct evidence that nicotine or smoking has this effect in man although the rare association of ischæmic cardiac pain with smoking (sometimes termed 'tobacco angina') has often led to the assumption that nicotine can aggravate coronary artery disease or produce temporary ischæmia. Ralli and Oppenheimer[22] mentioned 6 patients with angina pectoris in whom attacks of pain could be induced by smoking and relieved by nitroglycerin but not by a placebo Pickering and Sanderson[23] described 3 patients in whom smoking produced anginal pain but only after the threshold for pain had been reduced by previous exercise and if the pulse rate rose sufficiently They concluded that smoking was a minor factor in the production of anginal pain, and that its effect could be explained by its action in increasing the work of the heart Graybiel et al[24] noted changes in the T wave of the electrocardiogram after smoking which they attributed to the action of nicotine on the cardiac ganglia. The changes were similar to those after the administration of atropine and significant tachycardia occurred in most of their cases Although they do not mention the point depression of the ST segment and flattening of the T wave may be simply a result of tachycardia and it might be argued that smoking merely induced an increase in heart rate without any specific action on cardiac ganglia or myocardium

The effect of smoking on the ballistocardiogram as well as the electrocardiogram[25–27] has now been studied Russek et al[26] found a significant increase in heart rate and blood pressure after smoking both in healthy people and in patients with coronary artery disease decrease of amplitude of the T waves of the electrocardiogram and ballistocardiographic abnormalities were also noted Of 37 patients with coronary artery disease 18 had abnormal ballistocardiograms with only slight concomitant electrocardiographic changes Whisky improved the ballistic abnormalities induced by smoking These workers also considered that susceptible people might as a result of smoking have a functional circulatory derangement (independent of previous heart-disease) consisting of dull precordial discomfort, dizziness tachycardia ectopic beats and dyspnœa Cessation of smoking caused all symptoms and cardiographic abnormalities to disappear Russek et al do not believe that smoking constitutes a real danger to the patient with coronary artery disease Buff[27] by contrast believes that the patient with an abnormal ballistogram after smoking should discontinue the habit and in the U S A the majority view seems to be that smoking can damage the myocardium[28] The possible effects of tobacco on the progression of atherosclerotic heart disease are also important. Hammond and Horn[29] conducted an extensive investigation into the death rate attributable to coronary artery disease and found that this was significantly higher in cigarette smokers. These disquieting results call for further investigation although there is no direct evidence that smoking increases coronary atherosclerosis

It is open to question whether the patient with coronary artery disease who smokes moderately should be denied tobacco entirely Much of the recent work suggesting that smoking is injurious to the heart depends on ballistocardiographic changes, the exact significance of which have yet to be evaluated since it is undecided whether they are produced by a disturbance of the general circulation or of the heart[26] The effect of smoking in raising blood pressure and pulse rate should not be neglected but in the habituated smoker these effects may not be great If smoking is permitted certain points should be remembered Heavy smoking, chain smoking and strong tobacco should be proscribed Ten to fifteen cigarettes, or two to three pipes, per day should be the maximum and smoking should not be indulged in just before, during or after effort Patients who have additional peripheral vascular disease should be more rigidly restricted since there is no doubt that nicotine can cause peripheral vasoconstriction and of course smoking should be completely prohibited in patients with thrombo angiitis obliterans It is doubtful whether smoking can produce true anginal pain in the absence of other associated precipitating factors[23] but as Russek et al[26] point out it may occasionally produce symptoms and cardiographic signs which simulate heart-disease in patients who are peculiarly susceptible to nicotine The observation that alcohol reverses some of the ballistographic changes produced by smoking requires further study At all events, alcohol in small amounts, especially at night is of value to the patient with coronary-artery disease by producing peripheral vasodilatation and increasing the sense of well being and diminishing anxiety While some physicians will believe that smoking should be prohibited entirely in patients with coronary artery disease, many may feel that the evidence does not warrant forbidding this habit, which may afford solace to someone harassed by the burden of a serious disease

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[17] Goodman, L. G., Gilman, A. Pharmacological Basis of Therapeutics. New York, 1955 p 626

[18] Burn, J H Truelove L H Burn I *Brit med J* 1945 i 403

[19] Bateler E. Burn J H. Walker J M. *Quart J Med.* 1949 18 73.

[20] Raskin, A *Amer Heart J* 1947 34 569

[21] Davis, F W jun, Scarborough W R. Mason R E Singewald M L. Baker B M jun *Ibid* 1953 46 529

[22] Ralli E. P., Oppenheimer B S *Proc Soc exp Biol N Y* 1925 24 9

[23] Pickering G W Sanderson I H *Clin Sci* 1945 5 275

[24] Graybiel A., Starr R S White P D *Amer Heart J* 1938 15 9

[25] Levy R. L Mathers, J A L Mueller A A Nickerson, J L *J Amer med Ass* 194 135 417

[26] Russek H I., Zohman, B L. Dorset V J *Ibid* 1955 157 563.

[27] Buff I L. *Ibid* p 560

[28] Editorial *Ibid* p 596

[29] Hammond E. C Horn D *Ibid* 1954 155 1316

AN INDUSTRIAL HAZARD

IN this country forty industrial diseases are prescribed under the National Insurance (Industrial Injuries) Act, 1948, which entitles sufferers to special benefits From time to time new industrial hazards are discovered, and one of the most recent of these discoveries is a disease resulting from inhalation of small amounts of cadmium-oxide dust or fume Much interest has been shown in the question whether this disorder should be added to the list of prescribed diseases [1] Chronic cadmium poisoning has been a notifiable and compensatable occupational disease in Sweden and Eastern Germany since 1950 [2]

In 1948 Friberg [3] studied workers exposed to cadmium-oxide dust while making alkaline storage batteries in Sweden He found an unusually high incidence of emphysema in these workers, the majority of whom were excreting in the urine a protein of low molecular weight Similar findings are now reported by Bonnell,[4] who has examined men exposed to cadmium fume in two English factories where alloys of copper and cadmium are manufactured for use in the electrical and associated industries The health of 100 of these men was compared with that of similar groups who worked in the same factories but had never been exposed to cadmium In these control groups no significant abnormalities were found Of those exposed to cadmium 19 showed evidence of poisoning All 19 had been exposed to cadmium for over five years In 1 man symptoms had developed ten years after his last exposure, and his urine still contained cadmium 9 had emphysema and proteinuria, 3 had emphysema only, and 7 had proteinuria only 4 other men (2 with proteinuria) who were too ill to work at the time of the survey were investigated in hospital Of these men 1, who died later, had chronic renal failure with a blood-urea of 454 mg per 100 ml There was no hypertension This patient was observed for eighteen months before death, and repeated tests showed that the only protein present in the urine was "cadmium protein," which does not give the reactions of the protein commonly found in renal disease or of Bence Jones protein Histological examination of the kidneys showed changes indistinguishable from those of chronic nephritis

The results of this investigation suggest that the emphysema in affected workers differs from the chronic hypertrophic emphysema associated with chronic bronchitis or bronchial asthma In "cadmium emphysema" breathlessness develops slowly and insidiously without the cough and attacks of bronchitis which so often precede and accompany the common form of emphysema But occasionally breathlessness may develop suddenly after an isolated acute infection of the upper respiratory tract, and chronic bronchitis may follow in these patients, though almost invariably shortness of breath comes first There are also differences from the common emphysema in the respiratory function tests, and at necropsy in one case Lane and Campbell [5] found fundamental pathological differences No emphysematous bullæ were seen at the periphery of the lungs, and there was a narrow zone of normal lung tissue under the pleura, and chronic bronchitis was neither widespread nor severe

When the boiling test is applied to urine containing "cadmium protein" the result is sometimes positive and sometimes negative or inconclusive Non specific protein precipitants, such as 25% trichloracetic acid, gi positive reactions when the boiling test is negative doubtful The physicochemical properties of the prote were examined by Kekwick [6] The electrophore pattern showed many ill defined components covering mobility range similar to those of serum proteins Desp this the protein sedimented in the ultracentrifuge as single component, corresponding to a molecular weig in the range 20,000–30,000, which is very much low than that of any known serum protein These findin confirm the earlier work of Friberg

King [7] found that, in the two factories surveyed Bonnell, despite safety measures the concentration cadmium fume in the workshop air exceeded the accept maximum safe limit for short periods each day But th does not mean that cadmium poisoning will necessari develop in men exposed to these concentrations, sin all the affected men had previously worked under w conditions without any precautions and so had be exposed to even greater concentrations of cadmiu fume

The insidious onset and the severe disability caus by this disease emphasises the importance of ear recognition of signs or symptoms of poisoning, and taking precautions to safeguard the health of worke exposed to cadmium oxide dust or fume

A COMMON CAUSE OF DEATH UNDER ANÆSTHESIA

DESPITE the remarkable advances in anæsthet there is still a melancholy toll of preventable deat directly due to anæsthesia Anæsthetists themselv are well aware of this state of affairs, and to clari the problem a scheme was initiated for the volunta supply of particulars of such deaths to a central collectin point Already three important reports [8–10] based on the returns have been published One of them in particul indicates that inhalation of vomit is an especially comm cause of death [10]—it proved in fact to be the commone cause of death directly due to anæsthesia

The prevention of this particular form of accide depends not only on careful preoperative preparatio and the skilful administration of anæsthesia, but also an unremitting vigil over the patient from the mome he leaves the anæsthetist to the moment when he fully conscious and can look after himself Those wh look after him during this period must be taught mo emphatically that he must never be left for a momen If he vomits, gravity should be brought to his aid he should be positioned so that his head is lower than h body and the vomit allowed to run out on to the floo Attention has been repeatedly drawn to the importanc of the sucker in preventing inhalation of vomit,[11] bu even now in many hospitals suction apparatus is no ready at the bedside of patients recovering from gener anæsthesia The dire results are illustrated in the repo of yet one more fatal case [12] Here the patient was recover ing from "a successful operation" She was placed in ward "almost in darkness" and was visited every fiv minutes by the nurse in charge During one of he absences the patient vomited and when next seen wa in a state of asphyxia A sucker was not available fo fifteen minutes

An increasing number of hospitals alive to this sort of emergency are having piped suction installed In the long run this is cheaper than individual suction units and the money invested will pay handsome dividends in lives saved

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[1] See *Lancet* 1955 i 453, 506, 1019

[2] Baader E W *Dtsch. med Wschr* 1951, 76 484

[3] Friberg L *J industr Hyg* 1948 30, 32

[4] Bonnell J A. *Brit J industr Med* 1955, 12, 181

[5] Lane, R E Campbell, A C P *Ibid* 1954 11 118

[6] Kekwick, R A *Ibid*, 1955, 12 196

[7] King E *Ibid* p 198

[8] *Anæsthesia* 1955 10, 218

[9] Morton, H J V, Wylie, W D *Ibid*, 1951, 6, 190

[10] *Ibid*, 1952, 7, 200

[11] Mushin, W W *Brit med J* 1955, i, 1116

[12] *Manchester Daily Dispatch* Sept. 29 1955

Special Articles

THE HEALTH CENTRES OF HARLOW

AN ESSAY IN COÖPERATION

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VISITING RESEARCH FELLOW NUFFIELD PROVINCIAL HOSPITALS TRUST MEMBER, HARLOW DEVELOPMENT CORPORATION

As a result of the generosity and vision of the Nuffield Provincial Hospitals Trust the new town of Harlow in Essex now has three health centres in daily use In due course the Trust proposes to build three more health centres for general practitioners, medical and dental and for the local authority clinics two industrial health centres for the Harlow Industrial Health Service which is now being brought into being and it is hoped a diagnostic and treatment centre to serve the town as a whole

This paper tells of the planning and building of the three health centres now in use it tells of the lessons in design which have been learnt and of the even more important lessons in human relations and cooperation

The definition of a health centre in section 21 of the National Health Service Act 1946 applies only to buildings provided by the local health authority The Nuffield Trust has already supported three experimental health-centre ventures which do not come within this definition The Darbishire House health centre is a part of the teaching school of Manchester University its unique features are that it is situated in an industrial practice area and that it brings radiology and pathology to the general practitioners own door The Nuffield Diagnostic Centre at Corby provides a close link between the general practitioners of Corby and the consultant clinics, without replacing the general practitioners surgeries Haygarth House the small temporary health centre at Harlow came closest to what had been envisaged when the National Health Service Act was going through Parliament Moreover because of its position outside the Act this small centre was able to bring the general dental services fully into the picture for the first time to the benefit of dentists, doctors and patients The building of Haygarth House was fully described at the time of its opening three and a half years ago (Taylor 1952); the dental side of the work there has also been described (Keen 1953)

From Haygarth House we learnt the virtue of smallness. There were many complaints about lack of space but compulsory close living of doctors dentists local authority officers health visitors midwives, and secretaries, in the service of about 8000 patients helped to teach the value of coöperation and mutual help Doctors and dentists became colleagues in diagnosis and treatment doctors and health visitors colleagues in social medicine The local authority clinics were soon an everyday part of the life of the general practitioner; the county and area medical officers of health familiar friends

The success of the Haygarth House experiment was a factor which influenced the Nuffield Trustees in deciding to support further developments at Harlow So when the proposals of the Harlow Development Corporation prepared in cooperation with all users looked like being pigeon holed for lack of capital the Trust underwrote the project using the Development Corporation as its managing agent and the Nuffield Health and Social Services Fund as the property holder

Unique Features of the Harlow Health Centres

The features which are unique to the Harlow project are as follows

1 *Coverage* —Already almost all general practice in the new town proper is or is to be conducted from the health centres in day to-day association with the local health authority clinics.

2 *Special services included* —The centres house dentists in general N.H S dental practice as well as local-authority priority dental services.

3 *Timing* —Because the centres have been built simultaneously with the growth of the town there has not been the problem of disturbing existing patterns of practice

4. *Main place of practice* —All official health centres so far built have been subsidiary to general *practitioners surgeries* elsewhere The Harlow centres are on the general practitioner side in effect group practice houses replacing private surgeries In this they resemble the Darbishire House health centre at Manchester

5 *Design* has achieved efficiency with great economy In consequence no Government capital grants have been sought A special money-saving feature is the use of a common waiting room for the general practitioners and the local authority clinics.

6 *Finances are so arranged that tenants* pay economic rents to cover maintenance and administration and capital charges. In consequence *centres of the Harlow type* can be reproduced elsewhere provided the necessary capital advances are available and the necessary planning skill and coöperation are forthcoming

A further advantage of this *arrangement is that all users scrutinise design-costs most carefully* since those will be reflected in due course in their rents Luxuries are avoided and common usage achieved whenever possible

7 *Demonstration of good practice* —*Harlow new town* is a pattern of living for the future The Nuffield Trust has backed the Harlow health project as a demonstration of the conditions of good general practice, in association with all other local health services. Conditions are not *only physical*; personal relations are even more important There have been long and detailed negotiations between the general practitioners in particular and the Trust, to work out conditions of tenancy which are fair to all, and at the same time keep up high ethical standards within and between the centres. The lessons learnt here may well have general application

The Story of Harlow

Three and a half years ago when the Haygarth House temporary health centre was opened new Harlow had about 700 houses and flats occupied its population was about 2500

Today the situation is very different About 6400 houses and flats are occupied by over 22 000 new residents By 1958 it is expected that 12,000 houses and *flats will have* been completed housing over 40 000 people The town will then have just passed its half way mark towards its ultimate target of a population of 80,000—much the same size as Cambridge.

The town is much more than an agglomeration of houses and flats. An advantage of the Development Corporation is that it can take a wider view of community planning than has been possible for other developers in the past. Much community development must be done by local authorities or private or individual enterprise, but a Development Corporation can provide powerful stimuli.

These developments in Harlow up to September, 1955, are as follows:

Factories completed	54
Persons employed in the factories	5740
Schools completed	
Primary	6
Secondary	1
Churches and church halls opened or reopened	4
Shopping centres completed	
Main	1
Subsidiary	6
Community centres	
Main	2
Tenants' common-rooms	8
Public houses completed	2

There are also sports grounds, children's playgrounds, a paddling-pool, allotments, and such basic and expensive services as water-supply and sewage disposal.

On the social side, there are now over 200 voluntary bodies in existence, including religious, political, trade union, sporting, and educational groups.

The object of building Harlow and the seven other new towns around London is to relieve the Metropolis of some of its excess population. So the people of Harlow are primarily Londoners, particularly North Londoners, who come out with their industries. When a factory moves to Harlow, its employees are given the chance to come; as a rule more than three quarters of the men, with their families, decide to make the move. Those who stay behind are mainly the older folk with the stronges local ties. In consequence, the families of Harlow ar mainly young. Many of them have never had a hom of their own before; besides embarking on hire purchas of furniture and television, most soon decide to start or t increase the family. In consequence, nearly a quarte of the population o Harlow is under 5 year of age. Again in consequence, calls on the doctor are numerous. Moreover, the young parents in a new environment feel they must take all possible precautions to rear a healthy family; again, this leads to an extra medical burden, though also to an extra medical opportunity. Similarly, in the dental practices an outstanding feature is the large number of children who have to be treated.

Secondly, the combination of high rents, hire purchase payments, and more mouths to feed means that at Harlow most families have a tough financial struggle, especially in their first two years. This is a common enough experience for the newly married everywhere but in Harlow almost everyone is sharing the same experience at the same time. A popular daily newspaper once

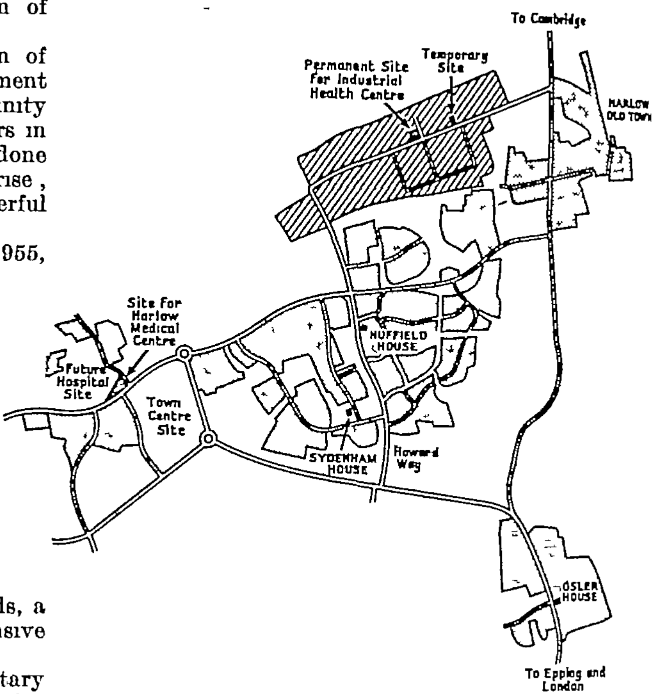

Fig 2—The location of the three health centres in the parts of th new town of Harlow already completed

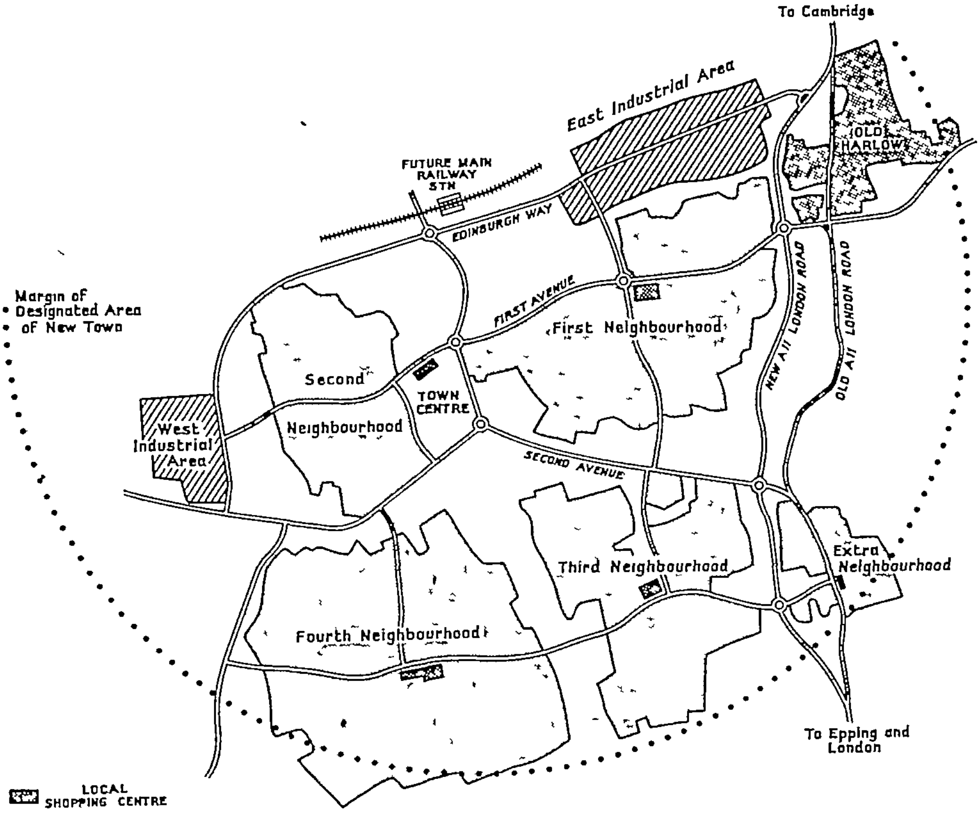

Fig 1—Harlow New Town, simplified master plan

referred to Harlow as 'Pram Town'—where there's a hole in every pocket and a smile on every face' Though this is broadly true, there are a number of exceptions The financial anxieties of many young parents are such as to make them dread falling ill, or losing over time In consequence newcomers sometimes suffer from justifiable anxiety states Happily, these appear to be self-curing, as hire purchase payments come to an end

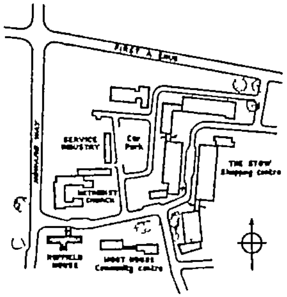

Fig 3—Location of Nuffield House health centre in the neighbourhood centre showing its relation to shops and other public buildings.

The Master-plan and the Health Centres

Harlow owes its master plan to a combination of topography and its master planner, Mr Frederick Gibberd, F.R.I.B.A The plan is shown in simplified form, in fig 1 Inside the designated area the New Town Development Corporation is both the planning authority and the main building agency

Natural valleys divide the site into four main areas, in each of which a neighbourhood is being or will be constructed. The population of the four main neighbourhoods will vary from 12 000 to 25 000 or more Each neighbourhood is surrounded by wedges of green and the main roads to the town centre run through these green fingers

The first neighbourhood the Mark Hall/Netteswell neighbourhood is now virtually complete The second neighbourhood, the Hare Street/Little Parndon neighbourhood, is under construction Building in the third neighbourhood of Tye Green has just started A small extra neighbourhood at the south-east corner of the designated area an extension of a ribbon village called Potter Street is also virtually complete

The location of the two industrial estates is shown in the simplified master plan From each neighbourhood cycle-tracks enable workers to get from their homes anywhere in the town to work places in under ten minutes These tracks are separate from the roads where possible they avoid the major roads by underpass.

The position of the first three health centres of Harlow in the Mark Hall/Netteswell neighbourhood and in Potter Street is shown in fig 2

Haygarth House the first temporary health centre was situated in Mark Hall North—that is, the part of the first neighbourhood lying north of First Avenue Its permanent successor *Nuffield House* serves the northern half of the first neighbourhood from the main shopping centre of the area called The Stow (fig 3)

The southern part of the first neighbourhood on both sides of a spine road, is served by the *Sydenham House* health centre adjacent to a shopping subcentre and overlooking a cricket field (fig 4)

The small *Osler House* health centre in Potter Street is located in Prentice Place a new shopping centre it is continuous with the shops, and has flats over a part of it (fig. 5) The A11 road which at present skirts one side of Osler House will in a year or so be diverted out of Potter Street to a new position indicated in fig 1

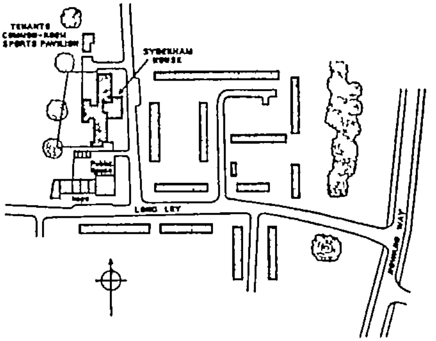

Fig 4—Location of Sydenham House health centre adjacent to a shopping subcentre and other community buildings.

Basic Planning Considerations

The first step in launching a health centre or group-practice building is to prepare a directive for the architect This will be revised several times in its final form it is a key document for it will definitely determine the main features of the building which comes out at the end Most clients brief their architects inadequately so architects have to imagine what is needed without precise knowledge

The directive should cover the following points

1 *Cost*—Give the architect a figure for his building knowing that it will probably be exceeded Remember that to the building costs must be added (*a*) cost of site (*b*) cost of civil engineering works on site (*c*) fees of architects quantity surveyors, and lawyers (*d*) cost of furniture if this is to be provided

At Harlow the Nuffield Trust set aside a figure of £24 000 for each of the two larger centres It was assumed that building costs ought to be kept to £18 000 So architects were asked to work to £17 500 For the smaller centre the figures were £12 000 £9500 and £9200

From the Harlow figures it is possible to calculate costs of health centre provision in terms of patients at risk For 10 000 patients the cost for general practitioners clinics N H S dentists and local authority dentists will be about £25 000 exclusive of furniture at 1954 prices or £2 10s per patient at risk; for general practitioner services alone the figure is about £1 per patient at risk However building prices have risen rapidly in the last year and are still rising

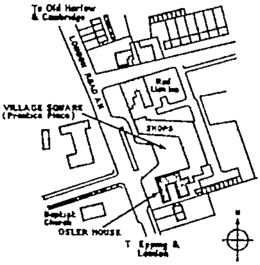

Fig 5—Location of Osler House health centre in relation to a shopping square and other community buildings.

2 *Site*—The limiting factor is taken as the distance a mother can conveniently push a pram The ideal site is close to a natural place of concourse such as a shopping centre but it should be reasonably quiet There must be adequate parking space for staff, and increasingly for patients.* The general practitioners must be able to get their cars in and out swiftly and unimpeded

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* The Harlow Development Corporation is now planning a garage for every other house.

3 *Content* —Each health centre had to house general practitioners and clinics, with rooms for secretary-receptionists, health visitors, and home nurses It was decided to have general dental suites at both the larger centres, but a local authority dental suite for priority classes at only one centre The architect must be made aware from the outset of the special gas, water, and electrical arrangements needed in a modern dental surgery

The following were also considered, but were decided against for practical reasons (*a*) dispensary or chemist's shop, (*b*) ophthalmic optician, (*c*) chiropodist It was felt also that the proper place for open access pathology and radiography was at the town centre adjacent to the hospital The town centre will not be more than eight minutes by bus from any part of the town, and to dilute these services by reproducing them in each health centre would be costly and inefficient

4 *General character* —The buildings were to be domestic rather than institutional, patients were to feel at home This was one of the lessons we learnt from Haygarth House The features of domestic building in this context are

(*a*) *Rooms* not too big, and, above all, not too high A small high room is miserable and hard to heat The maximum height for consulting rooms and other small rooms was given as 8 ft 9 in.

(*b*) *Windows* not too big, and opening properly top and bottom Given half a chance, architects equate health with the solarium or greenhouse The result is hot and glaring in summer and cold in winter A consulting room is a confessional, as Sir Thomas Moore observed in his *Utopia*, too much light dries up the mind and drives out thought It is also an undressing room, only exhibitionists like undressing in an aquarium

By contrast, a dental surgeon needs big windows to catch as much natural light as he can for his operative procedures, preferably with a north aspect

With windows, we have had some successes and some failures A consulting room must be capable of rapid ventilation to get rid of body smells, while still retaining privacy and quiet A doctor works there five hours a day, if possible he should have a nice view

Good ventilation is obtained with the familiar sash window, with cords and weights But such windows have had to be ruled out on cost The rotating window, which opens inwards above and outwards below, has much to commend it, but, when opened, the upper part projects into the room, pushing out of place the net or other curtains Even with opaque glass, such curtains are essential for privacy when windows are open

(*c*) *Furniture* and *pictures* to be chosen with all the care of those at home No tubular stackables or other institutional items

5 *One storey or two* —We soon found that all users wanted to be on the ground-floor The dentists wanted easy entry and separate exits without stairs by passing waiting-rooms for those who had had extractions under general anæsthesia The general N H S dentists have patients throughout the day, so their "stream" had to be kept separate from that of general practitioners and clinics, they rightly insisted on parity of "scale of entry" with the doctors They preferred that their entrance should be separate from that used by the local-authority priority dental patients With so many complicated circulations, our architects were unanimous in advising single storey buildings, on cost there was little in it either way

6 *Entrances* —The building is for the patients The main entrance should reflect this Streams should

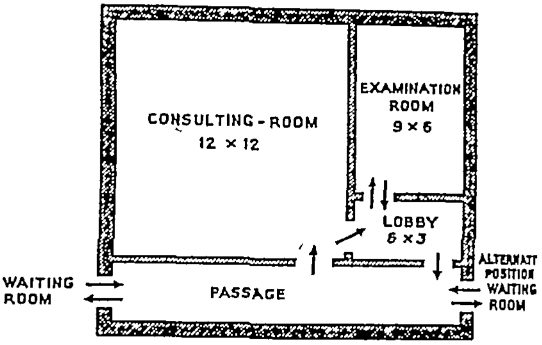

Fig 6—Basic general practitioner consulting-unit as advocated in Nuffield *Good General Practice* Survey (Taylor 1954)

be kept separate without wasting staff on an inqu point Doctors must have an emergency entran so that they can slip in and out in emergency with being seen by the patients

7 *Pram shelters* —We have noticed these are used unless they are right by the front door Pra are built for use in the rain, so a pram shelter need roof but no walls, it need be no more enclosed tha bus shelter

8 *Heating* —For buildings of this size we had decide reluctantly against central heating, because capital cost and because it would have meant employ at each centre a man as a stoker caretaker The e wages would have more than offset the saving in f Water heating is by gas or electricity, and space heat is by electricity Each tenant's rooms are mete separately, and the cost of heating the common roo is shared Incidentally, cleaning is dealt with on similar basis

9 *Floors* —Experience at *Haygarth House* made decide against thermoplastic tiles In two health cent wood blocks have been used, and in the third cork ti treated with a plastic non slip resin One dental su has lino tiles

Details of Planning and Design

Here pictures speak louder than words The rea is referred to figs 6–9 Fig 6 shows the basic gener

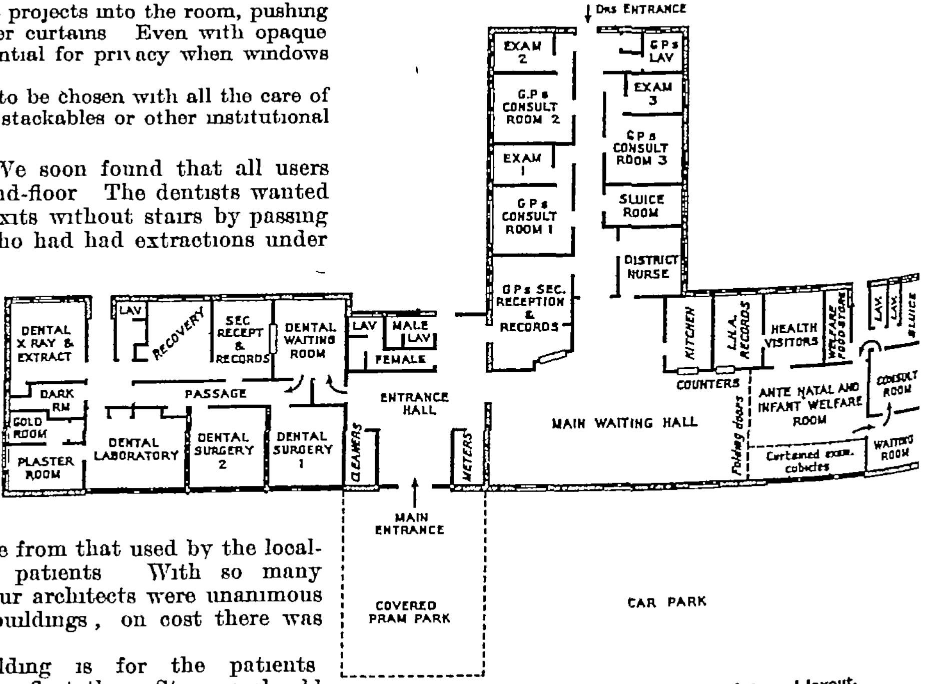

Fig 7—Nuffield House health centre, internal layout.

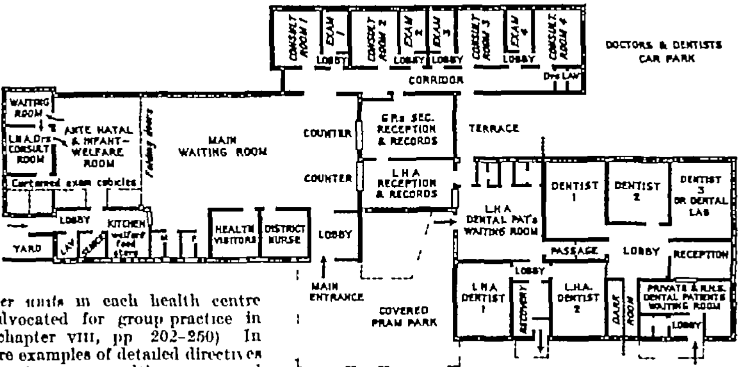

Fig 8—Sydenham House health centre, internal layout.

practitioner consulting-unit It is taken from the Nuffield survey of *Good General Practice* (Taylor 1954) where the case for it is fully argued To save money room sizes have been reduced below the ideal at Osler House Potter Street the practical minimum has been reached

The *general practitioner units* in each health centre follow closely those advocated for group practice in *Good General Practice* (chapter VIII, pp 202–250) In this chapter also there are examples of detailed directives to architects *Couch positions* in consulting rooms and examination rooms must be decided early, as they determine the positions of light fixtures. A right handed doctor stands on the right of the patient Desk and chair positions will influence the position of sinks

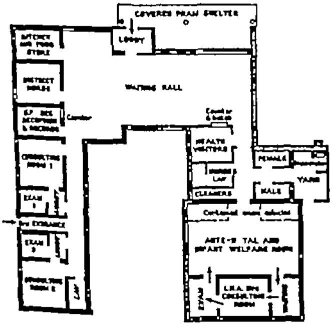

Fig. 9—Osler House health centre internal layout.

Waiting rooms —The pros and cons of one large waiting room or several small ones have been fully thrashed out Cost precluded our having both For local authority antenatal and child welfare clinics a large waiting room is a great advantage; it can be used for group-discussions lectures and even exercise classes. For the general practitioners it means that one secretary receptionist can oversee all the patients and direct traffic flow The same room can be used by general practitioners patients in mornings and evenings and by clinic patients in afternoons.

So we decided in favour of large waiting rooms

The risk of unhomeliness we have tried to avoid by careful furnishing (fig 10) There is too the problem of the patients not knowing who is next, when there are several general practitioners working at one time We are trying to break up the large rooms into three or four parts by using bookcases settees, and flowerstands as movable barriers

At Haygarth House we had to combine medical and dental waiting rooms This was not a success Dental surgeons must have separate waiting rooms as part of their own suites

Clinic rooms —Here we are still experimenting At each health centre there is a main clinic room for weighing and other purposes In the larger health centres it can be united with the main waiting room by throwing back folding-doors The result is a fine hall for lectures or meetings.

In the main clinic room there are two or more curtained cubicles These may be used for undressing, or for midwives antenatal examinations Off the clinic room is a suite of two or three rooms which may be used in several ways

1 Consulting room with waiting room and examination room

2 Consulting room with two examination rooms.

3 Two consulting rooms with examination room

We have learnt that a clinette is less necessary than it was since almost all antenatal patients bring up specimens in bottles There must however be a patients lavatory and a specimen-testing room

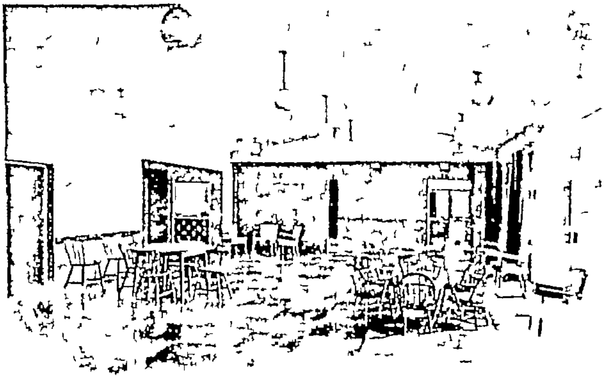

Fig 10—Large waiting-room at Sydenham House to show the attempt by appropriate use of furniture.

Hatches for reception offices and kitchens—These must be opaque When a hatch is shut the surgery or clinic is closed, and the receptionist must become a secretary if she is to get through her work, a transparent hatch at Osler House had to be replaced

A hatch must open fully, so that patients and receptionist can talk face to face It should have a proper counter on which the receptionist can write It should command the whole waiting room

There is no need to list the *other rooms* They can be seen in the diagrams The sluice and specimen room at Nuffield House is in effect a laboratory for minor pathology, as well as a wash up place for soiled mackintoshes and pus in kidney dishes The closest relation between district nurse's room and general practitioners' rooms is achieved at Nuffield House Space for storing welfare foods may be too small now that the local authority has taken over the full job from the Ministry of Food There must be enough lavatories for patients and staff, but not too many

Dental accommodation at Nuffield House has been planned to give something approaching ideal conditions for general dental practice There is a spare surgery, used for the following

1 "Pain cases" calling without appointment and needing immediate treatment
2 Radiographic examination
3 Gas extractions

This surgery is sound-proofed from the waiting room by distance and intervening doors and walls

There is a recovery room near the "gas room," with a separate exit short circuiting the waiting room The secretary receptionist in her office can oversee the recovery room as well as the waiting room, and she is still near the main dental surgeries The laboratory accommodation is so large because it is to serve the Sydenham House dental surgeries as well

Human Relations

The human side of making our health centres work is even more important than their physical design Wise physical design can help cooperation But cooperation is impossible unless the right human solutions are found

In a sense, it is like treaty-making at Geneva We must first have a common interest, to provide a touchstone for our judgments, this we find in the cure of sickness and the promotion of the health of our patients We are each sovereign States, and none of us must seek, or be allowed, to dominate over the others Each of us must preserve his integrity and essential freedoms, and each has to make sacrifices and compromises for the common good We have to codify our relations one with another in wise treaties and laws And we must agree on police action if any of us go off the rails

The parties involved have been

1 The general practitioners
2 The dental surgeons
3 The local health authority, the Essex County Council
4 The Local Executive Council for Essex
5 The Harlow Development Corporation, in its planning and building capacity and as agent for the Nuffield Trust
6 The Nuffield Provincial Hospitals Trust
7 The Nuffield Health and Social Services Fund
8 The solicitors or land agents for parties 1, 2, 3, 5, and 6 above

One of us (S T) has acted as ambassador at large or courier between the parties, this arrangement, combined with negotiations in twos and threes, rather than at round table conferences, has been found the method of choice In the negotiations, we have been fortunate in having the guidance and wisdom, especially at times of difficulty or deadlock, of the secretary of the Nuffield Trust, Mr L Farrer Brown we look forward to his continued help, as a trustee, and as a director of the Nuffield Health and Social Services Fund

Those of us who are in practice, medical or dental, express our thanks to the chairman, members, and officers of the Essex County Council and its health committee, and in particular, the former medical officer of health, Dr Kenneth Cowan It is fatally easy for a public authority to stop progress by saying "no," or by acting so cautiously that all progress ceases. With our friends of Essex, it has been just the reverse Both Dr Cowan and his successor have been ready to accept general practitioners as full colleagues in preventive medicine, and have been ready to trust us as we have come to trust them

This cooperation between the county and the general practitioners has had three immediate and valuable results

1 The county has made full use of general practitioners to staff their antenatal and postnatal clinics, and, where the general practitioners have had a special interest or training in pædiatrics, their infant-welfare clinics as well.

2 The county has encouraged general practitioners to make full use of their health visitors in the day to day practice of social medicine In consequence, it has become routine for general practitioners and health visitors to consult together daily on cases of mutual interest In the new health centres this is greatly assisted by the closeness of the offices of the health visitors to the general practitioners' consulting rooms

3 The county has set aside a room in their part of each health centre, conveniently near the general practitioners rooms, for the home nurse to hold her clinic each morning Here she sees her own ambulatory cases, as well as any general practitioners' cases requiring injections, dressings, or other straightforward nursing treatment This, too, is a valuable new link, it lightens the work of the practitioner, it enables the home nurse to treat as ambulatory some patients who might otherwise have to be treated at home, and it helps the practitioner and the nurse to discuss personally those cases where home nursing is in progress, instead of having to rely on written notes

The general practitioners must thank also the local executive council for their coöperative attitude over entry into the health centres Like us, they have been faced with new problems to which there were no ready made solutions Thanks to good sense on both sides, we believe that experience is teaching us the right answers

Entry into the Health Centres

When Harlow New Town started to grow in the North-East Essex countryside, it was an open practice area As a result of private initiative by general practitioners it is now a schedule 2 (intermediate) area That is to say, new doctors are warned that their chances of list building are limited, and no basic salary is available during the initial years of practice

To "squat" in Harlow has been more than an act of faith, it has needed courage and the financial strength to exist, until one's practice has been clothed by the Development Corporation's housing

It is a principle of modern town and country planning to discourage the use of the home for professions and businesses, it is held that these should be carried on at the places of concourse of the population, in buildings specially intended for the purpose This philosophy applies to general medical and dental practice, as much as to the law, accountancy, estate management, and the rest

Since the N H S Act (1946), local executive councils have been able to regulate the inflow of new doctors so that a fair balance between demand and supply is maintained In completely new towns and housing estates this regulation is reinforced by the control over property use which the estate authority exercises

We are not concerned with the wisdom of this. We merely record that the Harlow Development Corporation is providing offices shops, and workplaces in each neighbourhood for professional and business people on a scale adequate to meet the needs of the local community As a corollary the corporation does not allow its dwelling houses to be used for the practice of a business or profession or for the erection of a professional or business plate notice board or sign This means that professional people may not conduct practices from corporation dwellings though it is understood that doctors who live in corporation houses may from time to time see patients in their homes as a matter of convenience urgency or emergency

The Harlow Development Corporation has made it clear repeatedly that it is no part of its job to select general practitioners If selection is necessary it must be done by the body with the necessary professional competence—namely, the local executive council On the other hand the corporation cannot control what happens in premises which it does not own

In fact most of the doctors in the new town either have selected themselves by opening up in private premises, or have started as outposts of existing partnerships in the old town or elsewhere If they have communicated with the development corporation in advance they have been warned of the hard time which they must face and given no official encouragement

But once they have established themselves in new Harlow and acquired enough patients to show that they are there to stay the corporation has done its best to help them to serve their patients Temporary premises have been made available in shops or dwelling houses on the strict understanding that they will be vacated when something more permanent has become available These doctors have in fact become the first tenants in the Trust's health centres and doctors are already established in the areas where the next two health centres will be built

Principles of our Treaty-making

The conditions of tenancy which have been thrashed out become intelligible if the purposes behind them are kept in mind There are four groups of people whose reasonable interests have to be protected So conditions of tenancy have had to be devised to achieve what follows

1 *To give reasonable safeguards to the doctors who enter the health centres against the consequences of so doing*

Inevitably any practice is closely linked with the place from which it is carried out A doctor who gives up a private surgery to enter a health centre can therefore reasonably ask for proper security of tenure in his new work place

Any grouping of doctors in one spot enables them to give a better service to the public But in the outer part of the area served patients have to walk farther than if the same doctors were dispersed Competitors "squatting" in such places would have an unfair advantage In an open or intermediate area, there can be no absolute ban on such "squatting." But at least the doctors in the health centres can agree not to do it to each other

A doctor in a health centre who opened a branch surgery near another health centre might gain a temporary advantage But in the long run reprisals would be inevitable with both sides increasing their overheads, to nobody's ultimate advantage

2 *To give a reasonable assurance to the public that in any area there are enough doctors and a reasonable choice of doctor*

There are enough consulting rooms in the health centres to [illegible] so, if they are all occupied If the doctors in a health centre fail after a reasonable time to rent all the available consulting rooms, and if more doctors are manifestly needed there has to be machinery for filling the vacancies.

3 *To ensure that the conditions inside the health centres are in accord with the purpose of providing a demonstration of good general practice*

Principals and partners entering the centres enjoy real advantages They work from buildings prominent in the neighbourhood The local authority clinics automatically attract young mothers. Physical conditions for both patients and doctors are far better than in most surgeries The sacrifice if it is sacrifice which they are asked to make in return is that they should agree to set an example of good ethical behaviour to one another and to their juniors. Such behaviour may be to the temporary financial disadvantage of the doctors concerned But over the years, the returns which it should give in terms of happy and contented partnerships make it more than worth while

4 *To make sure that assistants-with-a-view and junior members of partnerships are fairly treated This is specially important in the light of the previous paragraph and of the exceptional conditions for practice-building peculiar to a new town*

The thinking here is based on the Trust's report on *Good General Practice* and on the Cohen Committee's findings

- (*a*) Entry into established practice should normally be by assistantship with-a-view
- (*b*) Partnerships or principals must select for themselves their own partners or assistants-with-a-view preferably after public advertisement
- (*c*) Permanent assistants are undesirable except in the most exceptional circumstances.
- (*d*) Salaried partnerships or other forms of concealed assistantship are undesirable
- (*e*) Partnerships or principals should not repeatedly take on and dismiss assistants with a view so that they become in effect salaried assistants
- (*f*) If incoming partners have to buy residential property or a share of other assets it is in everyone's interest that there should be a certificate from the Medical Practices Committee that there has been no sale of goodwill
- (*g*) Incoming partners should attain full parity reasonably soon The Cohen Committee's suggestion of seven years is in Harlow New Town reduced to four since practices grow to full lists almost as swiftly as houses are built. If a partner is to be truly part time then a share equivalent to the time worked will be regarded as parity If a practice has a surgery outside the area covered or to be covered by the health centres, for example in Harlow Old Town, the provisions about full parity will apply only to the part of the practice worked from a health centre
- (*h*) Assistants with-a-view and junior partners should be fairly treated over night work weekend duties and holidays.
- (*i*) In return for this generous treatment it would be expected that the younger members of a partnership would willingly carry rather more than their share of the work burden, to help the seniors in their fifties and sixties.
- (*j*) In the event of dissolution of partnership each principal should be able to continue to practice from his consulting room in the centre

Principles into Practice

The actual conditions of tenancy translate into practical terms the principles set out above They can therefore be stated quite briefly

1 Consulting rooms (with the use of all other necessary facilities) are let to individuals or partnerships.

2 Lettings to partnerships are made *jointly and severally* (to meet para 4j above)

3 Before a tenancy to a partnership is granted or extended the partnership agreement must be approved by the Nuffield Trust to see that it is in line with conditions 4c–4g above

4 The agreement shall also be approved by the Medical Practices Committee, and a certificate obtained under Section 35(9) of the N H S Act (1946)

5 Leases to principals or partners shall be for 21 years (or less if they wish), with the option to renew for a further 21 years (or less), the rent on renewal to be subject to negotiation

6 Leases of consulting rooms for assistants shall be for one year, with possibly two annual extensions When an assistant becomes a partner, a long term lease is granted

7 Two doctors may occupy only one consulting-room, whether as principals, assistants, or locums, in emergency or temporarily, or after written permission from the Trust, such permission not to be unreasonably withheld

8 Long term tenancies of more than one consulting room will not be granted to a single doctor

9 A doctor practising from a health centre shall not conduct a regular surgery or exhibit a plate or board elsewhere in the area of the New Town served, or to be served, by one of the Trust's health centres

10 If a partnership fails to grow to meet the medical needs of an area, the Nuffield Trust retains the right to let vacant consulting rooms to doctors not in partnership with those already in a health centre

The Consultative House-committee

In each health centre, a consultative house committee has been set up On these sit all the doctors and dentists working in the centre, with representatives of the local health authority, the local executive council, and the Harlow Development Corporation, as the Nuffield Trust's agent

Since the committee is advisory only, assistants can attend to learn about the work of the health centre The committees meet regularly, and the corporation provides secretarial help until the general practitioners are in a position to do so The committee elects its own chairman

The first of these committees, at Haygarth House, worked well In its first year it met every two months, in its second year quarterly, thereafter meetings twice a year were found to be quite enough to cope with any problems which arose On the committee, understanding between the general practitioners, the dentists, and the local health authority grew up, and the many day-to day details and small potential causes of friction were swiftly and easily ironed out

It is the hope of the Nuffield Trust that all the doctors working in a health centre, whether in one or more partnerships, will cooperate to work a rota system covering night duties, half-days, and weekends Such rota systems are in operation

Rents, Rates, and Furniture

Tenancies of the general practitioners' suites and the waiting-rooms are for furnished premises Tenants are responsible for replacing furniture and for internal decoration and repairs The Essex County Council has very kindly furnished its rooms in line with what has been done by the Trust

Rents have had to be exclusive of rates, since it is impossible to predict what the rates will be over the years The rent per general practitioner consulting-room works out at about £130 p a exclusive The general practitioners provide their own secretary receptionists and cleaners

Dentists' rents have been subject to detailed negotiations, based on the amount of accommodation occupied Moreover, dentists' rents, like the county-council rents, are for unfurnished premises, though the county does use the furniture in the common waiting-room

At first sight, it may seem that the rents compare unfavourably with those of certain local-authority centres, particularly where these rents include the use of secretary receptionists But in such local authority centres rents are heavily subsidised, to make it possible for the doctors to enter the health centres, they still have their own individual surgeries to maintain, often with their own secretaries outside At Harlow the position is that of a group of doctors renting a house from an ordinary landlord

The rents charged in future health centres might be higher than those in the first three health centres Building costs are rising rapidly, and the Trust's provision as to return on capital will presumably still hold

Dentists in the Health Centres

From the outset those of us who are dental surgeons have made it clear that our conditions of practice in the N H S differ in certain essentials from those of general medical practitioners First, ordinary N H S dental practice is not permitted from health centres proper Therefore we have sought and received guarantees in our leases that the Trust's health centres will not become health centres proper

The sale and purchase of goodwill of dental prac has not been abolished, and no compensation has paid In other words, when dentists retire they have to sell their practices with equipment to successors, to provide for their own retirement means that it is essential for us to be able to nom our successors in health centre practice as elsewhere.

Dental practice is completely open, and dentists "squat" anywhere without restriction, so alth the Harlow Development Corporation restricts practice of dentistry, the dentists do not have quite advantages enjoyed by the general medical practitio Dental practices are geographically less circumscr than medical practices, so we have had to reserve right to practice outside health centres in answe competition This has been felt by our landlords t reasonable, if only as a deterrent against uneconc opposition

THANKS

Because this enterprise is an essay in coöperat many people have played their part

We must thank specially Lord Nuffield and thos has chosen to see that his money is wisely spent for good of mankind But for his generosity and t imagination, there would be no health centres in Har

Thanks are also due to

The successive chairmen, members, and officers of the E County Council as local health authority, particularly past and present chairmen of the county health commi Ald Mrs M Ball and Ald K. E B Glenny, O.B E, officers of the health committee, especially the health visit midwives, and home nurses and their superintendents

Mr H E Bates, the chairman, and the members secretary of the Essex Local Executive Council, especi Dr H N Rose and Mr E Bergdahl, the secretary, who s on our house-committees

The chairman, members, and officers of the Harlow Deve ment Corporation, especially the general manager, W Eric Adams, O B E, the comptroller and general mana elect, Mr B Hyde Harvey, Mr J R Jacques, solicitor to corporation, and Miss J B Payne

The architects for Nuffield House, Messrs. Booth Ledeboer, F F.R I B A, for Sydenham House, the corporat with Mr D L Dyer, A.R.I.B A, in charge, for Osler Ho the corporation with Mr A McCowan, A R.I.B.A, in char the architects for the Harlow Development Corporation Mr F Gibberd, C B E, F R I B.A, architect planner, and Victor Hamnett, A.R I B.A, executive architect

The contractors R C Darlington & Sons Ltd, W & French Ltd, and J & J Dean Ltd

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In England Now

A Running Commentary by Peripatetic Correspondents

DURING the warm weather from a corner house in the consulting area of the Metropolis, I have conducted a psycho-sociological study of the electro-salpingophonist or common motor horn blower According to my classification motor-cornucacophonists fall into five groups—manic-depressive, schizophrenic, compulsive-obsessive anxiety neurotic, and moronic I have found that there is a definite correlation between the diathesis of the driver, the vintage of the car, and the volume of the sound There is also an associated relationship between the chromium content of the pars anterior of the vehicle Tall asthenic individuals in older cars tend to blow their horns less than obese pyknosomes in neoplastic, heavily chromicised automobiles For those who have little time for the profundities of the subject I suggest the following useful but simplified, classification

1 The excessively timorous, maternally dependent type (These are candidates for colitis, cortisone and colectomy)

2. The frustrated, aggressive paternally antagonistic type (These will probably require gastrectomy or sympathectomy in the near future)

In minor subgroups we have the sauve-qui peut blower who has an ungratified death wish but is loth to involve others the van-drivers of the *Nocturnal Intelligencer* are a good and fairly homogeneous example of this subgroup Another subgroup includes the joie-de-vivre musician who is probably a harmless dissociated personality

Most of my investigation has been carried out by perifenestral ectoscopy, a valuable method which needs no special apparatus Its only inconvenience is that it must be carried out without loss of time, so that valuable clinical material is not wasted I must thank all my private patients who have given me the time for my researches, either by late arrival or complete absence

* * *

' FOREN LETAS ' said the chalked writing on the railway coach This was English (phonetic) at Liverpool Street Station but it suggested that one was already well on the way to Denmark. ' Lemon Juice and Orange-water ' announced the menu on board the comfortable Danish ship, and a small raft on deck bore the sinister title " Rokwisitter We turned to our phrase-book " Hjaelp ! (pronounced yelp) was the first conversational gambit which it offered A language which sounds like English often has surprising pitfalls. For instance if a customs officer tells you to Luk den op you must open your bag, not lock it up It was a British Minister of Food who was momentarily shaken by the announcement of his arrival in a newspaper headline Mad Minister Her " Moreover, words such as sixpence speeder, and speaker ' are the appropriate Danish for cloth cap accelerator and radio announcer, while marmelade is jam and ' middag is evening dinner It is important not to confuse ol (beer) with olie (oil) which might be pardonable after a schnapps or two at a restaurant with a name such as Hos Bang At Oskar Davidsen s restaurant in Copenhagen the list of 177 smørrebrød dishes is 4 ft. long and proceeds from Super-fine Export Caviar on Toast through Hans Andersen s Favourite the Vet's Supper the Union Jack Sandwich to the final modest Slice of Bread with Butter or Dripping

The influence of the British Exhibition is evident in the streets and shops of Copenhagen English books materials shoes, and clothes are on view The tartans of the Scottish troops are already popular a small Danish schoolgirl proudly wore a kilt and a sixpence Denmark s own produce is unmatched and nowhere than in Copenhagen can there be such elegant window displays and such a wealth of modern fabrics light-wood furnishings, ceramics, silver and stainless steel table-ware. Contact with our European colleagues, always a rewarding experience is particularly pleasing in Denmark, where habits of thought are in many ways similar to our own, and where the welcome is so spontaneous.

* * *

The medical assessment of Shakespearean characters seems to have become a respectable pursuit,[1] and if it extends we may soon expect a spate of learned observations by psychiatrists on the reactions of the audience to *Titus Andronicus* at Stratford The mounting tension towards the end of the first act is an extraordinary sensation The management has thoughtfully provided teams of St John Ambulance girls who all competence cheerfulness and starch, deal with those who exhibit emotional instability A kind lady who sold programmes remarked that it was ' always the men ' and certainly it was five to one in favour of the so-called sterner sex in the part of the theatre where I was sitting It is a sobering thought that the chap who was reduced to having a hysterical fit might have been the psychologist on duty

* * *

With reference to my peripatetic colleague's potty using cat, I must record that our cat was discovered trying to turn on the tap, having used the basin in my surgery I presume he comes of a long line of Cambridge cats.

* * *

1955 will long be remembered for its ideal summer, and we should therefore be especially pleased that mid October has provided us with several more gloriously sunny days These my father always looked forward to and taught me first to call St. Luke's summer I truly celebrated this by eating the most delicious raspberries I ever remember tasting A rough wind had blown over my scarlet runners on to a row of raspberries, and there they lay for about a week before I touched them Then I discovered a second crop of raspberries which filled a porridge plate They were more scarlet than the scarlet runners and more succulent, juicy, and definitely sweeter than any we had in the summer Lunch with fresh runner beans followed by raspberries on Oct. 15 must be almost a record

* * *

Ages ago
Before Chadwick and Snow
When the march of science was slow
Year after year
Babies died by the thousand from summer diarrhœa
But when sanitation
Took hold of the nation
Unhygienic practices of every sort just had to go
To give a baby a dummy
Was equivalent to being slummy
It cannot be denied
That fewer babies died
But whether this was due to the decline of the
  dummy we really do not know

Now thanks to goodness knows who
Dummies are no longer taboo
Doctors prescribe them.
Doctors offspring imbibe them.
Any baby with a pain in his tummy
Is liable to be offered a dummy
Instead of sanitation
We have all this oral stimulation

But consider the babies in the slums.
Wouldn t they be better sucking their thumbs ?
They have to have fun
But what about *E coli* oh one-one-one ?
Can you happily ignore
A baby being given a dummy right off the floor ?
Do you say ' Giving him a dummy ? That s fine '
Taking the latest line
Or do you tell the mother
She can t give the baby a dummy that has dropped
  on the pavement
She must buy him another
Explaining in simple terms
The dangers of germs ?

If you look around
You will see that the dummy is gaining ground.
They even give them out at clinics
Which should amuse the cynics.
I do not decry psychology
But—Chairs of Child Health please note—what we
  urgently need
Is a little more bacteriology

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[1] See *Lancet* Aug 6 1955 p 288

Letters to the Editor

PREVENTING SMOG CASUALTIES

SIR,—The great London fog of December, 1952, was a disaster equal in magnitude to a major air raid Similar smogs may occur in future It is, I suggest, the responsibility of the health service to provide emergency measures analogous to air-raid precautions for the prevention and succour of fog casualties in chronic bronchitics In designing such a programme the following points are relevant

(1) The occurrence and persistence of fogs are partly predictable, and on receipt of a smog warning all chronic bronchitics who are able could, if they wished, leave London for a few days to avoid the smog Many older people are sufficiently free from commitments to be able to leave and could afford to go either to relatives or other accommodation There are frequent rapid trains out of London and there is no need to travel long distances —e.g , at my home 30 miles south of London, at an altitude of 500 feet, there was a warm sun shining and clear blue skies while the smog was killing susceptible people in London

(2) Chronic bronchitics ill enough to need hospital treatment should not be admitted to a hospital in the affected area, the wards of which would be full of smog, but should be *evacuated for treatment to hospitals outside the smog belt** The regional boards have a number of premises on the South coast to which these cases could be sent, if necessary with the nursing staff from the wards of the hospitals in London to which they would otherwise have been admitted These institutions could be used as convalescent homes for most of the year, so that beds could be made ready without delay when a smog emergency arose There will always be hospital cases who, for various reasons, cannot be evacuated For them effective air conditioning plant, capable of smog filtering, should be devised and installed in selected hospital wards

(3) For the smog-bound bronchitics who must stay at home in London, the number of air changes per hour in their living rooms and bedrooms could often be reduced by weather stripping of windows (widely used in other European countries) and fitting wooden door thresholds Hoover Ltd informed me that vacuum cleaner models current in September, 1953, had a bag, the fabric of which retained particles between 5 and 10 microns These machines would filter, I believe, 3000–4000 cubic feet of air an hour, which is the volume of an average room, and they should be tried out as makeshift air conditioning plants with perhaps a modified filter bag (The damp bag could be dried out at intervals with an electric hair dryer)

Interim measures on the above lines carried out before smoke abatement programmes come into action would save a number of lives

The Mass X ray Service
for South West London,
Grove Hospital Tooting,
London, S W 17

F A NASH

HÆMATOGENOUS OSTEITIS IN THE NEWBORN

SIR,—Mr Dennison (Sept 3) speaks with authority and experience about the treatment of acute osteitis in childhood It is therefore all the more important that his advice about the use of antibiotics in treating the disease in the newborn should not remain unchallenged He recommends that "whichever antibiotic is used, treatment with it should be discontinued as soon as the blood infection appears to be controlled" and his specimen case histories show that it has been his practice to withhold antibiotics altogether when the case first came under his care (cases 4 and 5) or to use them only for a week or two (cases 1 and 2) or at the most four (case 3)

It is unnecessary to examine the logic of the argum which he uses to support his advice, since the res which he describes speak for themselves One pat developed 37 recognised metastases while under obse tion , another suffered repeated recurrences and readmitted to hospital 12 times in the first eigh months , and of his 41 patients, 4 died

To prevent others being led to think that such res must still be accepted as inevitable in this disease spite of the antibiotics now available, I would like summarise the very different experience of this dep ment During the past seven years 34 cases of neon osteitis have been treated We have aimed in e case to continue treatment with the appropriate a biotic until the bone infection has been comple eradicated (in addition to aspirating pus and remo sequestra as soon as detected) Since it is character of osteitis in the newborn that the diagnosis is usu made late in the course of the disease (as judged by fact that radiological changes are usually already prese we have not been surprised at the need to cont treatment for several months in some cases. To policy we attribute the fact that no patient has develo a metastatic lesion after coming under treatment , that recurrences have been extremely rare, and n repeated, so far There was 1 death early in the se due to infection by a penicillin resistant *Staphyloco aureus* at a time when we were unfamiliar with the of alternative antibiotics

A full report of these 34 cases is being prepa Meanwhile, it seems desirable to give this brief acc of a particular aspect of the subject, not only to encou others to treat cases of this relatively rare but o crippling disease as adequately as possible, but also contribution to the current discussions about the pr use of antibiotics in various circumstances

Department of Child Health
at The Royal Victoria Infirmary,
Newcastle upon Tyne, 1

G A NELICA

SEQUELS TO ANÆSTHESIA

SIR,—Dr Bedford's paper and the subsequ discussion brought out certain aspects of administra of nitrous oxide (and its mixtures) which are likely t of value to anæsthetists It has long been apprecia that nitrous oxide was a weak anæsthetic agent and t in unpremedicated patients when combined with s atmospheric percentage of oxygen, its purported an thetic action was inevitably associated with greater lesser degree of anoxia In premedicated patients, h ever, it is possible to maintain anæsthesia (first plan third stage), with oxygen concentration well above atmospheric ($33^1/_3$ to 50%) Such indeed is the prac of most anæsthetists today It is generally regarded t even lengthy operations can be carried on with safety the patient Recently, however, a clinical observation made that patients anæsthetised with nitrous ox oxygen mixture become cyanotic during the recov period It has further been ascertained that during t period the arterial oxygen saturation falls in some ca by more than 10% This phenomenon, which w hitherto not understood, occurred despite ample venti tion and unobstructed airway after the removal of mask, and it persisted for about ten minutes

The researches of Dr B R Fink[1] in the United Sta threw, however, a completely new light on the techniq of nitrous oxide administration

> The volume of nitrous oxide in blood depends on t pressure under which it is administered and its solubility blood Its solubility is about 20 times that of oxygen. 75% mixture of nitrous oxide causes 100 ml of blood absorb 30 c cm. of nitrous oxide In equilibrium the part pressure of a gas in solution is equal to the partial pressure that gas in the atmosphere above the solution Therefore

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[1] Fink B R *Anesthesiology* 1955, 16 511

blood and the tissues of a patient undergoing nitrous-oxide/oxygen anæsthesia will absorb nitrous oxide until the partial pressure of nitrous oxide is in equilibrium. When however the patient begins to breathe room air the tension of nitrous oxide in the blood now exceeds that in the alveoli and the gas begins to diffuse out of the blood into the lungs The air now drawn into the alveoli during inspiration mixes with the outwardly diffusing nitrous oxide As a result the alveolar partial pressure of oxygen is reduced below normal (atmospheric) The inhaled oxygen is diluted by the exhaled nitrous oxide. This phenomenon is called diffusion anoxia.

Dr Fink states that this terminal sub oxygenation may be harmless and the patient returns to normal at the end of ten minutes, but on the other hand in certain poor risk cases it may have grave repercussions and may even be the cause of death It follows that in order to prevent diffusion anoxia it is imperative to administer 100% oxygen for several minutes before removing the mask from the patient's face—i e until nitrous oxide diffusion has slowed down In bringing this phenomenon to the notice of practising anæsthetists Dr Fink has rendered a great service

Bethnal Green Hospital
London, E.2

B KENTON
Consultant Anæsthetist

LACTOSE FREE DIET IN GALACTOSÆMIA

SIR —The rigid exclusion of lactose and galactose from the diet is essential in the treatment of children with congenital galactosæmia and much attention has recently been paid to ways of achieving this[1–4] We have found no reference in the literature however to the possibility of lactose ingestion in the form of tablets of commonly used prophylactic or therapeutic agents such as ascorbic acid, and we wish to draw attention to this possible danger

A baby aged 3 days became jaundiced and hepatosplenomegaly was discovered His urine contained a reducing substance, and this together with a suggestive clinical history with death at ten days in a sibling made congenital galactosæmia likely Paper chromatography was used later to identify galactose in the urine He became ill on the fourth day and a lactose free synthetic milk Nutramigen was started then, and later changed to Mullsoy which has been continued to date There was rapid improvement in his general condition and his melituria disappeared , At three months however he ceased to gain weight and although quite well with no sugar in his urine, for the next two months his weight was static At the end of this time it was discovered that the 25 mg tablets of ascorbic acid which he had been given twice daily since the age of one week each contained 125 mg of lactose When this treatment was withdrawn he started to gain satisfactorily and now at 8 months he appears mentally and physically normal although still underweight

It is interesting that he was quite well and his urine sugar free during the period when he was receiving 250 mg. of lactose daily, and that the refusal to gain weight was the only clinical abnormality When he was taken off the tablets, however he started to gain weight and clearly this small amount was exerting an adverse effect upon physical progress In view of the over-all poor prognosis for mental normality in these cases it may well be that mental progress was also being adversely affected although this was not evident At all events this case reinforces the view that every effort must be made to prevent the ingestion by these children of lactose even in small quantities.[4]

Lactose is widely used as a filler in tablets especially where the amount of the active ingredient is small, and these tablets may be used in preparing solutions or drops,[5] so that it would not be safe to use any medicament for these patients without a prior inquiry to the manufacturers In an emergency, however, such as an acute infection where an antibiotic was indicated, a liquid preparation would presumably be preferable to a tablet

Radcliffe Infirmary
Oxford

B D BOWER
VICTORIA SMALLPEICE

THE CLIMATE OF DISCOVERY

SIR —I enjoyed so much reading Prof Melville Arnott's stimulating and sensible address (Oct 15) that I was bitterly disappointed to read his last sentence He may of course have been attacking only the obscurantism which *masquerades* (my italics) under the euphemism of the art of medicine, ' but since he has not previously mentioned the art at all, one is left wondering whether he understands its true place

Medicine he rightly says, must be a compound of observation deduction and the proof of validity of deduction,' but just because we deal with human beings we cannot make the observations—i e collect the data—without applying the art No one I would claim can teach history taking as a science and it is the first and still the most important step in diagnosis And at the other end of our task when deductions have been made and their validity proved our power to influence the patient for his own good depends again on art

I have seen the scientific physician fail through not knowing what questions to ask or how to ask them As a result I have heard him accused of being too scientific which is absurd One cannot be too scientific in medicine but one can defeat the science by having too little of the art

London, S W 1

ROBERT PLATT

BARBITURATE POISONING

SIR,—In view of the recent interest in the treatment of barbiturate poisoning I think the following case is worth recording

A woman of 82 previously in good health apart from bilateral cataract was admitted from a ship on which she had been cruising. She had been in deep coma for over four days The initial shock having been treated she presented with deep coma and complete areflexia on admission there was some dehydration but no other adverse factors She was believed to have taken about 25 tablets of butobarbitone (gr $1^1/_2$)

Treatment was started with intravenous fluids, and the foot of the bed was raised The diagnosis of barbiturate poisoning was confirmed and Megimide 0 50 g with 'Daptazole 220 mg in intermittent dosage were administered intravenously until supplies ran out There was no apparent response Further treatment consisted of 30 mg methylamphetamine (Methedrine) every hour and later 60 mg every hour The level of coma became gradually less, but it was not until the eleventh day that she was able to speak in response to painful stimuli. Full recovery was not reached until a further three weeks had passed It was apparently complete and there were plans afoot for another sea voyage in due course !

The points of interest seemed to us to be

(1) That she should recover from a coma so long and so deep

(2) That she tolerated such massive doses of methedrine without ill effect (and without any tendency to *hypertension*)

(3) That recovery was complete leaving no residual cerebral damage

Opinion seemed to be divided over the last point and we can find no report of cases which do recover but with cerebral damage related to the *depth* of coma and its duration particularly in people of this age Have such cases occurred ?

Royal South Hants Hospital
Southampton.

C A ROGERSON

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[1] Cox, P J N., Pugh, R. J P *Brit med J* 1954 ii 613

[2] Komrower G M, Holzel A *Ibid* p 810

[3] [illegible], B D., Rose C A G, Gerrard J W *Lancet* 1955 i 1177

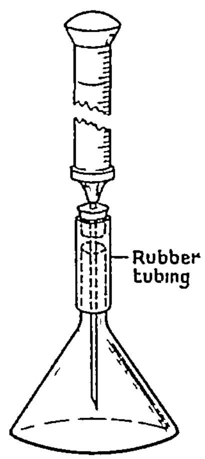
[4] Holzel, A., Komrower G M, Schwarz, V *Ibid* July 9 1955 p 92

[5] Ardley D G Personal communication

MODIFICATION OF THE HEAF TEST

SIR,—Dr Peter Stradling has described (July 30) a dropper for use with the Heaf gun in tuberculin testing I would like to suggest a simple modification of his apparatus which can be made up easily of parts found in any clinic The parts required are

The barrel of a 2 ml *syringe*
No 2 needle
Length of $^1/_2$ inch rubber tubing
Small glass funnel from the stem of which 1 inch has been sawn off
Rubber cap as found on any rubber-capped bottle



This apparatus can be disconnected for sterilisation and reassembled in a few seconds All parts can be boiled When dropping is taking place, the funnel rests on the arm When not in use the funnel rests in any antiseptic solution, care being taken that the level of the antiseptic does not reach the needle

To fill the dropper-barrel, the tuberculin solution is drawn into any sterile syringe and is injected into the nozzle of the barrel after first disconnecting the barrel from the needle

This apparatus was used with great success in a recent survey of 709 patients

South Ockendon Hospital,
Essex
DAVID DAVIS

IDENTIFICATION OF SYRINGES

SIR,—The battery of syringes used for intravenous drugs in anæsthesia today is, to my mind, a potential source of disastrous error Most anæsthetists use some method of identification such as different sizes of syringe, labelled racks, or spring clip labels, but objections can be made to all such methods

Many of these objections can be overcome by the use of coloured plungers to identify the contents of the syringe Red for Relaxant, Blue for Barbiturate, and Plain for Pethidine are easy to memorise, and Surgical Equipment Supplies Ltd are making up syringes for me with a band of colour round the neck of the plunger

West Suffolk General Hospital,
Bury St Edmunds
H MARCUS BIRD

HORMONE TREATMENT OF HÆMORRHAGE

SIR,—I am tempted to write this letter to report a case which may be of unusual interest to both ophthalmologists and physicians, because of the dramatic result

A woman, aged 74, consulted me in February, 1955 She complained of nausea, vertigo, and visual difficulty She was unable to see the ground when she walked and always had to be accompanied by someone In June, 1954, what was said to be a “thrombosis in the left eye” had developed I am told by Dr George Frampton that this was probably a hæmorrhage Dr Frampton has observed her from time to time, from January, 1955, until now She had a hæmorrhage about one disc diameter in size in the left macular region and scarring in the region of the right macula Over a period of six months no change was observed in the condition of the eyes About a year previously she had had an episode of sudden vaginal hæmorrhage, and about the same time she had had a painful subcutaneous hæmorrhage, the size of a saucer, on the thigh

Complete neurological investigation had previously been carried out on account of her vertigo, with negative results The blood picture (including platelets, bleeding time, and clotting time) was normal, Ide test negative

Physical examination was essentially normal apart from the eyes and a blood pressure of 200/100 mm. Hg For this she was given ‘Serpasil’ with a resultant fall to 140/80, at which figure it now remains without any medication

The patient was seen at about monthly intervals and June, 1955, she complained that her vision was deteriorati On July 1, on the assumption that the hæmorrhagic m festations might respond to hormone therapy,[1] I prescri ‘Proluton’ buccal tablets 10 mg daily On July 18 reported that she thought her vision had improved She then instructed to take 10 mg every second day On Au she was again seen, and by this time her vision had impro remarkably She was able to see and do things impossi *in the past* I could find no sign of the retinal hæmorrha and this was confirmed by Dr Frampton She has b instructed to continue the proluton 10 mg every second d Whereas this patient would always come to see me usin stick and with someone to assist her, she now has gone holiday alone

I realise that this one case may have some ot explanation and that the patient may yet suffer relapse, but I feel that in view of the disabling nature her condition this report is justified

Johannesburg
ROY MORRIS

SEXING NUCLEI

SIR,—To the methods mentioned in your excell leading article of Sept 24, we should like to add technique that has, to the best of our knowledge, yet received attention or been described as such, a that has proved to us of great practical value—name the study of vaginal and urethral smears

During the routine examination of vaginal smears in department, we noticed that the sex chromatin was striking conspicuous in many squamous cell nuclei, especially, wh œstrogen influence, which results in nuclear shrinking a pykenosis was not too pronounced. A systematic review smears—some of them years old—from patients with prima amenorrhœa, enabled us to recognise an unexpected majori of males in a series of Turner syndromes, and to reach positive diagnosis of “ovarian” agenesis in 3 doubtful cas since they proved to be genetically male The final res of this study was 12 Turner syndromes, 10 of them gene males Since, we have by the same technique also obtain completely unequivocal results in 6 cases of doubtful s Our findings and comments will be published in det presently[2]

The sex interpretation of the vaginal smears is extreme simple and demands but little experience while counting a calculating can be omitted altogether *In a complementa* study of oral mucosa smears, taken from male and fema volunteers, and of compared oral and vaginal smears simu taneously obtained from gynæcological patients, the unco testable superiority of the vaginal smear was clear demonstrated In the latter, the number of cells, in whi the sex chromatin can be recognised, is much higher, ev in the presence of some œstrogenic influence, cumberson cytoplasmic inclusions are but rarely encountered and th nuclear detail is more clearly visible Besides, we we pleasantly surprised, when we found out, that the sex chromatin was conspicuous even in the vagina smear drawings an microphotographs of a classical textbook on exfoliati cytology[3] On the other hand we have not yet found cytological description paying much attention to these pecul chromatin corpuscles

Urethral smears are also well suited for this kind of stud Although disturbing cytoplasmic inclusions may occur, th nuclei or the urethral mucosa cells are in most cases cle and vesicular As will be shown elsewhere, their study ca be helpful *in cases of male pseudohermaphroditism* Smear from the urogenital sinus in cases of female pseudohermaphroditism and from a very shallow vagina in several instances o vaginal atresia gave equally good results.

Our experience seems to indicate that in biopsies o vaginal mucosa the sex chromatin is as a rule more distinct than in biopsies of the abdominal skin In the former, the cell nuclei of basal and middle layer appea to be more “eutrophic” and vesicular We feel that this could be related to the proliferative and desquama

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1 Greene, R, Dalton, K *Proc R Soc Med* 1955, 48, 337.
2 *Ned Tijdschr Geneesk* (In the press)
3 The Cytologic Diagnosis of Cancer Philadelphia and London 1950, p 2

tive function of the vaginal epithelium It would in addition explain the superiority of the vaginal over other mucosal smears for the determination of genetic sex as well as for other cytological purposes

Finally several fortunate coincidences contribute to the value of the vaginal smear technique

(1) Most cases where determining genetic sex is important are seen by the gynæcologist or the obstetrician who is usually well acquainted with the essentials of technique and interpretation of vaginal cytology

(2) In cases where the determination of genetic sex is indicated, an adequate vaginal and eventually urogenital or urethral smear can easily be obtained.

(3) In these patients, owing to a lack of œstrogen the desquamating cells are mostly of the basal type presenting large vesicular nuclei, with very conspicuous sex chromatin But in our comparative study this did not apply to the oral mucosa smears.

(4) No special technique and no extraordinary skill or experience is wanted provided the classical fixation and staining method of Papanicolaou has been followed in detail. The very sensitive and elegant Feulgen technique shows the sex chromatin in a somewhat higher proportion of the cell nuclei, but we feel that the Papanicolaou procedure in addition to being more rapid and more generally used is anything but inferior in diagnostic value

We suggest the checking of the sex chromatin as a cytological routine especially in cases of primary amenorrhœa Although for the time being skin biopsy is still indicated as a valuable control, we believe that in the vast majority of cases, genetic sex can and will be most easily determined simply by the examination of a vaginal smear

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Utrecht Netherlands

P J CARPENTIER
L A M STOLTE
G P VISSCHERS

ASTHMA, CHRONIC BRONCHITIS AND EMPHYSEMA

SIR,—The excellent article by Dr Lister (Oct. 8) presents many stimulating ideas and will help in the approach to therapy of many cases. However it is probable that the problem presents a somewhat different aspect in the comparatively uncontaminated air of the West Country from that seen in the overcrowded industrial areas.

The bronchitis death rates in 1950-53 per 100 000 males in Plymouth were 74 for those of 45-64 years and 232 for 65-74 age group which contrasted with 129 and 1235 for the same age groups in Salford This fourfold difference reflects more than allergy and gives hope that preventive measures can do much to rid our community of this scourge. Atmospheric pollution is undoubtedly a major factor but the present Clean Air Bill omits any reference to the most important pollutant sulphur It is to be hoped that Members of Parliament for badly affected areas will see that this is rectified when the Bill comes up for second reading

Conditions at work especially in cotton mills, mines, and foundries, serve to swell the total of mortality and morbidity In all these industries rapid improvement in working conditions is possible and imperative

The contribution of the cigarette to this national problem must be assessed dispassionately Most of the patients seen in the early stage of chronic cough are addicts to tobacco, but find tremendous relief if they can be persuaded to abstain completely

Finally Sir treatment facilities have been inadequate. Now in most regions, beds are becoming available in sanatoria and chest hospitals It is hoped that many of these will be used for prolonged convalescence and rehabilitation of our pathetic army of chronic bronchitics

Clean air will ensure healthy lungs even in the presence of some allergy

Central Middlesex Hospital,
London, N W 10

HORACE JOULES

A DEVICE FOR BLIND PHYSIOTHERAPISTS

SIR—A research grant from the Royal National Institute for the Blind has enabled a device to be designed and developed whereby a blind physiotherapist can detect degrees of erythema in the skin whether from a test dose or from a general irradiation by auditory means. This enables him to administer general ultraviolet light with the same degree of accuracy as his sighted colleague This instrument has now been approved by a panel of the Chartered Society of Physiotherapy as has a demonstration of the technique of administration in a pilot group of blind physiotherapy students

Steps are being taken to provide a course of theoretical and practical instruction in the use of the device by such qualified blind physiotherapists as desire it

A technical description of the apparatus, which is being manufactured for the R N I.B by Electro Medical Supplies Ltd was published in the September issue of the *Braille Physiotherapy Journal*

Royal National Institute for the Blind
School of Physiotherapy
London, W 1

CLIVE SHIELDS
Chief Medical Officer

HYDROCORTISONE IN PAINFUL SHOULDER

SIR,—Mr Murnaghan and Mr McIntosh (Oct 15) are to be congratulated on their attempt to perform a controlled trial in a field where so much empiricism exists

I regret, however that they apparently ignore the fact that although the exact pathology in many cases must remain open to conjecture adequate examination of the 'painful shoulder' may enable the clinician to place the underlying lesion into one or another diagnostic subgroup (such as described by Furlong[1] whom they quote) in which management may differ considerably To be able to appoint any particular case to one of these subgroups information must be gained concerning not only the range of active movements but also of passive movements and movements against resistance

From their statement that as a rule the pain seems to subside of itself within about two years leaving various degrees of limitation of movement Mr Murnaghan and Mr McIntosh appear to have considered mainly those cases known to many as the frozen shoulder —a group in which all methods of treatment have to date been notoriously unsuccessful the disorder obstinately following its natural history of eighteen months to two years. It is in cases of local damage to the rotator cuff (traumatic degenerative or combined) with evidence of early spread of the local inflammatory response to the adjacent capsule of the shoulder joint or the subacromial bursa that treatment often proves so useful. These lesions appear to have a natural history of three to six months unless maltreated or unless naturally unfortunate for some reason not understood, when they may progress inexorably to the full picture of 'frozen shoulder' Active exercises apart from simple gravity assisted pendulum exercises may accelerate this train of events in the early case and Mr Murnaghan and Mr McIntosh do not record what type of "active exercises were prescribed in their series. Only observation over a period of three to four weeks will show whether any case with active involvement of the capsule of the joint is in fact progressing to the frozen shoulder syndrome

I would not expect hydrocortisone to have any specific action in painful shoulder' The only specific action hydrocortisone possesses at the point of local application is the damping down of local inflammatory response and therefore in nearly all lesions of the rotator cuff and capsule of the shoulder joint it can be used only as an aid to treatment the usual application of the basic principles of rest and *movement* suitable to the particular case must not be forgotten.

Had Mr Murnaghan and Mr McIntosh given us more exact information about the type of case they were treating their study could indeed be regarded as "a controlled trial" and their results of the utmost interest Meanwhile it would be a great pity if other workers in this field were discouraged by their results A controlled trial dealing with all the varied clinical aspects of the "painful shoulder" is still required

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[1] Furlong R. *Ann R. Coll Surg Engl.* 1952 11 300

St Thomas's Hospital,
London, S E 1

D R L NEWTON

FOREIGN BODY IN THE ŒSOPHAGUS

SIR,—The following case illustrates the potential dangers of certain practical jokes

Mr A, aged 52, was admitted to Morriston Hospital as an emergency at 1 A M on June 19, 1955, complaining of dysphagia and the feeling of "something sticking" behind the upper end of his sternum Three hours previously he had been drinking at a public house and a friend had placed a plastic 'spider" in his glass of beer He accidentally swallowed the spider

On examination, there was no respiratory distress and he was able to localise the foreign body at the level of the upper border of the manubrium sterni He had vomited once since the incident but no foreign body was seen in the vomit

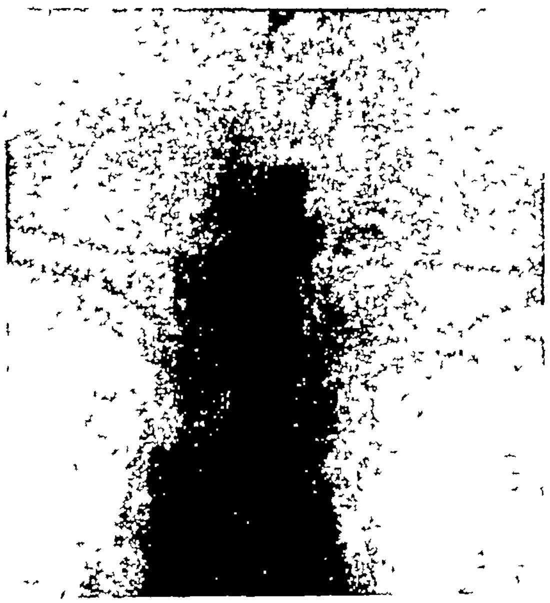

Fig 1

No abnormality was found on plain radiography of the neck and thorax A hold up of iodised oil following a swallow was demonstrated in the upper part of the œsophagus A barium swallow showed the spider's legs (fig 1)

At œsophagoscopy the foreign body was seen to be lying transversely across the lumen of the œsophagus with the springy legs embedded in the mucosa On pushing the body of the spider it rotated around the axis of the embedded legs, and was removed with ease (fig 2)

The dangers of this type of practical joke should be made fully known to the general public

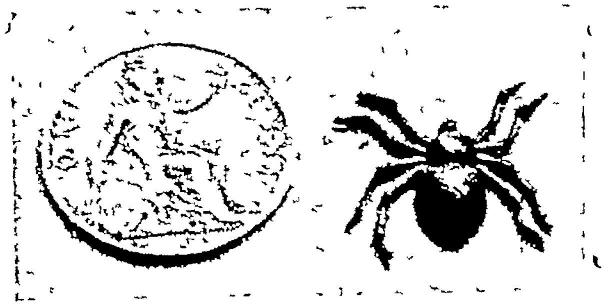

Fig 2

I should like to express my thanks to Mr C H Ta
for permission to publish the case and to Dr K. Mend
the radiographs

Morriston Hospital,
Swansea

D E STURD
Surgical Registr

DUAL CAUSE OF RAPID DEATH

SIR,—In his interesting article of Sept 24, Dr Fo
suggests that a reflex rise in blood pressure follo
cerebral hæmorrhage may have been responsible
rupture of an aorta already weakened by "mu
change" of the media He also cites 3 other cases w
a similar sequence of events had probably occurre

Arteries which have ruptured spontaneously gene
show the same morbid changes in the vessel
as are seen in cases of dissecting aneurysm[1,2] and
Shennan[3] states, a *sudden* increase in blood pres
may be sufficient to initiate dissecting aneurysm w
the vessel wall is already diseased I have seen 2 c
which lend further support to Dr Foster's propos
regarding the order of events Both were patients
cerebral hæmorrhage dying within 7 and 24 h
respectively of the onset of illness In the first ca
ruptured dissecting aneurysm of the splenic artery
in the second a simple dissecting aneurysm of the r
renal artery were found incidentally at necropsy
were evidently of very recent origin Microscop
examination of the affected vessels showed me
degeneration (increase in metachromatic ground
stance and depletion of muscle fibres) and it se
highly probable that the considerable elevation of
blood-pressure following cerebral hæmorrhage initi
disruption of the already weakened vessel walls

Pathology Department,
Western Infirmary, Glasgow, W 1

A J WATSO

GRAVES'S DISEASE

SIR,—The suggestion of Dr Taylor and Dr Willi
(Sept 10) that Graves was describing phæochro
cytoma with transient thyroid enlargement rather t
the disease which now bears his name, is of great inte
chiefly because it emphasises the similarity of the
disorders Their differentiation may be difficult,
recently cases[4–9] have been reported where phæochro
cytoma has been mistaken for hyperthyroidism
treated either by thyroidectomy or with thyroid dep
sants Davies,[9] whose account of such a case is the m
recent I have seen, finds it surprising that "in view
the similarity of the two syndromes this diagno
pitfall has not been more widely published" It sho
be mentioned that in none of these cases was thyr
enlargement a prominent feature, the diagnosis hav
been made on other signs and symptoms and, of cou
on the elevation of the basal metabolic rate

Though your correspondents' suggestion appe
plausible, a closer examination of Graves's orig
paper[10] reveals two arguments against it Firs
phæochromocytoma is a rare disease and thyroid enlar
ment, though it may occur more often than has be
reported or noticed, is nevertheless a rare complicatio
It is, therefore, most unlikely that Graves should ha
encountered, in a short space of time, 3 cases present
this rare complication of a rare disease—"I have lat
seen three cases " Secondly, in the course of
description of these 3 cases, he says "the size of

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1 Milne J A Graham, J G, Simpson J *Glasg med J* 19
31 206
2 Gore I, Seiwert U J *Arch Path* 1952 53 131
3 Shennan, T *Spec Rep Ser med Res Coun Lond* 1934, no. 1
4 Beer E, King, F H Prinzmetal M *Ann Surg* 1937 106
5 McCullagh E P Engel W J *Ibid* 1942, 116 61
6 Espersen T, Dahl Iversen, E *Acta chir scand* 1946 94
7 Hatch, F N Richards, V Spiegl, R J *Amer J Med* 19
6 633
8 Bartels, E C Arnold, W T *Lahey Clin Bull* 1949 6, 13
9 Davies J V S A *Brit med J* 1952, ii, 77
10 Graves R J *Lond med surg J* 1835, 7, 516

gland *at all times considerably greater than natural* was subject to remarkable variations When the palpitations were violent the gland used notably to swell " (italics inserted) It is clear from this that in these cases a further increase in size occurred in a gland already enlarged This is common in Graves's disease According to Zondek [11] a characteristic feature of Graves's disease is the liability to changes in the volume of the gland " Furthermore, as far as I am aware, in no case of phæochromocytoma as yet described has a permanent enlargement of the gland been reported

'Though Graves was wrong in attributing the thyroid enlargement to vascular engorgement his phrases an interstitial and sudden effusion into its substance 'the thyroid analogous to the tissues properly called erectile and "palpitation depending on functional disease of the heart exciting the swollen state of the thyroid all suggest this nevertheless, there can be no doubt that he did describe a condition which he considered a clinical entity characterised by thyroid enlargement and palpitation. For this reason and also because of the objections to the only likely alternative I would say that Graves was describing Graves's disease.

My second objection—namely that the thyroid enlargement in phæochromocytoma is transient, whereas in Graves's disease it is permanent—would be invalid if it could be shown, as it well might be now that our attention has been directed to this point, that Graves's disease is ushered in by a series of transient enlargements of the gland If we postulate an irritable or hyperreactive thyroid as the constitutional factor in this disease then these transient enlargements would represent readily induced reactions to minor emotional stresses, the chemical stimulus being provided by noradrenaline produced by the fluorescing cells of Eränkö [12] Sooner or later a major stress and therefore a more powerful stimulus from the adrenal medulla would bring about an exaggerated response from the thyroid the boundary line between morbid physiology and morbid anatomy would be crossed and permanent enlargement of the gland would ensue

That this is the probable sequence of events is suggested by the second and to me the more important part of Graves's paper

"Another fact well worthy of notice is that females liable to attacks of palpitations almost invariably complain of a sense of fullness, referred to the throat, and exactly corresponding to the situation of the thyroid. This sensation only continues while the paroxysm of palpitation lasts, and frequently is so urgent as forcibly to attract the patient's notice who now complains of its inducing a sense of suffocation. Here the interesting question occurs whether this feeling of something that impedes the respiration at the bottom of the throat, during the hysterical fit and which has been included under the general term *globus hystericus*—the question arises, I say whether this feeling is always of purely nervous origin. To me it appears probable that it is often induced by the pressure arising from a sudden enlargement of the thyroid, which enlargement subsides as soon as the fit is over Of this I am certain, that the lump in the throat of which such females complain, is often exactly referred to the situation of the thyroid; and indeed I have been told by other practitioners, upon the accuracy of whose observations I can rely that this swelling in the throat of females during the hysteric paroxysm has more than once excited their wonder

It is among these cases which astonished Graves's colleagues that the occasional case of phæochromocytoma with transient thyroid enlargement would be found Finally they would be cases of early Graves's disease

Finally it is worth recording that the relationship between emotional stress and thyroid enlargement had been noted by observant laymen centuries ago Though it may seem a far cry from phæochromocytoma to tests for virginity this paragraph from Havelock Ellis [13] is not irrelevant when we bear in mind that the proceedings of the wedding night might well prove a terrifying ordeal for all true (and unsophisticated) virgins

The ancient custom known in classic times, of measuring the neck the day after marriage was frequently practised to ascertain if a girl was or was not a virgin, There were various ways of doing this. One was to measure with a thread the circumference of the bride's neck before she went to bed on the bridal night. If in the morning the same thread would not go round her neck it was a sure sign that she had lost her virginity during the night If not she was still a virgin or had been deflowered at an earlier period. Catullus alluded to this custom which still exists or existed until lately in the South of France '

Johannesburg PERICLES MENOF

Medicine and the Law

More than Agents

IN 1948, leasehold property near University College Hospital tenanted by a business firm and purchased by the hospital in 1947 for future extensions, became vested as endowment property" in the board of governors under the National Health Service Act 1946 Just before the leases expired in March 1955 the tenants applied to the county court for a new lease under the Landlord and Tenant Act 1954 The board as landlords opposed the application on the ground set out in section 30 (1) (*g*) of the Act of 1954 that on the termination of the current tenancy the landlord intends to occupy the holding for the purposes of a business to be carried on by him therein The board had agreed to sell the premises to the Minister of Health when they obtained vacant possession and urgently needed them for hospital purposes The tenants contended that as the board intended to occupy the premises not in their own right but as agents of the Minister for the Minister's purposes they had not satisfied the condition in the Act of 1954 The county court judge refused to grant a new lease and the tenants appealed The Court of Appeal by a majority, Lord Justice Hodson dissenting dismissed the appeal and refused leave to appeal to the House of Lords

LORD JUSTICE DENNING said that the answer to the question whether the board intended to occupy these premises for the purpose of a business carried on by them depended on the real position of the governors in relation to the Minister under the National Health Service Act, 1946 Under that Act the board was entrusted with the task of managing and controlling the hospital on behalf of the Minister in accordance with such directions as might be given by him His Lordship could not agree that the board would occupy only as the Minister's agents for the board of governors of a teaching hospital were in a very *superior* position to that of an ordinary agent They were entrusted with the task of running the hospital themselves The Minister could not take that task out of their hands and run it himself They were in such a responsible position that they were the occupiers of the hospital. Their occupation was at least as high as that of the master of a ship or a bailiff who could bring an action of trespass in their own names whereas a mere servant could do no such thing On the definition of business in the Act it was plain that the governors intended to occupy these premises for the purposes of the activity carried on by them He would accordingly dismiss the appeal

LORD JUSTICE HODSON dissenting, said that the Minister had power under *section 57 of the Act of 1954* to prevent a new lease being granted where premises were needed for hospital purposes. He had not used that power and the *question* therefore was whether anyone had taken the right steps to prevent the tenants from getting a new lease His Lordship could not see any answer to the tenants argument that the board were agents of the Minister The language of the National Health Service Act and particularly of section 13 supported the view that the board were not in exercising their powers under the Act—extensive and important though those powers were—acting as principals If they were merely agents, the intended occupation was not that of the board but of the Minister, and the business to be carried on was that of the Minister and not of the Board in their own right He would have allowed the appeal

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[11] Zondek, H Diseases of the Endocrine Glands London 1935

[12] Eränkö, O Nature, *Lond* 1955, 175 88.

[13] Ellis, H Studies in the Psychology of Sex. Philadelphia p 201.

LORD JUSTICE MORRIS said that under the Act of 1946 the board, though subject to the Minister's directions, had a very special position The powers delegated to them were so ample that it was proper to say that they were the occupiers of the hospital for the discharge of their duties He would dismiss the appeal

Hills (Patents) Ltd *v* Governors of University College Hospital —*Court of Appeal* Denning, Hodson, and Morris, *L JJ* Oct 10, 1955 Counsel and Solicitors Roy Wilson, Q C, and Adrian Hamilton (Underwood & Co) Tristram Beresford, Q C, and R H Moylan (Pennington & Sons)

M M HILL
Barrister at Law

Public Health

Rehabilitating the Problem Family

COMMENTING last year on the case of a mother who was sentenced to six months' imprisonment for neglecting her 6 children,[1] we referred to various bodies—notably the Family Service Units and three homes—whose object is to save the problem family from disruption Of the homes which offer the mother training in mothercraft and housekeeping, Spofforth Hall, near Harrogate, was provided by the Elizabeth Fry Memorial Trust, which now reports on the third year's work[2]

When Spofforth Hall first opened, most of the families came on the recommendation of medical officers of health, and the report says "Families who came in this way were those whose home conditions were such that public action might need to be taken to separate the children from their parents unless timely and sympathetic help could be given" In 1953–54, medical officers of health sent 28 families, and only 3 were sent as the result of probation orders In April of last year, however, Spofforth Hall was approved by the Home Office as a home to which mothers convicted of neglecting their children could be sent as a condition of probation orders, and this has changed the type of family admitted, last year no fewer than 10 families were sent by the courts, and the number sent by medical officers of health fell to 19 The report adds "Whilst the Committee is glad to be able to provide a constructive alternative to a prison sentence for mothers convicted of neglect, they feel that greater effort should be made to offer help before this stage is reached" This change has also been financially inconvenient, because "payments for mothers and children who came to Spofforth Hall as a condition of a probation order are substantially less than those paid by health authorities, and very much below the actual cost of maintaining the family"

There is accommodation for 10 families at Spofforth Hall, and the average length of stay is about two months, mothers on probation must not leave under four months Fathers have stayed repeatedly with their families, and the warden has been able to give encouragement and advice to them, as well as to each mother

The committee says that "so far, all the families who have been to Spofforth Hall are, with varying degrees of success, maintaining their own homes and families," but it emphasises the need for cooperation from the local authorities in providing reasonable accommodation when the families leave The good work is liable to be completely undone if the mother has to return to a squalid home, where she is faced with all the problems which previously submerged her

Although local authorities contribute in keeping the families at Spofforth Hall, a large proportion of the expenses of this excellent work is met by bursaries, donations, and subscriptions

In considering how families can be prevented from breaking up, the Association of Children's Officers[3] makes three main points Better education for maladjusted and educationally subnormal children w
reduce the number of "inadequate and irrespon
adults" and "break the vicious circle whereby
generation of deprived children begets the ne
Secondly, the health visitor and education we
officer, who can now call on the health and educa
services, should be able to enlist the help of any of
social services (for instance, the housing authority
times of crisis in their families Finally, when the fa
has gone "from bad to worse" and its disruption se
imminent, the social worker should accept responsib
for what is beyond its ability Children's officers l
already proved the value of this family case-work,
the memorandum can say that "the number of chil
in public care is declining and the upward trend of
number of children coming into care has been arrest

Poliomyelitis

Uncorrected notifications of poliomyelitis in Eng
and Wales in the week ended Oct 8 (40th week) sho
the largest decrease so far this year, suggesting that
peak of the epidemic has been passed The figures
(39th week in parentheses) paralytic 186 (207),
paralytic 164 (180), total 350 (387) Regionally
figures decreased in all regions except the North Mid
and South Western regions and in Wales In Gre
London (excluding London county) Willesden notifi
further 6 cases and Enfield 4 No other borough
districts notified more than 3 cases The follo
figures give the total uncorrected notifications in
40th week during the past six years (percentag
paralytic cases in parentheses) 1950, 353 (68 3
1951, 96 (58 3%), 1952, 155 (66 6%), 1953, 176 (60 8
1954, 72 (62 5%), 1955, 350 (53 1%) The propo
of non-paralytic cases in England and Wales dro
still further to more normal proportions, but in 17 cou
non-paralytic cases were in excess of paralytic. In
so far the proportion of non-paralytic cases has
approximately 46 2% of the total The correspon
figures in the preceding four years were 1951, 41
1952, 29 8%, 1953, 34 6%, 1954, 32 8%

Second Quarter in Eire

Births registered in Eire during the second quart
this year[1] numbered 16,639, representing a birth
of 22 9 per 1000 population, which was 0 9 above
rate for the second quarter of 1954 Deaths tot
9699, which is equivalent to an annual death rat
13 3 per 1000 population—1 2 above the correspon
quarter last year Deaths from all forms of tubercu
numbered 236—a rate of 0 32 per 1000 populat
the corresponding rate in 1954 was 0 4 The mate
mortality rate was 1 1 per 1000 births registered
against 1 0 in the second quarter last year There
595 deaths of infants—an infant-mortality rate o
per 1000 registered births, which was the same as
year

Orange Drinks

Dr D Livingstone, speaking on behalf of the Leam
ton health department on Sept 16,[2] said that sale
orange-juice obtainable under the National He
Service had fallen by rather more than 10% in the
few months, and there had been a corresponding boo
the sale of proprietary orange beverages, which were o
delivered with the milk Many mothers might be tur
to the proprietary drinks believing that these contai
no less vitamin C He continued "Labels on the bot
describe the dairy-sold variety as a 'fresh orange dri
and I am told that one milkman asked a mother whe
she would like fresh orange-juice delivered Thi
misleading, to say the least"

Dr Livingstone informs us that the concentra
product obtainable under the N H S was found
contain 62 mg of vitamin C per fluid oz, wherea
beverage labelled "fresh orange drink" contained o
0 06 mg per fluid oz There is, he says, no suggest
that the labels on the bottles misrepresent the vitar
content, but it is not made clear that the drink i
pasteurised diluted solution of orange-juice

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[1] *Lancet*, 1954 ii, 637

[2] Third annual report of the Elizabeth Fry Memorial Trust To be had from the secretary of the Trust, Beverley House, Shipton Road York

[3] Helping Families Published by the Association of Children's Officers Copies can be obtained, post free, for 6*d* each from A S N Allison, 47, Full Street, Derby

[1] Quarterly Return of the Marriages, Births, and Deaths Obt
able from the Government Publication Sales Office, G.
Arcade Dublin. Pp 31 6*d*

[2] *Birmingham Post*, Sept 17, 1955

Obituary

MARGARET NELSON JACKSON

B M Oxfd D.P.M

On Monday of last week Margaret Jackson was working as usual in our office For more than fifteen years she has had a large share in forming and expressing the opinions of this journal on a wide range of subjects and we believe her contribution was as useful as it was skilful But we cannot reliably assess it we can do no more than indicate why we shall miss our colleague and our friend.

[Lafayette

Formerly slight and aquiline, at 51 she was a short, solid, almost portly, person with a liking for gay and elegant clothes. She had been she told us, an anxious, blushing and often miserable girl, but the years had made her more equable; and though she could still be indignant and occasionally sad she was usually both so kind and so cheerful as to be very reassuring and encouraging company These qualities of character are happily not so uncommon as to be highly remarkable in themselves; but Margaret Jackson also had a good brain artistic talents, and much determination She had a high tolerance for people but a low tolerance for unsatisfactory institutions. At her worst she wrote well and at her best superbly Her drawings were charming, she was a beautiful raconteur, and she loved acting and producing plays The sometimes passionate humanitarian feeling she showed was not something given by education or learnt from books or clergymen: it was her own In considering the effort she put into medical reforms and the sense of proportion she showed as a reformer it is not irrelevant to recall that her father was a Lancashire comedian and entertainer with the sensibility and sympathy this implies. She was early taught to laugh *with* people and though her own humour was exquisite she responded readily over a broad spectrum

From Nelson Jackson's home in Barnes, which was pleasantly full of sketches by fellow members of the Savage Club, his daughter attended St Paul's School for Girls, where she had won a scholarship Then like her brother, L. N Jackson of Crediton she decided on medicine and went to Oxford From Somerville College she came back to London for her clinical work and in 1929 she graduated from Charing Cross Hospital where she became house-physician The spirit of adventure took her to Egypt where she was medical superintendent of the Lady Cromer Dispensary in Cairo with the care of innumerable sick children After her return to England she made her first firm contact with this office by serving as secretary of the Lancet Commission on Nursing with Mrs. Kettle the hon secretary as her chief. But at this time there was no opening for her on our staff, and she returned to hospital work first at a private mental hospital and then for six years at the Fountain Hospital where she had charge of mental defectives These years were particularly fruitful and formative

When she first went to the Fountain she was depressed by the sight of the children for they did not look like ordinary children They looked odd and many had physical handicaps which made them awkward lame or clumsy But by the end of the first week she recognised them as full of character and interest and as different from each other as any other children Though their minds were not very bright they were active and gay, glad to use what wits they had and with a tremendous zest for enjoying small pleasures and joining in whatever fun was going Soon she began to use her inherited talent for stage-craft to provide more of these small pleasures for them and to allow them to develop their talents They loved music; many had a good sense of rhythm, and they were unselfconscious with an audience. They enjoyed singing and dancing and action games, and she organised little concerts and little plays which pleased both them and their relations She was able to do so much for them because she appreciated them as people Many of her patients (she often pointed out) were really much nicer people than the rest of us—affectionate, good humoured and generous, ready to please and be pleased Did we not in the outside world she sometimes asked, over-value intelligence and brisk efficiency?

She was interested in the nurses as well as the patients. In the early days they had helped her to see their patients as children and not as sad cases, and she recognised the value of their work. As one professional woman to another she offered them her friendship and her help The born nurse who was not good at passing exams found her a lucid coach who could explain anatomy and physiology clearly and simply and show its practical applications

But her interest did not stop at their work. Accustomed to use her own leisure constructively—"all leisure corrupts and absolute leisure corrupts absolutely," she once said—she encouraged their perhaps unsuspected interest in reading music, and dressmaking Much of this was done through her amateur dramatic society Before the war the Fountain pantomimes were winning more than local fame. Written, produced and mounted by Dr Jackson they successfully disrupted the routine of the hospital for several months of the year In turn these opportunities for producing and acting stimulated her, and in these years and at the beginning of the war she wrote several plays.

An entertaining murder play reflected the atmosphere, if not the practice of a hospital *Date with an Angel* perhaps her most successful was acted by an amateur company in Buckinghamshire during the war and may be done again in Essex Amateur dramatics at the Fountain became so thriving that Dr Jackson and her team decided to venture out of the hospital and start an amateur company in South London. Enterprising and resourceful, she bought a roomy barge for the club headquarters but the outbreak of war put an end to the enterprise and the *Sonia* had to be broken up at her moorings.

To the beginning of this period (1936) belongs her attractive book on the history of children's dress entitled *What They Wore* and embellished by her brother's verses Another book in which she collaborated is one of the best popular manuals of medicine—*Everyman in Health and Sickness*, written with Harry Roberts

Her entry to medical journalism began when she started to help Egbert Morland with his little monthly, *Maternity and Child Welfare* and in the summer of 1940 he brought her to *The Lancet*, which badly needed aid The time was an awkward one but the length and detail of a dramatic criticism which she wrote during June of that year suggest—not quite incorrectly—that she thought games of bowls ultimately more important than Spanish Armadas Rather more topically she had just produced under Morland's auspices what was described as "An Aylesbury Broadside" in which the case for family allowances was very agreeably presented. But unfortunately *The Lancet* at Aylesbury had a very small staff in a very small room; and Margaret Jackson's racehorse pen had to be heavily harnessed for the duller routine duties It did its utmost, but truth to tell she never became a really good subeditor When it was a question of reducing an interesting article of ten columns to a still more interesting one of five she was excellent; and it was incidentally impressive to see how much knowledge of clinical medicine she possessed and retained But Margaret Jackson lacked the obsessional interest in detail which is necessary if a journal is to give its pages a reasonably consistent appearance Nor had she the qualities of a supervisory editor: for her refusal to be swamped by routine went with a certain vagueness about getting next week's issue to press, about what we said a fortnight ago and even about her engagements On the other hand, she was a most able reporter, who at meetings on all sorts of subjects could write (in long hand) a report acceptable alike to speaker and reader, and she was the ideal person to send to any hospital, medical school, or other organisation which wanted people to know about something new it was attempting Above all, however, she was a brilliant writer of editorials, capable of picking up the dullest report and transmuting it into an exciting leader—as the fairy godmother turns the frog into a prince There was a danger admittedly that, because of her abundant interest in almost anything, the prince would prove to be triplets, but this was a risk any editor would have gladly run Her range was such that her editorials on mind and consciousness were on the highest level of scientific journalism, while her utterance on the perils of bicycling was read to his boys by the headmaster of a prep school

Without this artistry she could not have written so frequently, over the years, on the subjects on which she felt so keenly—especially the improvement of nursing, on the care of the tuberculous, of old people, and of mental patients, and on delinquency and prison reform These subjects, and others of equal importance, can easily be made tedious by repetition, but Margaret Jackson perpetually found fresh things to say—partly because she cared deeply and partly because her mind was so well stocked and so lively In her father's household (she used to say) jokes came *first*, and as a serious journalist it had been painful for her to learn that manner must be secondary to matter But the laughter and the imagery still came through, even if quite often they got no further than the editor's table The other day a draft leader on certification of mental disorders remarked of a certain procedure that it would have made all the difference to King Lear on the night of the storm. "Better out" she said. "Ah well" Nobody could write better on rehabilitation, and if she had had her way this inherently boring word would long since have been superseded by one more Anglo-Saxon Like the late Sir Edmund Spriggs, she introduced and propagated the word "reable" as a substitute for "rehabilitate," and some may remember her ingenious propagandist verses on "Able Seaman Able"[1]

As for the things she wanted to see done, she seemed to us to be generally talking very good sense Like her namesake, she knew when to turn a blind eye, and her refusal to see the difficulties in the foreground often gave her a clear view of the project on the horizon "But that's merely an economic problem Surely there could be no difficulty in solving that?" she once said, and this seeming imperception often served to make clear to others that an apparent impossibility was in fact not impossible but only expensive in time, effort, or money She was very far from being the vague or woolly-minded reformer Her ideas at first might not always seem practical, but they were always clear cut, and she was an acute, if sympathetic, critic of the ideas of others, especially when they were ill expressed, confused, and pretentious "I haven't been able to understand it yet" she said of a memorandum, "it's written in baronial Scotch" Her own style was simple, but this was deceptive, for, though she wrote fluently, she only began to write after hours of mental preparation as she sewed, cooked, or gardened—she enjoyed all these occupations—she would be turning over the opening paragraphs of an article in her mind. Because her ideas were so lucidly expressed, the careless reader might underestimate them To illustrate a point, she often used a homely metaphor, an everyday allusion, or a frank joke, and she sometimes ran the risk of not being taken seriously But what she wrote stayed in the memory and she was probably right in her belief that "it's always our lightest word that has any effect"

For a leader-writer, of course, there must be bounds to originality But fortunately her letters, at least, escaped any kind of editing Though they may sometimes have surprised the recipients, they were often enchanting—those to her godchildren on their joint official birthday on Midsummer Day for example. "It is perfectly safe," she remarked, "to give any advice to children They never take it" Of recent years our departing secretaries have usually had a very prett Jackson poem with their handbags, "In England Now has been brightened by the vicissitudes of her cats, sh has done some broadcasting, and various national bodie including Ufaw, a Ministry, and the Mental Healt Research Fund have had her help in persuading th public into something it ought to be doing For a lon time her health has had ominous features, but she alway paid the least possible attention to disabilities, and the did not prevent her living an arduous and complex li involving a lot of motor-driving—the kind of life whic she presumably preferred since she continued it in h holidays In the intervals she made charming hom and gardens successively in most of the Home Countie and visitors found that her cooking almost equalled h conversation. As if all this were not enough, her frien might hope to be startled at Christmas by the arriv of (let us say) a scrapbook made specially for them, some objet-d'art such as her admired Florence Nightinga rendered in limpet shells Whatever she made would b a treasure

In this office for a long time to come we shall kee on remembering wise things and funny things that sh said Some were for internal consumption—such as he elegant comment on a contribution which does not see to have carried full conviction

> "Like a heron in the twilight, this seems to skim obscurel over the surface of a lot of deep water"

But on the subjects nearest her heart much of what sh had to say has been shared with our readers, and thi makes us think it likely that, though Margaret Jackso will never be classed among the famous reformers, sh has in fact done a great deal to enlarge the thoughts an sympathies of others besides ourselves

JAMES MARTIN BEATTIE

M A N Z, M D Edin., D Sc N U I

Dr J M Beattie, emeritus professor of bacteriolog in the University of Liverpool, died on Oct 12 He wa 87 years of age, but he is still widely remembered as a outstanding teacher

He was born in 1868, the son of William Beattie o Alexandra, New Zealand, and after graduating M.A. wit first-class honours at Otago University, he came t Edinburgh to study medicine In 1894 he graduate M B, again with first-class honours He continued hi studies at University College, London, and in 1900 h was awarded a gold medal for his M D thesis at th University of Edinburgh From 1901 to 1907 he held the post of senior assistant to the professor of pathology and lecturer in pathological bacteriology at Edinburgh O H W, who attended his classes, confirms that Beattie was already an excellent teacher

"His description of the microscopic appearances of sections of pathological tissue, as we looked at a section under the microscope, was lucid and impressive Histopathology could not be better taught than the way in which he did it. His teaching of bacteriology was fascinating and I well remember the thrill the class had when on one occasion we were shown a culture and stained slides of a new organism that had been brought over from Paris It was called the *Micrococcus neoformans* and was supposed to be the cause of carcinoma Unfortunately the cause of cancer was not to be so easily revealed. Later when I reminded Beattie of th incident, he said that he had soon come to the conclusi that the organism from France was nothing more noteworth than the *Staphylococcus albus* My contemporaries w remember that he was pathological editor of Choyce's *Syst of Surgery*, a book that in its day was read by most aspira to higher degrees in surgery We students greatly admir his quiet charm and had the greatest respect for his integri He stood high in our affection"

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[1] *Lancet* 1945, i 509

During these Edinburgh years he published several papers on the bacteriology of rheumatic fever and began his collaboration with the late W E Carnegie Dickson on their book on pathology The volume on general pathology first appeared in 1908 and the volume on special pathology a year later The two were later combined to form the *Textbook of Pathology* that for many years was the standard work in pathology in this country

In 1907 Beattie was appointed to the chair of pathology and bacteriology at Sheffield and during the five years that he held that appointment he was also dean of the medical faculty In 1912 he accepted the chair of bacteriology in the University of Liverpool and he held this appointment until he retired in 1934 T Ll H , who was both an undergraduate and postgraduate student of his at Liverpool, writes

> Beattie made his lectures vividly interesting but it was in the practical laboratory work especially with postgraduate and D.P.H. students, that he was at his best Here his courteous and kindly personality were used to good effect in instilling enthusiasm for a rapidly developing subject into his students while always ensuring the need for meticulous care and accuracy in the work. His spare white-coated figure moving from bench to bench was a joy to see and his approach was regarded by all as a pleasurable interlude in the laboratory routine. A careful painstaking honest worker himself he inevitably left his imprint on those working with him and gave them a firm foundation on which to build in the future."

In Liverpool Beattie continued his studies on the causal relation of streptococci to acute rheumatic disease and became interested in the pathology of the dust diseases and their relation to tuberculosis. His Liverpool chair carried with it the duties of city bacteriologist and these turned his attention to public-health bacteriology His later papers dealt with bacteriological diagnosis of anthrax, cerebrospinal meningitis tuberculosis due to milk, sterilisation of milk bacteriology of water-supplies, and similar topics. In recognition of this part of his work in 1933 the National University of Ireland conferred on him an honorary D.SC in public health Though he made considerable contributions to bacteriology in its relation to public health, it is perhaps his share in the *Textbook of Pathology* that will ensure his place among our eminent pathologists. In his retirement he gave much time and care to the revision of later editions of this book, the fifth of which appeared in 1948

A year after his retirement from the University of Liverpool he was invited to take charge of the department of pathology in Aberdeen during the illness of the late Professor Shennan. Beattie thoroughly enjoyed this return to teaching An Aberdeen colleague recalls his popularity among his foster students.

> "He was a very good teacher his lectures were clear simple and concise and although with undergraduates he may have been rather dogmatic his teaching to postgraduates was thorough, discursive and stimulating His tall lean slightly stooping figure rather belied a very warm nature of which a most engaging chuckle gave frequent outward expression. His was a many-sided likeable personality and he enjoyed a very happy family life

Professor Beattie married Margaret, second daughter of the late Thomas Kettle of Kilmarnock. She survives him with a son and a daughter The son is a surgeon on the staff of the medical school of Liverpool University

ALEXANDER LIVINGSTON

M.B., M D.S. Lpool

Dr Alexander Livingston formerly sub-dean of King's College Hospital Dental School, London and later principal of the Queensland College of Dentistry, died in Oxford on Sept. 28 at the age of 61

He was born in Glasgow in 1894 and was educated at Wellington High School near Liverpool and at Liverpool University Although lame from childhood, he enlisted in 1914 for special service with the Royal Engineers in connection with wireless signalling He returned to Liverpool in 1916 to finish his training and he took the B.D.S. in 1918 and was appointed dental surgeon to the Liverpool Royal Children's Infirmary He proceeded to the M.D.S. degree in 1919, and the M.D two years later

Livingston became a member of the committee appointed by the British Dental Association in 1922 on diet and its relation to the teeth and the subject remained his main interest throughout his life The following year he was appointed sub dean and director of dental studies at the new dental school of King's College Hospital He organised the new school with great energy and originality of mind, and by 1931 it was one of the most advanced of its kind He was also lecturer in dental surgery and pathology in the University of London, and in 1927 he was appointed consulting dental surgeon to the London County Council, and was medical officer for the council's sixty three children's dental treatment centres His publications in these years included reports on his research into the incidence and cause of dental caries, and a handbook of *Dental Histology* (1920)

In 1931 he became principal of the new Brisbane Dental Hospital and of the Queensland College of Dentistry in the University of Queensland Together these posts gave scope to his gifts as lecturer teacher and organiser, and he took a large part in designing the new dental hospital at Brisbane. He was examiner to the Universities of Queensland and Melbourne, and as a result of his work on cancer of the mouth he was invited to become a member of the advisory medical committee of the Queensland Cancer Trust.

In 1934 he returned to England, and to private practice, and at first settled in Southampton where his interest in research and in dental administration persisted, though his work was often interrupted by ill health He published his observations on diet in relation to gingivitis in 1945

His last years were spent in Oxford

A colleague writes Apart from his almost international outlook on dentistry Dr Livingston maintained a keen interest in local affairs, in his old students, and in much else besides : he had a wide scientific and humanitarian knowledge he was a competent model engineer a lover of birds of books, and music, and a gardener ; and his fondness for painting in oils tiny glimpses of his native land gave, and gives, pleasure to many "

He married in 1926 Miss Margaret Aubrey Edwards, who survives him with a son and a daughter

LEWIS CHARLES THOMSON

M.B , Ph D D.Sc Lond

Dr L C Thomson, director of group research in the physiology of vision under the Medical Research Council died on Oct. 10 at the age of 42

Educated at Sherborne and Guy's Hospital he graduated M.B in 1938 In 1939 he joined the teaching staff of the anatomical department at Guy's, but moved two years later to the physiological department where he was assistant lecturer until 1947 During the latter part of this period he worked with W D Wright at Imperial College on problems of colour vision Because of his success in this field Prof Hamilton Hartridge invited him to join the newly formed vision research unit of the Medical Research Council at the Institute of Ophthalmology On Hartridge's retirement in 1951 this unit was reconstituted as the council's group for research in the physiology of vision with Thomson at its head In this position he was triumphantly successful and during the last four years the group has become a nucleus for much of the most active research into the problems of visual physiology to be carried out in this country In 1947 Thomson was one of the small unofficial group which organised the extremely successful International Conference on Colour Vision held in Cambridge and he was chairman of the colour group of the Physical Society from 1953 to 1955 and a member of the joint committee on lighting and vision of the Medical Research Council and the Department of Scientific and Industrial Research He was Ettles Memorial Lecturer for 1955 and his general writings on vision included a useful review on colour perception published in *Ophthalmic Literature* in 1952 and chapters in the second edition of Murray's *Colour*

A colleague writes "Undoubtedly Thomson's most important work was the series of investigations he made on colour sensitivity, using for stimulation, retinal fields subtending 15 to 20 minutes of arc as opposed to the more usual 1 or 2 degrees By this means he showed that the presence of the colour-sensitive retinal mechanisms presumed to exist on the basis of colour-mixture data could be demonstrated under conditions which had hitherto suggested homogeneous activity These results are of fundamental importance in colour-vision theory His ability as an organiser was exceptional, and unlike many able administrators he was also unusually kindly and his even temper and unruffled good humour in the face of difficulties made him an extremely pleasant colleague"

Dr Thomson leaves a widow and two sons both still at school

Diary of the Week

OCT 23 TO 29

Monday, 24th

University College, Gower Street, W C 1
5 P M Prof F B Straub (Budapest) Synthesis of Amylase in Cell free Systems

Royal College of Surgeons of England, Lincoln's Inn Fields, W C 2
5 P M Prof B Mukopadhya The Rôle of Excisional Surgery in the Treatment of Bone and Joint Tuberculosis

Postgraduate Medical School of London Ducane Road, W 12
4 P M Dr J Pepys Current Views on Bronchial Asthma

Royal Society of Medicine, 1 Wimpole Street, W 1
5 30 P M *Odontology* Prof H H Stones Facial Pain (Presidential address)

Manchester Medical Society
9 P M (Medical School, University) *General Practice* Dr Richard Asher Things Are Not What They Seem

Tuesday, 25th

Royal Society of Medicine
8 P.M *Medicine* Dr G E Beaumont The Clinical Approach (Presidential address)

St Mary's Hospital Medical School Paddington W 2
5 P M Mr Howard C Hanley Urological Problems during Pregnancy

West London Hospital Medical School
5 30 P M (Royal College of Surgeons) Dr Russell Fraser Tests of Thyroid Function (Alex Simpson Smith lecture)

Institute of Obstetrics and Gynæcology
3 P.M (Chelsea Hospital for Women, S W 3) Mr F C Dwyer Backache

Institute of Neurology
5 30 P M (National Hospital, Queen Square, W C 1) Dr J St C Elkington Headache

Institute of Dermatology, Lisle Street W C 2
5 30 P.M Dr O L S Scott Systematised Nævi

Wednesday, 26th

Royal College of Surgeons of England
5 P M Dr J J Stevenson Studies of the Movements of the Urinary Tract in Health and Disease as shown by the Image Intensifier (Film)

Royal Society of Medicine
5 P M *Endocrinology* Dr A C Crooke Measurement of Pituitary Function (Presidential address)

Postgraduate Medical School of London
2 P M Prof N H Martin Plasma Proteins

Institute of Diseases of the Chest Brompton Hospital, S W 3
5 P.M Dr F H Young Pathogenesis of Tuberculosis

Institute of Dermatology
5 30 P M Dr R W Riddell Diagnosis of Ringworm Infection

St Mary's Hospital
5 P.M Prof John Squire The Nephrotic Patient

St Marylebone Hospital for Psychiatry and Child Guidance 48 Cosway Street N W 1
5 30 P M Dr J Flind The Psychosomatic Syndromes

Renal Association 41 Portland Place, W 1
4 30 P M Short papers

Royal Institute of Public Health and Hygiene 28, Portland Place, W 1
3 30 P.M Dr J A Dudgeon Recent Advances in the Control of Poliomyelitis

Birmingham Medical Institute 134 Great Charles Street 3
8 P M *Psychiatry* Prof R W Russell, PH.D Some Effects of Certain Biochemical Lesions' on Behaviour

Royal Faculty of Physicians and Surgeons 242 St Vincent Street Glasgow C 2
5 P.M Dr R L Richards Peripheral Vascular Disease—The Arteries

Thursday, 27th

Royal College of Surgeons of England
5 P M Prof K F Russell John Browne—1642-1702 (Thomas Vicary lecture)

British Postgraduate Medical Federation
5 30 P.M (Senate House, University of London, W C.1) Sir Wilfrid Le Gros Clark, F R S Hypothesis and Speculation in Scientific Research (First of fifteen lectures on the Scientific Basis of Medicine)

University College
5 P M. Professor Straub Mechanism of Active Transport of Potassium in the Human Erythrocyte

Royal Society of Medicine
8 P M *Urology* Mr David Band Management of Genito-urinary Tuberculosis in a Special Hospital (Presidential address)

Nuffield Orthopædic Centre, Wingfield Morris Orthopædic Hospital, Oxford
8 30 P M Prof C D O'Malley Contributions toward the Discovery of the Circulation of the Blood in the 16th Century

Liverpool Medical Institution, 114, Mount Pleasant, 3
8 P.M Dr D Lehane, Dr M McCarthy, Dr C. A. St Hill The Uses and Abuses of Blood

University of St Andrews Queen's College, Small's Wynd, Dundee
5 P.M Mr D J Browne Classification and Treatment of Congenital Deformities

Friday, 28th

Royal Society of Medicine
5 P.M *Pædiatrics* Dr J Vernon Braithwaite Problems Connected with Enuresis (Presidential address.)

Postgraduate Medical School of London
2 P M Mr J Swinney Hydronephrosis

University of Edinburgh, *University New Buildings, Teviot Place* 8
5 P.M Sir William Macarthur History of Malaria

Saturday, 29th

Institute of Obstetrics and Gynæcology
11 15 A.M *(Hammersmith Hospital)* Prof A S Duncan Vulvitis and Vaginal Discharge

Institute of Orthopædics
10 30 A.M *(Mount Vernon Hospital)* Mr R L G Dawson Plastic Surgery in Orthopædics

Appointments

Barron, D W, M A Belf, F F A R C.S anæsthetist at hospitals managed by the S Tyrone, S Armagh and St Luke's H.M.C.

Garrett, M J, M B N U I, D.M R T whole time asst. radiotherapist, Liverpool Radium Institute

Howard, A C M D Lond M O H, Wem, Ellesmere, and Whitchurch

Mackey H M, M R C.S appointed factory doctor, Stamford, Lincoln

Williams, H O, M CH ORTH Lpool, F R C.S part time consultant orthopædic surgeon, Whiston Widnes Accident, and Rainhill Hospitals

South-Western Regional Hospital Board

Akehurst, A. C, M B Lond, F R C.S senior surgical registrar, Exeter clinical area and United Bristol Hospitals

Leigh H I M B Brist surgical registrar, Taunton and Somerset Hospital

Seager C P, M B, B.SC Wales, D P M senior psychiatric registrar, Bristol Mental Hospitals

The Hospital for Sick Children, Great Ormond Street, London

Evans, Beatrice M, M B Lond, D.A resident anæsthetist, Tadworth Court

Haas, Leonard, M A, M.D Camb, M R C P D C.H asst medical registrar

Holborow C A, M.A M B Camb D L.O senior registrar to the E N T department

Rhodes, Ellen L, M B Leeds, D C H house surgeon, orthopædic and plastic department

Somers K, M.B Witw'srand, M R C.P house physician

Births, Marriages, and Deaths

BIRTHS

Diggory—On Oct 11, at The Old Court Clinic, Hanger Lane, Ealing to Patricia and Peter Diggory of 10, Campden Hill Square London W 8, a daughter

MARRIAGES

Moncrieff—Wedmore—On Oct 15, quietly at Beckenham, Alan Moncrieff, O B E, M D F R C P, J P to Mary Wedmore

DEATHS

Jackson—On Oct 14 at the London Hospital, Margaret Nelson Jackson B M Oxfd, D P.M an assistant editor of *The Lancet*, aged 54

Notes and News

OLD ANATOMICAL THEATRES

AT the opening meeting of the Manchester Medical Society on Oct 5 Dr William Brockbank, the new president, gave an address on Old Anatomical Theatres and What Happened Therein. Beginning with the construction of temporary theatres he described the change to permanent accommodation and dealt especially with the theatres at Padua, Leyden, London, Bologna, and Pavia. He described the showmen and the showmanship. An anatomical demonstration was more of a theatrical occasion than a lesson and was often attended by the outstanding personalities of the town and members of the general public of both sexes. Nevertheless the theatres were without doubt the first laboratories and the first places in which scientific research was carried out. They were the rooms in which anatomy developed from a crude to an exact science, thus paving the way for the work of the physiologists. Many great teachers spread their knowledge from these old buildings. The beautifully illustrated textbooks of Vesalius, Eustachius, Bidloo, Scarpa, and Albinus, to name only a few, came from them. Physiology, and for that matter modern medicine too, were born in one of them when Fabricius supplied Harvey with the idea that led him to the discovery of the circulation of the blood. Physiologists used them, for Galvani demonstrated his experiment with electricity on the nerves of the frog in the theatre at Bologna. Morgagni, working and teaching under adverse conditions, founded the science of pathological anatomy. Last but by no means least, countless generations of medical students had learnt at first hand the detailed architecture of the human body and the correlation of post-mortem findings with clinical observations. And if carnival masks, flute players, and banquets supplied some light relief to the story they in no way detracted from the great importance of the rôle of the theatres of anatomy in the history of medicine.

EPILEPSY IN THE YOUNG

FROM Oct 6 to 12 fifteen specialists from nine countries met in London under the auspices of the World Health Organisation to discuss juvenile epilepsy. Among their recommendations was the formation of diagnostic and treatment centres with modern methods of treatment. In the future fewer and fewer children, they believed, would need even semipermanent institutional care and the emphasis should be on integrating handicapped children as far as possible into the community. Possible prophylaxis against the effects of birth injuries and infections of early childhood was also discussed. Members of the conference included Prof Fraser Brockington, Dr Romanes Davidson, Prof J R Hargreaves, and Dr Peter Henderson.

A NEW INDUSTRIAL MEDICAL CENTRE

THE Shell Petroleum Company has built a medical centre to provide "on the spot" treatment for the 4000 personnel employed at its refinery at Shell Haven in Essex. Since the centre was opened three *months ago nearly 4000 treatments* have been given, including 300 to eye casualties, and 95 patients have been sent either home under the care of their own doctors, or to hospital. The aim of the centre is to give round-the-clock medical attention to employees so that they need not leave the refinery, but there is no question of usurping the functions of the general practitioners or the hospitals, with whom there is close liaison. Treatment started outside the refinery, such as the daily dressings of wounds and physiotherapy, can be continued in the centre, thereby easing the burden of the local doctors and saving man hours.

The design of the centre is functional, and the inside walls are painted in a variety of bright colours (a scheme which has been found to reduce fatigue and bolster morale in the engine-rooms of the company's tankers). The centre, which is planned to reduce the patient's waiting time as far as possible, is divided into three compact units: a treatment area; specialist rooms; and a group of rooms for investigation, including an X-ray room, a small laboratory, and a waiting room. The treatment room is divided into two sections—one for "dirty" surgery and the other for "clean" surgery and burns. A recovery room, to which a badly injured patient can be taken straight from the ambulance, adjoins the treatment-room and the X-ray department. Certain specialists working under the National Health Service attend regularly and there is accommodation in the specialist rooms for an ophthalmologist, an optician, and a dentist. There is also a physiotherapy room and a one-bed ward.

Chest radiography, urine testing, and blood-counts are regularly carried out on all men handling dangerous chemicals such as benzine and tetra-ethyl lead, and new entrants and employees going abroad are routinely checked.

The staff consists of the refinery doctor, the sister in-charge, two nurses, a combined radiographer and laboratory technician, a secretary, and four first aider/drivers.

University of Oxford

At a congregation held on Oct 11 it was resolved to confer by decree the degree of M.A. on Surgeon Rear Admiral James Hamilton, director of postgraduate medical studies in the university.

University of London

At a recent examination for postgraduate diplomas the following were successful:

D C P—Ram Prasad Agrawal, C de V Bevan, Ethel A. V Brooks, Israel Chanarin, P J Dawson, L W Duchen, J C B Fenton, J S Gordon, M. U Henry, T P S Mulligan, Chandawimala de Silva Muthucumarana, Jack Rusius Kanagaratnam Shanmugaratnam, R W Snyder, P J Stevens, R. C. Taylor, Rai Ranendranath Chaudhuri, Hla Thein, S O Waller, D C. Watler.

D I H—Cezary Cywinski, Ponniah Nadarasa, Mulaniol Ittyrah Vaikki.

University of Birmingham

The title of reader in pathology has been given to Dr D B Brewer. Dr O H Wolff has been appointed first assistant to the chair of pædiatrics and child health, Dr B D Bower lecturer in pædiatrics and child health, and Dr J M. Bishop lecturer in medicine.

University of Leeds

The annual dinner of the past and present men medical students of this university will be held at 7.30 P.M. on Friday, Nov 25, in the Hotel Metropole, Leeds. Further particulars may be had from Mr James Dowson, hon. secretary, School of Medicine, University, Leeds, 2.

University of Durham

Dr Martin Roth has been appointed to the chair of psychological medicine in succession to Dr Alexander Kennedy, who has become professor of psychiatry in the University of Edinburgh.

Dr Roth, who is 37, qualified from St. Mary's Hospital in 1941, took the M.B. Lond. in 1943, the M.R.C.P. the following year, and the M.D. Lond. in 1946. He was house-physician at a St. Mary's Hospital medical unit at Basingstoke and held registrarships at the Maida Vale Hospital and the Maudsley Hospital in London before he was appointed as a psychiatrist at the Crichton Royal, Dumfries, where he was also in charge of the department of electro-encephalography. He has held his present appointment as director of clinical research at Graylingwell Hospital, Chichester, since 1950. In 1954 he was visiting lecturer and director of a department at the Allan Memorial Institute of Psychiatry at McGill University, Montreal. In 1951 he was awarded the Burlingame prize of the Royal Medico-Psychological Association for his study of the mode of action of convulsive treatment. His other published work includes papers on mental disorder in old age, the effects of parietal lobe lesions, and clinical electro-encephalography. He is one of the authors of the textbook *Clinical Psychiatry* which was published last year.

Royal College of Surgeons in Ireland

On Oct 14 the licence in midwifery and surgery of the college was conferred on Jean le Brocquy.

Society of Apothecaries of London

On Wednesday, Nov 16, Sir Zachary Cope will give the first Gideon De Laune lecture, when he will speak on the Society of Apothecaries and Medical Education. The lecture will be given in the hall of the society and will begin at 5.30 P.M.

Kettle Lecture

Prof J H. Dible will deliver the Kettle lecture on Friday, Dec 2, at 5 P.M. in the Institute of Pathology, Royal Infirmary, Cardiff. He is to speak on Ischæmia in the Peripheral Circulation.

Association of Clinical Biochemists

At the annual general meeting of the association on Oct 1, the following officers were elected: president, Prof N F Maclagan; chairman, Dr C P Stewart; treasurer, Dr I. MacIntyre; secretary, Dr A L. Tárnoky, Royal Berkshire Hospital, Reading. The annual general meeting of the southern region of the association will be held on Saturday, Nov 5, at Stoke Mandeville Hospital, Aylesbury.

Royal College of Surgeons of England

At a meeting of the council on Oct 13, with Mr Julian Taylor, the senior vice president, in the chair, Mr R P Scott Mason (Birmingham) was admitted as vice president, and Mr A C H Bell (Westminster Hospital) was admitted as a coöpted member of council for 1955–56, representing gynæcology and obstetrics Dr J B Walter was appointed senior lecturer in pathology Handcock prizes were presented to M. A. Harper (Birmingham) and J L McClure (London Hospital) P E Copus (Cardiff High School and Cambridge University) was admitted as a Macloghlin scholar

Diplomas of membership were granted to S T G Butterworth and R B Jenkins, and diplomas in child health, jointly with the Royal College of Physicians, to the following

Eoin Aberdeen Iqbal Ahmed, Barbara D Allen, Mary L Assinder P J C Barry, P F Benson, Adela M. Blair, P O Bodley, Margaret M. Boylan, D R Boyns, E P Brasted Margaret H Buston, J C D Callander, Leela Chacko, Marot Champion, Beatrice S Chinniah, Keitha Corlett, Elizabeth J Coulter, Deborah M. T J Cronin, Gerwin S D Davis Dennis Dean A. S H de Silva, J J H Eastwood, M A. Fernando, K C Finkel, K M. Fraser Mary I Gibbons R M. H Gompertz Georgina Gorman Irene M. Ibler Alline M. W James Agnes M T Kelly W P Kennedy, M A Kibel, J F King Mary F Knight, Kim Siong Lim, Audrey M. Lowry, Lena M MacBean Morag S Macdonald Elizabeth U Macgregor, M B McKerrow, Valerie C Magner, Ma Ma Tin, Margaret B Manson H A Martinson Muhammad Saleh Abutalib Memon, D H Miller, J M. Morfitt, D C Morley, Patricia E Mortimer, Karunasena Jagodage Nanayakkara, Margaret A Norman, Irene F Osmund Dorab Jehangir Patel, Mary C Peard, Patricia M Perera, B W Petty, Harold Price Elizabeth Pryce Jones, E J Raffle, Bapu Raghavendra Rama Rao, Mary Rennie, D J Robinson Jagat Narain Rohatgi Patricia A Russell, Wedad Salama Rajeswary Sathasivam, Ian Schneideman, Marjorie E J Shafto, Lorna J Shankland Rita W Shannon, Gopal Sharan, Gwyneth M Stevens Dorothy A Sutherland, G B Taylor, Arthur Trueman, Chinnamma Varkki, J D Waldman, Elizabeth H M Walker Barbara A Wallace Patricia G Wallis, Coral I Welch Margaret S I Williams, Meriel Williams V G Wills A. C Woodmansey

On Thursday, Nov 10, Prof L Deloyers, of Brussels, will give the Moynihan lecture on a New Curative Operation for Peptic Ulcer—Reversed Gastrectomy On Wednesday, Nov 23, Prof B L McFarland will deliver the Robert Jones lecture He has chosen as his title The Crooked Tree Both lectures will begin at 5 P M On Thursday, Nov 3, at 3 30 P M, Dr M H Armstrong Davison will give the Frederic Hewitt lecture of the Faculty of Anæsthetists His title is to be Ut non Percipiatur Dolor All the lectures will be held at the college, Lincoln's Inn Fields, London, W C 2

Medical Films

The *Presse Médicale* is this year again offering prizes for amateur medico surgical films Applications for further details should be sent as soon as possible to the offices of the journal, 120, Boulevard Saint-Germain, Paris, VI

Research Defence Society

On Wednesday, Nov 16, at 5 30 P M Sir Henry Dale, O M, F.R S, will deliver the Stephen Paget lecture He is to speak on Humanity's Rising Debt to Medical Research The lecture will be given at University College, Gower Street, London, W C 1

The Handicapped Child

A conference on this subject is to be held at the Highgate wing of the Whittington Hospital, Dartmouth Park Hill, London, N 19, on Saturday, Oct 29, at 2 P.M, when Dr Ronald Mac Keith and Dr Ann Mower White will speak.

Royal Free Hospital Medical Society

The inaugural meeting of this society will be held at the medical school on Thursday, Oct 27, at 6 30 P M The chair will be taken by Sir Daniel Davies, president of the society, and the inaugural address will be given by Sir Lionel Whitby, regius professor of physic in the University of Cambridge, who will speak on Medicine and Medical Societies The society has been formed to promote unified activity, in extra-curricular matters of medical interest, of the staff and the students of the Royal Free Hospital Group and of the Royal Free Hospital School of Medicine

Exhibition on Mental Health

Sir Walter Monckton, Minister of Labour and National Service, and Mr Iain McLeod, Minister of Health, will together open this exhibition at the Central Hall, Westminster, at 11 A M on Monday, Nov 7 The aim of the exhibition is to dispel misunderstanding and ignorance about mental illness and mental deficiency It will be open to the public from 2 P M to 6 P M on Nov, 7 and then daily from 10 A M to 6 P M till Nov 12

Congress on Dietetics

The second International Congress of Dietetics is to be held in Rome from Sept 10 to 14, 1956

British Psychological Society

On Wednesday, Oct 26, the medical section of this society will meet at 1, Wimpole Street, London, W 1, to hold a symposium on Jung's Contribution to Analytical Thought and Practice

Christian Medical Education in India

A meeting is to be held on Tuesday, Nov 1, at 5 30 P.M., at 26, Portland Place, London, W 1, in connection with the work at Vellore and Ludhiana Medical Colleges. Dr C C. Chesterman will be in the chair Invitation cards may be had from the secretary, Medical Missionary Association, 31, Bedford Place, W C 1

St Thomas's Hospital

The old students' dinner will be held at the Royal College of Surgeons, Lincoln's Inn Fields, London, W C.2, on Thursday, Nov 10, at 7 30 P M Dr R C Jewesbury will be in the chair Tickets (£1 11*s* 6*d*) may be had from the hon secretaries at the hospital

West End Hospital for Neurology and Neurosurgery

The medical staff of the West End Hospital for Neurology and Neurosurgery gave a dinner on Oct 7 to celebrate the reopening of the hospital at 91, Dean Street, W 1 Dr T. Rowland Hill, chairman of the medical committee, presided and the guests included Lord Bruntisfield, patron of the hospital, Sir Russell Brain. P R C P, and Sir Ernest Gowers. Sir Russell, proposing The Hospital, said that surely no hospital could have suffered more complete destruction than the West End Hospital Yet those who believed in it, both laymen and doctors, fought that it should survive, and their faith has been justified In its new home the hospital would more than maintain its long tradition of service to its patients and to neurology Sir Russell observed that some people had suggested that the need for special hospitals was passing, and that the work they did could be done equally well in the special departments of general hospitals He thought that was quite untrue each was indispensable The special department had the advantage of bringing a specialty into close relationship with general medicine, but the special hospital allowed interplay between many minds occupied with different aspects of a subject, and for this there was no substitute as a training for specialists and, indeed, as part of the continued education of the specialists themselves It was also a centre which could teach the non specialist where the specialist could help him, and that was very necessary in neurology today Sir Russell referred to a "most serious gap" in the hospital and consultant part of the National Health Service—the lack of sufficient neurologists There were large and important areas of the country with no neurological consultant, and where, therefore, the patient was not getting the comprehensive service he was promised, and for which he was paying. And the obverse of this was the unhappy group of trained and experienced neurologists who could not get the consultant work they needed and which needed to be done Sir Russell coupled the toast with the name of Dr Rowland Hill, and he spoke warmly of Dr Hill's courage and clarity in the deliberations of the Central Consultants and Specialists Committee and the Joint Consultants Committee In his reply, Dr Rowland Hill recalled some of the physicians and surgeons in the history of the hospital, and he said that their Ulysses like qualities of courage and endeavour were needed today Speaking of future plans, he said there were hopes that a separate long stay unit would be acquired soon for neurological patients Mr Geoffrey Knight proposed The Guests, and Lord Bruntisfield replied

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Mr Frank Law has been elected master of the Worshipful Company of Spectacle Makers

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CORRIGENDA *West Midlands Physicians Association*.—The date of the autumn meeting of this association is Saturday, Oct 22 (not Oct 21 as stated in our last issue)

Osler's Oxford House.—The Osler Club was responsible only for the plaque which was unveiled on Oct 8 (*Lancet*, Oct 15, p 831) The reopening of Osler's house and the arrangements for its use were made by Prof A D Gardner and the officers of the University of Oxford.

INFECTION ACQUIRED IN HOSPITAL[*]

LEONARD COLEBROOK
M.B Lond F.R.C.O.G F.R.C.S F.R.S

LATE DIRECTOR OF THE MEDICAL RESEARCH COUNCIL BURNS UNIT, BIRMINGHAM ACCIDENT HOSPITAL

WE are so accustomed to think of the conquest over infectious disease during the past 100 years as a wonderful triumph (as indeed it is) that we are apt to forget that that triumph has all too often been tinged with tragedy Our hospitals—the workshops which have enabled us to achieve the triumph—have also unfortunately been the places in which grievous harm has frequently been done to a great many people. Patients admitted for one complaint—often one that was not a threat to life, perhaps a cleft palate, a hernia, or a pregnancy—have contracted some infectious disease and quite often have died of it That is my rather melancholy theme

All my working life as a bacteriologist looking at medicine from the sidelines this problem has been forced upon my attention First, in a general hospital, where I saw the not-so-exceptional clean surgical case go wrong and develop acute local sepsis or even septicaemia next, in the first world war, when few open wounds escaped infection after admission to hospital and one could hardly doubt that much of it had been transmitted there. Later when bacteriology came to our aid in the investigation of puerperal fever we got clear proof that streptococcal infection was very frequently being transmitted from patient to patient in maternity institutions and finally during World War II when it was established, in Glasgow and at the Birmingham Accident Hospital that almost all the sepsis of burns in hospital was due to transferred infection

Now that my active work is finished it may perhaps be useful to take stock of the present situation and a glance at the past to summarise the lessons we have learned in recent years; and to put forward a few suggestions.

There are two reasons why it seems opportune to do this at the present time First, now that post-war difficulties are receding a little many people are thinking about the need for new hospitals and it is to be hoped that in the planning of these hospitals mistakes which have contributed to the spread of infections in the past will not be repeated

Secondly we have come to rely very much in recent years upon antibiotics for our defence against infectious diseases, and there are some indications that that defence is, to some extent, breaking down Thus, in his valuable discussion of resistance to antibiotics Lowbury (1955) stated that: ' The dilemma of hospital infection has been complicated rather than solved by chemotherapy and others have voiced the same opinion If that situation is not resolved—and there are at present no signs that it will be—hospital infection may become much more important to us in the future than it has been in the past few years

Such a change has indeed already been reported from the large general hospital,[*] in Sydney A systematic check on the streptococcal infections developing *after* admission to the surgical wards during the past five years has shown a steady rise—from four in 1950-51 to twenty eight in 1952-53 (Rountree 1955) And this rise coincided with a rise in the incidence of wound infections by penicillin resistant staphylococci Dr Rountree s comment on this association was as follows

> When, however the streptococcus is implanted into a surgical wound along with an antibiotic resistant staphylococcus that is a potent penicillinase producer it would seem that parenteral penicillin cannot be relied upon to prevent streptococcal colonisation of the wound

It would be of great interest to know whether a rising incidence of infections by *Streptococcus pyogenes* similar to that observed in Sydney has been found in other hospitals

Survey of Hospital Infections

My survey of hospital infections will be limited to the last 100 years, and for the most part to the last 40 years—that is to the period in which bacteriological investigations have thrown so much light on the interpretation of clinical data

MATERNITY HOSPITALS

The decade 1850-60 was perhaps the blackest period in all the story of hospital infection for it was then that Semmelweis (1861) revealed to the medical world the sinister fact that in some of the wards of the great maternity clinic of Vienna—the largest in the world at that time—more than 10% of the mothers were dying of puerperal fever It seemed clear that in many cases infective material was being conveyed on the hands of accoucheurs from the post mortem room to the lying in wards The adoption of an antiseptic ritual brought the mortality down to about 3%

The Vienna hospital was not alone in this experience Epidemics were frequent in the maternity hospitals of England and America although not quite on the Vienna scale At York Road Lying In Hospital in London the average mortality over about 30 years prior to 1875 was 4% (*Cullingworth 1888*)

The menace of puerperal fever in hospitals diminished gradually with better understanding of the part played by streptococci from the throat and nose with the adoption of asepsis and antisepsis with the development of better obstetric techniques and the better organisation of the maternity services Finally there was a spectacular fall in the death rate after the introduction of ' Prontosil and the sulphonamide drugs in 1936 (Colebrook and Kenny 1936)

It is important to recognise that although the risk of epidemic sepsis is now much less than it was 30 years ago it is still a factor to be reckoned with At Queen Charlotte's Hospital, after a year without a single case of streptococcal infection there was a troublesome little epidemic in 1952 involving 25 mothers (Gibson and Calman 1953) Happily there were no deaths. The source of the infections was not discovered Evidently the threat of puerperal infection must be borne in mind by all those planning future maternity hospitals and continuous vigilance is still required on the part of all those engaged in obstetric work.

NURSERIES OF MATERNITY HOSPITALS AND OTHER INSTITUTIONS IN WHICH INFANTS ARE CARED FOR

It is difficult to assess the amount of cross-infection in the nurseries of maternity hospitals The records of non fatal infections are seldom included in the annual reports and in the records of fatal cases there are often complicating factors such as immaturity or birth injury which make it difficult to decide how far infection was responsible for the deaths It is however common knowledge that within the last 20 years neonatal staphylococcal infections have been a cause of grave concern in many maternity hospitals and a number of reports of more serious epidemic illness have also appeared

Three outbreaks in English *cities* far apart were reported in 1941 by Ormiston. Among 900 infants at risk 139 became infected and 41 died (case-mortality 29%) The infective agent was not detected Another English epidemic involving 18 infants of whom 15 died was reported by Sakula in 1943 Wallace (1947) stated that 25% *of all* neonatal deaths among premature babies in the maternity department of the

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[*] Based on a lecture given at the University of Otago March

Edinburgh Royal Infirmary were due to infection which he considered avoidable "to a great extent"

In Australia salmonella epidemics have been reported by Rubbo (1948) from Melbourne and by Mackerras and Mackerras (1949) from Brisbane The one in Melbourne involved 37 infants infected in hospital, and there were 10 deaths The one in Brisbane involved 11 babies of whom 4 died

In the U S A a series of 27 outbreaks in 19 different hospitals was reported by Best in 1938 Among 5082 babies at risk 750 became infected (by an unknown agent) and 356 died (case-mortality 47 5%) And in another American epidemic, described by Barenberg et al (1936), 32 babies were infected, of whom 14 died

In other institutions to which infants are admitted—e g , foundling hospitals and hospitals for sick children—such high mortality rates have been reported that there can be little doubt that transmission of infection was a major factor, and in some instances the origin of the infection within the institution was definitely established

Thus, Chapin (1915) referred to mortalities ranging from 18 to 57% in institutions receiving infants in New York State, while the mortality for comparable age groups outside such institutions was only 12% Sauer (1935) reported that out of 942 infants cared for in the Evanston "Cradle" during its first 6 years 40 died of enteritis contracted within the institution

In 1948 Brehme summarised a number of outbreaks in nurseries in England, the U S A , and Germany in which the case mortalities had ranged from 10 to 40% (No data about these outbreaks were given)

In 1954 Jameson et al reported a series of outbreaks of gastro enteritis among infants admitted to an English children's hospital in the course of 6 years 118 children were sick and 43 died In this, as in many other epidemics of gastro enteritis reported in Great Britain, in Scandinavia, in Germany, and in the U S A , it was suspected that a strain of *Escherichia coli* was the responsible agent

When it is borne in mind, as Robert Cruickshank (1944) has reminded us, that these published reports are comparable only to the visible part of an iceberg, much more remaining undisclosed, it would seem that we have still much to learn about the menace of cross infection to infants in institutions The careful work of Rogers (1951) has emphasised the great difficulty of preventing such infections even in one of our newest hospitals, with good facilities for bacteriological investigation

It is to be hoped that in the future many more maternity hospitals will publish every year a pædiatric as well as an obstetric report (as suggested by Thomson (1952)), and that other institutions admitting infants will reveal how far epidemic disease has contributed to their sickness and mortality rates from year to year

CHILDREN'S WARDS IN GENERAL HOSPITALS

The careful study of Joyce Wright (1940) at University College Hospital showed that of the 551 patients in the children's wards during a 12-month period no less than 13 1% acquired manifest or latent infection by hæmolytic streptococci The manifest infections included wound suppurations, sore throats, pyrexia, and otitis media In addition to these there occurred during the same period two outbreaks of diphtheria (15 patients), two of *sonnei* dysentery (10 patients and 1 nurse), one of catarrhal jaundice (1 patient and 3 nurses), 6 cases of intercurrent gastro enteritis of infancy, and 1 case of measles In all, at least 104 (18 9%) of the patients developed intercurrent infections, manifest or latent, during their stay in hospital

Another study, which was based chiefly on clinical findings and took account only of manifest infection, was that of Watkins and Lewis Faning (1949) carried out in 14 English hospitals They found that of 10,000 children at risk during a 12 month period about 7% developed signs of cross infection Treatment for those infections caused the children to occupy hospital beds for 12 days on the average longer than they would otherwise have done In 41 children death occurred which was judged to be partly or wholly due to the acquired infection. Infections of the upper respiratory tract took first place in all these hospital infections, and those of the gastro-intestinal tract second The writers were unable to come to any conclusion as to the most effective means of controlling them

CHILDREN IN HOSPITALS FOR INFECTIOUS DISEASES

The difficulty of preventing the spread of chickenpox and measles, in spite of isolation and barrier nursing, is too well known to need emphasis Diphtheria, too, has often been implanted on scarlet fever—and vice versa—often with fatal results And the menace of hæmolytic streptococcus infections in measles patients is notorious. Among 43 such patients Allison (1938) found that cross-infection by streptococci occurred in 22 In another paper he reported that the incidence of otitis media in hospital wards was sometimes as high as 20%, and among the children with this complication about one third developed mastoiditis—and often permanent deafness

CROSS INFECTION IN SURGICAL WARDS AND THEATRES

I need not remind you of the grim story of clean surgery in the 'eighties and 'nineties of last century before the advent of asepsis and antisepsis and the gradual evolution of the modern (apparently) dust free operating-theatre Lord Moynihan used to tell how when he was a house surgeon in 1888 two out of three patients used to die after opening the peritoneum In the light of modern knowledge we cannot doubt that most of those deaths were due to infection conveyed in the theatre Brewer, writing in 1915, has told us that when he joined the staff of the Roosevelt Hospital in New York in 1895 nearly 40% of clean operations were followed by septic infection

Happily, all that has vastly changed and today the incidence of postoperative sepsis is trifling compared with the immense amount of clean surgery successfully performed without such misfortunes And, thanks to the antibiotics, such infection as does occur seldom has very serious consequences

But my own experience in British hospitals comp me to think that there is still much more infect transmitted in our operating theatres and wards th we should accept We have not nearly reached th irreducible minimum that every conscientious surge would wish for In the course of 40 years I have work in fairly close coöperation with surgeons of the first ra in two general hospitals, a plastic surgery unit, a finally at the Birmingham Accident Hospital In all the institutions cross infection in the wards and theatres wa a by no means uncommon event I cannot quote actu figures because no systematic investigations were mad From talk with fellow bacteriologists and with surge from other hospitals I gather that my experience ha not been at all unusual In the case of the Birmingh Accident Hospital some of these misadventures hav been published Thus, Sevitt (1949, 1953) recorded fatal cases of postoperative tetanus and 1 (non fatal bu requiring amputation) of gas gangrene , and the acqui infections (by *Strep pyogenes*) occurring in the Bu Unit are set out in the report by Colebrook, Duncan, a Ross (1948) There were certainly others which we not published Inquiry into the theatre infections ma it seem probable that one factor contributing to the was a faulty ventilation system which sucked co-taminated dust into the theatres from a corridor and lift shaft and carried it up past the operating table to a fa high up on one of the walls † That is the plan unfortunately adopted in many—I suspect most—operating theatres in this and other countries I shall return to this matter later

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† It is hoped to replace these old and faulty theatres in the ne future by others having positive pressure ventilation (wi filtered air) and designed with the special object of avoiding lodgment of dust on walls, lamps, furniture &c

In America an investigation by Ives and Hirschfeld (1938) indicated that in Newhaven about 5% of clean wounds developed some signs of infection and a review of the literature suggested to these authors that other hospitals had a similar rate Hunt (1933) thought that "ten per cent expresses very conservatively the morbidity from operative wound infection under average standards of technique and equipment" at that time Fortunately the majority of the infections were mild He foresaw the evolution of an operating theatre designed to give much more strictly aseptic conditions than those available in most hospitals Meleney (1935) wrote strongly in the same vein. He told us that on one occasion, when a clean wound became infected at the Presbyterian Hospital New York, the surgical staff met to discuss it One of the chiefs was asked what he thought the infection rate was on his service He guessed it was about 2% Dr Meleney in turn thought it might be nearer 5% To settle the matter a careful analysis of the records was put in hand—and the true figure turned out to be 15% Meleney's comment on this was as follows

> "I am sure that impressions are woefully inaccurate in most instances, and when you hear anyone say that the wound infections in his hospital are negligible the statement should be discounted, unless there is an actual count and a careful study of the dressing notes"

That was written 20 years ago—but is the situation very different today? I doubt it. There are few data on which to base an opinion Strahan reported in 1951 that 4·3% of 370 operations on inguinal hernias (by grafting) were followed by frank sepsis. *I have found no* ier post war figures for clean surgery ‡ It may be that e infection rate is actually much less than before the r, or that many incipient infections are headed off the practice of operating under an 'antibiotic ver' I suggest that it would be a salutary thing if one two of our larger hospitals were to carry out a com ned clinical and bacteriological follow up of all their ean surgical cases for a period of say a year That ould tell us the true position in those hospitals and ould give other hospitals a valuable yardstick by hich to compare their own results from year to year It ught also bring to light some of the sources of these oublesome cross infections

In the special field of plastic surgery where such brilliant results have been achieved (largely due to the pioneer work of the men who came to us from New Zealand Sir Harold Gillies, Sir Archibald McIndoe, Rainsford Mowlem and John Barron) transmission of infection within the wards and theatres has always been and I fear still is, a very serious menace It will be recalled that during the late war Francis (1942) described an epidemic of streptococcal infection in one of our best plastic-surgery units In another Spooner (1941) found that about 25% of all the cases admitted acquired a streptococcal infection during their stay in hospital and about 65% of all patients were thus infected (It must be admitted that war time conditions, deficient ventilation, &c. may have played a part in these results) There is no doubt that if we could win greater control over this menace of hospital infection it would enormously increase the scope of the plastic surgeon's art.

In another department of surgical work—that which deals with the ear, nose and throat—the conditions have of course always been exceptionally favourable to hospital infection, since so many patients are already infected on admission. I need only remind you of the careful investigations of Okell and Elliott during the years 1933–36, which revealed that there had been no less than fourteen outbreaks of cross-infection in the ear nose, and throat wards of University College Hospital London 52 patients were involved in these outbreaks and *1 of them died* *In their report there is also a* reference to the deaths of 3 young men before this period who had died from postoperative sepsis following tonsillectomy, and the authors considered it probable (although not certain) that their infection had been acquired in the hospital.

Finally, in connection with burns, hospital infection is of quite special importance Almost all extensive deep burns become more or less infected (unless they can be grafted within a day or two of the accident) and it has been clearly established by work at the Birmingham Accident Hospital and elsewhere that that infection is nearly always a hospital infection

The suffering attributable directly to these infections (*an uninfected burn is usually painless*) is often very severe In many cases they lead to death. The other consequences—loss of morale, slow healing and contractures loss of function—all too often add up to a grievous load of misery for the burned patient The average stay in hospital for the more severe cases is between 40 and 50 days which represents a formidable expenditure of hospital beds, as well as of surgical and nursing personnel. That is a situation which we should no longer accept, for it is clear that a large part of the infection could be prevented But we cannot prevent it with our present set up for the treatment of these injuries I have suggested elsewhere how it might be done if we dealt with them in specially equipped centres (Colebrook 1950)

CROSS INFECTION IN ADULT MEDICAL WARDS

During the late war I was told by one of our leading physicians that any patient admitted to the medical wards of his hospital (one of the most famous in Great Britain) had a 50/50 chance of acquiring an infection of the respiratory or the urinary tract I hope that was an over statement and that the infections he had seen were partly the result of war conditions I cannot recall any inquiry into the infection hazards in peace-time, but it would not be surprising if they are considerable

That brings me to the end of my survey I have given you only a small part of the evidence that would be forthcoming if one were to make an exhaustive study of the literature, or, better still, if one had access to the very many unpublished records (for it is the exception rather than the rule to make public our misfortunes of this kind) But I have perhaps said enough to justify my belief that infection transmitted within our hospitals is still a serious problem, calling for much more investigation and for well-directed preventive measures

I have said nothing about tuberculous infections because it is more difficult to trace the origin of tuberculosis in individual cases. And I have said nothing about virus diseases and tropical diseases because I have no first hand knowledge of them

Lessons Learned in Recent Years

I would like now to remind you briefly of *some of* the circumstances which contribute to these misfortunes and finally, to consider with you what steps we could take to eliminate them

It has been clearly established by bacteriological detective work that many infections both in and out of hospitals, owe their origin to organisms expelled from the throat or nose of patients suffering from some infective condition of the upper respiratory tract: and our hospitals are full of such patients The organisms so expelled, by coughing or sneezing or even talking, can survive in dust, and retain their capacity to infect for many weeks[§] (White 1936), and they may be carried in the form of minute droplets to long distances This, of course, is an old story, but it is one that we can ill afford to forget in considering hospital infections In particular we do well to recall the important work of Hamburger and Green (1946), which demonstrated the very large number of organisms expelled on to handkerchiefs, hands, bedding, and clothing by patients with infection of the nasal sinuses That would seem to call for very special precautions in the hospital treatment of such cases—precautions which, I fear, are seldom taken

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‡ Since this was written my attention has been called to Howe's report (*New Engl J Med.* 1954 251 411) that there was evidence of major or minor septic infection following 7·2% of clean operations performed in a hospital in Massachusetts. And more recently Blowers et al. (*Lancet* Oct. 15 1955 p 780) have reported a steady increase of infections, to 10·9% among 138 patients operated on in a thoracic surgery unit in the north of England.

The increasing number of hospital inmates, both patients and staff, who are harbouring staphylococci resistant to antibiotics in their noses, without manifest signs of infection, offers another difficult problem, for there is little doubt that these nose carriers bear an important relation to the rising tide of staphylococcal cross-infection of wounds

The study of wound infections has also been fruitful in recent years Thanks to the development by Bourdillon (Bourdillon et al 1941) of methods of detecting and counting organisms in air, we have learned that every time we disturb the dressings on a wound in the open ward—as they are disturbed in almost every hospital in the world—there occurs a scatter of thousands of subvisible particles into the surrounding air , and all too often these particles carry pathogenic bacteria which may be transported by air currents to colonise another patient's wound (Bourdillon and Colebrook 1946) The number of wounds infected in this way in every hospital must be very large

We have learned too that the covering of an open wound by the conventional sterile dressing may afford less protection than we have supposed If the dressing becomes soaked with exudate many pathogens, derived from the air or bedding or hands, can grow through the mass of serous fluid and quickly colonise the wound beneath (Colebrook and Hood 1948)

Reverting to the scatter of organisms by the disturbance of dressings I would remind you that a similar, very large, scatter occurs every day during the ordinary process of bedmaking in the wards Staphylococci in particular are constantly being disseminated in this way because they are so frequently present in the noses of patients and staff Blankets are probably the most important reservoirs of harmful organisms because they liberate so much fluff—and also because *they are never sterilised* in most hospitals I shall have more to say about this later

Since the bedding is so often contaminated with pathogens it is not surprising that nurses' hands may transmit them My colleague Dr Lowbury once found that *Pseudomonas pyocanea* could be grown from 50% of the ward nurses' hands at a time when there were a number of burns infected with that organism

Intravenous infusions have also frequently been incriminated as carriers of infection , and the unsterile water or saline (sometimes stored in corked bottles) used for rinsing syringes or other instruments that have been kept in antiseptics In other cases flies, or unsterilised feeding utensils, thermometers, bedpans, toys, or books have been the proven or suspected transmitting agents

Some Suggestions

I come now to my epilogue It is clear that there are many channels by which infection can spread in a hospital community What steps could we take to diminish the chances of such spread ?

It has sometimes been suggested that we may be able, at some time in the future, to build up the resistance of patients to all the microbes they are likely to encounter in hospital That seems to me so very problematical that I shall say no more about it It is certainly not yet on the horizon

There are two alternative policies We can accept the hazards that we have at present in our hospitals, in the belief that it is not practicable to reduce them very much, and put our trust in antibiotics and immunisation and other antibacterial devices to deal with such infections as may come along from time to time We see signs of that policy in action today in the indiscriminate use of antibiotics It seems to me a very dangerous policy, for it will surely encourage and condone all sorts of evil practices And it will almost certainly lead to a very wide dissemination of pathogens which have become resistant to many or all of the antibiotics—a situation which might have extremely serious consequences

The alternative is to strive continuously to block the many channels by which pathogens are transmitted in our hospitals so that the hazards of cross-infection are progressively diminished—and to keep our antibiotics and immunisation as a second line of defence to be used only when, and if, the front line defences have failed That surely must be the right policy—albeit it is the hard way How then are we to set about the job of diminishing the hazards ? Here are a few suggestions and some questions

1 We should, I think, *make it our aim to diminish the amount of contaminated dust in our wards—and to prevent its dispersal by air currents, so far as possible*

A large part of the dust in a ward comes from bedding, especially from sheets and blankets The former are normally sterilised by boiling in the laundry when each patient is discharged, and at frequent intervals while he remains in hospital It is quite otherwise with the blankets Because of the risk of shrinkage and felting they are never boiled in most hospital laundries, nor are they washed more often than is strictly necessary

I have myself cultivated hæmolytic streptococci (by mere swabbing) from blankets just returned from the laundry in a hospital where many burns were being treated (Colebrook et al 1945) Using a vacuum cleaner device Lemon (1943) has shown that the blankets used by a scarlet fever patient may sometimes harbour very large numbers of hæmolytic streptococci Rountree and Armytage (1946) with a similar technique found that 31 out of 47 blankets from surgical wards gave a culture of these organisms (Of the 24 from a male ward 10 were positive , and of the 9 samples from the ear, nose, and throat wards 8 were positive) Hamburger and his colleagues (1946) have also demonstrated the very heavy contamination of bedding used by patients with streptococcal infection in the nose

Staphylococci are found still more commonly and often in very large numbers These, and hæmolytic streptococci, can remain viable in the dust disseminated from blankets for many weeks

During the war, when this potential source of hospital (and barrack) infections was recognised as a problem affecting the health of civilians and of the Armed Forces considerable progress was made in dealing with it It was shown by Andrewes and his colleagues in 1940 that the scatter of fluff could be much diminished by the oiling of woollen bedding and bed clothing with a mineral oil , and later, when stabilisers, such as cetyl pyridinium bromide, were included in the emulsion, it was found that these could also exert a considerable bactericidal effect (Rountree 1946) Trial of this oiling procedure on all the bedding in a measles ward, combined with oiling of the floor, was reported to give a great reduction of the streptococcal content of the air by comparison with that of an untreated control measles ward , and also a great reduction of the cross infection rate (Wright et al 1944) In America it was claimed (Puck et al. 1945) that still greater control over cross infections was obtained by combining these dust-suppressive measures with vaporisation into the air of triethylene glycol

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[§] One organism which apparently cannot so survive is the common cold virus.

These were important steps forward, but, with the return of peace-time conditions interest in this problem seems to have lapsed and it is probable that few hospitals have continued to take the menace of infected bedding seriously In the Burns Unit of the Birmingham Accident Hospital oiling of the blankets has continued and no serious disadvantages have been encountered Low temperature sterilisation (5 lb for 20 minutes) has also been adopted This has seemed to cause less shrinkage and felting than the usual laundering

Recently chemical sterilisation combined with laundering has been advocated by Blowers and Wallace (1955) They used a solution of cetyl trimethylamine bromide but it is not yet clear that this is the best antiseptic for the purpose The authors admit that it is not very effective against *Ps pyocyanea*, they have not excluded the possibility that it may cause troublesome sensitisation effects in some patients (as does the nearly related cetrimide) nor have they established that repeated soaking of the blankets will not cause serious shrinkage

In short, we do not know at present what is the optimal procedure for dealing with hospital bedding and there would seem to be need for an ad hoc collaboration of applied bacteriologists and representatives of the laundering and textile industries Such a joint investigation might yield large dividends in increased control over hospital infections

2. I feel sure we could greatly *improve our methods of removing dust from the wards*

In this connection the Nuffield Trust's investigation of the functions and design of hospitals (1955) found

> "Little was done in the wards to suppress dust In spite of the strong and frequent recommendations of the Medical Research Council and the British Pædiatric Association, none of the 24 wards oiled either bedclothes or floors and the usual way of cleaning was to dry sweep the floor with a broom 2 or 3 times a day Floors were scrubbed with soap and water every three months, and polished daily with a dummy Very few wards had the use of a vacuum cleaner

I submit that, in view of what has been widely known for the past ten years about the presence and survival of pathogenic organisms in dust the continuance of these archaic methods in our hospitals indicates that our health authorities have been grievously non progressive The advance that has been achieved in our operating theatres has had no counterpart in the management of the wards, where undoubtedly many of the cross infections occur Surely in our present hospitals the broom and dry sweeping should be completely replaced by vacuum cleaning And in our new hospitals could we not provide a built in suction system (as suggested by Bourdillon et al. (1948)) to which the ward cleaners have only to attach the usual nozzles and flexible tubing ?

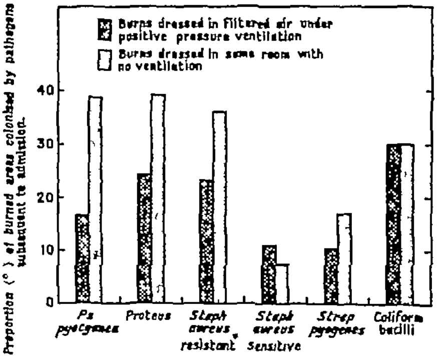
The treatment of floors by spindle-oil which was recommended during the war as a means of matting up the dust has not proved acceptable to most ward sisters They dislike the slipperiness of the surface while the oil is drying; it is alleged to do harm to nurses' shoe-leather and the dull surface is not pleasing to the eye There seems to be need for some preparation which has none of these disadvantages and will seal the smaller cracks, so discouraging the lodgment of dust and facilitating its removal

The disposal of soiled bed linen also deserves special consideration I have too often seen it thrown on the floor in the ward or in a corridor for sorting by the nurses Surely it should be placed immediately in closed containers, and removed if possible by a chute, for sorting well away from the hospital building—and by somebody other than a nurse

3 My third suggestion has to do with *ventilation* In 1949 *The Lancet* put the matter forcibly in these words

' Hospital authorities ' it said " who insist on clean milk and clean water should be equally particular about the cleanliness of the air in their operating theatres and casualty dressing rooms Is there any hospital in the world where that rule holds ?

Or to put it in another way How many surgeons have any idea whether the air of their theatre is clean at the beginning of an operation or to what extent it is polluted during an operation on an infected patient ? These questions are very rarely asked—and still more rarely answered—by an ad hoc bacteriological investigation And yet such an investigation is not difficult if one employs a Bourdillon air-sampling apparatus—which should be available to the hospitals in every large city



Bacterial flora of burns during a trial of an air-conditioned dressing-room (Lowbury 1954)

For the past 10 years in Birmingham we have dressed all our burns in clean air such as the *Lancet* leader called for—that is to say air with one or less microbe-carrying particle per cubic foot of air We have obtained that degree of purity by leading into the room a stream of warmed and filtered air sufficient to maintain a slight positive pressure in the room It is diffused at ceiling level in order to avoid an undesirable draught around the operating table Such a downward stream effectively assists gravity by continuously sweeping all particles in the air towards the floor whence they are sucked out of the room to the outside air by a fan Within 5 or at most 10 minutes after each patient leaves the room the air is almost microbe free and safe for the next patient

Dressing our burns in such an atmosphere has paid us handsome dividends Dr Lowbury (1954) has published the results of a controlled experiment designed to get statistical evidence of this benefit He has kindly allowed me to summarise his data in graphic form in the accompanying figure.

It is clear that when *Ps pyocanea* or proteus or penicillin resistant staphylococci were the indicator organisms there was a very substantial advantage in dressing in clean air In the case of streptococcus the advantage shown was rather less, but the total number of wounds so infected was not very large In the case of coliform bacilli and penicillin sensitive staphylococci no advantage was demonstrated, perhaps because many of these organisms were derived from the patient himself, and their transfer to the wound occurred independently of its dressing

The deductions which I think we are entitled to make from all our Birmingham experience are these

(a) that it is possible and quite practicable to have much cleaner air in operating theatres than we have usually had in the past—and at no great expense

(b) that we should especially avoid contamination of the air at the beginning of an operation. For that reason unsterilised blankets and woollen stockings should never be brought into the theatre, and soiled dressings and plasters should be removed in another room whenever possible—before the patient is brought in,

(c) the dressing of open wounds in wards should be discontinued Air conditioned dressing rooms, with appropriate equipment to facilitate a strict no touch technique, should be provided to serve groups of wards, and all dressings should be done in these

There is one further point in connection with ventilation If a plenum system such as I have described is installed for the operating theatres, could it not also be used for the periodical cleaning of the air of the wards—especially while bedmaking is in progress? (I realise that the cost of this might be prohibitive)

4 My fourth suggestion is that in most of our hospitals we should *make more provision for the isolation of infected, and infective, patients* More cubicles are needed, I think, and there is surely need for improvement in the technique of isolation Two points have struck me as especially important First, cubicles should be so constructed that *they can be easily and quickly sealed for fumigation* Second, the ventilation of cubicles should be such as to minimise the chance of infectious agents being carried into corridors or adjacent wards With a cruciform arrangement of cubicles having a central common servicing department, and outside corridors, it was found by Peters (1943) that cross-infection of infectious fevers was almost entirely eliminated, and the occupation of beds correspondingly diminished

Mixed up with this question of the technique of isolation and general ward management is the very difficult problem of how to dodge the transmission of pathogens by nurses' hands and clothing I feel that a solution of this problem is fundamental if we are ever to get rid of infection in severely burned people—and probably also for the care of infectious diseases in children I suggest, tentatively, that the nurses should make more use of rubber gloves, that there should be more facilities for them to wash their hands, and that the overalls used for bed making should then be discarded and, if possible, hung in a formalin-disinfecting chamber The suggestion by Duguid and Wallace (1948) that they should work in boiler suits instead of the traditional uniform is also worthy of serious consideration

Other matters of ward routine that need attention, at any rate in most British hospitals, are the sterilisation of feeding utensils and of bedpans, basins, and baths, the provision of individual thermometers, and the much more active control of flies

Finally, there are two important items of hospital organisation that are especially germane to this question of infections The first is the desirability of having in all our larger hospitals a *central sterile supply department* for the issue of syringes, saline solutions, distilled water, dressings, &c I was much impressed with the value of this feature in some American hospitals so long ago as 1937, but in 1955 the *Nuffield Trust* reports " There is no example of such a department in the British Isles at the present time " I suggest that the lack of it has been responsible for very many serious, and not a few fatal, infections in the past years

And last—do we not need, again in the larger hospitals, one individual whose responsibility it is to direct and coordinate all the activities which make for safety from infection? We have had too many chiefs in our hospital communities—medical superintendents, matrons, surgeons, and physicians—all of them concerned with this matter, but it has been no one person's business to find out whether the blankets were being sterilised in the laundry after use by a patient with a streptococcal infection, or whether the sterilisers were functioning properly, or whether the rubber gloves and dressings were being properly packed in the drums, or whether the antiseptic employed for cleaning the theatre floor, and the surgeons' rubber boots, was of sufficient strength, or what steps were taken to sterilise the anæsthetist's equipment, or whether there were throat and nose carriers of streptococci working in the wards, or whether adequate provision was being made to prevent flies breeding in the dustbins

I would like to see these and a hundred similar matters the business of an *infection control officer* appointed for that job He would of course be authorised to make an immediate inquiry when any instance of hospital infection came to his notice, and to issue a report upon it so that, if it had resulted from any mistake in procedure, this could be recognised and rectified And each year he would prepare a factual report upon the hospital's success or otherwise in avoiding cross infections, and state the case for any reforms he believed to be necessary

Such an officer should be the spearhead of our attack upon hospital infection And I believe his appointment might well prove to be an economy, because in exercising his functions he would inevitably exert a check upon the enormously wasteful and very often ineffectual use of disinfectants, antibiotics, and other antibacterial agents which has often occurred in the past, and, by reducing cross infections, he would correspondingly increase the value of the hospital's service to the community

There will of course be difficulty at first in finding suitable officers for such appointments, but that, I think, will settle itself when the need for them is recognised—just as happened years ago when the need arose for anæsthetists and radiologists

It has sometimes been suggested that the functions of such an officer should be performed by a committee, but I fancy that, in Britain at any rate, that would not make for efficiency The officer must, of course, be required to submit his proposals on major reforms to a committee, but he must also have authority to act on his own in smaller matters

* * *

Summarising, I would submit that we have still a long way to go before the transmission of infection in hospitals is a thing of the past In our new hospitals I would like to see

Rooms provided for the dressing of all open wounds, designed with the specific aim of aiding a strict no touch technique.

Ventilation plant which will ensure the continuous elimination of bacteria from the air of these rooms and of the operating theatres

Adequate isolation for infected patients in cubicles which can be readily sealed for fumigation, and either open corridors for the servicing of these cubicles, or inside corridors from which the air is continuously exhausted

Chutes for the disposal of soiled bedding and dressings, so that these are never handled by nurses.

More effective provision for the removal of dust from wards, and for the sterilisation of blankets

More effective measures for the exclusion of flies from wards

A central sterile supply department for syringes, dressings, sterile water and saline, &c

An infection control officer, and a systematic check, year by year (in some hospitals at least), on all the infections acquired in hospital These should be published.

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DIABETES IN JAMAICA

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It is now generally agreed that diabetes mellitus is not one disease entity, but a syndrome (characterised by hyperglycæmia and glycosuria) which includes a group of disorders differing in their clinical features, biochemistry, and cause (Himsworth 1949)

There are two main clinical types (Lawrence 1951):

The first (called *type 1 diabetes* in this paper) starts in young people who are often underweight; it is severe in that the patient depends on the administration of insulin to prevent ketosis. The second (*type 2 diabetes*) is mild and characteristically arises in middle-aged patients who are often obese ("lipoplethoric" diabetes of Lawrence 1951) and seldom require insulin except during added infections

These two types include most diabetics the residue is composed of rare anomalous cases and those in whom the diabetes is associated with other specific endocrine disturbances.

Diabetes seemed to be of particular interest in Jamaica because general clinical observation suggested that a proportion of diabetics there behaved differently from those accepted types Moreover both malnutrition and liver disease are common (Waterlow 1948, Hill et al. 1953) These facts, together with the wide range of local diets and living conditions made treatment a special problem.

Methods of Inquiry

In the eighteen months from January 1953, to June 1954 an effort was made to review, in the diabetic clinic at the University College Hospital of the West Indies every case of diabetes, known or suspected coming to the hospital During this time 215 patients were shown by blood-sugar estimations to have definite diabetes, and on all these the following information was recorded whenever practicable: sex race, and locality of residence age at onset of diabetes, serial weight records compared with average for height and age serial blood pressure records clinical estimate of obesity detailed analysis of diet before onset of diabetes, course of disease with relevant diet insulin requirements in relation to blood sugar level and ketosis complications and associated pathological conditions; family history local herbs ("bush teas") consumed, and, in some cases, liver function tests and liver biopsy The results were tabulated on punched cards and used for assessing the clinical types

Unusual Varieties of Diabetes in Jamaica

Insulin Resistance in Youth (Type J)

Experience in Britain and the United States is that type 1 diabetics are sensitive to insulin and therefore readily develop hypoglycæmia if insulin is given very little in excess of their needs Except when their illness is complicated by infection, they require relatively small doses to control glycosuria and to prevent the ketosis which readily develops without insulin Lawrence (1951) says:

> "All diabetic children and most adults under 40 . . . are of this type . . . Sometimes the disease is controlled at first by quite small doses of insulin—indeed it may be given up for a time—but as months and years go on the majority become stabilised at insulin requirements of some 35 to 60 units a day

Type-1 diabetics are found in Jamaica, but many cases in young adults under 40 and even in children there apparently do not conform to this type These exceptions persistently require large doses of insulin to control glycosuria and so maintain their weight are relatively insensitive to its action and show little or no ketosis if insulin is withheld Such cases will be called type J

The presence of type-J diabetes in the present series can be seen from a scatter diagram relating modal insulin requirements, when balance was achieved to the age of onset of the diabetes for each patient (see figure) At the same time, the obesity of the patient is shown and whether ketosis was ever recorded in the absence of infection Obesity is measured by comparison of weight to the average expected from age and height as given in tables reproduced by Duncan (1952) or as estimated clinically in the few cases where height was not recorded. The hatched area (age of onset below 45 years, insulin requirements below 50 units) in the figure shows the approximate limits for type 1 and contains most of the patients who could thus be classified being underweight and having ketosis A few patients who could be classed as type 2 come within this area Most of the obese patients are among the large group at the bottom of the figure who need no insulin at all show no ketosis, and scatter about an average age of onset corresponding to the menopause in women—i e 45–55 years (essentially type 2 cases) There are some presumably type-2 cases, taking insulin who may or may not need it depending on infection and other complications Some of the latter with ketosis and onset about 45–50 years cannot be distinguished from type 1 there is "overlap" as in the type-1 area, but on the whole the distinction is clear-cut The young insulin resistant type-J cases are delineated by the area enclosed by an interrupted line and stand out clearly from type 1

Clinically the type J cases differ from the recognised sporadic cases of "insulin resistance," in which the resistance may temporarily be greater—these are usually defined as cases requiring more than 200 units of insulin daily for not less than forty-eight hours (Hubble 1954)—in that they show no gross fluctuations in their state but require a persistently large dose of insulin Examples will help to show how type J differs in clinical features

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and course from the usual type 1 of the same age of onset

Case 1 (type J, thin, no ketosis) —A Negro girl, aged 17, developed diabetes with sudden onset of thirst and urinary frequency when she was 15 years old She apparently had a "*tropical*" ulcer *on her foot at the time and* was kept for three months in another hospital, where, with daily insulin, the ulcer healed On discharge she got insulin only erratically from a local clinic during the next two years When we first saw her, she was very thin and weighed 94 lb, the average for her height (5 ft 1 in) and age being 113 lb Her urine was brick red to Benedict's solution Her fasting blood sugar level was 180 mg per 100 ml, rising to 270 mg per 100 ml an hour after a test dose of glucose 50 g, but she had no ketosis in spite of an infected ulcer and small injection abscesses Before admission she had been taking soluble insulin 80 units and protamine zinc insulin 80 units, but often omitted injections, and her diet was 1400 calories, with about 160 g of carbohydrate In hospital she got 2400 calories and required soluble insulin 190 units and protamine zinc insulin 50 units to control her glycosuria, and her weight increased to 108 lb Subsequently it was found that a diet of 1670 calories was the most she could obtain away from hospital, yet her insulin requirements changed little She is now balanced on 220 units of insulin zinc suspension (Lente) daily

Some cases regarded as type J show ketosis in the presence of infection, but usually ketosis is conspicuous by its absence, in spite of the gross mismanagement of the diabetes which readily occurs in the poor social circumstances of many Jamaicans Many cases are well balanced by a single large injection of soluble insulin each morning, as in case 2

Case 2 (type J, thin, slight ketosis) —A coloured male, aged 28, developed diabetes and was seen after he had had injections of soluble insulin 20 units b i d. daily for about a week His fasting blood sugar level was 232 mg per 100 ml, and he was very thin His diet before the onset of his diabetes contained about 268 g of carbohydrate but only 62 g of *protein and* 60 g *of fat* He weighed 108 lb, compared with 135 lb average for his age and height He then defaulted from hospital and was admitted two weeks later with slight ketosis and urine brick red to Benedict's solution He was finally well balanced in hospital on soluble insulin 160 units each morning, and about 1850 calories, the latter being the most he could obtain away from hospital Although he was taught to give his own injections he was careless in doing so and often went without insulin He did not live near a clinic and often defaulted from hospital attendance Over the course of a year he showed no ketosis, but he developed bilateral cataract and now awaits operation because he can barely see

Temporary Diabetes

It is well known that reducing the weight of a patient with middle age onset, obese, type 2 diabetes to normal by dietary means may often "cure" the diabetes, in the sense that the abnormal glucose tolerance curve becomes normal, and—so long as obesity is prevented—no detectable abnormality of carbohydrate or fat metabolism exists Himsworth (1949) reports such a case, and we have observed several in Jamaica This phenomenon contrasts with the sudden apparent cure of what could otherwise be regarded as type-1 diabetes Diabetics who are underweight and insulin sensitive, develop ketosis without infection, and show sudden spontaneous "cure," with an increase of weight during treatment, will be designated temporary diabetes—for example

Case 3 (temporary diabetes, with ketosis) —A coloured woman, aged 43, about 5 lb under the average weight for her age and height, was seen a week after the onset of diabetes A glucose tolerance curve showed her fasting blood sugar level to be 350 mg per 100 ml, rising to 485 mg per 100 ml an hour after, and 572 mg per 100 ml two hours after glucose 50 g Her urine was red to Benedict's solution and gave a strongly positive Rothera's test, though she had no evident infection Admitted to hospital she was initially stabilised on 1500 calories with 142 g of carbohydrate and taught *to give her own injections* of soluble insulin 30 units daily Before discharge her *diet* was increased to 2200 calories, but her insulin, when she was an outpatient, was progressively reduced, and after two months she needed no insulin at all Six months later, having remained off insulin, her glucose tolerance curve was 108 mg per 100 ml fasting, 177 mg one hour, 152 mg two hours, and 104 mg three hours after glucose 50 g After a year with no insulin it was 75 mg per 100 ml fasting, 111 mg one hour, 120 mg two hours, and 98 mg three hours after glucose Her weight increased by 7 lb during the year She has now been observed to have no apparent diabetes for nearly two years

Mackenzie (1953) has reported similar temporary diabetes in Jamaica in his case 2, a man aged 34, but the first case he cites as being atypical may well be an example of the well-recognised "cure" in an obese type 2 diabetic Dolger (1952) reports one case of complete remission of diabetes after a period of insulin resistance, and another, in a Negro woman in the U S A, has been reported by Cheng et al (1953)

Associated Types

In Jamaica, as elsewhere, one sees isolated anomalous cases with much instability, or cases associated with other specific endocrine disturbance (e g, disease of the suprarenal glands, Cushing's syndrome, or thyrotoxicosis) These are not classed here as clinical types of diabetes per se but grouped together as "residue" In the present series 3 such cases were noted

A man, aged 39, was initially thought to be a type 1 diabetic, but *after over a year he developed signs of thyrotoxicosis* associated with malignant exophthalmos When these thyrotoxic disturbances appeared, the diabetic syndrome disappeared

The two other patients showed gross instability, one may have a *phæochromocytoma*, *the other*, a man of 44, initially balanced on insulin 80 units daily, has intermittently become insulin resistant and, in the absence of any obvious infection, required up to 400 units daily for short periods to control ketosis and hyperglycæmia

This last case, in contrast to the permanent relative insulin resistance without ketosis in our young type-J diabetics, seems to be one of the rare cases of insulin resistance of unknown ætiology reviewed by Smelo (1948) and Hubble (1954)

Frequency of Different Types

On the basis of the following criteria the 215 consecutive patients were classified into types

Type 1—"Severe" *diabetes needing* insulin to prevent ketosis Insulin sensitive Usually underweight Usually developing under 40 years of age, but sometimes in old age (65 or over)

Type 2—"Mild" diabetes No ketosis without insulin unless complicated by infection Often obese Insulin-insensitive and relatively resistant but usually requiring no insulin on a suitable diet and sometimes "cured" by weight reduction *Middle age or late onset* When complicated by infection, require insulin and behave temporarily as a clinically different type (2b)

Type J—Like type 1 but insulin resistant (*persistently* over 80 units a day) and with much less tendency to ketosis Onset *in young, usually* thin, subjects

Temporary—Diabetes in young subjects with ketosis showing apparent spontaneous cure

Residue—Anomalous cases often *associated* with specific endocrine upset

In *allotting patients to the* different types chief attention was paid to insulin requirements, ketosis and obesity age of onset was not regarded as absolute

Results

Table I shows the resulting classification It is based on this small sample but otherwise should *give* a fair idea of the proportion of different types, since observer errors in classification or sample bias are thought to have little effect

Observer Error

Table II shows the result of typing all the patients and then allotting them again into types on a second occasion

TABLE I—INCIDENCE OF DIFFERENT TYPES OF DIABETES IN 215 CONSECUTIVE CASES IN JAMAICA

Type	Male	Female	Total
1	18	8	26
2	57	115	172
J	7	6	13
Temporary		1	1
Residue	2	1	3
Total	84	131	215

without knowledge of the results of the first. Repeatability of typing is high, and the small error does not materially affect the results or conclusions reached. Sample typing by two other observers showed approximately the same consistency.

The greatest error is in allotting some cases to either type 1 or type 2—usually mild diabetes of early onset, or severe diabetes in overweight patients who might be either type 1 or type 2 with complications. More interesting and important are the other errors. Of the 3 cases classed as temporary diabetes on one occasion only, 2 were initially slightly overweight (and therefore were not truly in the type as defined) but both showed 'cure' of their diabetes with weight increase after their insulin had been reduced to nothing. However, both subsequently relapsed with infection and were finally classed in type 2. The 3rd may be a true example of temporary diabetes but has not yet been observed long enough, and the onset was rather late (43 years). Of the 2 placed in the 'residue' on one occasion, one might have had some degree of thyrotoxicosis, and the other had an onset of diabetes associated with an operation for carcinoma of the pancreas. The type 1 called type J on one occasion, had rather severe ketosis.

TABLE II—REPEATABILITY OF CLASSIFICATION

Class	Second reading				
	1	2	J	Temporary	Residue
First reading					
1	**23**	10	1		
2	1	**157**			
J	1	1	**12**		
Temporary		3		**1**	
Residue	1	1			**3**

Numerals in bold type indicate number of cases assigned to same diabetic type in two independent readings.

Nature of Sample

Most patients coming to the hospital are 'casual' patients arriving for treatment from many parts of the island and not referred by doctors. Thus the great majority in the present series were of the peasant class mostly from the town of Kingston and the surrounding hill country, though all Jamaican parishes were represented.

Racially all patients were of Negro or a varying admixture of Negro-Caucasian stock except 4 Chinese and [illegible] East Indians. These exceptions had type 2 diabetes. 3 white United Kingdom visitors to the island were excluded from the sample. Compared with the island census the series is a reasonably proportionate sample of the community and it is difficult to see how any selection bias from these factors can operate to affect the general conclusions. The only known bias was in those coming to the hospital during the trial period and not traced and seen in the clinic. 5 patients were treated by diet only in the 'casualty' department and there may have been a few others. A few patients admitted directly to surgical wards because of gangrene, were excluded for various reasons. Both these lapses were presumably type 2 diabetes, so the proportion of these is if anything even greater than that suggested by table I.

Ætiology of Diabetic Types

Age and Sex

Table I and the figure show that in Jamaica as elsewhere there is the same predominance of type 2 diabetes in women about the menopause and of type 1 diabetes in men in early life.

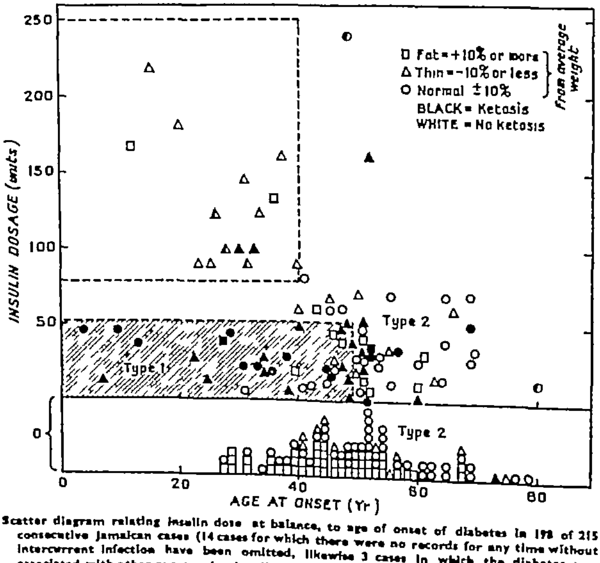
Heredity

Accurate family histories were often difficult to obtain partly because so many births are illegitimate and there is usually more than one father to the family. Nevertheless it seems that inheritance played a more important part in diabetes of early onset than in that coming on after middle age. Of the 39 cases of early onset (types 1 and J) 20 were thought to give reliable information and 6 (30%) of these gave a positive family history. Of the 172 patients with type-2 diabetes, 80 were thought to give reliable information and in only 11 (14%) of these was the family history positive.

Obesity and Diet

The importance of obesity in the ætiology of diabetes of middle-age onset, seen in the figure, has been emphasised by Duncan (1952), Joslin et al. (1952), and many others.

A detailed analysis of the diet before the onset of diabetes was made in 12 out of the 26 type-1 cases, 5 of the 13 type-J cases, and 99 of the 172 type-2 cases. *There was not, on the average, a striking imbalance or deficiency in the diets*, though individual examples of malnutrition were common. No clear-cut relation between diet and diabetic type was found except the expected tendency to excessive diets in some of the



Scatter diagram relating insulin dose at balance, to age of onset of diabetes in 198 of 215 consecutive Jamaican cases (14 cases for which there were no records for any time without intercurrent infection have been omitted, likewise 3 cases in which the diabetes was associated with other overt endocrine disturbance)

TABLE III—AVERAGE DIET BEFORE ONSET OF DIABETES IN THE DIFFERENT CLINICAL TYPES

Type	Calories		Carbohydrates (g)		Protein (g)		Fat (g)	
	Average	Range	Average	Range	Average	Range	Average	Range
1	2343	1428–3598	347 (*71%*)	217–718	75 (*15%*)	46–111	66 (*14%*)	20–92
J	2164	1574–2916	318 (*71%*)	203–564	61 (*14%*)	48–71	60 (*15%*)	60–81
2								
Fat	2371	1224–6042	304 (*64%*)	145–647	79 (*17%*)	15–140	88 (*19%*)	31–318
Thin or indifferent	1969	1148–2765	262 (*66%*)	111–512	69 (*17%*)	15–120	66 (*17%*)	16–105

obese type 2 patients and the high proportion of fat in the diet in this class (table III) Himsworth (1949) thought that human diabetes was correlated with the amount of fat consumed

It is interesting to contrast Africa with Jamaica, for in Africa diabetes in the Negro races appears to be uncommon although the diet contains a higher proportion of carbohydrate (Dean 1954) Whether this reputed difference in prevalence of diabetes is related to a lower total calorie intake of the African Negro is not known The incidence of diabetes is reduced when food is short, as in Germany in 1917–18 (Lawrence 1951) Although the average total calorie intake shown in table III, like the amount of protein, is low in all classes, compared with the accepted dietary recommendation of about 3000 calories for adults (depending on energy requirements for work) including 70 g of protein per day (National Research Council 1948, British Medical Association 1950), the totals for middle-aged women may well represent an excess of food over their energy requirement, and the associated type 2 diabetes may account for the believed difference between Jamaica and Africa

TABLE IV—RELATION BETWEEN "HYPERTENSION" AND DIABETIC TYPE

Type	Total	Blood pressure recorded	Systolic > 180 mm Hg	Diastolic > 100 mm Hg
1 and J				
Male	25	21	1 (*5%*)	1 (*5%*)
Female	14	14	2 (*14%*)	3 (21%)
2				
Male	57	53	8 (*15%*)	14 (*26%*)
Female	115	110	44 (*40%*)	53 (*48%*)

Liver Disease

In 3 cases classified as type 2 diabetes the liver cells from biopsy showed some vacuolation consistent with fatty change in 2 patients aged 42 and 53 at the onset of diabetes, but normal histology with normal glycogen content in the 3rd case (a woman aged 74 at the onset of diabetes). The liver was quite normal in 1 type 1 case. These findings of fatty change in type 2 diabetes but a normal liver in type 1 diabetes agree with those of Bearn et al (1951) Possibly, since type 1 diabetes may start in the very elderly (Lawrence 1951), the type 2 case with a normal liver was misclassified Liver biopsy in 3 type J cases revealed no remarkable histological change and an apparently normal glycogen content, thus grouping them with type 1 from their liver histology

TABLE V—INDEPENDENT RELATION BETWEEN BLOOD PRESSURE, DIABETIC TYPE, AGE, AND OBESITY

Diabetic type	No	Age (yr)	Blood pressure (mm Hg)			
			Systolic	Dia stolic	Adjusted systolic	Adjusted diastolic
Males						
Types 1 and J	21	30 5	120	76	− 11	+ 0 5
Type 2						
Fat	16	52	149	96	+ 12 5	+ 15 9
Indifferent	18	57 7	144	87	+ 2 5	+ 3 6
Thin	19	50 7	143	86	+ 6 0	+ 4 2
All types	53	53 5	145 1	89 3	+ 6 7	+ 7 5
Females						
Types 1 and J	14	37 6	135	82	+ 8 2	+ 9 6
Type 2						
Fat	62	50	161	96	+ 21 2	+ 12 2
Indifferent	25	59	166	95	+ 12 4	+ 6 2
Thin	23	52	164	97	+ 24 6	+ 9 6
All groups	110	52 4	162 7	95 9	+ 19 9	+ 10 3

Average figures For definition of age adjusted B P score see text

The 1 case of temporary diabetes showed normal glycogen storage at the time of the biopsy—i e., after the diabetic state had gone, but the biopsy showed some portal fibrosis and portal infiltration with lymphocytes, plasma cells, and occasional eosinophils The significance of these changes is not clear

Liver-function tests in 25 cases of type 2 diabetes were completely normal in only 10 In the remaining 15 the cholinesterase level was low in 4, and 12 showed abnormality in one or more flocculation tests usually associated with a rather low serum albumin level

TABLE VI—FREQUENCY OF COMPLICATIONS DIRECTLY RELATED TO DIABETES IN PATIENTS OF TYPES 1, 2, AND J

Complication	Types 1 and J (39 cases)	Type 2 (172 cases)
Ketosis	30 (*77%*)	41 (*24 0%*)
Coma or pre-coma	7 (*18%*)	1 (*0 6%*)
Cataract	4 (*10%*)	19 (*11 0%*)
Retinopathy	3 (*8%*)	11 (*6 0%*)
Neuropathy	7 (*18%*)	27 (*16 0%*)
Ulcer	4 (*10%*)	12 (*7 0%*)
Gangrene	0	8 (*5 0%*)
"Persistent" urinary infection	1 (*3%*)	17 (*10 0%*)
Other pyogenic infection (mostly boils abscesses)	9 (*23%*)	17 (*10 0%*)
Pulmonary tuberculosis	1 (3%)	2 (*1 0%*)

Complications

Complications attributable to diabetes were common (table VI), and associated conditions much commoner than elsewhere Thus of the 39 patients with either type 1 or type J diabetes, 11 had other conditions, including bronchitis, syphilis, malaria, malnutrition and œdema, cirrhosis of the liver, carcinoma of the pancreas, uterine fibroids, gas gangrene, and infective hepatitis Only 1 woman was pregnant, she also had syphilis and gross cirrhosis of the liver and died before term. Of the 172 type-2 diabetics 75 had associated conditions.

If "hypertension" were arbitrarily defined as a systolic blood-pressure greater than 180 mm Hg or a diastolic greater than 100 mm Hg, it was common in the type 2 patients, especially the women (table IV).

A comparison of blood pressure scores adjusted for the effects of age showed that the higher incidence in these type 2 patients could not be attributed to their higher age (table V)

The age-adjusted scores were made from tables given by Hamilton et al (1954) and represent "the number of mm. by which an observed B.P reading exceeds or falls short of the mean figure for the general population for that sex at that age the scores being further adjusted to what that deviation would correspond to at age 60 This second adjustment is necessary because not only does the average pressure rise with age but also the scatter about that average increases.

It is often held that 'essential hypertension' is very common in Jamaica, though awareness of 'blood pressure' among the population may partly account for the impression However measurements we have made to date show that the same average increase of blood pressure with age and increase in scatter about the average occurs in Jamaica as in Britain; so the tables of Hamilton et al. seem appropriate for the age adjustment of the blood pressure of these diabetics

Bush Teas

Various herbs, leaves, or fruits of plants are commonly made into an infusion and drunk in Jamaica as a bush tea. There are two kinds regular bush used for tea" (breakfast) each morning or at night, and "doctor bush used as a cure for specific ailments Asprey and Thornton (1953) have prepared an excellent list of such plants, carefully identified No fewer than 43 species of plants were used for bush teas by the different patients in this diabetic series

We have no information as to whether any of these "bushes may actually cause diabetes Certainly some regularly used plants may, in certain circumstances apparently interfere with carbohydrate metabolism, probably by blocking liver enzymes For example there is evidence (*West Indian Medical Journal* 1953 Hassall and Royle 1954) that a severe, and often fatal, toxic hypoglycæmia (known locally as vomiting sickness) may be caused by the consumption of ackee (*Blighia sapida*) possibly if the fruit is unripe and the subject has little glycogen reserves as the result of previous starvation, though the fruit is normally a harmless and delicious food

Many plants are credited with being cures for diabetes Among those commonly taken to improve the sugar are: periwinkle (*Vinca rosea*) the white variety (var *alba*) being used almost exclusively mistletoe (*Phthirusa pauciflora*); nichol or nicker berry (*Cæsalpinea bonducella*) and rice bitters (*Andrographis paniculata*) Preliminary clinical trials of the first three of these plants were made to see whether they had any effect

9 patients who understood the trial and had previously taken some form of bush were used 5 were given white periwinkle leaves, but only 2 nichol berry nuts and 2 mistletoe leaves, since these were less readily obtained All had from four to nine days rest in bed on a standard diet until their glycosuria was stabilised and at least two duplicate glucose tolerance curves were done before the particular 'bush was given for the subsequent trial, which lasted from five to eight days according to the supply of bush Glucose tolerance curves were repeated at the end of the trial and in 4 cases the blood sugar levels were measured fasting and an hour after food during the trial All the bush teas were made exactly as in traditional recipes; but since pilot experiments on volunteers showed that doses twice as large as those customarily taken gave no ill effects (except slight nausea with mistletoe) these high doses were used

In the 2 patients given nichol berry in 1 of the 2 given mistletoe and in 1 of the 5 given periwinkle there was no demonstrable effect on either the blood-sugar or the urinary sugar level 2 of the remaining 4 patients on periwinkle showed a slight fall. both in urinary sugar and blood-sugar levels In the remaining 2 on periwinkle and the other 1 on mistletoe there was a definite decrease in glycosuria but a rise in the blood-sugar level.

The fall in both blood-sugar and urine sugar levels in the 2 patients on periwinkle cannot be attributed to a hypoglycæmic action of the herb because the effects of diet alone could account for the results if the initial balance period were not in fact adequate However it is difficult to explain the rise of blood sugar accompanied by a fall in urine-sugar, in the 2 other cases given periwinkle and the 1 given mistletoe except by assuming that the herbs were creating a renal 'block'—presumably increasing the reabsorption of sugar in the proximal renal tubules and thereby acting in an opposite sense to phloridzin This observation needs confirming pharmacologically if it is correct, the bush teas so widely taken for diabetes in Jamaica may be harmful both to the general diabetic state and locally to the kidney

In view of the known hypoglycæmic action of polypeptides extracted from ackee seeds (Hassall and Royle 1954) trials of this plant in diabetes would be of great interest But further experiments on animals are required first The edible part of the fruit probably contains the hypoglycæmia producing substance only in small and variable quantities Insufficient extract of the polypeptides from the seeds was available from chromatography Moreover the seeds are not used as a bush remedy so the safety of a crude preparation was unknown. Ackee might well be useful in type-2 diabetes since glyconeogenesis appears to be depressed by it and liver glycogen is depleted in clinical cases with the toxic hypoglycæmia of vomiting sickness

Treatment

The poor social circumstances of many patients their illiteracy and fixed dietetic habits and the presence of much insulin resistant diabetes, combine to make treatment difficult in Jamaica Diets prescribed in European textbooks are usually quite unsuitable which means that patients are often given diet sheets which are impracticable and which they ignore or that insulin is taken, often spasmodically without any effort in dietary control. The high prevalence of complications in the present series may reflect previous poor control of diabetes and be an example, like others recently reported (Root 1949 Joslin et al 1952, Dunlop 1954) of the long term danger of 'free diets" with neglect of hyperglycæmia and glycosuria. In Jamaica obese type-2 diabetics, especially often suffer by taking insulin when they have no complications demanding it. Carbohydrate restriction and a reducing diet would control or even cure their diabetes but on insulin they usually gain weight

In preparing diets the local habits of eating many different starchy vegetables at one meal (yams, sweet potatoes rice and peas,' green bananas plantains, cocos breadfruit &c) have to be recognised; but now that tables giving the composition of all local foods are available (*Platt* 1945 Iberson 1953) practicable diet-sheets can be prepared Two standard series of sheets, each with diets of 1500 2000 2500 and 3000 calories, were found necessary to cover upper and lower social groups but even then they often required minor modification for individual patients. Simple carbohydrate equivalents were given but any approximation to Lawrence's line ration scheme (Lawrence 1955) proved too complex for most Jamaican patients. Some had to be given unsatisfactory diets because of economic necessity but, if the diet were known and its carbohydrate value and fat ratio were maintained they could usually be stabilised.

In spite of the social difficulties, experience showed that most diabetics who needed insulin could be taught to give their own injections if they were admitted to hospital initially Admission was important both because of the wide range of mental aptitude and because of the different insulin sensitivity of young patients, some of whom proved to be type J and to need large doses of insulin At regular outpatient attendances in the diabetic clinic, their weight, and the analysis of four specimens of urine from the previous day gave enough evidence of whether they were keeping to their correct diet and insulin If their eyesight was defective, syringes were marked with waterproof tape, or adjustable metal stops were fitted, so that insulin dosage was still reasonably accurate Providing syringes, and making patients responsible for their welfare rather than dependent on visits to local clinics for injections, led to better control and saved hospital admissions

Most diabetics needing insulin were balanced on soluble or protamine zinc insulin, or on both Some type J cases were found to be satisfactorily balanced throughout the day on a single large injection of soluble insulin in the mornings Globulin was rarely needed Isophane insulin ('N P H') proved a satisfactory one-injection substitute for cases stabilised on both soluble and protamine zinc insulin However, the recent introduction of insulin-zinc suspensions (I Z S) has meant easier and more stable balance in many cases, hence, in future, insulins other than these suspensions and soluble will probably rarely be needed The balance in more than 40 patients, including type J cases changed over to the I Z S, has now been observed for six months It was maintained or improved in all of them, judged by the four urine specimens brought fortnightly to the clinic, but we could not make as many estimations of the blood sugar levels each day as Paley (1954) recommends About 10 patients volunteered that they felt better on I Z S and had fewer insulin reactions

Thus our experience supports, in Jamaican cases, the views of Oakley (1953), Murray and Wilson (1953), and Nabarro and Stowers (1953) in Britain about the usefulness of insulin zinc suspensions Only 2 patients were less well controlled on I Z S than on their previous insulin, a much smaller percentage than that found by Fitzgerald et al (1954) The standard Lente mixture of amorphous and crystalline suspension was satisfactory for all the patients except 2, both of whom were anomalous they needed more of the quick acting amorphous 'Semilente' suspension So far we have not had to use the crystalline ('Ultralente') suspension Change over from two injections of soluble insulin, or of soluble insulin and protamine zinc insulin, was usually simple, if the previous daily total was given as I Z S lente and increased as required We confirm, however, in the Jamaican cases the experience of Venning (1954) that some patients initially, and a few permanently, require more units daily on I Z S lente than on other insulins, the former tend to become hypoglycæmic in the early morning as their requirements fall

Discussion

The recognition of different clinical types of diabetes, as well as of regional variations in the syndrome, is not only important for logical treatment but also, with experimental work, helpful in understanding its pathogenesis

Probably type 1 diabetes results from a primary deficiency of insulin, though histochemical correlation with β-cell change in the pancreas is often disappointing, and the cause of the damage to these cells unknown, unless recent work on alloxan, uric acid, and other inactivators of glutathione provides the clue (Lazarow 1954) Insulin sensitivity and ketosis are to be expected if there is an absolute insulin lack, and the demonstration by Bornstein and Lawrence (1951) of an absence of circulating plasma insulin, in contrast to its presence in type 2, has confirmed this concept That patients with type-1 diabetes from total pancreatectomy require relatively little insulin (Peters and Van Slyke 1946) possibly results from the concurrent lack of the insulin antagonist, glucogen, from the pancreatic α cells (Sutherland and de Duve 1954)

Other clinical types of insulin-resistant diabetes seem to result not from a primary lack of insulin but from an excessive demand for it outstripping the supply or from the overproduction of insulin antagonists The exact mechanism of type 2 diabetes is still doubtful Most features of the clinical syndrome would be explicable by an excess of pituitary growth-hormone which might well accompany the hormonal changes of the menopause Growth-hormone is experimentally diabetogenic only in the presence of plentiful nourishment (Campbell et al 1954) It stimulates the production of insulin but neutralises the effect of insulin on the blood sugar level and at the same time impairs the utilisation of fat (de Jongh 1954) Thus growth-hormone with plentiful nourishment and circulating insulin would account for the clinical insensitivity to insulin, the obesity, the lack of ketosis, the improvement by dietary restriction, and the fat in the liver

Whether type J cases represent a clinical entity wholly different from type-1 cases, or are merely this variety of diabetes behaving in an unusual manner, needs further study In their age and mode of onset and in their liver biopsy they resemble type-1 cases, but their insulin resistance and relative lack of ketosis suggest a supply of free insulin Plasma-insulin assays (Bornstein and Lawrence 1951, Vallance-Owen and Hurlock 1954, Randle 1954) and measurement of liver glucose output by hepatic-vein catheterisation (Bearn et al. 1951) would help to decide whether they lack insulin or not, if not, they must be "immune" to its action or have an antagonist or excessive glycogenolytic factor, such as that from the pancreatic α cells, causing the insulin resistance and preventing ketosis (Thorogood and Zimmermann 1945) The latter mechanism has been suggested (*Lancet* 1952) to account for the similar behaviour of diabetics with Kimmelstiel Wilson kidney lesions as opposed to those without or with other types of renal damage (Zubrod et al 1951)

Temporary diabetes is evidently rare, because only 1 case (possibly 2) occurred in the present series of 215 consecutive patients Nevertheless its existence is of interest in understanding the pathogenesis of diabetes and we know of other cases in Jamaica which may prove to be of this variety Other published cases (Mackenzie 1953, Cheng et al 1953) have also been in Negroes On the basis of the liver biopsy of the 1 case in the present series it seems reasonable to suppose that it might be the clinical counterpart of the diabetic syndrome arising from partial hepatectomy (Himsworth 1949)

Summary

An analysis of 215 diabetic patients consecutively attending hospital in Jamaica showed that they could be divided clinically into the two main types seen elsewhere type 1, of early age onset, insulin sensitive, and ketotic (26 cases), and type 2 of middle age onset, insulin-resistant, with a tendency to be obese but not to have ketosis, if without insulin, unless they have an infection (172 cases, nearly three quarters in women)

A third variety, not previously described, also occurred (type J, 13 cases) It was peculiar in its onset in young thin people who were, however, relatively insulin resistant and lacking in ketosis

The significance of type J as well as of some sporadic cases of temporary diabetes seen in Jamaica is discussed in relation to the pathogenesis of diabetes in man

Liver biopsy in 3 cases of type J diabetes showed them to resemble type 1 diabetes in that the liver was normal in contrast to the fatty change common in type-2 diabetes

Preliminary trials with local plants, reputed to cure diabetes, were unconvincing, though periwinkle (*Vinca rosea*) and mistletoe (*Phthirusa pauciflora*) may raise the renal threshold for sugar Clinical trials with ackee (*Blighia sapidia*), which is known to cause hypoglycæmia, could not, it was felt, be undertaken without more information

Complications of diabetes were common and may reflect the results of 'free diets' Hypertension was particularly associated with type 2 diabetes independently of the effects of age sex, and obesity

Points about the local management of diabetes are presented in relation to diets social conditions, prevalence of insulin resistance without ketosis and the value of using insulin zinc suspensions

I wish to thank Dr Henry Bunjé for his collaboration in this work Prof E K. Cruickshank for his interest and helpful criticisms, and the other members of the staff of the University College Hospital of the West Indies for letting me cite their cases Mrs MacBain Miss Fox (dietitian to Kingston Public Hospital) and Mrs Williams (dietitian to University College Hospital) for taking careful dietary histories and preparing local diet-sheets Messrs Boots Pure Drug Company Evans Medical Supplies Ltd and British Drug Houses Ltd gave generous supplies of I.Z.S and other insulins for trial in diabetic patients in Jamaica

ADDENDUM

Since this article was written Dr R A. Pallister has reported 2 cases to me from Malaya with insulin resistance and relative lack of ketosis and I have had a similar report of many cases with a lack of ketosis from the University College Hospital Ibadan Nigeria This suggests that 'type J' diabetes may be generally common in tropical countries A further case of temporary diabetes was seen in the diabetic clinic at Hammersmith Hospital London but again in a Negro patient referred while he was visiting Britain by Dr G L Money from Ibadan However the recent article by Downie (1955) reports fluctuation with temporary cure of established diabetes in non Negro patients

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THE PALLIATION OF BRONCHIAL CARCINOMA BY RADIOTHERAPY

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THE value of palliative X ray therapy in bronchial carcinoma—meaning sufficient irradiation to relieve symptoms without attempting to prolong life—has been disputed The present investigation was undertaken to determine the most suitable type of case for such treatment The increasing incidence of bronchial carcinoma (Doll 1953) suggests that this will become a larger problem unless earlier diagnosis or more effective methods of treatment become possible

Material

The patients were seen for the first time at the radiotherapy departments of the Middlesex and Mount Vernon Hospitals between August 1953 and January 1954 Only those receiving palliative X ray therapy were accepted which entailed the rejection of patients having radical courses or radiation after resection

90 consecutive patients were examined, but 21 were rejected 4 because the diagnosis was incorrect and 17 because of insufficient data 69 patients remained 59 males and 10 females—a male-to female ratio of 6 to 1 The age distribution in table I shows that most of the patients were in the seventh decade The diagnosis was confirmed histologically in 35 patients, and analysis of the effect of treatment is restricted to these The The histological type of carcinoma was as follows:

TABLE I—AGE AND SEX OF SIXTY NINE PATIENTS

Sex			Age (years)					
—	Total	Ratio	0–29	30–39	40–49	50–59	60–69	70 or more
Male	59	6	0	2	14	17	24	2
Female	10	1	0	0	0	7	3	0

Squamous-cell	15	43 %
Oat-cell	11	57 %
Other	9	

Method

At the first interview the history was taken and a clinical examination made, followed by a chest radiograph Subsequently every patient was seen on several occasions during and after irradiation As the investigation was concerned with palliation, particular note was made of the presence or absence of symptoms. Moreover it was essential to estimate the severity of symptoms so that the variation either waxing or waning after treatment could be recorded The following scheme was adopted

Dyspnœa was assessed clinically and based on the five grades suggested by Fletcher (1952):

1: the patient's breath is as good as that of other men of his own age and build at work on walking and on climbing hills or stairs.

2 the patient can walk with normal men of his own age and build on the level but cannot keep up on hills or stairs

3 the patient cannot keep up with normal men on the level but can walk about a mile or more at his own speed

4 the patient cannot walk more than about 100 yards on the level without a rest

5 the patient is breathless on talking or undressing or cannot leave his house because of breathlessness

Cough was assessed as occasional troublesome, or causing disturbed sleep

Chest pain was best classified into three types

(1) Invasive associated with periosteal bone plexus or intercostal bundle involvement by direct extension.

(2) "Mediastinal," described as a midline pain radiating through the middle of the chest and sometimes associated with dysphagia This may be accompanied by enlargement of the mediastinal and subcarinal glands

(3) "Visceral," a dull ache in the affected hemithorax, sometimes radiating through to the subscapular region and usually associated with an intrapulmonary mass

The severity of the pain was assessed as mild, causing disturbed sleep, requiring regular analgesics, or necessitating surgery

Obstruction of superior vena cava was assessed by inquiring into dizziness on stooping and increase of collar size, and by measuring the circumference of the neck

Constitutional disturbance, included malaise, lassitude, sweats, and fever

In the clinical and radiological examination attention was given to evidence of pulmonary collapse, consolidation, effusions, metastases, and obstruction of the superior vena cava The serial radiographs were read personally, particular attention being paid to changes in the extent of collapse, consolidation, size of effusions, and masses "Radiological regression" denotes re-aeration of an atelectatic segment, lobe, or lung, and diminution in the size of a pleural effusion or an intrapulmonary or glandular mass

Treatment

In most cases X-ray therapy was by anterior and posterior chest fields, but a few cases had extra ports 7 patients were treated with grids The average over all course was 2942r at 220–250 kV and 10–17 mA spread over seventeen treatments given during thirty one days in hospital The dosage differed at the two centres, one giving an average of 3722r in twenty-three treatments, the other 2161r in twelve treatments Otherwise there was no significant difference in the treatment received Some patients received antibiotics in addition to X-ray therapy, they were considered separately when change in constitutional symptoms was assessed

TABLE II—SYMPTOMS AND SIGNS RELIEVED BY PALLIATIVE RADIOTHERAPY IN 35 HISTOLOGICALLY PROVED CASES OF CARCINOMA OF BRONCHUS

Symptom or sign	Cases suitable for analysis	Improved
Chest pain	13	7
Mediastinal	*3*	*3*
Visceral	*6*	*4*
Invasive	*4*	*0*
Cough	25	19
Dysphagia	4	3
Dyspnœa	24	14
Hæmoptysis	13	7
Obstruction of superior vena cava	6	5

Results

These comments are restricted to the 35 patients in whom the diagnosis was confirmed histologically This is, therefore, too small a series from which to draw statistical conclusions

The results are shown in table II, which shows that dyspnœa was reduced in more than half, cough alleviated in three quarters, and dysphagia relieved in three quarters of those who had it Mediastinal and visceral chest pains were usually relieved, but radiation had no effect on invasive pain Hæmoptysis improved in more than half, and obstruction of the superior vena cava was relieved in 5 of 6 cases with this complication

Turning from isolated symptoms, it is necessary to consider the patient, who usually had more than one disability, as a whole 21 (60%) showed general improvement They included 8 (53%) of the 15 patients with squamous cell carcinoma and 13 (65%) of the 20 with oat cell and other histological types of growth, this suggests that the latter are more radiosensitive than the former 17 (49%) were able to lead an independent life, and 6 (17%) returned to work

12 patients had constitutional disturbance associated with bronchial infection 4 given antibiotics and radiotherapy improved, and of the 8 who received radiotherapy alone only 5 improved

In 17 patients who showed symptomatic relief, and where radiological correlation was possible, radiological regression was seen in 13, but in the other 4 the condition was stationary or worse

As regards the site of the growth, the upper lobe was involved in 20 patients, of whom 14 (70%) were improved by radiotherapy The lower lobe was affected in 11, of whom 7 (64%) were relieved The growth infiltrated the main bronchi in 4 patients, all of whom deteriorated

TABLE III—COMPARISON OF RESULTS OF LARGE AND SMALL DOSAGE OF X RAYS FOR PALLIATION OF CARCINOMA OF BRONCHUS

—	Large dose group	Small-dose group
Number treated	12	23
Proportion of squamous cell oat-cell carcinoma	1 1 4	1 1 3
Dose of X rays	3722r	2161r
Number of treatments	23	12
Days in hospital	43	20
Percentage of cases improved	58	61

The results of two different dosage schemes (table III) were about the same in both groups Patients treated with a grid (table IV) did not appear to fare better, but the number of cases is small

Discussion

In most patients with carcinoma of the bronchus no attempt can be made to cure the established disease. Unfortunately resection, the only hope for cure, is possible in only a few At the joint consultative clinic at the Brompton Hospital 3 9% were resected (Brooks et al 1951), and 35% of those seen in a surgical clinic (Ochsner et al 1952) and 17% of those seen in a general hospital (Aufses 1953) were resectable Later work at the joint consultative clinic (Bignall 1955) showed that 18% were resected, this increase probably reflects earlier diagnosis Of the remaining patients some are treated by radical X-ray therapy and some by chemotherapy In most of them no attempt can be made to prolong life, Bignall (1955) points out that there is unlikely to be any improvement in this situation, and suggests that attention should be directed to effective palliation

Some distressing symptoms may be relieved by palliative X-ray therapy, but all cases are not suitable, and patients must be selected Patients with lassitude, malaise, fever, sweats, anorexia, nausea, and vomiting, probably indicating metastases in the liver, are often too weak to withstand the treatment and may be worsened by it

Case 1—[53/798] A male metal polisher, aged 46, had an acute chest infection which left him, in April, 1953, with shortness of breath and an unproductive cough At bronchoscopy in September, 1953, a squamous cell carcinoma was found in the right main bronchus, involving the trachea

First seen September, 1953—Anorexia, nausea, grade-4 dyspnœa, an occasional dry cough, and physical signs of a collapsed right lung (confirmed by radiography)

TABLE IV—COMPARISON OF RESULTS OF PALLIATIVE X RAY THERAPY GIVEN BY OPEN AND GRID FIELDS IN CARCINOMA OF BRONCHUS

—	No grid	Grid
Number treated	28	7
Proportion of squamous-cell oat-cell carcinoma	3 4	3 4
Percentage of cases improved	61	57

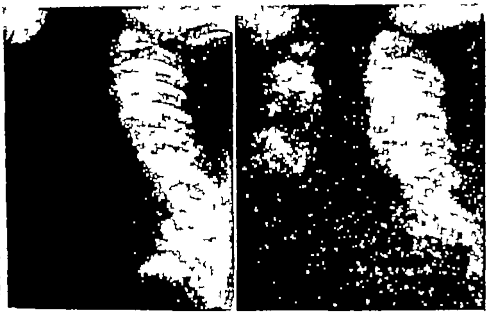
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Fig 1—Case 2 before and after treatment.

Treatment—1020r in six treatments over eight days at 220 kV and 10 mA

Result.—During treatment he developed fever lassitude, sweats, troublesome cough and dyspnœa on the slightest exertion. Penicillin had no effect and X ray therapy was abandoned.

Disposal.—He was transferred home confined to bed and died a month later

This case illustrates the poor response of a squamous cell growth invading the main bronchus in a patient with severe constitutional disturbance

Multiple metastases may make the patient unsuitable but occasionally irradiation of the metastases and the chest is warranted As with any other form of treatment patients should be selected because certain symptoms indicate the need for treatment with a view to making their life easier and not because one must do something

The symptoms and signs most likely to respond are obstruction of the superior vena cava, cough dysphagia, "mediastinal" and "visceral" chest pain hæmoptysis and dyspnœa. The following two cases illustrate the relief of obstruction of the superior vena cava

Case 2—[53/671] A lorry driver aged 43 had a hæmoptysis in April, 1953 Bronchoscopy showed an undifferentiated carcinoma of the right upper lobe bronchus. While he was awaiting admission obstruction of the superior vena cava gradually developed.

First seen in August 1953—Dizziness on stooping swelling of the face and neck, grade 3 dyspnœa, troublesome cough with a trace of mucopurulent sputum, and mild right-chest "visceral" pain. Examination showed the signs of obstruction of the superior vena cava with œdema, a collapsed right upper lobe and right pleural effusion

Treatment—2400r in sixteen treatments over twenty-one days at 220 kV and 10 mA

Result—The symptoms and signs of obstruction of the superior vena cava, dyspnœa, and chest pain were relieved. Radiologically the right pleural effusion cleared (fig 1) and the patient was left with an occasional cough and a trace of mucopurulent sputum

Disposal—Three weeks after discharge he returned to work driving a 5-ton timber lorry which he helped to load. He continued this for six months and then led a restricted life until he died from heart failure a year after his first attendance

This case illustrates the excellent response of an undifferentiated carcinoma causing obstruction of the superior vena cava The relief of this syndrome permitted the patient to pass his remaining year in moderate comfort

Case 3—[54/73] A slaughterman, aged 47, had an acute chest infection in December 1953 This cleared after treatment In January 1954 he gradually developed the symptoms and signs of obstruction of the superior vena cava At bronchoscopy there was distortion of the right upper lobe bronchus Biopsy of a supraclavicular gland showed replacement by oat cell carcinoma

First seen in January 1954—Dizziness on stooping swelling of the face and neck blurring of vision grade-3 dyspnœa and occasional cough with 1 oz of mucopurulent sputum Examination showed gross symptoms and signs of obstruction of the superior vena cava, with œdema and a neck circumference of 18 inches. There were large axillary glands.

Treatment—2010r in sixteen treatments over twenty two days at 220 kV and 10 mA.

Result—The symptoms and signs of obstruction cleared the neck circumference being diminished by 3$^1/_2$ inches. The cough became dry but the other symptoms remained. Radiologically the congested lung fields had cleared there were small bilateral pleural effusions and the mass at the right hilum had diminished (fig 2)

Disposal—The patient was confined to bed at home with multiple metastases and died a month later

This patient illustrates the good response of an oat-cell carcinoma, the growth shrank and relieved the pressure on the superior vena cava

The following case illustrates relief of "mediastinal" chest pain and dysphagia

Case 4—[H. 54974] A postman, aged 44 had dyspnœa, cough and a trace of mucoid sputum in June 1953 Radiography of his chest showed a collapsed right upper lobe Bronchoscopy (August 1953) showed a squamous-cell carcinoma of the right upper lobe bronchus.

First seen in August 1953—Lassitude malaise grade-3 dyspnœa wheezing troublesome dry cough and mild midline chest pain of "mediastinal" type with dysphagia. Examination revealed stridor and collapse of the right upper lobe.

Treatment—4516r in thirty treatments over forty four days at 250 kV and 10 mA.

Result—The constitutional symptoms pain and dysphagia were relieved. The dyspnœa improved from grade 3 to grade 2 and the cough became occasional The right upper lobe was re-aerated and the mass at the right hilum diminished (fig 3)

Disposal—The patient led an independent life at home for six months; then his dyspnœa and cough worsened and obstruction of the superior vena cava developed. This was treated but he developed a chest infection which did not respond to antibiotics and he died.

This squamous-cell carcinoma in the right upper lobe bronchus responded well the patient getting relief from

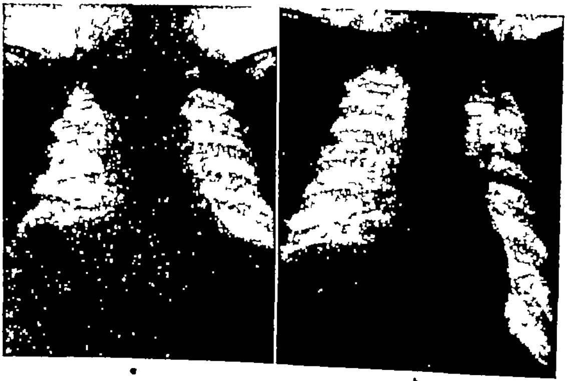
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Fig 2—Case 3 before and after treatment.

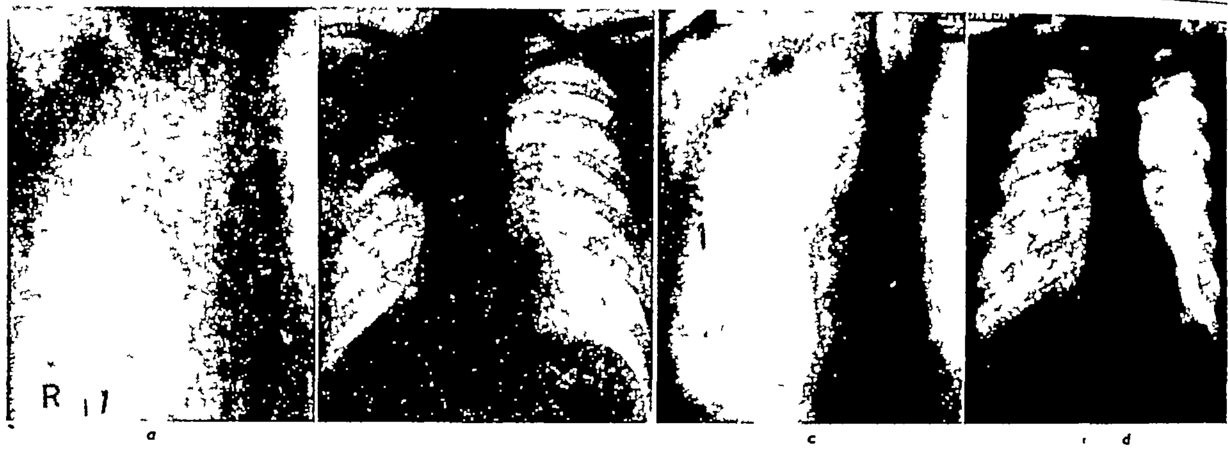

Fig 3—Case 4 before and after treatment

the pain and dysphagia which resulted from mediastinal glandular metastases

This next case illustrates the relief of dyspnœa, cough, and sputum

Case 5 —[53/898] A woman fishmonger, aged 53, had a right basal pleurisy in March, 1953 It cleared in a week, but she had a further chest infection in May, with blood streaked sputum for two or three days Bronchoscopy in September, 1953, showed an oat cell carcinoma of the right lower lobe bronchus

First seen November, 1953 —Grade 3 dyspnœa, a troublesome cough, 1 oz of mucoid sputum, and wheezing Examination showed collapse of the right middle and lower lobes

Treatment —2178r in eleven treatments over fifteen days at 220 kV and 10 mA

Result —Her dyspnœa improved to grade 2, her cough became occasional and her sputum a trace She still complained of wheezing Clinically and radiologically there was re aeration of the right middle and lower lobes (fig 4)

Disposal —She returned home able to manage housework In March, 1954, she had an enlarged solitary deep cervical gland on the right side which regressed after local X-ray therapy She died in July, 1954

Obstruction of the superior vena cava with a gradual onset due to pressure from enlarging glands should be differentiated from the sudden onset of thrombosis due to invasion of the vein wall by growth, the former responding well, the latter poorly Any patient with obstruction of the superior vena cava deserves a trial of palliative X ray therapy because the chances of relief are good and death from such obstruction is extremely unpleasant

As regards chest pain, both the " visceral " and the " mediastinal " types respond well, but the " invasive " type responds poorly

A tumour in the superior sulcus involving the upper dorsal nerves or the brachial plexus is a different problem. Analgesics are taken in increasing doses, the patient usually being relatively well, apart from pain Recent interest in the effect of sympathetic denervation in pain prompted a trial of cervical sympathectomy in such a case

Case 6 —[H 45838] A storeman, aged 67, had left sided chest *pain and a troublesome cough in June, 1952* In the following January his sputum was streaked with blood, and radiography of his chest showed a shadow in the left upper zone which thoracotomy revealed to be due to a poorly differentiated squamous carcinoma During February, 1953 before this investigation was started, he had a course of palliative X ray therapy

Seen in August, 1953, he had left upper chest pain of " invasive " type radiating to the left subscapular region and down the left arm, so severe as to require regular analgesics He had a troublesome cough with a trace of blood streaked sputum On examination there was tenderness over the left upper chest

Treatment —2402r in eleven treatments over sixteen days at 230 kV and 15 mA.

Result —The hæmoptysis ceased, and the cough improved, but the pain and tenderness remained There was no radical change

Disposal —He returned to work until February, 1954, when the severity of the pain demanded further treatment A stellate ganglion block with local anæsthetic having alleviated the pain, left cervical sympathectomy was performed in June, 1954 This relieved the pain for three months, but he was then compelled to return to regular analgesics.

This patient illustrates the poor response of " invasive " pain due to invasion of the chest wall by a peripheral growth Such patients suffer greatly and warrant trial of other measures to give them some symptomatic relief

In any patients with bronchial carcinoma one of the major factors in prognosis is the histological type of growth This applies to the response to palliative X-ray therapy, and in this series 53% of squamous cell growths improved, compared with 65% of the others improved Brown (1952) found that 19% of squamous cell growths improved, compared with 57% of anaplastic These figures reflect the greater radiosensitivity of oat cell and of undifferentiated tumours, which are consequently more effectively treated by a palliative course of irradiation Concerning the site of the tumour, growths of the upper lobe responded slightly better than those of the lower lobe, and all the growths occluding the main bronchus responded poorly

In this series the results obtained with an average dose of 2161r in twelve treatments were not improved by increasing the dosage Brown (1952) also found that the percentage improvement was the same for a dosage of 2000–3000r as for one of 4000–5000r

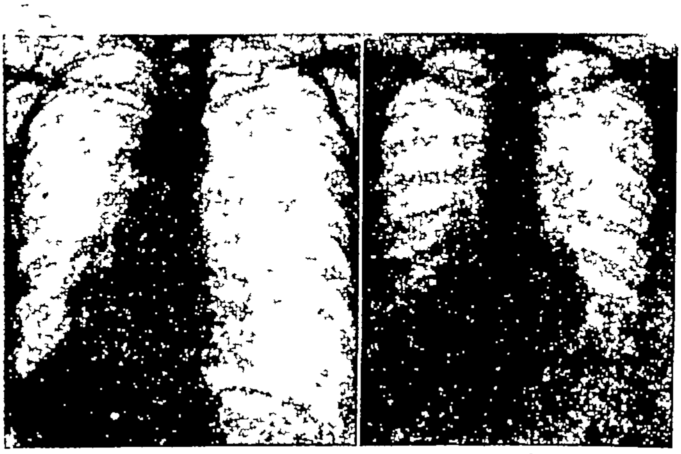

Fig 4—Case 5 before and after treatment.

Antibiotics may also be needed in patients with infection distal to bronchial occlusion 4 such patients so treated all improved, whereas only 5 of 8 treated by X ray therapy alone improved

Most patients develop erythema and pigmentation at the site of treatment. Some had anorexia and slight nausea but none developed radiation sickness In case 1 treatment had to be abandoned but this was probably because the disease was so far advanced

Summary

The effect of palliative X ray therapy in 35 patients with histologically proved bronchial carcinoma is analysed

Symptoms were relieved as follows

Obstruction of superior vena cava	in 83%
Cough	in 76%
Dysphagia	in 75%
Hæmoptysis	in 64%
Chest pain	
Mediastinal	in 100%
Visceral	in 66%
Invasive	in 0
Dyspnœa	in 58%

After treatment 60% of patients had improved as regards their general condition 40% were able to live independently and 17% returned to work

The most effective course was an average dose of 2161r given in twelve treatments Higher dosage and longer treatment produced no better results

Squamous-cell tumours did not show such good results as did other histological types

Upper lobe growths responded slightly better than lower lobe growths.

This work was done on a grant from the Middlesex Hospital Clinical Research Committee and I should like to thank Prof. B W Windeyer Miss M D Snelling Dr W R Ward and Dr L. G D Picciotto for permission to study cases under their care. From Dr Arthur Willcox who suggested the survey I have had much encouragement and advice I am also grateful to Dr A J H Hewer for his help with case 0 to the radiological pathological and records departments of the Middlesex and Mount Vernon Hospitals and to Miss M L Autin and to Mrs C L. Burton for secretarial assistance

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The great advantage enjoyed by the physician of an earlier age was that he saw his patients as whole persons and familiar friends. He saw them in health as well as in sickness. He dealt with birth childhood maturity and old age and with all common ailments. His technique was meagre but he performed it all Hippocrates legislated only for the responsibility of an individual physician attending a patient or a few patients in a single family Even now that is how it generally begins and ends at the beginning of life and the end of it But in between something else has crept in something unknown to Hippocrates. We now have to worry about collective responsibilities and especially about public health. In the interest of public health individual interests may have to give way Nobody has formulated rules about this yet and I do not envy anybody who tries. At present it means that physicians sometimes violate the Hippocratic Oath in a small way and nobody except the physician takes much notice. They might find themselves doing it in a large way and then the trouble would begin. This is a pointer to one of the difficulties of the new age; we have no codes and no traditions about collective moral responsibility we have on the other hand a great deal of detailed legislation which does not command moral respect Thou shalt not steal does command moral respect Thou shalt not park thy car on the left hand side of the road on odd days of the month nor yet does not "—Prof A D Ritchie *Univ Edinb J* summer 1954 p 233

ACTIVE VENTILATION IN TREATMENT OF RESPIRATORY ACIDOSIS

IN CHRONIC DISEASES OF THE LUNGS*

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Increased experience in Denmark with artificial ventilation partly through work during the epidemic of poliomyelitis in 1952 (Lassen 1953), has aroused interest in the numerous possibilities of this treatment We report here some investigations into the effects of different methods of ventilation in the treatment of respiratory acidosis in patients with chronic bronchitis with pulmonary emphysema

Chronic pulmonary emphysema reduces the alveolar ventilation and this reduction may gradually lower the oxygen saturation and increase the carbon dioxide tension ($p\,CO_2$) of the arterial blood In spite of the increase in $p\,CO_2$ the pH of the blood is generally normal (compensated acidosis) In acute impairment of the function of the lungs, due to infection accumulation of secretion or the administration of morphine, the $p\,CO_2$ increases further the pH decreases (uncompensated acidosis), and extreme cyanosis and unconsciousness develop If this condition is not dealt with the increased $p\,CO_2$ will paralyse the respiratory centre ventilation will be further reduced, and the vicious circle will soon lead to death

The treatment must establish adequate ventilation In some patients a mere increase in the concentration of oxygen inhaled will not suffice, because it may reduce the ventilation and aggravate the hypercapnia and acidosis. This phenomenon which has been much discussed (Richards and Barach 1932 Donald 1949 Comroe et al. 1950 Bickerman and Beck 1952 Henriksen 1953), is caused as follows

The sensitiveness of the respiratory centre to increased $p\,CO_2$ is reduced in such patients The anoxæmia which influences the respiratory centre via the chemoreceptors in the aortic arch and the carotid gland thus becomes of increasing importance to the activity of the centre When anoxæmia is prevented by the administration of oxygen in a high concentration, the activity of the respiratory centre will be much impaired because its most important stimulus has been removed

If oxygen treatment of such patients aggravates the hypercapnia artificial ventilation should be instituted At the same time an attempt should be made to improve the function of the lungs by other means—e g by antibiotic treatment of any infections aspiration of secretion from the trachea and the bronchi, or physicotherapeutic exercise of the lungs to promote the expectoration During the acute stage one may attempt to improve the ventilation by manual or mechanical ventilation

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* Abridged from a paper which appeared in Danish in *Ugeskrift for Læger* 1955 117 247 Published by permission of the Editor Prof Mogens Fog

A few reports of treatment with artificial ventilation according to these principles, often with excellent effect, have been published (Boutourline-Young and Whittenberger 1951, Chermiak 1953, Segal and Dulfano 1953, Stone et al 1953, Lovejoy et al 1954)

The Investigations

Methods

The oxygen saturation of the blood was determined by Brinckmann's reflectometric method (Zijlstra 1951), and p CO_2 was calculated from Henderson-Hasselbalch's equation on the basis of determination of pH and total content of carbon dioxide in the plasma The electrocardiographic signs of cor pulmonale were right axis deviation and large P_2 and P_3 Where the clinical condition allowed, the function of the lungs was assessed from determinations of the vital capacity and the maximum breathing capacity

In three patients the pulmonary function was investigated in greater detail The ventilation at rest, the total capacity and its fractions, and the oxygen consumption were measured, and a Tiffeneau test was performed

The artificial ventilation was given with a tank respirator (Dräger and Emerson), and the manual ventilation was effected through an endotracheal tube with a to and-fro system with or without an absorber The tracheal or tracheobronchial toilet was performed by aspiration through a tube introduced into the trachea or through a bronchoscope Physicotherapeutic exercise of the lungs was given by a specially trained physicotherapist, usually two or three times daily for several weeks Oxygen was given in an oxygen tent or through a nasal catheter All the patients were treated with antibiotics, usually penicillin G 4 million units daily

Series of Patients

The patients were six men with chronic bronchitis and emphysema admitted to the medical department of Blegdamshospitalet between October, 1953, and September, 1954 All of them had experienced an acute aggravation of their illness and were extremely ill, almost moribund, when treatment was started Clinical and laboratory findings are given in table I

Treatment

In most cases the procedure in the acute situation was as follows Oral intubation with introduction of a tube into the trachea was performed at once Aspiration from the trachea and the bronchi was effected with a Tiemann catheter introduced through the tube Oxygen treatment was then instituted while the patient was closely observed If the condition was aggravated, with sluggishness and a rise in p CO_2 in the arterial blood, artificial ventilation was instituted, in some cases first in the tank respirator and, if this was ineffective, then as manual ventilation through the tracheal tube Supplementary treatment was administered in the form of antibiotics, physicotherapeutic exercise of the lungs, and repeated tracheobronchial toilet Some patients were fed through a stomach tube The artificial ventilation was discontinued when the patient's breathing had become sufficiently effective, estimated clinically and by analysis of arterial blood When ventilation was required for more than 48 hours, its administration through a tracheotomy tube after tracheotomy was considered. This was done in one case

TABLE I—CLINICAL AND LABORATORY FINDINGS AT ADMISSION IN 6 PATIENTS WITH CHRONIC BRONCHITIS AND RESPIRATORY ACIDOSIS

Case no	1	2	3	4	5	6
Age (yr)	67	56	53	61	61	51
Duration of bronchitis (yr)	10	Several	50	9	36	32
Depressant drugs given before admission	–	+	–	–	–	+
Oxygen saturation of arterial blood	77	53	39	50	51	31
pH of arterial blood	7 36	7 12	7 24	7 29	7 33	7 20
p CO_2 of arterial blood	60	90	76	73	66	78
Hæmoglobin (%)	111	64	82	121	118	100
Erythrocytes (million per c mm)	5 3	4 08	4 29	5 59	5 79	4 91
Hæmatocrit (%)	50 9	34 6		54 2	59	47 8
Purulent sputum and pyrexia	+	+	+	–	+	–
Infiltration of lungs (radiography)	–	+	–	–	–	–
Right axis deviation large P_2 and P_3	–	+	+	+	–	+
Congestive heart failure	+	+	–	+	+	–

Results

Treatment and results are shown in table II Two of the patients were treated with a tank respirator alone, one died Two were first treated with a tank respirator and, that being ineffective, with manual ventilation, one of these patients died The fact that the tank respirator was ineffective in these two cases may be due in one case to bronchial intubation with much reduced ventilation of the left lung, and in the other to the inability of the patient to follow the rhythm of the respirator Finally, two patients, who were much exhausted during the acute stage, were treated *only by* manual ventilation, they are both alive

TABLE II—TREATMENT AND COURSE OF ILLNESS OF 6 PATIENTS WITH CHRONIC BRONCHITIS AND RESPIRATORY ACIDOSIS

Case no	1	2	3	4	5	6
Tank respirator used	–	+	+	+	+	–
Manual ventilation through endotracheal tube used	+	+	–	+	–	+
Tank respirator effective		–	+	–	+	
Manual ventilation effective	+	+		+		+
Complications	S	B I	B I Asp	S	–	–
Died in hospital			+	+		
Condition on discharge	Improved	Improved			Improved	Improved

Asp aspiration B.I , bronchial intubation S, shock.

The effect of the artificial ventilation appeared sooner with manual ventilation than when a tank respirator was used

Complications

Intubation of the right main bronchus with resulting insufficient ventilation of the left lung occurred twice. In both cases the error was soon discovered and corrected. *Vomiting* with *aspiration* occurred in case 3 during treatment with a tank respirator Severe *shock* was observed in case 4 and moderate shock in case 1

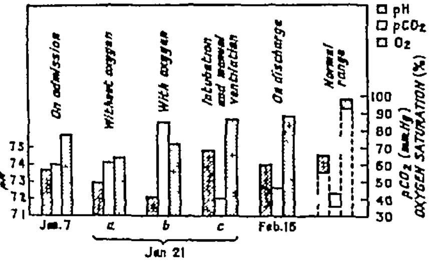
Illustrative Case-report

Case 1 —A former workman, aged 67, who had had bronchitis, expectoration, and increasing dyspnœa on exertion for about 10 years, was admitted with an acute exacerbation.

On admission he had pronounced cyanosis and dyspnœa, temperature 38°C (100 4°F) , blood-pressure 130/70 mm. Hg pulse rate 68

Investigations —Radiography of the thorax showed sequelæ of left sided pneumonia and slight increase in width of the heart Electrocardiography showed left bundle-branch block. The arterial blood showed normal pH, increased p CO_2, and low oxygen saturation (see figure)

Course and treatment —The patient was treated for about a week with oxygen and procaine penicillin, but he became worse, his arterial blood showing decreased pH, increased p CO_2, and improved oxygen saturation (see Jan. 21a and b in figure) He gradulaly became deeply comatose A cuffed tube was therefore introduced into his trachea, and manual positive pressure ventilation was instituted after the intravenous injection of tubocurarine 9 mg Large quantities of mucopus were aspirated from the bronchi In about an hour the pH, p CO_2, and oxygen saturation of the arterial blood



Case 1: arterial carbon-dioxide tension pH and oxygen saturation on admission during treatment with oxygen with intubation and manual ventilation, and on discharge. Note aggravation during oxygen inhalation and improvement during manual ventilation.

had become normal (see Jan 21c in figure) in 8 hours the patient was completely conscious and after 22 hours manual respiration the tube was removed. Respiration was effected with nitrogen monoxide-oxygen 50%, 4 litres flow without absorber Repeated falls of the blood pressure during ventilation were counteracted by repeated injections of l-phenylephrine and blood transfusion

The patient was treated with oxygen for another two weeks. Antibiotic treatment of the bronchial infection was instituted with procaine penicillin chlortetracycline (aureomycin) and sulphadiazine After five weeks in hospital he was discharged with satisfactory pH pCO_2, and oxygen saturation (see figure)

Follow-up—He was out of bed with moderate dyspnœa on exertion when seen 5 months after discharge Pulmonary function tests then showed vital capacity 1 9 litres (56% of normal) total capacity 3 5 litres, residual air 1 6 litres, and maximal breathing capacity 18% of normal. Other tests indicated emphysema with pronounced obstructive pulmonary insufficiency

Readmission.—A year later the patient was readmitted His condition had been tolerably well up till a month previously when he had an exacerbation of his bronchitis and an acute sinusitis. Under oxytetracycline (terramycin) therapy he improved, and on discharge his condition was almost the same as the year before Treatment with sodium penicillin had to be cancelled owing to a severe allergic reaction.

Discussion

Four out of six patients were discharged improved. The favourable course in these four cases can no doubt be ascribed to the fact that the reduced pulmonary function was due to either acute infection or acute impairment of the respiratory centre following the administration of depressant drugs

The question arises whether these results can be improved. Possibly the aspiration of vomit with fatal consequences in case 3 might have been avoided by prophylactic evacuation of the stomach and controlled administration of fluids this was done in all the cases treated later The chief cause of the severe shock in case 4 may have been prolonged anoxæmia during the 2-hour experiment with tank respirator treatment The tank respirator should undoubtedly be superseded by manual ventilation when it causes difficulties.

We wish to emphasise that several different methods of treatment were used simultaneously in these cases It may often be difficult to decide which form of treatment is the best However we do not doubt that artificial ventilation is one of the most essential causes of survival me of these patients.

me may question the advantage for these patients nging them through the critical phases of an illness h cannot itself be appreciably influenced The fact wever that in most cases it is impossible in the te stage to know how the patient s condition has been viously and how good it may be in the future

Summary and Conclusion

Six patients with chronic bronchitis and emphysema were treated during a phase of uncompensated respiratory acidosis by artificial ventilation supplemented by antibiotic treatment, physicotherapeutic exercise of the lungs, and tracheobronchial toilet Two patients were treated with a tank respirator only two first with a tank respiratory and then by manual ventilation, and two with manual ventilation only One patient of each of the two first groups died, four patients were discharged improved

Thus by active therapy patients with chronic bronchitis and emphysema can be brought through phases of severe respiratory acidosis which must otherwise be fatal. Both manual ventilation and tank respirator may be used but the former seems to be the safer method

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6-MERCAPTOPURINE IN ACUTE LEUKÆMIA

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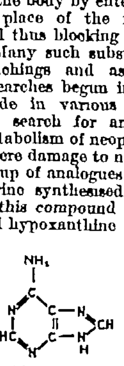
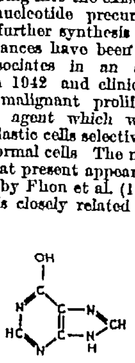
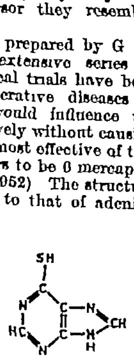
Synthetic analogues of naturally occurring purines and pyrimidines might be expected to act as metabolic antagonists in the early stages of nucleic acid synthesis in the body by entering into the existing enzyme systems in place of the nucleotide precursor they resemble, and thus blocking further synthesis

Many such substances have been prepared by G H Hitchings and associates in an extensive series of researches begun in 1942 and clinical trials have been made in various malignant proliferative diseases in the search for an agent which would influence the metabolism of neoplastic cells selectively without causing severe damage to normal cells The most effective of this group of analogues at present appears to be 6 mercaptopurine synthesised by Elion et al. (1952) The structure of this compound is closely related to that of adenine and hypoxanthine


Adenine


Hypoxanthine


6-Mercaptopurine

Studies of the metabolism of nucleic acid in *Lactobacillus casei* and other micro-organisms have shown that 6-mercaptopurine acts as a metabolic antagonist of adenine and hypoxanthine. Presumably the mode of action in mammalian tumours is similar although neither the chemotherapeutic nor the toxic effects can be reversed by administering purine In laboratory animals the toxic effects are chiefly on cells of the bone marrow and other hæmopoietic tissues and the gastro-intestinal tract, although hepatic degeneration may follow very high dosage (Philips et al 1953, Clarke et al 1953)

Clinical trials of 6 mercaptopurine, during the last three years, in acute and chronic leukæmias, malignant reticulo endothelial disorders, and metastasising neoplasms of various kinds have suggested that this anti metabolite may be of considerable value in acute leukæmia and perhaps in chronic granulocytic leukæmia, although it appears to be substantially ineffective in most other malignant conditions (Burchenal et al 1953, Hall et al 1954, Fountain 1955) The potentialities of 6 mercaptopurine are of particular interest because reports suggest that it may prove more effective than other agents in the treatment of acute monocytic leukæmia and acute leukæmias in adults

The present report is based on a study of 15 adults with acute leukæmia who have been treated with 6-mercaptopurine in the last two years

Classification of Cases and Assessment of Remission

Cases have been classified on a cytological basis into myeloblastic, lymphoblastic, and acute monocytic types, with the aid of Romanowsky, Sudan-black, Feulgen, and peroxidase staining methods and phase contrast microscopy Most cases in this series did not present great difficulty in cell identification 4 were lymphoblastic, 6 myeloblastic, and 5 acute monocytic

Remissions were assessed as complete when clinical signs and symptoms of the disease disappeared and the peripheral-blood and bone marrow pictures returned essentially to normal, with less than 10% of primitive cells and lymphocytes in the marrow aspirate When substantial improvement in clinical manifestations took place, accompanied by a return in blood and marrow cytology towards normal but with obvious leukæmic features persisting, the remissions were classed as partial

TABLE II—EFFECT OF 6 MERCAPTOPURINE IN ACUTE LEUKÆMIA

No of cases treated		No of remissions	Complete or nearly complete remissions
Myeloblastic	6	2	1
Lymphoblastic	4	2	1
Monoblastic	5	3	
Total	15	7	2

Dosage and Control of 6-Mercaptopurine Treatment

The 6 mercaptopurine was given usually in a single daily oral dose, at an initial rate of 2 5 mg per kg body-weight, as recommended by Burchenal et al (1953) Most patients therefore received 120–200 mg daily during the early stages of treatment Dosage was maintained at this level until suppression of leukæmic proliferation became manifest by a fall in the peripheral leucocyte-count and by a reduction in the proportion of primitive cells in the blood and bone marrow, or, in unresponsive patients, until an adequate therapeutic trial had been continued for three weeks

When evidence of response was obtained, intermittent therapy or maintained treatment at a lower dosage was administered until definite leucopenia was produced. When a complete remission was achieved by this means, 6 mercaptopurine was discontinued and was not resumed until relapse threatened In patients whose remission was only partial, frequent intermittent courses of treatment were given in an attempt to prevent recrudescence. Antibiotics were not used routinely but only when there were signs of infection, and blood transfusions were avoided during treatment with 6 mercaptopurine unless rendered essential because of severe anæmia

Gastro-intestinal toxic effects of the kind described by Hall et al (1954) were not observed in most of the present patients, perhaps because the dosage did not exceed 2 5 mg per kg body-weight daily, but in 2 cases anorexia, nausea, and vomiting were unpleasantly severe

In every case treatment was started in hospital, with frequent hæmatological examinations, but patients were allowed home as soon as possible and closely followed

TABLE I—DETAILS OF CASES

Case no	Sex	Age (yr)	Type of acute leukæmia	Previous treatment and remissions	Dosage of 6 mercaptopurine (mg per kg body weight)	Degree and duration of remission	Survival time from onset of disease (months)
1	M	55	Myleoblastic	None	2 5 daily for 8 days, 2 in intermittent maintenance courses	Almost complete, 3 months	6
2	M	45	Myeloblastic	Transfusion and cortisone without effect	2 5 daily for 3 weeks	None	4
3	M	38	Myeloblastic	Transfusion and cortisone without effect	2 5 daily for 2 weeks	None	3
4	F	19	Myeloblastic	Transfusion ineffective	2 5 daily for 3 weeks	Partial, 1 month	8 (including full remission on cortisone)
5	F	44	Myeloblastic	Transfusion and cortisone without effect	2 5 daily for 16 days	None	3
6	F	52	Myeloblastic	None	2 5 daily for 3 days (death occurred before adequate trial of treatment)	None	1
7	F	61	Lymphoblastic	None	2 5 daily for 10 days	None (leucocytes reduced but no clinical improvement)	4
8	M	17	Lymphoblastic	None	2 5 for 5 days further 8 day course after relapse	Partial 2 weeks no effect	3
9	F	37	Lymphoblastic	Transfusion and cortisone complete remission 6 mos	2 5 for 10 days	None	14
10	M	33	Lymphoblastic	Cortisone without effect	2 5 for 10 days 2 for 7 days after 5 months remission	Complete 8 months +	Living and well 11 after onset and after start of remission
11	F	60	Monoblastic	Transfusion ineffective	2 5 daily for 5 days	None	3
12	F	52	Monoblastic	Transfusion, partial remission for 3 weeks	2 5 daily for 7 days intermittent maintenance	Partial 2 months	8
13	F	43	Monoblastic	None	2 5 daily for 21 days intermittent maintenance excessive nausea and vomiting after 5 months' intermittent therapy	Partial 5 months	Living but relapse 8 after onset
14	F	35	Monoblastic	Transfusion ineffective	2 5 daily for 11 days	Partial 2 months	4
15	M	21	Monoblastic	Transfusion ineffective	2 5 daily for 8 days	None	3

at weekly or fortnightly visits to the outpatient department

Results of Treatment

Brief details of all 15 patients are given in table I and the frequency of remissions in the different cytological varieties of acute leukæmia is analysed in table II

Discussion

Although the results of treatment with 6 mercaptopurine in children with acute leukæmia are probably no better than those achieved with folic acid antagonists (Burchenal et al 1953) the drug has clearly an important place in the management of acute leukæmia in adults Hall et al. (1954) treated with 6 mercaptopurine 24 adults with acute leukæmia and obtained 10 partial and 3 complete remissions. The initial remission rate was higher and the duration of remissions longer in patients with acute lymphocytic leukæmia than in those with either myeloblastic or monoblastic leukæmia but successes were obtained in all cytological types of acute leukæmia.

Fountain (1955) treated 7 adults with 6-mercaptopurine and obtained 3 complete remissions 1 in each of the three major varieties of acute leukæmia 1 further patient showed a partial response and 3 proved refractory to treatment

Burchenal et al. (1953) recorded the results of treatment of 12 adults, among whom 1 experienced a complete and 3 others a partial, remission One of the partial remissions was in a patient with monoblastic leukæmia, and the other remissions were all in those with myeloblastic leukæmia.

The results achieved in the present series confirm the capacity of 6-mercaptopurine to produce remissions in all cytological kinds of acute leukæmia in adults and 6 mercaptopurine is now probably the chemotherapeutic agent of choice in monoblastic and myeloblastic leukæmias in such patients. In lymphoblastic leukæmia whether in children or in adults, corticotrophin and cortisone have not been displaced as the primary agents of choice, but 6 mercaptopurine provides a valuable second agent for use in acute leukæmia resistant to those hormones.

Summary

15 adults with acute leukæmia were treated with 6-mercaptopurine

7 patients experienced remission—partial in 5 and complete in 2

The complete remissions occurred in patients with myeloblastic and lymphoblastic leukæmia and lasted respectively three months and more than eight months

The partial remissions were obtained in 1 patient with myeloblastic 1 with lymphoblastic and 3 with monoblastic leukæmia

6-Mercaptopurine is at present probably the agent of choice in myeloblastic and monoblastic leukæmias of adults.

I wish to thank Sir Lionel Whitby for his constant advice and the physicians of Addenbrooke's Hospital for their help and coöperation. Initial supplies of 6 mercaptopurine were provided through the kindness of the medical directors of Burroughs Wellcome in New York and London.

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PNEUMATOSIS CYSTOIDES INTESTINALIS

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Intestinal pneumatosis is a rare condition characterised by the presence of cystic lesions varying from 1 mm to 2 cm or more in diameter containing gas mainly nitrogen and having a lining of flattened or cubical cells of doubtful origin They occur either in the subserosa or submucosa or in both situations

Koss (1952) reviewing 213 cases collected almost entirely from mid European and American sources found only 13 in which the colon was involved and none in which the rectum was involved Matthews (1954) was the first to report seeing such cysts on sigmoidoscopy —at 23 cm from the anus

Though now the characteristic X ray appearances are more generally recognised, pneumatosis has only very rarely been diagnosed before operation

No completely satisfactory theory to account for the lesions has yet been suggested The most generally accepted view resulting mainly from the work of Wright (1930) is that intestinal gas is forced into lymphatic channels, having gained entry through a break in the mucosa, such as a duodenal ulcer This is supported by the fact that pneumatosis is often associated with peptic ulcers, especially in cases affecting the small bowel and it is a striking feature that in a large percentage of the published cases the abdomen was opened because of disease of either the stomach or the duodenum usually ulcer the cysts being found incidentally A case reported by Somerville (1951) illustrates many of these points very well

There is some evidence that intestinal pneumatosis is self limiting, and that the cysts may disappear spontaneously

The following case illustrates some of these points

Case report

A woman, aged 43 was first seen in January 1949 complaining of passing blood and mucus in her stools several times a day She also had attacks of abdominal pain, mostly in the left iliac fossa. Her symptoms began in October 1947 but did not become troublesome until the autumn of 1948 In 1946 a year before the onset of these symptoms, she had her abdomen opened for hysterectomy and apparently nothing unusual was observed in the bowel at the time There had been no history of gastric trouble

On admission abdominal examination showed a fullness down the left side of the abdomen but no definite mass Sigmoidoscopy showed a large number of bullous lesions of different sizes bulging into the lumen of the rectum and

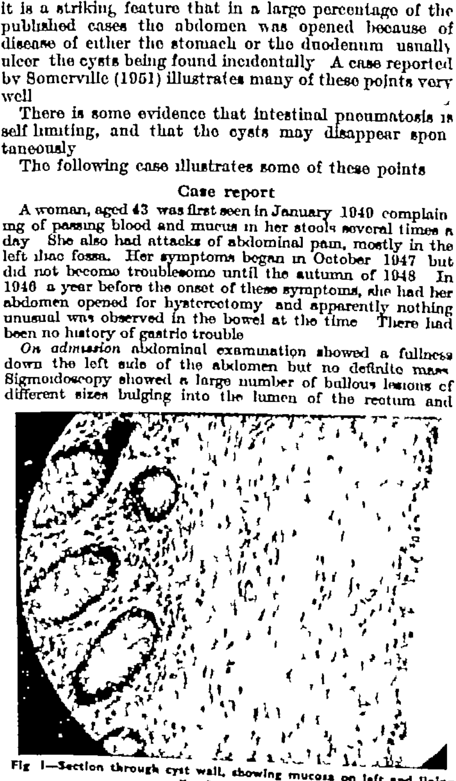

Fig 1—Section through cyst wall, showing mucosa on left and lining cells of cyst on right.

sigmoid as far as the instrument would reach These were clear thin walled dome shaped protuberances The intervening mucosa appeared quite normal Biopsy (fig 1) and radiography showed the typical findings and appearances of pneumatosis The symptoms not being very severe, it was decided to keep the patient under observation, but she left the district

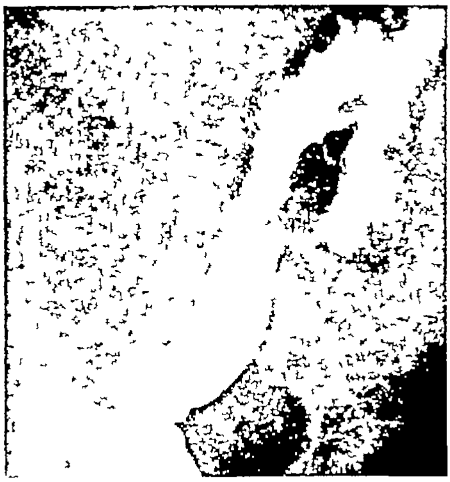

Fig 2—Barium enema, showing the typical serrated appearance and round defects in filling

Re-examination—She did not come again until January, 1954, when her symptoms had changed somewhat, her complaint now being mainly of troublesome constipation and more severe abdominal pain Abdominal examination showed a more definite sausage shaped swelling down the left side of the abdomen, and sigmoidoscopy revealed a considerable increase in the number of cysts, beginning at a point about 17 cm. from the anus, though the rectum appeared little worse than on the previous occasion It was impossible to pass the sigmoidoscope beyond this point, the cysts were clearly now sufficiently numerous to narrow the lumen A barium enema showed that the area involved was the distal part of the transverse and the whole of the descending colon (fig 2)

Course—By March, 1954, symptoms of obstruction were becoming more definite, and it was decided to excise the involved bowel

Operation—When the abdomen was opened, the left colon immediately sprang to view, it looked like a continuous mass of cysts, 0 5–2 0 cm in diameter (fig 3), and felt like sponge rubber There were scattered cysts in the proximal transverse colon, but the very thickly involved and obstructed area consisted of the distal third of the transverse and the descending colon as far as a point about 5 cm above the peritoneal reflection. At this point there was a sudden reduction in the number of cysts This involved piece of bowel was excised and an end-to-end anastomosis was made No other abnormality was found in the abdomen, no cysts being seen in any other part of the intestine Recovery was uneventful

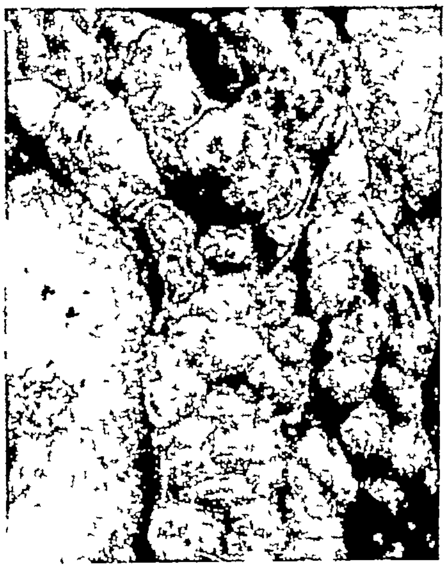

Fig 3—A portion of the mucosal surface of the resected bowel (Photograph by Dr. David Lewes)

Follow up—Sigmoidoscopy three weeks after the operation showed no cysts, those previously seen in the rectum having apparently disappeared Further examination a month later was equally negative The patient was last seen in February, 1955, feeling well and having no symptoms Sigmoidoscopy again showed no abnormality to 25 cm from the anus. A barium enema, however, showed that a few cysts were still present in the transverse colon

Conclusions

The progress of this case, which has been observed for six years, supports the view that intestinal pneumatosis tends to be self-limiting, the cysts disappearing spontaneously

The present case is exceptional in that the cysts were found in the colon and the rectum, and in the fact that the disorder was diagnosed by sigmoidoscopy and radiography

My sincere thanks are due to Dr J C Valentine for advice and help in pathology and photography

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THE IN-VITRO EFFECT OF METHYLTHIOURACIL AND ŒSTRADIOL MONOPHOSPHATE ON THE CONVERSION OF THYROXINE TO TRIIODOTHYRONINE BY KIDNEY SLICES

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Gross and Pitt-Rivers (1952a and b) and Roche et al (1952) have shown that a new organic compound, 3 5 3′ triiodothyronine, is found in the thyroid, blood, and apparently other tissues They have also demonstrated that it has a very powerful biological activity. Gross and Leblond (1951) and Gross and Pitt-Rivers (1952b) suggest that triiodothyronine is formed from thyroxine by deiodination in the extrathyroidal tissues and is probably the active compound

Albright et al (1954) have proved that the conversion of thyroxine to triiodothyronine by deiodination takes place in kidney tissue in vitro They observed that chromatically pure *l*-thyroxine labelled with ^{131}I is partially transformed into triiodothyronine after incubation with slices of kidney surviving in physiological media

We used Albright's method to investigate directly the effect of methylthiouracil *—a synthetic anti thyroid substance—on the conversion of thyroxine to triiodothyronine in kidney tissue Furthermore, since it was suggested by some clinical (Engstrom and Markardt 1954) and experimental (Sherwood 1941, Gundry et al 1952) observations that there is an antagonism in tissues between thyroxine and œstrogens, we studied by the same method the effect of œstradiol monophosphate on the extrathyroidal deiodination of thyroxine

Methods

The incubation and extraction of the iodised compounds with butanol was done by exactly the same procedure as that used by Albright et al (1954) The butanol extracts were analysed by paper chromatography (Lissitzky 1952) Radioactivity was then registered directly on the chromatogram with a rate meter fixed to the Geiger Müller counter (Lerch and Neukomm 1954)

In a first series of experiments, slices of a rat's half kidney, to which was added 0 05 µg of chromatically pure thyroxine † labelled with ^{131}I, were incubated The

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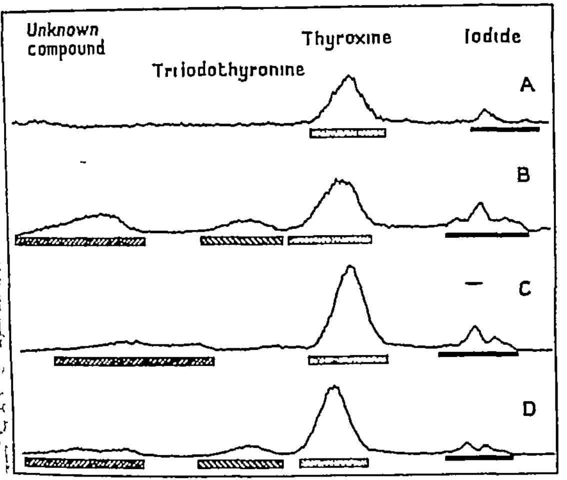
* 'Thiomidil' (Wander)
† Abbott Laboratories



Chromatograms of butanol extracts of homogenised kidney slices after incubation with thyroxine labelled with ^{131}I

A before incubation
B after 4 *hours incubation*
C, after 4 hours incubation + addition of methylthiouracil to the medium.
D after 4 hours incubation + addition of œstradiol monophosphate

specific radioactivity was 25 μC per μg In a second series the dose of thyroxine was 0 03 μg with a specific radio activity of 70 μC per μg The periods of incubation were 4 and 8 hours respectively

Methylthiouracil 15 μg dissolved in an alkaline medium was added to the preparation before incubation We made sure that the solvent had no inherent action of its own, The dose of œstradiol monophosphate was μg in each preparation

The controls—those with methylthiouracil as well as those with œstradiol monophosphate—were prepared simultaneously and incubated in exactly the same conditions.

Results

After incubation of the thyroxine with kidney slices for 4 and 8 hours, the butanol extracts regularly contained triiodothyronine (see figure) In each case the addition of methylthiouracil obviously inhibited the conversion of thyroxine to triiodothyronine. On the other hand, œstradiol monophosphate had no effect on this phenomenon.

Discussion

The results agree completely with those obtained by Albright et al. (1954) and confirm that triiodothyronine may be formed in the extrathyroidal tissues by the deiodination of thyroxine

The fact that methylthiouracil inhibits the deiodination of thyroxine shows that methylthiouracil has a able impact—on the dehalogenation of thyroxine well as on its synthesis

These results confirm absolutely those reported by aclagan et al. (1952) Wilkinson and Maclagan (1953) d Wilkinson et al. (1954) who showed that a synthetic ati-thyroid substance — n butyl 3 5-diiodo-4 hydroxy enzoate—increased the biological effect of triiodo hyronine in mice and inhibited that of thyroxine This ubstance reduced the urinary secretion of inorganic odine in the rat treated with triiodothyronine as well as n the rat treated with thyroxine. These observations uggest that n butyl-3:5 diiodo-4 hydroxybenzoate affects the deiodination of these two organic iodised compounds, and that triiodothyronine is the biologically active one

Œstradiol monophosphate had no obvious action on the extrathyroidal deiodination of thyroxine Perhaps it acts differently or the doses were not large enough

A rapidly migrating iodised compound usually appears on the chromatograms This compound has not yet been identified It is probably the result of a binding of iodine with a lipoid carrier (Vannotti et al 1955) We called it the ' yellow spot.

Summary and Conclusions

Chromatographically pure thyroxine labelled with ^{131}I was incubated with kidney slices in a physiological medium After incubation for 4 and 8 hours butanol extracts of the homogenised kidney slices were chromatographically analysed and always found to contain radioactive triiodothyronine. Therefore, under these experimental conditions thyroxine is converted to triiodothyronine by deiodination

The addition of methylthiouracil inhibited this conversion of thyroxine to triiodothyronine whereas œstradiol monophosphate had no effect on it

These experiments show that the antithyroid action of methylthiouracil is due not only to the inhibition of the synthesis of thyroxine in the thyroid gland, but also to the inhibition of the conversion of thyroxine to triiodothyronine in other tissues.

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COMA AND ELECTRO-ENCEPHALO-GRAPHIC CHANGES IN HYPOPIT[illegible]

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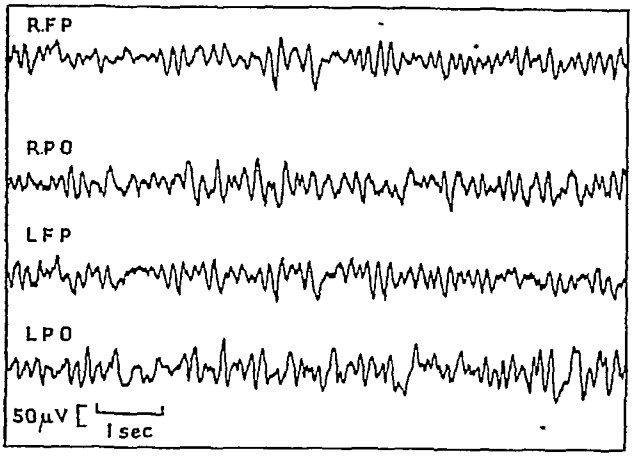
In Simmonds [illegible] of coma are [illegible] completely

The fact [illegible] either a [illegible] to insulin [illegible]



Electro-encephalogram of a woman, aged 49, who had had repeated attacks of coma over three years

coma might be due to hypoglycæmia, but it soon became clear that this was not the invariable cause when some patients did not recover consciousness after intravenous injections of glucose had raised their blood-sugar level well above normal

Subsequently Sheehan and Summers (1952) noticed that an extremely low body temperature was sometimes associated with an attack of coma, and that correction of the hypothermia by the simple application of heat might restore consciousness rapidly

Finally, in a few cases of coma a widespread disturbance of the electrolytes of the blood has been found which was conceivably responsible for the condition

It therefore seems that, either singly or in combination, hypoglycæmia and hypothermia may certainly precipitate coma in hypopituitarism, and, less convincingly, that other disturbances of the blood chemistry may play a similar part

On the other hand, we have observed in hypopituitarism prolonged coma in which neither hypoglycæmia nor hypothermia was present and the blood chemistry was normal In a recent case the concentration of electrolytes in the muscles and the blood was also within the range of that found in 20 healthy people (J A Litchfield, personal communication) save for a moderate rise in the blood-urea level

Investigation

In view of the possible relationship between the pituitary gland and nervous structures, we thought that it would be interesting to study electro encephalograms in Simmonds's syndrome to see if there were any evidence of hypothalamic or other nervous disturbance, despite the generally accepted statement that the electro encephalogram is normal in hypopituitarism in the absence of a space occupying lesions For this purpose we collected 7 patients in all of whom the diagnosis had been completely established by clinical and laboratory investigation

Results

In 2 male patients who had never had periods of coma we obtained normal electro encephalograms

2 other patients with normal tracings had had a single isolated period of unconsciousness only, three years or more before electro encephalography In 1 of them the coma coincided with the onset of cortisone treatment, in the other the coma lasted only half an hour and the nature of the attack remains in doubt

3 patients who had had repeated attacks of coma gave abnormal electro encephalograms

A B persistently gave an abnormal tracing at all times, with widely distributed theta and delta activity which would be quite consistent with hypothalamic dysfunction.

C D gave a record of the same type while "giddy" but not unconscious, though on other occasions her record has been "within normal limits" though showing very low voltage activity

E F, showed generalised high voltage delta waves during coma accompanied by hypoglycæmia At other times her record shows very low voltage theta activity which is almost "flat" in the frontal leads

Comments

Though the number of cases is too small and the variability too great to draw any definite conclusion, a liability to coma in disorder of the pituitary gland apparently does tend to be associated with an abnormal electro encephalogram of such a kind as is not inconsistent with hypothalamic dysfunction

Cases of fully established Simmonds's syndrome are rare, and we have found no other reports on electro-encephalograms in this disease save the statement by Piaggio Bianco (1950) that in 2 cases of secondary myxœdema of pituitary origin there was generalised theta and delta activity over the whole head, so the matter seems to us to merit further investigation

We thank Dr S R F Whittaker for placing case-records at our disposal and obtaining some electro encephalograms for us

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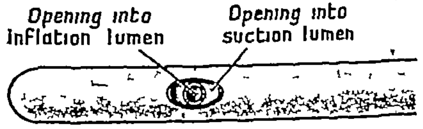
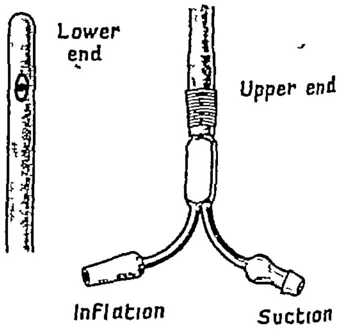
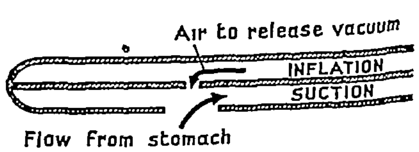
New Inventions

A GASTRIC ASPIRATION-TUBE

Continuous gastric aspiration has become one of the most important adjuncts to abdominal surgery, because of its great value it has produced a great deal of extra work for the nurses The difficulties in the use of a ordinary single-lumen tube of the Ryle type are as follows







(1) When the stomach has become empty by aspiration the inlet holes in the tube are liable to blockage by mucosa since the vacuum is still being produced. This applies to any

ethod of continuous suction whether by inverted bottles, ater suction pump, or electric suction pump and causes uch extra work for the nurses

(2) If suction continues in the presence of mucosal blockage he gastric mucosa may be ulcerated as has often been found t necropsy

(3) The tube may become blocked by blood clot or particles f food

In the drainage of other areas of the body the ump type of drain allows continuous successful aspira ion of exudate This principle has been used in the esign of a gastric aspiration tube which largely vercomes the first and second above-mentioned ifficulties.

The new tube (see figure) has a double lumen At the upper end is a metal attachment allowing independent ccess to each lumen One side is marked SUCTION, and the other INFLATION At the lower end of the tube the uction lumen opens into the stomach. At the same evel the inflation lumen opens into the suction lumen, opposite the opening into the stomach

The method of use is to pass the tube via nose or mouth into the stomach A suction apparatus is attached to the suction side the inflation side being left open to the air When gastric contents cover the lower end of the tube they will be sucked up in the usual way When the stomach becomes empty, air will be sucked from the inflation lumen, thus breaking any vacuum between mucosa and the suction side of the tube As fluid accumulates in the stomach a combination of air and fluid will be sucked up It is imperative that the suction be of low power—say, the equivalent of 3 ft. of water Alternatively, suction being developed slowly by a small-capacity pump such as the 'Minivac' (Thackray Ltd) is suitable. High powered suction defeats the object of the tube since the rate of air inflow down the inflation tube is insufficient in those circumstances to break the vacuum fully

If the tube is blocked by blood-clot or by particles of food, forcible entry of water down the inflation side will help to clear the block, and the same method can be used on the suction side If water has been used down the inflation side it should be cleared by a small injection of air To prevent obstruction of the tube by blood clot after gastrectomy the tube is passed before operation and aspiration is started as soon as any blood is liable to be present in the stomach. This prevents the blood from clotting before it can be aspirated.

Once the nurses have become accustomed to the use of this tube, their work is greatly reduced

Messrs. J G Franklin & Sons Ltd have made this tube to my design. These tubes can be obtained through any surgical supply house

Ballochmyle Hospital,
Mauchline Ayrshire

GAVIN CLELAND
M.B.E., F.R.C.S.E.

A VEIN STRIPPER WITH DETACHABLE HEADS

MOST strippers in use today consist of a single or coiled ire with, at one end, a fine knob or introducer and at he other, a larger knob against which the vein is stripped The stripper is either introduced into the vein at the groin nd passed from above downwards, or introduced below t the ankle and passed upwards. It is often more difficult o pass the stripper down the whole length of the aphenous vein because it tends to enter branches or e held up at a tortuosity If the stripper is introduced rom below it usually passes without trouble to the groin ecause many of the tributaries approach the saphenous ein from the same direction as the main venous flow, nd the stripper therefore does not enter them

Once the stripper has been introduced however it is asier to strip the vein from above downwards than from elow upwards. This is partly because the vein is more olid at the groin and is less liable to tear, and partly ecause there is less loose areolar tissue between the vein nd the skin in the leg than in the thigh and therefore he stripping is often more difficult to start in the leg specially if there is or has been associated ulceration.

Sometimes one cannot pass the stripper either up or own the full length of the vein from either end, owing to bunches of tortuous veins in the middle thirds of the calf and thigh

These difficulties can be largely overcome if the stripper has detachable heads, enabling either end to be introduced into a vein and a head to be attached at whichever end is convenient, thus allowing the stripper to be passed from below upwards and the vein to be stripped from above downwards

The stripper so designed consists of a coiled wire with a single wire core having an introducer at both ends. The introducer is made of a sleeve with a bevelled expansion near its tip (fig 1) The head is composed of two parts, a slotted flange and a cap which screw together When the introducer emerges from the vein it is passed through the slot of the flange and then pulled down so that its bevelled surface engages with a similar face on the flange (fig 2) The head is then united by screwing down the cap (fig 3)

This stripper has proved of value in the function for which it was designed It has an additional advantage that where varicosities in the middle thirds of the leg and thigh present a difficulty, the stripper can be introduced into the long saphenous vein at the knee one end being passed upwards to the groin and the other downwards to the ankle The heads are then attached and both segments of the vein are stripped towards the knee.

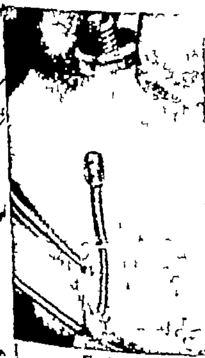


Fig. 1

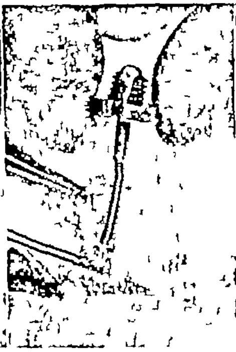


Fig 2.

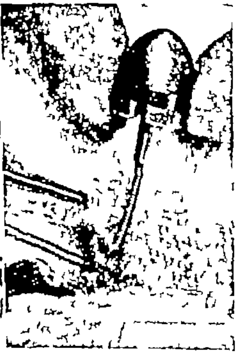


Fig 3

We are grateful to Sir Cecil Wakeley for his interest and encouragement and we wish to thank Mr S T Smith, of the physicist s department of King s College Hospital for his help and skill in the making of this instrument

King's College Hospital
London

F T GRAVES
F.R.C.S

P W BLOWER
M.D Lond.

Reviews of Books

Corneal Grafts

B W RYCROFT, O B E, M D, D O M S, F R C S, ophthalmic surgeon, corneoplastic unit, Queen Victoria Hospital, East Grinstead London Butterworth 1955 Pp 285 57*s* 6*d*

THIS is the first book of its kind in the English language, and is worthy of its author, who has done so much to further corneal grafting in this country

The text is a series of monographs by experts from various parts of the Western world They deal with all aspects of corneal grafting, not only surgical, but biological, legal, and histopathological, and each in his own sphere gives a clear account of his subject But in a volume such as this there are bound to be gaps, and some important new methods, such as the scientific measurement of corneal thickness, receive only brief mention But there are beautifully illustrated, detailed accounts of all well recognised techniques, and no one reading these pages can be in doubt about the steps of each operation Since there is no unanimity about the best method of fixing a corneal graft in position, various methods are described and some comparative results given

The first question asked by a patient is likely to be about the chance of losing the eye as a result of this operation But the answer to this question is not easily found in the text and the reader is left with the fact that in penetrating grafts about 5% of eyes are "made worse" More detailed statistics must be forthcoming before this question can be answered

Mr Rycroft's book can be recommended to all ophthalmologists engaged in this work They will find in it practical advice from surgeons of many parts of the world

La progénèse

Facteurs préconceptionelles de développment de l'enfant Editor RAYMOND TURPIN, professor, Faculty of Medicine, Paris Paris Masson 1955 Pp 703 Fr 3500

"PROGÉNÈSE" is a word coined by Professor Turpin to cover all the factors which may influence a child's development, even before conception This book is a report of the addresses at a course he directed at the International Children's Centre in Paris in 1954 Its range is very wide Man's place in Nature, human heredity, existing eugenic legislation and the prospects of eugenics in the future, the effects of malnutrition and toxins on the human germ cells, and the treatment of infertility are all included Moral aspects, too, as they appear in a Catholic country, are discussed by a Jesuit who is also a scientist There is little original material, but as a synopsis of recent, particularly continental, work on pre-conceptional influences it is very useful A chapter on the heredity of disorders of the nervous system by L van Bogaert is outstanding because of the author's knowledge of pathology, and a stimulating contribution from J B S Haldane on the biochemical action of genes visualises a time when young couples will exchange information on the recessive mutations they each carry before they become engaged

The Surgery of Theodoric

Volume I, Books I and II Translated by ELDRIDGE CAMPBELL, M D, and JAMES COLTON, M.A Issued under the auspices of the New York Academy of Medicine New York Appleton Century Crofts Inc 1955 Pp 223 $5 50

Theodoric's *Chirugia*, written in 1267, is of interest to the modern surgeon not only for its content, but also for the picture it gives of medieval surgical thought and practice Theodoric was possibly the actual son, and certainly the professional and spiritual son, of Hugo of Lucca His writings record the surgical principles and practices of the father Often he elaborated them, after having tested them in his own practice

Much of the text is astonishingly wise The resources of medicine are said to be three diet, drugs, and surgery, the last to be used only when the others are inapplicable. He points out that the word "chirurgia" comes from two greek words meaning "action with the hand" He recommends that "practitioners of surgery frequent the places where skilled surgeons operate, to attend their operations diligently and to commit them to memory" He urges them not "to be rash or daring," but to "operate under all circumstances with what gentleness they can, especially around cerebral membranes, sensitive parts and other ticklish places" Dealing with wounds he writes "above all else a wound must be made clean." He appreciated the need of leaving a wound dry, and often he speaks about boiling the wine or other substances to be used on wounds before their application. He states that the wound so prepared should not be drained but should be closed either by sutures or by bandages and bolsters applied to each side of it and then it should not be disturbed for four to six days This is strictly modern surgery, although written nearly seven hundred years ago

The present volume is a translation of the first two books of Theodoric It deals with wounds, dislocations, fractures, and hæmorrhage The remainder of his work is to be published in a second volume Surgeons, orthopædic surgeons, and anyone interested in the history of medicine will find this book very interesting Undoubtedly Theodoric was one of the great surgeons

Morals and Medicine

JOSEPH FLETCHER, professor of pastoral theology and christian ethics, Episcopal Theological School, Cambridge, Mass London Gollancz 1955 Pp 243 15*s*

IN this book an American theologian discusses "the moral problems of the patient's right to know, contraception, artificial insemination, sterilisation and euthanasia"

For Professor Fletcher the chief end of man is to develop to its fullest stature that highest part of him, his personality, and this is to be done by exercising his power of choice New knowledge has widened man's control of his own fate, more facts are available concerning diseases from which he may suffer and their likely outcome, he is freer than he was to decide whether to have children, and "finally by euthanasia we are able to control our being or not being" (Have we not, in fact, rather lost the power to die at will?) "We human beings," he affirms, "increase in wisdom and stature", and it is time we took advantage of new knowledge and techniques, chose freely and so developed further He therefore finds euthanasia and control of fertility—positive and negative—to be morally right Not only has the patient the right "to know" if he wants to, but also "when the patient is too ignorant to ask for the information acquired by the doctor it is clearly the doctor's moral obligation to supply it" If the patient wishes *not* to know, the doctor "should respect his wishes"

It is easier to admit the logical cogency of the author's reasoning than to accept his premises as valid, or his conclusions as expedient A liberal minded doctor may agree with Ecclesiastes that "to everything there is a season," but also with St Paul that though all things were made lawful for him not all would be expedient Towards the end of the book Professor Fletcher hints at eugenic and compulsory extensions of sterilisation and even of euthanasia he quotes with approval the dictum that "there should be no child in America that has not the complete *birthright* of a sound mind in a sound body," and "wholly and passionately rejects" the view that "to exist with a taint is better than not to exist at all" He manages to dismiss the terrifying example of the Third Reich in a couple of sentences

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Recent Advances in Radiology (3rd ed London J & A Churchill 1955 Pp 358 45*s*) —In this edition, Dr Thomas Lodge has broadly followed the presentation of the previous one, and he covers some of the literature of the past twenty years In his preface, he says that he has written for the *radiologist working in a general hospital* and not for the specialist in any one field This has been a difficult task and inevitably many readers will consider that particular subjects have been inadequately dealt with and that important work has been neglected But within the limits of a book of this size Dr Lodge has attained his main object The work reflects his personal views throughout, as well as those of the Sheffield school

THE LANCET

LONDON SATURDAY, OCT 29, 1955

Gastro-enteritis in Infants

In 1922 Adam[1] published his first paper on dyspep-ekoli, a group of *Escherichia coli* which he believed ive rise to infantile gastro-enteritis His differentia on was based on biochemical reactions and few orkers followed up his findings Twenty three years ter Bray[2] suggested that a specific *serological* ype of *Esch coli* was responsible for an epidemic of nfantile gastro enteritis Very soon other workers ad confirmed and extended Bray's findings[3–6], nd in the course of this work many further types of *Esch coli* which cause enteritis in babies were dentified If new admissions to a babies unit can e kept in a separate part of the hospital until they re known not to be excreting any of these specific erological types of *Esch coli*, outbreaks of enteritis an be largely avoided. But this system will fail when n infant is the carrier of an unidentified new type nd many workers now hold that if an epidemic nnot be traced to any recognised organism the fected babies and their contacts should be investi ted for the presence of a new type of *Esch coli*

In England many hospital bacteriologists have ason to be grateful for the help that is so readily d quickly given by the reference laboratories of e Public Health Laboratory Service in investigating ese outbreaks In the U S A there is obviously same close liaison between clinicians and laboratory rkers. Last year Stulberg and his colleagues[6] Michigan described an epidemic in a premature by unit due to *Esch coli* type O 111 (B 4) The me group of workers[7] have now reported *another* idemic made up of six connected series of cases read over a period of four months, of 60 affected bies 5 died. In the six preceding months there d been several sporadic cases of diarrhœa in the it and although *no ætiological agent* could be entified, strains of *Esch coli* from each ill baby were red In the actual epidemic each epidemic wave bsided when neomycin was administered to the fected babies, but fresh waves of cases continued arise until the neomycin was given to all the infants the unit Routine bacteriological investigations d not reveal the presence of salmonellæ or shigellæ d because of the uniform colonial appearance of the sch coli it seemed obvious that a specific serological pe of this organism was the pathogen Later wing et al.[8] identified as type O 127 (B 8) the sch coli isolated both from the earlier sporadic ses and in the epidemic In this outbreak it was und that the longer a baby had been in hospital e greater was the risk that it would become infected—a feature well demonstrated in Glasgow by Anderson and his co workers[9]

Controlled trials showed that the attack rate of gastro enteritis in carriers of type specific *Esch coli* was reduced by prophylactic administration of chloramphenicol or sulphadiazine[10] American workers have shown that in treatment neomycin is valuable[6 7 11] Stulberg found that administration of neomycin had reduced the attack rate of gastro-enteritis in the carriers and he depended on bacteriological screening and chemoprophylaxis with neomycin to prevent the other infants in the premature baby unit from becoming infected by *Esch coli* type O 127 Despite neomycin therapy the mortality was 8% and there was a very high bacteriological and relatively high clinical relapse rate The schemes described in England[12 13] were unlike this since they combined bacteriological screening with *segregation* of the excretors Stulberg's practice apparently reduced the morbidity, but it was more than four months before the nursery was free of the *Esch coli* type O 127

The view that type specific *Esch coli* cause most of the epidemics of infantile gastro enteritis in institutions is based mainly on epidemiological investigations and feeding experiments Direct proof from pathological findings has been lacking the post mortem appearances are not in any way distinctive septicæmia is extremely rare, and antibody production is difficult to demonstrate by ordinary routine methods, which show irregular or no rise in titre Neter[14] has evolved a method of demonstrating hæmagglutinins which promises to provide more informative results Thomson[15] has attempted to provide direct proof of the pathogenicity of these organisms by a careful quantitative bacteriological study of duodenal juice aspirated during life and of post-mortem material from affected babies This important work lends great weight to earlier qualitative findings[16] Thomson found that the specific serological types of *Esch coli* were present in very large numbers from the duodenum to the rectum, and in the bile (Ascent of bacteria into the upper small intestine has also been demonstrated in cases of sprue[17]) Culture of the vomit of babies with enteritis due to *Esch coli* often yields a pure growth of the specific organism, and Rogers[18] found that these vomiting babies can be dangerous to nearby infants

Thus direct evidence is confirming the pathogenicity of specific serological types of *Esch coli*, and neomycin is proving useful and reliable in treatment But there is still no generally accepted way of handling an epidemic In Britain many children's hospitals have had relatively few cases of this form of enteritis in the present year, so perhaps now is the time to plan for speedy localisation of any epidemic Stulberg's experience reinforces a suggestion by Rogers[19] that if there is an epidemic in a babies'

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ward or maternity unit, admissions to the ward should be stopped, and the ward emptied of patients and fumigated before being reopened This may seem a drastic course, but half-measures usually result in the establishment of an endemic infection in the unit [20] no antibiotic has been discovered which can be used for chemoprophylaxis without subsequent bacteriological relapses In the larger cities hospitals might arrange to help each other if an epidemic became very extensive

Poliomyelitis Problems

THIS year poliomyelitis has been much in everyone's thoughts It is now established that some batches of poliomyelitis vaccine used in the U S A last spring contained live poliomyelitis virus [21] It is also clear from the technical report by the United States Public Health Service [22] that the manufacturing laboratories, including the laboratory whose vaccine was found to contain live virus, had conformed with detailed directives which they had been given Study of the manufacturers' experience shows that when in preparing vaccine they treated the virus with formaldehyde, this often did not result in satisfactory inactivation, so certain lots of vaccine had to be discarded Thus inactivation by formaldehyde is not so certain as SALK [23] has supposed, and stricter criteria of virus inactivation are now being applied The important question whether, in satisfying the new criteria of safety, the antigenicity of the vaccine will be retained has been exhaustively discussed, and time will show whether a formula can be devised for preparing a formaldehyde-inactivated vaccine which will combine safety with antigenicity at least as good as that already described [24]

The incidence of poliomyelitis in this country has been high this summer One interesting feature has been the rather high proportion of non-paralytic cases —for example, in the Willesden area—and this has aroused doubts whether some of the cases could be due to another virus Dr MCMATH, the superintendent of Neasden Hospital, whose letter we publish on p 924, does not feel that there is any reason to suspect a different ætiology Dr BREEN (p 923) finds that the proportion of non-paralytic to paralytic poliomyelitis in the South Middlesex Hospital is very much lower than that in Neasden Hospital This difference is unlikely to be due entirely to differences in reporting, and it is more probable that differences in poliomyelitis-virus type or virulence are responsible In Lowestoft an outbreak of an infectious illness occurred which Dr A C GEE, the medical officer of health, believes was not poliomyelitis [25] Infected children had neck rigidity, fairly high fever, and vomiting, they recovered fully, usually within a week This may have been an outbreak of non-paralytic poliomyelitis due to a virus of low virulence, or it may have been caused by an unrelated virus, laboratory investigations will be necessary to decide this point Laboratory investigations will be needed, too, to establish the cause of the outbreak this summer at the Royal Free Hospital The clinical picture [26] was reminiscent of that in outbreaks of poliomyelitis-like infections in Iceland [27] and later in this country,[28] from which no causal virus has yet been recovered [27–29]

There have been many recent improvements in laboratory techniques for isolating and identifying viruses, and there is a natural desire to investigate outbreaks of poliomyelitis and related infections as fully as possible In his letter Dr BREEN suggests that the facilities for routine virus investigations are deficient This is a particularly difficult problem. Developments in the production of poliomyelitis vaccines will inevitably strain our resources in virologists and technicians, many will be needed to prepare poliomyelitis vaccine commercially, and to supervise the elaborate safety tests, and if poliomyelitis vaccines are tested in this country there will be further demands on man-power for assessing their efficacy Inevitably these needs will be met first, and investigations of outbreaks of poliomyelitis or poliomyelitis-like infections will suffer Dr BREEN's pl for further "routine" virus laboratories is wel justified, but the need can be met only by augmenting our small band of virologists, and this will take time.

Second Thoughts on Glucagon

GLUCAGON—the hyperglycæmic-glycogenolytic factor (H G F) of the pancreas—raises the blood sugar man and animals by stimulating glycogenolysis the liver [30–32] So much has been proved But th additional hypotheses that it is derived from the α-cel of the pancreas,[33] and is a hormone which acts as "powerful insulin antagonist," [34] are being challeng

GOLDNER et al [35] were able to extract glucagon fr the pancreas of dogs treated with alloxan to destr the β-cells and with cobalt to destroy the α cells, a they now report [36] repetition of these experiments dogs whose pancreatic ducts had been ligated three five months before the treatment by alloxan a cobalt These animals showed considerable aci fibrosis, and, though extracts of their pancreas st had hyperglycæmic activity, this was reduced degree The investigators therefore raise the questi whether the hyperglycæmic factor does not come fr the excretory parenchyma of the pancreas Glucag can also be extracted from the gastric mucosa and th duodenum [37]

The experiments of VAN ITALLIE et al [38] sugge that glucagon does not inhibit the peripheral utilis tion of glucose, and therefore cannot be regarded as any essential sense an antagonist of insulin By study of the glucose levels in capillary and vein afte an infusion of glucagon they demonstrated that th blood-sugar values in the falling limb of the curv were appreciably lower in venous than in capilla

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blood, and from this observation they conclude that glucagon does not interfere with the peripheral uptake of glucose The same conclusion may be drawn from the experiments of HUBBLE,[39] who found that the fall of the blood sugar curve in 17 diabetics after an injection of glucagon closely paralleled the fall seen in the glucose tolerance test of these same diabetics In thyrotoxic diabetics, on the other hand, the blood sugar fall was faster after glucagon hyperglycæmia than after alimentary hyperglycæmia VOLK et al[40] report a diminished insulin sensitivity in hyperthyroid dogs, which they attribute to the rapid breakdown of hepatic glycogen in the hyperthyroid state—a break down faster than the uptake (also rapid) of glucose at the periphery The distinction between glucagon hyperglycæmia and alimentary hyperglycæmia which HUBBLE observed in thyrotoxic diabetics could thus be explained by glucagon having emptied the liver of its glycogen leaving little to be mobilised later by thyroxine VAN ITALLIE et al[38] and HUBBLE[39] examined the effect on the blood sugar of glucagon given with an intramuscular injection of adrenaline The blood sugar curves were considerably higher than when glucagon alone was injected—from which HUBBLE infers that glucagon does not inhibit the glycogenolytic effect of adrenaline on muscle, whereas VAN ITALLIE and his colleagues conclude that adrenaline inhibits peripheral glucose uptake This conclusion they support by showing that the capillary venous differences in the blood sugar were almost removed by the action of adrenaline

Glucagon then is not an insulin antagonist, its site of origin is still undetermined, and its hormonal status is uncertain. *Indeed, if it is a hormone it* probably acts synergistically with insulin, by making hepatic glycogen available for insulin action at the periphery[41 42] ANDERSON[43] has reviewed the experimental evidence which suggests that glucagon not only potentiates the action of insulin but also stimulates production during the postabsorptive period

If the place of glucagon in human physiology is unsettled, its use in pathological diagnosis requires critical examination KIRTLEY et al[33] used glucagon in diabetics, and on the shape of the consequent blood sugar curves they divided these diabetics into groups 4 who were young and thin, in whom diabetes was labile and ketotic showed a small and a rapid fall, while 4 elderly, obese and non-ketotic diabetics showed a higher rise and a slow fall By the response to glucagon, the well known insulin sensitive and insulin insensitive types could be differentiated But HUBBLE, having repeated this work and compared the results with the Himsworth insulin glucose tolerance test, the insulin tolerance test the glucose tolerance test and the patient's clinical type does not believe that any such differentiation is possible by the injection of glucagon Several of his elderly and obese diabetics showed only a small rise (less than 25%) over the fasting blood sugar, while in one child diabetic the response of the blood-sugar to glucagon was increased from 18 to 53% by giving a meal and insulin before the test was made

WINSTON EVANS, LITTLER, and PEMBERTON[44] have lately described 4 uncontrolled young diabetics with large livers in which an excess of glycogen was found In 3 of them, after an infusion of glucagon the blood-sugar rose only by 85, 20, and 35 mg per 100 ml—a result attributed by the investigators to impaired glycogenolysis One may assume that the height of the fasting blood sugar must have some influence on the capacity of the liver to mobilise glycogen, and in these cases the fasting blood-sugars were 425, 420, and 450 mg per 100 ml. It would have been valuable to have repeated the glucagon test after insulin, as in the child whose case is quoted above Moreover, it has already been demonstrated that in such uncontrolled cases with glycogen filled livers, an injection of adrenaline provokes a normal glycogenolytic response[45] Adrenaline (provided it is not used in an impotent solution[46 47]) remains both a more powerful and a more accessible glycogenolytic agent than glucagon

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Annotations

NOBEL PRIZE IN MEDICINE

THE award of the Nobel prize in physiology and medicine to Prof Hugo Theorell of the Nobel Institute, Stockholm represents the second occasion on which this honour has been given to a compatriot of the founder

Professor Theorell's fundamental contribution to the study of cell respiration was made in the early 'thirties, when he isolated the "yellow respiratory enzyme" in crystalline form Other contemporaries—notably Otto Warburg another Nobel prizeman—helped to define the chemical nature of this enzyme but to Theorell goes the credit for showing that the enzyme could be reversibly split into two inactive portions—namely, a prosthetic group (riboflavine phosphate) and a protein carrier This enzyme is now known as the "old yellow enzyme" to distinguish it from other yellow respiratory ferments that have since been discovered

Of late years Professor Theorell has added notably to our knowledge of oxidase enzymes of the cytochrome type These enzymes are also associated with cell respiration and act in conjunction with the flavine enzymes.

VASOMOTOR HEADACHE AND EPILEPSY

THE borderlands of epilepsy constitute a perpetual diagnostic problem At what stage for instance should we term "epileptic" the patient who repeatedly has sudden brief loss of consciousness often with pallor and perhaps occasionally a little minor twitching and whose attacks appear quite causeless? In such cases considerable reliance has been placed on electroencephalography which occasionally gives an unequivocal answer But as our knowledge of the range of normal has increased the number of records regarded as decisive has been reduced and we have been left increasingly to make a clinical decision

Heyck and Hess[48] working in Prof H Krayenbühl's clinic in Zürich seek to extend this borderland a little They find that of 200 patients with severe episodic vasomotor headache 20 showed evidence of epileptic dysrhythmia in their electro encephalograms, particularly after photic stimulation and of 48 patients with classical migraine 8 showed such evidence Their patients tended to faint easily, and be subject to unusual emotional instability The possibly "epileptic" nature of their symptoms seemed to be confirmed by their improvement with anticonvulsant drugs Yet we should be wary of extending the meaning of epilepsy—if only because of its social and psychological implications for the layman It seems more reasonable to regard the cerebral changes in vasomotor headache as one of many factors which may produce either electro encephalographic abnormality or brief loss of consciousness in a patient whose cerebral make up contains an "epileptic tendency" (we have little direct knowledge of what this is), rather than to bring vasomotor headaches within the fold of larval epilepsy

BONE BIOPSY

It is generally agreed that histological diagnosis should usually precede treatment of a bone tumour, whether by surgery or by radiotherapy This necessity arises from the increasing knowledge of the histopathology of bone tumours[1]—in particular the extent to which their histological subdivision aids prediction of clinical behaviour—and from the unreliability of other methods of distinguishing effectively between the various types of tumour and separating these from non-neoplastic lesions Radiographic findings, though important, are to some extent non specific, and do not establish conclusively the nature of the lesion

The necessary histological information can occasionally be obtained by localised surgical resection of the lesion, but biopsy is usually necessary before more radical surgery or radiotherapy Hitherto, open biopsy has usually been practised Its great advantage is that it yields almost always an adequate and representative sample of the lesion Some consider that with this method there is little risk of promoting metastatic spread,[2 3] but certainly local extension of the tumour in the biopsy wound occasionally ensues Such extension, and the biopsy incision itself, are serious disadvantages if radiotherapy is subsequently applied Accordingly some workers have resorted to aspiration biopsy, by techniques developed not only for bones but also for other tissues and organs These techniques[4] involve removal of tissue through a hollow needle, trephine, or drill, introduced through a small skin puncture which does not interfere with any subsequent radiotherapy, a general anæsthetic is not required The chief disadvantage of this method is that it yields little tissue, and thus erroneous conclusions are sometimes reached—in as many as a third of the cases in some early series,[5 6] but in a considerably smaller proportion since experience of the method has increased

The aspiration method was largely developed at the Memorial Hospital in New York[7 8] It was soon applied to the diagnosis of bone tumours by Coley et al[9], and its value in this field was established in 1945 by Snyder and Coley[5] Christiansen,[10] Ellis,[6] and van den Brenk[4] have used the rotating trephine ("drill biopsy") for bone, as well as for soft tissues Ottolenghi[11] and Schajowicz[12] describe from Buenos Aires experience with aspiration biopsy of bone in a series of more than 1000 cases By simple aspiration with a 2 mm needle, positive diagnostic information was obtained in 84% of attempts Lesions of all types, and in almost all parts of the skeleton, were studied, only the skull base and the bodies of the 1st to 10th thoracic vertebræ being inaccessible Mo of the lesions aspirated were in the vertebral bodies, femur, or pelvis Metastatic carcinoma and various types of primary bone tumour were the diagnoses most often established, but various inflammatory and other non neoplastic lesions were encountered In this series diagnosis depended on paraffin sections prepared from the aspirated material, but smears were also made and were particularly useful in lesions of hæmopoietic tissues. The Buenos Aires workers emphasise that close collaboration between surgeon, radiologist, and pathologist necessary for the effective use of aspiration biopsy for bone lesions

Aspiration biopsy will no doubt be increasingly used in the diagnosis of bone lesions, particularly when conventional bone biopsy is difficult or inadvisable, either for anatomical reasons or because radiotherapy may be applied subsequently

COLOUR-BLINDNESS IN YOUNG PEOPLE

It is nearly ten years since a committee of the Colour Group of the Physical Society, in a report defective colour-vision in industry,[1] suggested that schoolchildren should be tested for colour vision Betenson[2] has now described the results of ten years of such te in Brecknock schools, so this seems a good moment consider the problems once again

About 8% of the male population have some de of colour-vision, the colour-blind woman is comp tively rare The most common forms of colour de consist in difficulty in distinguishing differences betw red, green, and yellow which are obvious to normal peo People with this defect are sometimes loosely c red green blind, but their difficulty is not in *seeing* th colours (the relevant parts of the spectrum do generally seem to them white or black) but in tell which is which There is also a colour defect (tritano in which blue, green, and yellow are similarly confu and two forms of complete colour-blindness in w there is no appreciation of hue whatever, these two are very rare

Often boys with grossly defective colour vision g up unaware of their disability Such ignorance i cause of much disappointment and difficulty for youths who have specialised in their later school y with a view to a career in, for instance, the Navy R.A F or even medicine and who discover that ow to deficient colour vision their choice is unsuitable impossible It was on behalf of these unfortunates the Colour Group committee pleaded for tests in the years at school

This recommendation has been taken up by Ministry of Education and is put forward in the medical officer's report for 1952–53[3] with the hope all education authorities will, in time, act on it T report refers to four borough and two county author which are giving regular colour-vision tests to many the children in their care In general the Ishihara is used alone, but in two districts this is supplemen by a lantern test for individual failures

It seems therefore that the battle for general testi boys below the age when their future is decided is on way to being won But of equal importance is dardisation of the tests Without standardisation differ examiners may get different results from the individual, and this sometimes leads to uncertain and hardship Candidates for some careers are te before being accepted for training, and then, becau

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an idea that colour vision can deteriorate between e ages of 10 and 20, they may have another test, ten under totally different conditions, at the end of e training period It is not unknown for candidates ho have been accepted for training to be rejected later n the ground of colour deficiency Since there is no ood scientific evidence that colour vision deteriorates the late teens these rejections cause resentment as ell as disappointment

The Ministry of Education recommends an Ishihara est supplemented where necessary (and where a dark oom is available) by a lantern test but the Ministry ffers no guidance as to the best method of administering hese tests In the Ishihara book of charts the would be xaminer is told only that the cards should be kept out f the sun to prevent fading and that the tests should ot be applied in artificial light In addition there is n introduction in which a diagnostic value is claimed r the test which in fact it does not possess No ggestions are given as to the best method of scoring f properly applied the Ishihara test will detect a handi pping colour defect affecting the red green and yellow arts of the spectrum Contrary to the claim made in he introduction, this test does not reveal the exact type f deficiency within this group and people with tritan pia can read all the charts correctly Since the ain practical object of colour vision tests is to discover hose who may be incompetent or even dangerous in cupations where the difference between red and green ust be recognised, the Ishihara test is, in general fairly tisfactory; but for any investigation of the various rms of defect a more detailed examination is essential r those who are keen to know more of this subject right gives a clear exposition in his excellent book [1]

PROGRESS REPORT

In his presidential address to the West London Medico irurgical Society on Oct 20 Mr G B Woodd Walker lved deep into the past and spared some words of wise ive and rather guarded *hope for posterity*

In tracing the history of mankind he reserved his rmost admiration for man s first slow steps in conquer g his environment and indeed to make fire may well ve been as difficult and as significant as to split the om Even half a century ago different peoples were widely different stages of civilisation: the Stone e as Mr Woodd Walker pointed out, was running undisturbed course in such places as New Guinea and ntral Australia But modern transport and modern ans of communication have relentlessly brought the efits and dangers of what we call civilisation to these kets of older cultures Whereas man acquired know ge and mastery over his environment slowly and nfully, his knowledge and mastery is now being pled with almost terrifying speed In Mr Woodd lker s vivid phrase the stone axe head hunter of Hinlay may be today a uniformed policeman

Now that we have solved so many of the problems ich Nature has set us the time has come he suggested consider whether we can solve the problems which have set ourselves Have we for instance conquered ease only to be confounded by over population? ve we conquered distance only to be defeated by the fculties of living together? The varied life of the all communities has given way to the complex mono y of our vast agglomerations and Mr Woodd Walker mitted that he found the uniformity of contemporary lisation depressing Of new suburbs he said

"The few local shops have given way to branches of the en big retail stores. The grocer, the shoe shop and the with their too familiar names and standard products nd shoulder to shoulder in every new shopping-centre And the new houses, whether council or private display the same uniformity in their construction and the taste of their inmates"

Yet though so many of us lead similar lives, he fears that we are as far as ever from understanding how our neighbours feel and think—and today our neighbours live all over the globe To improve the transmission of facts and of ideas is, in his view, the next urgent task that faces mankind If we are to solve it in time we must be prepared he suggested, to grasp new methods, to free ourselves from the limitation of language, and to use visual and photographic statements more boldly Mr Woodd Walker believes that 'thought can and should be transmitted graphically and pictorially with minimal use of words

CORTICOTROPHIN AND CORTISONE IN THE NEPHROTIC SYNDROME

CORTICOTROPHIN and cortisone are now widely used in the treatment of the nephrotic syndrome, especially in the variety which Ellis[1] called type 2 nephritis." The cause of this condition is unknown and at the onset it does not have the serious complications of hyper *tension hæmaturia, and nitrogen retention* As the syndrome is commonest in children[2] more is known of the results of treatment in children than in adults Heymann et al[3] have recorded the results in a series of 64 children treated by repeated short courses lasting from 10 to 12 days, of either cortisone or corticotrophin Diuresis was obtained in 52 patients, usually during the actual administration of the drugs Only 13 of the children received more than four separate courses of treatment and the average length of remission was 4·2 months after corticotrophin and 2·6 months after corti sone Of patients who eventually died of renal failure there was diuresis in only a half and it became steadily less frequent as the condition deteriorated Heymann and his colleagues conclude that hormone treatment has greatly reduced the morbidity of the disease, since œdema can usually be kept under control, but they consider that the eventual mortality rate remains unaffected. 17 of the children have already died and a fatal outcome is expected in another 6 This corresponds very closely with a similar series[4] reported in 1946 before cortisone and corticotrophin became available and the results are much the same as those previously des cribed[3 5-7] with cortisone and corticotrophin

Because of the frequency of relapse after short courses of treatment hormones are often continued after diuresis has started Lange et al[8] have given the results of longer periods of treatment lasting up to six or seven months They gave corticotrophin or cortisone in large doses for three consecutive days of each week to diminish toxic side effects Long remissions followed and no relapse was noted while treatment continued Proteinuria was much reduced and the plasma protein pattern and raised blood-cholesterol returned to normal Complications of treatment are not rare[6] and they include intercurrent infection hypertension and hypokalæmia Prophylactic penicillin and a low sodium diet with potassium supple ments were found to be of great value No large series of adults treated with corticotrophin or cortisone has been published but it is generally agreed that the outlook is more unfavourable than in children.

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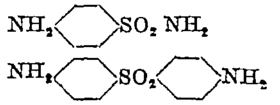
One of the important effects of corticotrophin or cortisone in the nephrotic syndrome is a reduction of the abnormal glomerular permeability to the plasma proteins of smaller molecular weight,[9] leading to a great reduction of proteinuria This is usually associated with an increase of glomerular filtration-rate Heymann et al[10] consider that diuresis is unlikely unless there is significantly less protein lost in the urine, and they found that patients with the greatest reduction of serum-protein levels often had a delayed diuresis compared with patients less severely affected The urine of nephrotic patients with severe œdema contains abnormally large amounts of the sodium retaining adrenal steroid, aldosterone,[11] and in one such case[12] pure crystalline aldosterone was isolated In a natural or hormone induced diuresis, urinary aldosterone is much reduced at the same time as the output of urinary sodium increases

ANTILEPROTIC ACTION OF DAPSONE AND DERIVATIVES

DAPSONE is now regarded as the drug of choice in the treatment of leprosy The antibacterial activity of this sulphone was first examined because of its close chemical relationship to sulphanilamide[13] Both dapsone (4 4′-diaminodiphenylsulphone) and sulphanilamide have two amino groups In the sulphanilamide molecule only one such group is attached to the benzene ring, and its antibacterial activity is believed to depend on this ring being free



Sulphanilamide

Dapsone

It has been assumed that the antileprotic activity of dapsone likewise depends on free amino groups attached to two benzene rings Certain di substituted derivatives of dapsone, such as solapsone and promanide, have been prepared with a view to diminishing the toxicity (dapsone may cause hæmolytic anæmia and toxic hepatitis) But it has been argued that these derivatives are inactive per se, and owe their apparent activity to the liberation of dapsone in the body, and Francis and Spinks[14] showed that when solapsone and other soluble dapsone derivatives were administered orally they were converted into the parent dapsone in the stomach But this explanation does not account fully for the antileprotic activity of these derivatives, because they are active when injected, and very little is then converted to dapsone Francis and Spinks noted that dapsone itself is not excreted unchanged, but they did not identify the excretion products Bushby and Woiwood[15] have now examined these, and those of solapsone, by means of paper chromatography and paper electrophoresis They find that in man and the rabbit very little dapsone is excreted as such, only about 5% is recoverable from the urine, the remainder being a conjugate in which one of the amino groups is blocked by glycuronic acid This conjugate is also present in the blood Bushby and Woiwood have also examined the excretion products of the di substituted dapsone, solapsone, both in man and in rabbits, and they find that when given parenterally it is not changed to dapsone Evidently the two free amino groups are not essential for the activity of these sulphones The picture is complicated by the fact that commercial solapsone contains some 15% of semi solapsone, in which there is only one free amino group, one only of the two amino groups in the parent dapsone being substituted Bushby and Woiwood have shown that this mono-substituted derivative of dapsone has antibacterial activity, and that it is present in the urine of rabbits injected with pure solapsone free of semi solapsone.

Not all the substituted derivatives of dapsone are converted in the stomach into the parent substance. Thus chromatography shows that 4 amino 4′-carboxy methyl amino diphenyl sulphone is excreted unchanged after oral or parenteral administration According to Bushby and Woiwood there can be little doubt that dapsone exists in the body almost entirely as the conjugate, with one amino group free, and they suggest that the activity of dapsone in man is due to this mono-substituted derivative, the presence of two free amino groups being unnecessary for antileprotic activity Certainly mono substituted dapsone derivatives have anti-tuberculous activity in guineapigs,[16] and, according to Cochrane,[17] the mono substituted glycine derivative is effective in the treatment of leprosy, this compound is excreted unchanged[15] The activity of solapsone administered parenterally might therefore be due to the presence of the semi solapsone in the commercial product and to the formation of this in the body If, as Bushby and Woiwood say, the body detoxicates dapsone, and the product of detoxication is also active, it would seem rational to administer dapsone in a substituted detoxicated form Mono substituted derivatives with a higher antituberculous activity than dapsone itself are already known

DR ALBERT SCHWEITZER, O M

Dr Albert Schweitzer, musician, philosopher, medical missionary, came last week to London to rec from the Queen the honorary membership of the Order Merit Their subsequent fireside chat on Bach's m of which he is the greatest living authority and expon will, he says, be among the most treasured memories a long life

He came also to thank the friends who help to sup his hospital at Lambaréné After the Harveian or on St Luke's day he took tea with the president fellows of the Royal College of Physicians. Later attended a general meeting at the Royal Society Medicine, and before signing his name as an honor fellow he thanked his hosts for their assiduity in for new weapons which men like he, who had never writte scientific article in his life, were able to use in the serv of humanity The Royal Society of Tropical Medi and Hygiene entertained him to dinner and welco him as an honorary fellow In his reply Dr Schweit said that he was feeling very much at home in tropical atmosphere which was now his native air honorary doctorate of laws conferred on him by University of Cambridge, gave him especial pleas for he maintains that he came to England through gateway of Cambridge, where his old friend Profes Burkitt, whose grave he visited, had introduced his ea theological works to the British public Perhaps the hig light of his visit was one which illuminated but a h few—those who listened to him playing Bach on the or of the Festival Hall late one evening after the conce goers had all unwittingly departed

In December Dr Schweitzer returns to his appointed task in Equatorial Africa

THE next session of the General Medical Council open on Tuesday, Nov 22, at 2 30 P M, when Sir Da CAMPBELL, the president, will deliver an address T Medical Disciplinary Committee will meet on Wedne Nov 23, at 2 P M

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In the Mental Hospital *

THE FORGOTTEN PATIENT

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I THE PROBLEM REVIEWED

All now agree that mental hospitals are overcrowded nd understaffed and various means of remedying the ituation have been proposed or adopted—notably the rovision of more beds and the wider employment of artially trained nurses But these remedies or palliatives, have been put forward without sufficient examina ion of the problem to be solved My purpose here is o indicate how bad conditions in mental hospitals arise nd are perpetuated and then to show that major ifficulties can be overcome, and major reforms achieved ithout much extra expenditure

The Beds

There are two reasons for the overcrowding The st is the absence of an adequate geriatric service at e la Pole Hospital for example a fifth of the women atients should not be in a mental hospital at all and uld leave immediately if proper arrangements were ade for their care But the second and by far the ore important reason is that psychiatrists have failed cure and discharge their patients If relieved of the rden of those old people who are at present admitted retained for social rather than medical reasons any ental hospital ought to be able to reduce each year a long time to come the number of beds in occupation ven if the number of admissions continues to increase e business of a hospital is to cure patients not to ard them and the sheltering of patients in hospital thout continual *efforts* to make them fit to return to e world is a complete denial of the functions of dicine If attention is mistakenly concentrated on ilding additional wards and villas the almost invariable ult will be that these *too* will become overcrowded ause the last incentive to discharge patients will have e It would be wiser in fact for the hospital to knock n a ward every five years or so

The Nurses

f an increase in the number of mental hospital beds ndesirable, the more general employment of untrained sons as nurses is worse Its effect can only be to ke *mental* nursing a progressively less skilful occupa n What is happening at present is that we are olling as assistant nurses more and more people who ke no intention of taking examinations Where there no great difference in the pay married women naturally vitate to the category of assistant nurse because ce they will have no examinations to take Instead ncouraging this we ought to make it easier and more itable for these *women* to take nursing examinations uld be done within each hospital by skilled teaching nationally by offering a more valuable reward have no wish to disparage assistant nurses most em have the qualities *one is happy to see in trained* es and most of them are capable of passing the e examinations. There are first rate assistant nurses are very useful in a hospital But mental nursing ures not only devotion and intelligence but also ills. A mental nurse must be as able as any other e to look after physically ill patients—to manage h postoperative care and so on He or she also needs other special skills—the ability to run an insulin coma unit , to lead discussion groups with patients who are practically mute to improvise entertainments , to nurse tactfully suspicious and resentful patients , to guard unobtrusively against suicide in depressed patients to deal with the many problems which face the relations of patients and perhaps from time to time face physical harm to himself in the interest of his patients

Mental nurses are nearly all good people, and they are crying out to have their talents recognised and put to good use They long to be allowed to nurse instead of being employed by psychiatrists as custodians and one certainly cannot say that all of them are well occupied at present If the days are past when they worked in the medical superintendent s house and gardens, they are still deployed in the most extraordinary tasks No patient has ever improved as a result of working on a hospital farm , yet in many hospitals droves of patients labour in the field and cow houses, year in year out under the nominal care of a nurse The nurse does not regard it as his duty to help the patients to benefit from their occupation He rightly recognises that though he is employed as a nurse his duty is to work as farm labourer and that is what he does There are hospitals where 25 out of 200 male nurses may spend all their working day, from 8 A.M to 5 P M on the farm with only the slightest pretence that they are in charge of patients. I know a hospital where until recently the man who always milked the cows was a nurse and paid as a nurse Sometimes a nurse spends his time cutting the grass on the hospital lawns sometimes he works as a cobbler in the shoe repair shop often nurses are worked as porters and I even know a hospital with a sewerage plant where a nurse is asked to stand in for the *sewerman when he is away* Sometimes the whole policy of the hospital centres around the farms and gardens and the chairman of the appropriate committee demands that nurses should be available for work on *them in the numbers that he dictates*

Obviously all this is against the interest of the patients but equally it is against the interests of the nurses Nursing requires good men and women and only in times of unemployment are the *best candidates likely to survive* such onslaughts on their professional ideals and ambitions

If a hospital is a good hospital it does not have much trouble in obtaining good recruits, many of whom will be keen on the work and enjoy it But a large proportion of these will later leave and the chief reason is poor pay They want to nurse and that is why they start they think they can manage and it is only after a year or so, when they contemplate marrying or having children, that they realise that they cannot make up their pay as industrial workers do by overtime The basic pay is reasonable enough but their actual income compares unfavourably with other people s I feel pretty sure that there would be very little problem in obtaining nurses if their pay was made up to a reasonable amount

For my part I see great hope for the chronic psychotic in a nursing staff which is better paid and better trained There is in all young nurses some idealism—though too often the psychiatrist seems to try to extinguish it Moreover because psychiatrists perforce spend so little time with their patients there is no branch of medicine in which the *nurse* is more valuable to the doctor Every effort therefore should be made to develop the nurse s powers

The Committee

Often one finds that years have elapsed since some of the members of a hospital management committee have visited the wards of their hospital and these will be the members who will speak most strongly against reforms and the expenditure of more money From this criticism one cannot exclude medical members who are often more conservative than laymen

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roup of articles chiefly *concerned with the value of* active occupation and work for mental patients and the means whereby it is best provided.

But it must be admitted that committee members labour under certain difficulties The psychiatrist rarely welcomes them, and he is also at fault in a more subtle way If a layman asks to be shown round a hospital, he will be filled with admiration by the excellent admission wards and convalescent villas and occupational-therapy centres, and will readily imagine himself falling ill and being treated with the skill and sympathy so manifestly offered He will not so willingly recognise himself and his wife in the chronic wards and on his first horrified visit he will ask the psychiatrist if nothing can be done to help these wretched patients He will be told that nothing can be done they are incurable All that duty and humanity demands is that they should be clothed, fed, sheltered, and not allowed to die too young This the layman will accept and he will thenceforward feel that he is right to resist reforms

The Patient Stays in Hospital

The doctors have little incentive to discharge patients In the first place a proportion of those discharged will inevitably require readmission within a few months, and that is a trouble Again, if one discharges patients, and thereby succeeds in reducing the total number of occupied beds, this may mean that the senior nursing officers' salaries will be appreciably reduced without any consideration for their additional work One knows too that, if a hospital succeeds in bringing down its numbers, the regional hospital board may tell it to accept so many patients from another and less active hospital, and one knows all too well the sort of patients who will be so transferred There will be undiscovered consumptives, the patients whose wives or husbands live near the transferring hospital and who are only too glad to have visiting made impossible, and the Poles, Rumanians, and other foreigners who are held to be transferable because they have no relations nearby (though they may have had friends)

Examination of the lot of these foreigners, whose countries are closed to them as a result of the war is instructive to some extent it crystallises the lot of all chronic psychiatric patients These men will have fought for the Allies during the war and deserved well not only of their own country but also of ours, and yet they are treated with what looks like calculated unconcern They are scattered throughout the mental hospitals of this country, perhaps five to ten in most hospitals In each hospital it is improbable that there will be any patient who speaks their language—unless it is held that all who fail to speak English have a common language It is impossible that there should be a nurse who speaks their language, and almost equally so that there should be a doctor who can exchange a word with them One would think that this would rouse the humanitarian interest of the authorities Yet what is done ? A foreigners' ex-Servicemen's organisation has been set up Once or perhaps twice a year a representative will visit these men and have a few minutes' conversation with each, will give each man a few cigarettes and leave again During the rest of the year an occasional national newspaper will be sent, at Christmas, more cigarettes

If anyone should think that only foreigners treat their ex Servicemen in this way, they are mistaken for precisely similar treatment is meted out to our own ex Servicemen when they become chronic psychotics If a psychiatrist wants help for a chronic patient who is fit for discharge, he will waste his time if he seeks the help of ex Service organisations I well remember the civil adviser of such an organisation who wrote of a patient that he had been in hospital for so long that it was better he should remain there

Nor can the civilian dismiss these things with a shrug of the shoulders, for they happen to him too Once he becomes a chronic patient nobody will be interested in him The Churches don't care, the Governmen doesn't care, there is no organisation which helps him any more than there is one to help the foreigner or the ex-Serviceman

Perhaps worse than the lack of any organisation to help the chronic patient is the lack of any organisation to see that he is well treated Contrary to what is supposed the Board of Control does not perform this function. The task of the board is to see that the patient is not illegally detained, and anybody who regards it as a guarantee of satisfactory treatment would be quickly disillusioned by watching a routine visit to a mental hospital by the board's commissioners The time allocated to these inspections is in my opinion too short for any good purpose to be served I do not criticise the commissioners, but I do most strongly criticise the system For several hundred patients to be inspected, together with their living quarters, in less than an hour, as so regularly happens, is sufficient reason for suggesting that some other way of safeguarding the patient's interests be devised

Research

The public believe that effective research is go on to prevent mental illness and to cure it when i develops Is their trust misplaced ? Personally I thi that it is

The national bodies concerned with mental heal and disease seem to me to lay too much emphasis neurotic as distinct from psychotic illness (After one can work and live for most of the time adequately with even a severe neurotic illness, but t slightest psychotic illness brings life to a standstill Believing, like most psychiatrists, that all psycho are organically produced and largely independent social events, I am impatient with those who igno the very real and present needs of psychotics in favo of a long term preventive policy of child guidance, use though that may be

As a young doctor the psychiatrist has been taught th recent illnesses are the most important, that work more rewarding in a general hospital than in a men hospital, that visiting patients in their homes is m important than work in a general hospital and t community work for the world is most important of How many years is it since his teacher saw a chro psychotic ? Has the teacher ever had the care of chro psychotics ?

As one goes from mental hospital to mental hospi reads psychiatric papers, and goes to meetings, one driven to the conclusion that for the psychiatrist rese is not something that arises out of work It is alternative to work, done in working hours to exclusion of work One sees that every psychiatrist wo for choice work in a general hospital, in a univers or anywhere other than in a mental hospital and this one can hardly blame him, because there are rewards for choosing the more difficult life save lon hours and great responsibility

The Psychiatrist

Ultimately the only safeguard a chronic patient has his psychiatrist, and how often, alas, the patient relatives are unjustified in putting their faith in h Unhappily, it is simply not true that in hospital ever thing possible will always be done to restore the pati to health, and this applies not only to provincial h pitals but also to many of the Metropolitan ones wh look so nice and which are so respected

In many of the latter one can see nothing to criti when one is shown around The wards are unlocke even those of the long stay patients, occupation therapists are busy not only in their own excelle departments but also (when necessary) in the ward The gardens are well kept, and patients' clubs are patients for their own advantage There may even large and well furnished villas where patients with d illnesses are admitted without any formality ere may be mixed units where elderly men and women and spend the day together Sometimes it is the pital's proud boast that in its occupational therapy partments there is room for every patient

In these hospitals the atmosphere is so pleasant that e feels that the millennium has really arrived and e leaves with the warmest feeling of respect for the ychiatrists and the hospital's management committee t sometimes, after expressing pleasure at an inspiring dit, one stops and wanders round again seeking out e wards which one had not been invited to visit And ere things are as one feared These wards may contain many as a third of all the patients in the hospital rhaps nearly all of these literally never leave the ward cept to be crammed into a square of ground called the ring-court perhaps many of them are always in bed small rooms alone They are clad in the shapeless rments so familiar to us, and if they are up they never ear shoes Too often they are regarded as objects of gust and even ridicule and sometimes it seems that e attention paid them is less than that accorded to the ospital's pigs

Even those hospitals which boast that all their wards e unlocked sometimes need a little closer examination r they may have an arrangement with a neighbouring pital whereby the latter will accept patients who ome difficult to look after The second hospital has no reputation to maintain and immediately locks these patients up

Great improvements have been made, but far too little thought is being given surely, to the vast residual problem of the patients whose active treatment has been abandoned and who are medically forgotten When one tries to look at this problem it seems that among psychiatrists there is too much talk about irrelevancies Too much talk about the supposed causes of mental illness too many agreeable remedies which do nothing for sick mankind Too many stratagems which do not blind the public, such as open days at hospitals when only the admission wards are shown Above all too much talk about what could be done if only money were available and not enough done to show that money is not the first essential

More than anything what is needed is that each psychiatrist should think of himself as his patients guardian Legislation cannot protect them if he is not with them not for them Even if he works in the worst hospital in the country he can help his chronic patients without the aid of anyone save his nurses. If conditions are difficult he may take the more pride in what he and the nurses accomplish Money will be granted when he has proved he will gladly work without it He must remember that grandiose equipment is not what chiefly matters

In my second article I shall provide evidence from my own hospital that by a change of emphasis and effort much can be done by simple means.

Special Articles

MARGINAL-PUNCHED CARDS

THEIR USEFULNESS IN MEDICAL PRACTICE

J MACLEAN SMITH
M.B Glasg F.R.F P S
STANT PROFESSOR, DEPARTMENT OF INTERNAL MEDICINE
STATE UNIVERSITY OF IOWA

WHAT happened to that girl with pulmonary erculosis and diabetes whom I saw about three years

A clear accessible record which answers this question valuable confirmation of the memories that make up a doctor's own private experience over the years A tem that not only answers such a question but also duces quickly and easily all the cases of a certain ease or all the patients treated with a particular edy makes records both more useful and more resting Such a system is provided by punched ds.

Punched cards of the machine sorted type have been l for the analysis of scientific data since 1880 The patent for the use of marginal punched cards was n out in 1800 but their application to scientific work ot recorded until 1920 It has been said that the idea punched cards came to Hollerith while he was travelling train, and watched the ticket-collectors punching the et margins in different positions, in accordance with eye and hair colour of the passengers so they could nt transfer of tickets In the past fifty years much been written on the use of punched cards in business earch and the information has been summarised textbooks. The first by McGaw (1952) describes of these cards in libraries but it is a useful manual beginner The second by Casey and Perry (1951) s cards of both kinds—the marginal punched orted and the centrally punched machine sorted.

A Simple System

ave found the following system practical both for ts records and for indexing useful articles so that they can easily be found years later when their origin is forgotten

Cards for Patients Records

The cards I use (fig 1) are 5 × 8 in, printed on a light cardboard material and perforated with about six holes to each inch * On the face and back of the card the usual clinical data are written by hand or typewritten Along the top margin the holes refer to necropsy death sex, primary diagnosis age group and the first letter of the patient's surname Along the other two sides and part of the bottom a second and third diagnosis can be recorded The remainder of the bottom edge is reserved for coding treatment

Coding

As medical diagnoses are many and complex, a code has to be used to record them I use the classification published by the Medical Research Council (1944) Thus if the diagnosis is cancer of the stomach the number will be 1210 The appropriate holes are notched as shown in fig 1 Should one of the digits be over 5 then 5 is notched and an additional hole also to make up the required number This is done to save space For the same reason the alphabet in the right hand corner has been compressed Each letter has to be located by notching in two places and two sortings are needed to divide the cards alphabetically For example in fig 1 the letter D has been notched The first sorting separates the A's B's C's D's, and E's and a second sorting the D's from the others

At first I thought of including the M R C occupation code, but in practice I have not found this a useful notation and I have given it up in favour of coding a third diagnosis

How to code treatment presents a problem Ideally some chemical code which is expandable might be used All these, such as the Dyson notation (Casey and Perry 1951) have proved too complex I now use the index to a drug compendium published by Messrs. Eli Lilly which I have expanded and to which I have added the list of operations given in the M R C classification Each

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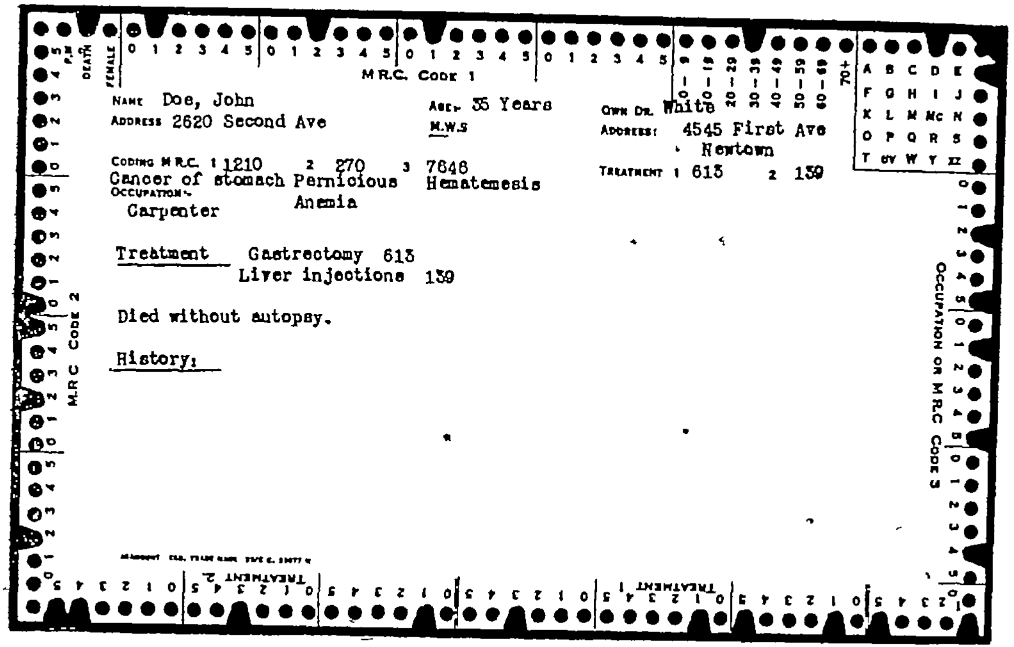
These were prepared to my specification by the Copeland-Chatterson Co, Ltd Exchange House Old Change London E C 4 and are sold as Paramount Case Cards.


DEATH
F.M.
FEMALE
M.R.C. CODE 1
0 1 2 3 4 5
0–19 20–29 30–39 40–49 50–59 60–69 70+
A B C D E
F G H I J
K L M Mc N
O P Q R S
T UV W Y Z
M.R.C. CODE 2
OCCUPATION OR M.R.C. CODE 3
TREATMENT 1
TREATMENT 2

NAME Doe, John
ADDRESS 2620 Second Ave
AGE 35 Years
M.W.S
OWN DR. White
ADDRESS 4545 First Ave
Newtown
CODING M.R.C. 1 1210 2 270 3 7646
Cancer of stomach Pernicious Anemia Hematemesis
TREATMENT 1 615 2 139
OCCUPATION Carpenter

Treatment Gastrectomy 615
Liver injections 139

Died without autopsy.

History:

Fig 1—The record of an imaginary patient has been written on this card The data regarding the patient have been "notched" on the edges of the card as described in the text.

entry is numbered and I have left spaces for later additions (Smith 1953)

Cards for Literature Records

To avoid expense, for medical articles I use the same kind of card but of a different colour The authors' names are written in the space for the patient's name, the reference under "Address," and the title opposite "Occupation" The first letter of the first author's surname is coded in the top right hand corner The eight holes for age grouping are considered to be numbered

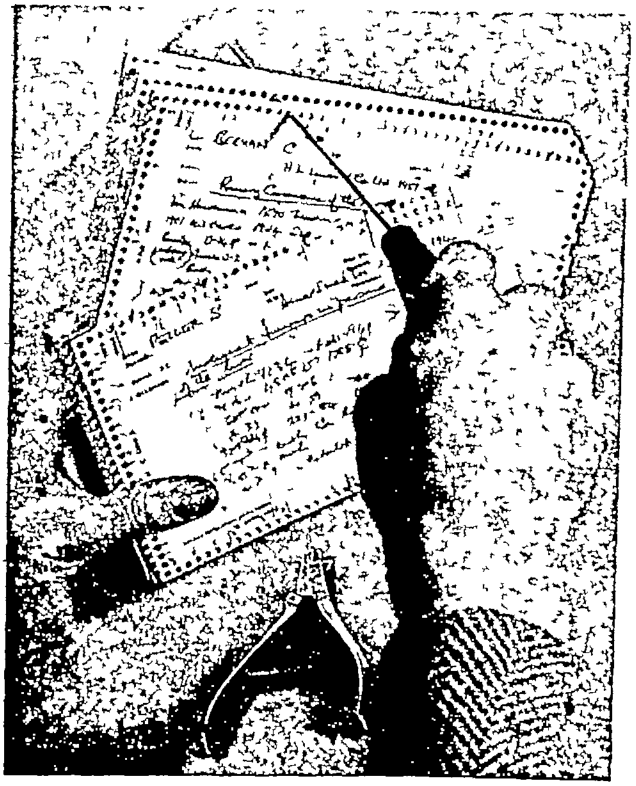


Fig 2—Sorting of marginal punched cards The punch for notching these cards is shown

1, 2, 4, 7, and 1, 2, 4, 7, and the year th article was published recorded as 37 (1 + and 7) or 55 (1 + and 1 + 4) I still the figures marked M R C code 1 for any diagnostic term in the title of the article. The code at the left hand side of the card marked M R C code 2 I use to record any non-diag nostic term in the title. I do this in a rough, but satisfactory, fashion by looking up the term Dorland's *Medical Dic tionary* (1951) and cod ing the page number this code—e.g, prog nosis 1219 Treatment 1 and 2 codes are as for the patient records For a time I used the M.R C code space to record the journal from which the article came, using a simple numerical code, but this ha not proved useful I now use this space for any spe analysis and redesign it each time This system great value in preparing bibliographies and reviews.

Sorting

The cards are notched in accordance with the co They are easily aligned by making sure that the upper right-hand corners are all in that position T knitting-needles are passed through the holes refer to the subject in question (fig 2) and a gentle sh allows the cards that have been notched in this pos to fall from the pack

Discussion

In the seven years that I have used this system improvements have suggested themselves For insta if I had used the notation 1, 2, 4, 7 throughout, m space would have been left on the card Some of space could be used to record the current year on pat cards Notes on death and necropsy are infrequent one punch would suffice Better but more com alphabetical indices to replace the one in the right top corner have been developed (Casey and Perry 19

Shaw and Fisher (1946) with a simple photogra apparatus copy articles or summaries and elim transcribing errors In the future punched cards m be made of photographic paper so that records could transferred directly

It is possible that a complete transfer of records punched cards can be made with Kodak dry mount tissue to attach existing records to new punch ca Lawson (1948) has described how microfilm records be attached directly to punched cards He points that six pages measuring $8^1/_2$ × 13 in (21 5 × 33 c may be recorded on a 3 × 5 in (7 5 × 12 5 cm) c My own first system consisted of standard filing ca with holes made by an electric drill Sometimes th method would be applicable to existing records Eve doctor would be well advised to have a card designed his own use

The tremendous task of making available to profession all articles referring to medical science been explained by Rogers and Adams (1050) With the use of punch cards—in this case I B M cards— formidable task could not be carried out Similar y the use of marginal punched cards each investigator n make the literature more easily available to himself

The photographs were taken by Mr R F Carter

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HOSPITALS AND THE PRESS

A CONFERENCE of doctors and press organisations, ld under the auspices of the British Medical Associa on with Dr H Guy Dain as chairman has agreed n the recommended procedure by hospitals for the lease of news about the condition of patients The commendations are as follows

ckness Cases

1 No information should be divulged to the press without e consent of the patient beyond the admission on inquiry at the person concerned is a patient Where, however en this statement would be deleterious to the patient s terests, his presence in the hospital should not be disclosed thout his consent. For example, in certain special hospitals, ch as mental hospitals and sanatoria, where the mere mission of the patient implies the nature of the diagnosis information should be given to the press without the tient s consent.

2. In the case of well known people (and subject always the patient s consent) a brief indication of progress may be en, in terms authorised by the doctor in charge

3. In the circumstances referred to under 1 and 2 where the tient is too ill to give his consent, or is a minor the consent the nearest competent relative may be accepted

cident Cases

4. (a) *Individual cases* —The press should be given on quiry only and at the time of the inquiry or as soon as sible afterwards, the name and address of the patient a general indication of his condition. The patient s atives should normally be informed before any statement ven to the press; but if it has not been possible to do so should be made *clear to the press* Further information uld be given only with the patient s consent.

(b) *Multiple cases* —In accidents involving a number of ople (for example, a railway or air accident) all reasonable s should be taken to inform relatives of the injured fore the publication of names, bearing in mind the necessity early publication to dispel the anxiety of the next-of kin all other persons who were, or might have been, involved the accident Further information should be given only the patient s consent.

Hospitals admitting accident cases should maintain ualty book by reference to which inquiries may be rred.

ral

All hospitals should ensure that a sufficiently senior and onsible officer of the hospital is at all times available ther in person or by telephone to answer press inquiries should nominate an officer or officers for this purpose

When dealing with press representatives who call at itals and are unknown to them such hospital officers advised to ask to see evidence of accreditation in the n of a document issued by the press representative s spaper news agency or photographic news agency or a mbership card of the Institute of Journalists or the National on of Journalists.

. Coöperation between hospitals and the press must d on mutual confidence and good personal relations. ulties and misunderstandings should be taken up between ospitals or board concerned and the local press.

hese recommendations are to go for ratification to the s represented at the conference and the Ministry Health is expected to consult hospital authorities. conference also approved an explanatory morandum

Public Health

Chemicals in Food

A JOINT conference of the Food and Agriculture Organisation and the World Health Organisation was held recently in Geneva, under the chairmanship of Dr Norman Wright, to explore what action could be taken by the two organisations on the international level in the matter of chemical additives in food All member countries were invited to this technical exploratory conference 12 countries sent delegates, and 1 an observer, and 4 scientific groups were also represented

The conference decided that international action on food additives was necessary because: (1) the potential health hazards were world wide, (2) both the less-developed and the highly developed countries were exposed to these hazards especially the latter for they used a greater variety of additives (3) the size of the problem made it impossible for a single country to undertake all the investigations needed (4) apart from health aspects, food additives affected international trade and the free movement of foods; (5) many countries were currently reviewing their legislation on food additives (6) laboratory facilities for work on food additives were inadequate in most countries and international coöperation was needed to put them to their most effective use The first step should be to recommend uniform methods for evaluating the safety of food additives, and to formulate general principles governing their use In addition, F.A O and W.H.O should collect and disseminate information on pertinent legislation and on the various properties and effects of individual food additives. Finally the two organisations should assist in the coördination of investigations, to prevent overlapping and duplication of research

Of the classes of additives now in use, the conference recommended that priority should be given to the work concerning food colours, preservatives, and emulsifiers

The situation has become much more complex since the synthesis of the so called coal tar ' *colours* Over 2000 *of these synthetic dyes have been prepared, but fortunately* only about 80 are currently permitted in foods There is at present no internationally agreed list for either natural or synthetic colours although attempts have been made to obtain international acceptance in Europe, of a list of 7 synthetic and 5 natural colours. The conference urged early consideration for this question.

Preservatives including both antimicrobial agents and anti oxidants, are of special value in limiting wastage and deterioration in food-supplies. They are of special importance for the storage and orderly disposal of surplus commodities Finally they are particularly valuable in tropical areas, where storage presents special problems. As antimicrobial agents are more extensively used, especially in hot climates they should be given higher priority

A Survey of Tuberculosis

A seven week campaign of mass X ray examination and tuberculin testing was carried out in an industrial area of Northumberland in May and June this year Blyth with a population of just under 35 000 was selected as suitable for the survey because both its size and its nature as a comparatively isolated industrial town A total of 20,000 people were examined by three mass radiography units. This represented 60% of the census population over the age of 5 years, together with 1780 people working but not resident in Blyth

About 1 in every 25 volunteers were recalled for large films Among these 40 cases of active tuberculosis were discovered —a rate of 1 9 per 1000 examined As is usual, other important abnormalities were found and some of these were dealt with by direct reference to the general practitioner or school medical officer and the chest clinic. A guarantee was made that every case requiring hospital admission would be offered an immediate vacancy

Of the Blyth cases, 8 were potential sources of infection and only 5 had symptoms that would have probably resulted in their diagnosis apart from the survey Further examination of contacts of active cases resulted in 2 additional cases being found, and the possibility of finding further cases has not yet been fully ruled out

An interesting feature of this survey was the use of the tuberculin test by Heaf's multiple-puncture method There was surprisingly little opposition from the public, and no less than 95% of those examined were tested The tuberculin test was carried out by school medical officers in the schools, assisted by health visitors, who themselves carried out the testing of the public with the help of members of the St John Ambulance Brigade The postal method of reading, as previously tried in a small pilot survey, was used as the only practicable method of reading these tests, and a control of a 10% random sample was read twenty-four to forty-eight hours later by the health visitors This check showed no serious error in postal reading, 2% were incorrectly recorded positive and 3% were incorrectly recorded negative Used in this way, the value of the tuberculin test is not yet fully clear, but there can be little doubt that the results relating to a 60% sample of the community is of value in the search for further evidence of tuberculous infection in the borough

The radiography units were concentrated on their proper work of mass radiography only, the large films were all taken in the chest clinic Throughout the survey, one static unit was situated in a hall near the market square and two mobile units moved around the town according to need Where possible they operated in public halls, but when this was impracticable a marquee was used The survey began in the schools, which were covered in the first week, and achieved a rate of 88% This had the advantage of bringing the survey to the notice of the majority of the population Later the units worked in the shipyard, the collieries, and the light industries

From the administrative standpoint, no difficulty was experienced in the apportionment of the cost above the normal expenditure of the X ray units, this was shared about equally between the regional hospital board and the local authority Most of the extra clerical work was done by volunteers As in the pioneer Salford survey of 1953, the medical officers of health, chest physicians, school medical officers, health visitors, and clerks in the public health department and mass radiography teams all worked as a single unit and illustrated the close coöperation that can and should exist between the regional board and the local authorities

Well supported by the press and the public, the Blyth survey was a model of how mass radiography can be used effectively and economically

Poliomyelitis

Uncorrected notifications of poliomyelitis in England and Wales in the week ended Oct 15 (41st week) showed a slight increase The figures were (40th week in parentheses) paralytic 189 (186), non-paralytic 177 (164), total 366 (350) The total uncorrected notifications in the 41st week during the past six years were (percentage of paralytic cases in parentheses) 1950, 308 (72 4%), 1951, 94 (57 4%), 1952, 109 (84 4%), 1953, 124 (63 7%), 1954, 71 (70 4%), 1955, 366 (51 6%) So far this year the proportion of non-paralytic cases in England and Wales has been approximately 46 3% of the total The figures for the whole of the preceding four years were 1951, 41 5%, 1952, 29 8%, 1953, 34 6%, 1954, 32 8%

Third Quarter in England and Wales

The Registrar-General[1] announces provisional figures for the quarter ended Sept 30, 1955 Live births numbered 166,584 (a rate of 14 9 per 1000 population), in the corresponding quarter of 1954 the rate was 15 0 There were 101,647 deaths registered—9 1 per 1000 population, compared with 9 3 per 1000 in the third quarter of 1954 The infant-mortality rate was 21 6 per 1000 related live births, compared with 21 0 last year There were 3897 stillbirths, or 22 9 per 1000 total births, compared with a rate of 23 1 in the September quarter last year

In England Now

A Running Commentary by Peripatetic Correspond

THIS season of ducks for dinner is a time of rather mixed feelings Barely four months have passed sinc Porter Fred rang up to say that a carton of day-old ducklings had come off the 7 32, undoing the box o the kitchen table, and the cold little webs wriggling over the children's fingers in a mutual squealing match of excitement, the snuggling acceptance of twelve balls of fluff beneath the dignity of a broody hen The blossom on the apple tree was already set for sauce

High summer saw prodigious growth Those littl yellow shovels scooped up crumbly meal with all th efficiency of open-cast mining Their foster moth clucked with frustration at the water edge, her bastar brood upended in derision One was curiously flatten by the feeding bucket, and one just went by night t rat or weasel The other ten survived for human pleasure The drought was overcome by a self appointed ro system in the horse trough, an inconvenience more th compensated by long hours of basking in the s drenched grass, one leg extended, beak tucked neatly over back How I have often envied such tortic for taking forty winks in car or cinema

But even the nicest of ducks have their debit I wish Aylesburys were a little more constipated back-door steps are treacherous I wish they did take it upon themselves to sound reveille for the of the dawn chorus, or at least do it less raucously I w they would go to bed at sundown instead of causing to stumble through the nettles to shoo them in a shut them in safe from foxes The design of their und carriages seems hopelessly inefficient for taxiing present-day speeds a small wheel on the sternum the obvious modification for the next marks

Squadron manœuvres also need working up P gression in line astern is not only monotonous but o moded since Farnborough The sudden removal of leader to the oven caused a degree of disorganisati quite out of proportion to the accepted principles delegation, save for the smirk on the beak of Tail-E Charlie Subsequent candidates for execution picked haphazardly from the hut at night, but the vivors continue to honour their memory by maintai blank files in the procession—a mute rebuke to Nem

The last two shall go together to minimise psyc trauma A bumper-size packet of frozen peas and the of the cooking apples shall adorn their passing When have eaten our way through ten luscious duckl another summer will be officially over, and we shal in good trim to turn our thoughts to turkeys

* * *

In one of your recent issues I noted that a hosp in the Midlands requested that their new R.M.O sho hold the M R C P (London) I am now awaiting advertisement which stipulates that the new regist at this or that hospital should have the school lea certificate (Oxford and Cambridge Joint Boa B A. (Oxfd), B M (Guy's Hospital trained), and, of cou M R C P (London)—not to mention a full knowledge the report of the Royal Commission on Monopolies

* * *

I am an octogenarian, as my mother was before me my father would have been one had he lived long enou I know all about octogenarians, I realise their inne value, and am happily conscious that everywhere England now, this is fully recognised

But octogenarians were not always held in such hi esteem Not many years ago they were thought to poor old people, who sat all day before the fire in la armchairs, wrapped in shawls and wearing caps T old men wore smoking caps, rather the shape of th worn by Montenegrins, made of cloth and embroidered green and red As a child these caps greatly worried Why, I wondered, were they called smoking-caps, fo many old gentlemen never smoked, they thought rather a wicked habit I supposed in my childish wa that as most of them were bald they were worn to kee their heads hot, in fact smoking hot, and, of course, a mark of distinction This idea was somewhat confirm the *fact that lady octogenarians all* wore lace caps most of them had enough hair for warmth, the cap s clearly to mark their dignity and their intrinsic periority over lesser non-octogenarian folk.

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[1] The Registrar General's Return for the week ended Oct 15, 1955 H M. Stationery Office Pp 20 1s

Such caps as marks of distinction are now unnecessary ; s universally recognised that only the best people can come octogenarians ; the lesser sort have not got it them to stay the course or climb the heights. We owe s just appreciation entirely to our best beloved elder tesman *It is because he is an octogenarian that he is* st rightly and highly esteemed Make no mistake about at. It is not because he led the British Empire to ctory and undreamed of glory but because he is an togenarian Immediately he achieved victory he was shed out into the wilderness, but the moment he tered the ranks of the Immortals—that is, of the octonarians—he was honoured in Westminster Hall and tists began to paint his portrait Now he is regarded *the greatest of all back benchers, because as an* togenarian he has taken a back bench.

Since only the best people can become octogenarians, till the present reign our best queen has been the only togenarian queen—Queen Victoria Peace and pros rity always flourish where octogenarians rule and I n reliably informed by a political commentator not mself of course an octogenarian that there is talk in litical circles about the introduction of legislation to bid the *appointment of any but octogenarians to* the st of Prime or any other species of Minister, and to sure that only octogenarians shall be eligible to stand Parliament. Already, counting Schweitzer, ten of us long to the Order of Merit.

* * *

An impairment of mechanical function in my car me to my favourite garage where I am sure of getting ood opinion. After I had dilated for some minutes the probable pathology of the defect and its obvious in the anterior carburettor I noticed a familiar k on the face of the garage proprietor It was an ression often seen on the countenances of the greatest manitarians at the end of a long outpatient session terested sympathy had been replaced, as my monoue progressed by a glazed bland bonhomie which rcely concealed a modicum of impatience.

The pundit spoke Look, Sir, I'm not asking you to me what the *matter is* That's *my job* Suppose just say what you notice wrong '

* * *

The other day we noticed that one of our clinic patients a small accessory breast in an unusual position Our ry, usually so exact with medical nomenclature, to the doctor thus

> Doctor,
>
> patient is making satisfactory progress but it was noted e had a small mammal below the right inguinal ligament

may be right of course—perhaps it is just a mole

* * *

r donor files suggest that religion holds a high place r region I suppose the same applies in other parts e country but certainly Bishops Deans, Canons it with two Ns) Priests, and Deacons abound here we have no rector, but we *do* have a Vicker (sorry !), there are a number of Ministers Indeed our spiritual re is well looked after, *for we also* have Abbotts, ks, Nunns, and a Friar

ere are Sees for the Bishops and adequate Churches, Norman and Saxon, for the other dignitaries. d there are Parishes for all. But there are hardly sh Churchyards to accommodate all the Graves Tombs. Two Sextons keep things tidy and help ake up for the lack of a verger and there is more one Churchman to listen to the Sermons These preached without any accompanying service perhaps use we have no organ no choir no choristers even an organblower But there is no lack of Bells have plenty : our trouble is that we have but one er

* * *

om from the tissue-culture laboratories

e hear that in addition to glass, 'Cellophane Polythene avar and various plastics, the tissue-culture men are growing their cells on rayon. I say Wotherspoon isn't desirable—I've just got a ladder in my *cultures*.

Letters to the Editor

DEATHS AFTER ANÆSTHESIA

SIR —Your annotation last week draws attention to what must be the greatest source of concern to anæsthetists today Macintosh[1] stated that whilst anæsthetists are aware of the necessity for supervising the airway—during anæsthesia— for some unknown reason the same anæsthetist may then lightheartedly hand over the unconscious patient to a junior nurse who puts the patient flat on his back in bed and leaves him unsupervised and often for considerable periods Many deaths have resulted ' He is also of the opinion that a greater number of deaths from *faulty anæsthetic technique* occur after the patient is returned to bed than on the operating table It should be stressed that to leave an unconscious patient in the care of a nurse or orderly who is not adequately trained to supervise him is regarded as faulty anæsthetic technique

Practically all of these deaths could be prevented by the provision of proper facilities for the care of patients following anæsthesia In America, since the opening of a post anæsthesia room at St Mary's Hospital, Rochester in 1942, it has become widespread practice to provide special accommodation for patients in the immediate postoperative phase A recent survey of the American Hospital Association showed that out of 6070 hospitals 1100 provide special post anæsthetic facilities for the patient It is a remarkable fact that only one such unit has been described in this country[2]

The advantages of the recovery ward are too numerous to mention here but suffice it to say that in a hospital so equipped suction would be provided for anyone needing it within a matter of seconds

Newcastle upon Tyne P HEX VENN

POLIOMYELITIS IN NORTH-WEST LONDON

SIR —I see that I have been reported as having said in London recently that the present epidemic of poliomyelitis was due to a new type of virus May I be allowed to explain ? In discussing the cases that occurred in North West London during August, I said that the high proportion of non paralytic to paralytic cases and other anomalies (the absence of polymorphs from the cerebro spinal fluid in so many cases) had given rise to the speculation that this might not be poliomyelitis at all but another infection However, such cases as had been investigated had revealed the presence of poliomyelitis virus, albeit type III the first time so far as I know, that this type has been encountered in this country ' Incidentally I also note that this remark has given rise to the speculation that it may have been imported by West Indians who I understand form a large colony in that part of London

Considering that we form the adjoining area in Middlesex *the contrast between* the Willesden experience and our own during the present epidemic is striking Whereas in the early stages non paralytic cases appear to have formed about 80% of the Willesden cases in our series to date they comprise less than 25% Some of this might no doubt be accounted for by better reporting in Willesden but I can hardly believe that this alone can explain such a large discrepancy In our area, moreover, the only case investigated yielded virus type *III*

Very pertinent to all this Sir is the question of facilities for virus investigation available to the ordinary practitioner in hospital or in general practice today The Virus Reference Laboratory at Colindale—to the best of my knowledge—has to cope not only with London and Greater London but with the entire South of England. Virology represents today one of the rapidly growing points of medicine, and, unless we are prepared to fall hopelessly behind the Americans in the hunt, I submit that this provision is inadequate By its very nature the Colindale laboratory can scarcely be expected to do routine work, and indeed, considering its commitments, it would seem impossible that it should None the less, routine virology must become available if we are to make any progress More facilities, I submit, are urgently required

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[1] Macintosh, R. R. *Brit J Anæsth.* 1949 21 107

[2] Davies R. M. Hunter J T *Lancet* 1952 i 865

South Middlesex Hospital,
Isleworth Middlesex
G E BREEN

SIR,—The statement that there have been a large proportion of non paralytic cases during the present epidemic of poliomyelitis could be based upon uncorrected figures, depending upon the numbers admitted to hospital Our experience of those admitted to Neasden Hospital between July 5 and Oct 10 has been non-paralytic, 161, paralytic, 91 (the usual proportion at this hospital in recent years, about 2 to 1)

Amongst the *non* paralytic cases, 43% had a biphasic illness, and 85% had cerebrospinal fluids examined Of the latter, 58% were abnormal in having usually a lymphocytic pleocytosis and raised protein content

The clinical picture, with the proportion of paralytic cases and seasonal incidence, gives me no reason to doubt that the disease is poliomyelitis until any later virus laboratory reports show that some of the non paralytic cases in particular may be due to a different virus

Neasden Hospital,
London, N W 10
W F TWINING MCMATH
Physician-superintendent

VITAMIN E

SIR,—I have just read in your issue of Oct 1 a report on the 3rd International Congress on vitamin E held in Venice in early September

The account suggests that "sceptics" might ascribe some of the results illustrated in our "impressive" photographs to "spontaneous recovery" and could duplicate them "under the influence of adequate hospital treatment" It goes on to imply that perhaps α tocopherol is only an "expensive placebo" after all Surely, I could not have made the details of our case studies clear, because we have never yet seen a doubter whom the photographs failed to persuade The unconvinced are merely those who have not seen and understood them. Some were on display at the combined meeting of the Canadian Medical Association and the British Medical Association in Toronto in June, where many of your readers may have noticed them.

The illustrated results were achieved mainly in desperate cases For example, all the gangrenes were cases where excellent surgeons at excellent clinics had advised amputation or had already performed partial amputations We took the patients out of hospital and rescued them with α tocopherol I showed ulcers of long duration that had resisted every other treatment in hospital α-tocopherol cured them while ambulant I also showed conditions such as facial wounds and burns which would have healed if left alone or if treated by any traditional method The point I made was that on tocopherol therapy they healed unusually quickly, one of them healing thus after grafts had failed, and *without contraction of scar* Where has this been seen before ? Of course, phlebitis may resolve with traditional treatment or if anticoagulants are administered, but what *safe* agent can heal such a case in five days while the patient continues with her housework ? I showed such a patient Almost all of the patients illustrated were treated in the office 17 of the 21 came to us in despair *after the best hospital treatment had failed* Surely, there is a limit to continued doubt, although I suppose there have always been men who would not believe unless they could put a hand in the wounds

More than 300 papers have now appeared lending support to our cardiovascular observations of 1942–48 That is a not inconsiderable volume of corroboration in so brief a time It should give pause to a calcified sceptic

I could wish, too, that your report had stressed not only the strong support we received from O'Connor and Lambert, but the equally notable corroboration from Schmidt, of London, and Tusini, of Genoa. And you might have mentioned Dr Foa, president of the congress and professor of medicine at Milan, who told the meeting that many of our results had been duplicated before his eyes by a colleague

Many a limb and many a burn will continue to be needlessly jeopardised if our photographs are not at face value Their inescapable implications with to heart-disease should not be overlooked

London, Canada
EVAN V SHUTE.

PENNYROYAL POISONING

SIR,—Dr Vallance's interesting article last week refers to "*Mentha pulegium* which is found in Spain, the south of France, and Algeria (*Extra Pharmacopœia* 1952)." This needs some correction, because it is not uncommon in this country Clapham et al [1] say this about its British distribution

"Native Wet places on sandy soil. Very local but widespread in S England becoming rarer northwards, in Scotland only known from Ayr and Berwick, in Ireland mainly in the S W and N E, also Wexford and Dublin, Channel Is."

De la Pole Hospital,
Willerby, E Yorks
J A R BICKFORD.

THE PHYSIOLOGY OF CHANNEL SWIMMERS

SIR,—Unless I misinterpret him, Dr Robertson (Oct 15) regards the chief advantage of adiposity in Channel swimmers as that of providing a source of fuel for the physical energy expended, apparently disregarding the nutriment ingested during the course of the swim. He goes so far as to indicate that in the case of one performer there was a store of potential energy, the equivalent of 180,000 calories, which would enable him to swim for hours (a very convenient means of reducing obesity were it practicable) He visualises ketosis as occurring in Channel swimmers This I should have thought would be only one and not the worst of the discomforts and inconveniences incurred from living on one's fat

As a contrast he notes that the marathon runner carries little reserve fat upon which to draw Ma my biochemistry is not above expert criticism, but for what they are worth I offer these details

In a man weighing 60 kg—a reasonable average for a marathon runner—the liver may be estimated at 1 containing 15% glycogen. His muscles constituting of the body contribute 1 5% glycogen, or, in all, 585 g available

The first-class marathon runner inspires 3 litres of oxygen per min. for rather less than two and a half hours, so 560 g of carbohydrate are consumed, the combustion of therefore need be minimal True, there is loss of weight Dr Robertson says 3–8 lb, "part of which is loss of moisture" For "part" I would substitute "most" I have on occasion seen as much as 9 lb lost which was regained within 48 hours

I am aware that American observers have correlated the exhaustion of runners at the finish of the marathon with blood-sugar levels No doubt the resemblance of their symptoms to those of hypoglycæmia encouraged this explanation, but there are several factors (hy pyrexia, dehydration, salt depletion, peripheral cir latory failure, low-grade toxæmia, and so on) all c tributing to the condition of collapse, and it is not possible to isolate any one of a variety of functional stre imposed simultaneously If my figures are correct hypoglycæmia is not to be expected

The ability of women to compete with men as Channel swimmers and even surpass them, I am not prepared to explain The quantity and disposition of adipose tissue must be a vital factor not merely to resist hypothermia but perhaps in conferring buoyancy and other technical advantages which with my limited acquaintance with swimming I am unable to supply Moreover, it must nembered that in protracted feats of endurance physical ributes alone are not concerned Other qualities, otional and psychological are demanded ; patience rise above monotony , courage fortitude stoicism endure fatigue hunger thirst discomforts of all ds; resolution to push on and resist the clamant pulse to rest Perhaps in these respects women sess superiority No woman has, as yet, run over the arathon course, at least officially In 1928 (on a very t afternoon), one started from Windsor and ran a dis nce of about 20 miles in $3^{1}/_{2}$ hours completing most of e remainder of the course to Stamford Bridge in a otor-car

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[1] Clapham A R Tutin, T G, Warburg, E. F Flora of the Brit Isles Cambridge, 1952

Not that I doubt the capability of some of our girl hletes to complete the classic 26 miles 385 yards Some their recent achievements encourage such an expecta on To select only one Mrs Sheridan half an inch nder five feet and weighing 8 stone has pushed a cycle 238 miles in 12 hours and has ridden from Land's nd to John o Groats in 2 days 11 hours—only 5 hours nger than the record holding male At a guess a girl ng-distance runner who undertook the necessary aining would run over the marathon course in 4 hours d perhaps a few minutes faster

London, W 1 ADOLPHE ABRAHAMS

TREATMENT OF CUSHING'S SYNDROME

SIR,—In regard to your valuable leader last week ere is now no doubt in the minds of those in contact th the clinical results, that bilateral subtotal adrenal tomy is a valuable method of treatment The success this major *surgical procedure and the reduction of* e mortality rate to very small figures, has been made ssible by cortisone

Since bilateral adrenal hyperplasia is much more frequent an neoplasia as a cause of Cushing s syndrome the import ce of such a surgical approach being perfected is obvious. e of the as yet unsolved problems is the amount of adrenal sue to be left behind. On the one hand the patient may left with chronic adrenal insufficiency requiring permanent tisone therapy and, on the other the remnant may undergo perplasia and clinical relapse occur In many the balance happily struck, empirically and not only may the patient ain completely well, but as in one woman of 23 operated on by Professor Rob in 1952[1] she may subsequently pass ough a successful pregnancy without a relapse in her ion in spite of the tendency to adrenal hypertrophy gnancy However *the incidence of relapse is sufficiently* in the experience of some surgeons to lead them to ate total adrenalectomy a very radical measure with eat disadvantage of continuous cortisone therapy and vicissitudes of adrenal insufficiency even in the cortisone The problem is, in some ways, comparable to thyro ds but with more severe consequences

u write of further advances One method of oach would be the discovery of a rare radio ated element for which the adrenals (or the pituitary) a selective affinity another the inhibition of the itary gland (corticotrophin) by a steroid of similar ula to cortisone but with minimal biological effects perhaps the relatively unknown territory of the othalamus may yield to exploration

different angle is the question of extension of the edure to severe cases of pituitary adrenal hyper tion which would not strictly justify the name of hing s syndrome Sprague s diagnostic caution in connection which you repeat should be remembered, when is a Cushing s syndrome not a Cushing s drome ? is not merely a frivolous question Why some otherwise typical cases not have diabetes and ers diabetes but no osteoporosis ? The problems of ety and gradation of pituitary adrenal hyperfunction olving in the main glucocorticoids and androgens are l involved[2] but rigid criteria for a syndrome or an eponym, are often too exclusive or inadequate for many allied clinical conditions, involving morbidity, and requiring diagnosis and treatment

London, W 1 S LEONARD SIMPSON

HYDROCORTISONE IN PAINFUL SHOULDER

SIR —What a pity to see that hydrocortisone is being used indiscriminately, giving results that might cause the medical profession to decry its usefulness.

The article by Mr Murnaghan and Mr McIntosh (Oct 15) was a great disappointment to me being interested in the treatment of lesions in and around the shoulder by hydrocortisone, I had hoped to learn something It seems that the only examination performed was the assessment of range ; selective testing of all tissues that might be at fault was omitted An accurate diagnosis, *therefore, could not be made and hydrocortisone should* not have been used I believe that the dramatic improvements were due to the injection being given by chance to the correct spot the failures due to the wrong spot being chosen

The results bear out the fears of Cyriax and Troisier[1] Their experiences, and mine too, show that a pin point diagnosis should be made before an injection of hydro cortisone is used, this diagnosis being based on Dr Cyriax's method of testing active passive and resisted move ments separately Then and then only can an accurate judgment be passed on the usefulness of hydrocortisone

London. R. BARBOR.

SIR —Mr Murnaghan and Mr McIntosh have rendered a disservice to orthopædic medicine. They have not undertaken diagnosis by correlating the results of testing active passive, and resisted movement In our paper on hydrocortisone[1] Troisier and I laid all the emphasis we knew on this clinical method of singling out the lesion Their omission leads them to find diagnosis difficult at the shoulder Indeed yes I for one would find it impossible were I restricted to measuring the active range Even so having found the range limited in a manner suggesting arthritis, they inject in various places but not (as we described) into the joint itself No wonder the results were unimpressive , for hydrocortisone exerts its anti inflammatory effect only where it is placed.

London W 1 JAMES CYRIAX.

SIR,—Reviewing their controlled trial on the treatment of painful shoulder by local injection of hydrocortisone Mr Murnaghan and Mr McIntosh found that lignocaine was equally as effective as hydrocortisone and con cluded that hydrocortisone had no specific effect on the painful shoulder

I think there is a simple explanation of the disappointing results in the cases which received hydrocortisone Mr Murnaghan and Mr McIntosh having pointed out how difficult it is to diagnose and treat pain arising in the shoulder joint proceed to put all their eggs in one basket by limiting the site of injection to the subacromial region

It was on account of the difficulty in localising the *precise source of the pain* and because we felt that the inflammatory condition was often widespread that in our series at Guy s Hospital[2] we made a practice of injecting the shoulder joint in three places—namely, in the region of the long head of the biceps the sub acromial bursa and posteriorly into the joint Whereas Mr Murnaghan and Mr McIntosh endeavoured to inject all the hydrocortisone into the capsular and peri capsular tissues only we deliberately injected some of the solution into the subacromial bursa and the joint space itself as well as into the peri articular structures The inflammatory process usually involves the synovial membrane, and the most rational method of bringing the hydrocortisone to bear on it is by intra articular injection

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[1] Simpson, S L. *Proc R Soc Med* 1953 46 39
[2] Simpson, S L. *Postgrad med J* 1953 29 184

[1] Cyriax J., Troisier O *Brit med J* 1953 ii 960
[2] Crisp, E J Kendall P H *Lancet* 1955 i 476 *Brit. med J* 1955 i 500

In analysing their results it is a pity that the authors did not attempt any classification, separating the acute cases from those in which the onset was insidious and the condition chronic In my experience acute "capsulitis" of the shoulder, whether traumatic, infective, or meta bolic in origin, usually responds dramatically to the *intra articular injection of hydrocortisone*

It is worth mentioning in passing that the acute capsulitis which sometimes follows a trivial elbow injury resolves in a similar manner following intra articular injection of hydro cortisone

Although the chronic "frozen shoulder" is naturally less responsive to the injection of hydrocortisone, nevertheless this form of treatment is of the utmost value and effects much saving in physiotherapy By reversing the inflammatory process pain and spasm are relieved and the patient enabled to carry out active exercises to mobilise the joint Of this type of case, at least 50% can be expected to regain full movement in a matter of weeks rather than months

If manipulation under anæsthetic is necessary an injection of hydrocortisone into the joint will expedite recovery by preventing the formation of further adhesions

Finally, I would stress the very real value of hydro cortisone *in the treatment of painful shoulder conditions*

London W 1 E J CRISP

NURSING BY THE MOTHER

SIR,—Dr Pickerill's letter of Oct 1 describes the value of nursing by the mother from the surgical point of view

Recently an infant of three months was operated upon for the relief of an umbilical hernia and the whole of the nursing was undertaken at home by the mother From the surgical and cosmetic point of view results were excellent but other benefits were unexpectedly obtained

The baby was born by cæsarean section on May 24, 1955 (33rd week of pregnancy), weight 3 lb The mother had a severe toxæmia and was unable to feed the infant, being discharged from hospital before her on June 8 The infant was not sufficiently large to be discharged until July 15, when she joined her mother On July 22 the mother was readmitted for ten days for further examination, the child remaining with the grandmother deep in the country They returned to Malvern about Aug 15, attending the welfare clinic on Aug 23 where she was seen by one of us (H F G)

The child then weighed 8 lb 4 oz. She was rather thin and pale and somewhat restless and uncomfortable No cyanosis was noted. A loud systolic murmur was heard over most of the precordium. A large central umbilical hernia, $^3/_4$ in in diameter, protruded $1^1/_2$ in from the navel It was easily reducible though the neck was very small. An attempt to control it by strapping failed.

On the morning of Aug 25 the child became very uncomfortable and the mother was unable to reduce the hernia She panicked and set out for the family practitioner (A L B) Passing the clinic on the way, she called, where the child was seen by the health visitor and then by one of us (H F G) The hernia was now barely reducible It was arranged between us that surgery was needed at once and Mr P W Houghton was asked to see the infant He agreed that admission to an infants' ward was undesirable

On the morning of Aug 26 mother and infant were taken to hospital, where, after preliminary hæmoglobin estimation, Mr Houghton removed the hernial sac and repaired the abdominal wall The child was returned from the theatre to a side ward where she was left with her mother for five hours to recover She was then taken home in a hospital ambulance car She was a little restless that night but other wise made an uninterrupted recovery, the stitches being removed on the fifth day

Owing to the mother's illness and her second admission to hospital, she had little opportunity of getting to know her daughter before the operation nor had she gained any con fidence in her ability to look after her Her lack of self-confidence was such that she was afraid of being left at home alone with her daughter and even afraid to make up a bottle feed or change the napkin After the operation she needed the daily encouragement of the family doctor and health visitor for a week, by which time she was fully confident of her own ability and a normal satisfactory mother-child relationship had been established. Mother and child became contented and placid

To operate at that time was essential, yet it was felt that the risk of infection in this child, who was almost *certainly anæmic, was so great that it was not* justifiable to admit her to any ward anywhere So this happy result was brought about accidentally We were all impressed by the way in which the sharing of the ordeal of operation by mother and child seemed to establish proper relation ship between them so rapidly and completely, and by the improvement in the condition of both This result suggests that other benefits in addition to freedom from secondary infection could be obtained by extending the range of surgery carried out, without separation of mother and child by admission to hospital

We should like to extend our thanks to Mr Houghton for his coöperation and help, and to Miss Hudson and Miss [illegible] the health visitors concerned

A L BROWN
H F GREEN

Malvern Worcs

SIR,—We are very pleased to know that Mr Oldfield (Oct 8) is still much in favour of our nursing methods and finds in them considerable advantages, but I think he should now have the courage to advance a little further.

In my letter of Oct 1, it is stated that "by abolishing the pool of infection in a common ward and by preventing transference from patient to nurse to patient operative and nursing procedures could be very much simplified" and then are given examples of such *simplifications* with their added advantages. These simplified methods are *possible* if there is an open ward and if nurses handle babies *For fourteen years I used gloves and all infants had* highly skilled intratracheal anæsthesia, then, with the abolition of the common ward and adoption of full mother nursing in single rooms for *every* infant, "intratracheal" anæsthesia was abandoned and gloves gradually given up, with extra-ordinarily better results—unbelievable perhaps but true.

As to gloves, the utmost delicacy of touch is required in infant surgery both in making small accurate measured incisions (as for instance in a Le Mesurier operation) and getting absolute accuracy of adaptation and in tying secure knots with extremely fine nylon sutures Many wound closures have minute, almost invisible crevasses, but never theless quite wide enough for many organisms to enter afterwards they show where sutures have cut and *so* provide other entrances I aim to have none such by inserting two or three times as many sutures as usual, with tension carefully adjusted so that the sutures do not cut, yet the margins are in continuous and absolute adaptation, and I do not believe that these things can be done with tight rubber gloves destroying the necessary *tactile* sensation I think that operations on infants require the same order of controlled digital action as playing a violin or repairing a wrist watch.

Yesterday I *removed* the sutures from an infant with an abdominal tube graft, for the construction of which no gloves were worn, the suture lines on the tube and abdomen were perfect, no sign of infection and the graft a beautiful colour But I would not have dared to do that if the child had been brought to the theatre from an open ward, because from experience of both methods I am certain that with the patient also comes a large sample of ward *organisms* and that it is impossible to prevent this, despite the most careful precautions, and I feel sure too that ward organisms are already in the infant's mouth and *pharynx* and so may be carried down into the bronchi by an intratracheal tube Moreover, the rubber of the tube has a harmful effect, I believe, on delicate (ciliated) *epithelium*, just as it has in veins and in the urethra

Naturally "no gloves" means more meticulous scrubbing up and we take *surprise* swabs from hands and fingers to check on this

As to anæsthesia, I would suggest to Mr Oldfield that he should persuade his anæsthetist to try ether through which oxygen is bubbled and delivered to the nasopharynx only, through fine nasal catheters connected by a Y piece—almost as simple as the old ' Junker " With the infant s head dropped a little (a child s eustachian catheter makes the best sucker) a skilled anæsthetist will get a perfect anæsthesia, very quick recovery and absolutely no postoperative tracheitis or bubbling chests; it is for infants a great advance on intratracheal to which I would not wish to return under any consideration whatever With this as the routine method there has been no anæsthetic death nor any incident even in thirteen very busy years, and it is extremely rare for any infant to get any rise in temperature What better could one want ?

There is a tendency nowadays for the adulation of the complicated and the difficult at this hospital an endeavour is made to reduce every procedure to its simplest possible form, consistent with perfect safety to the patient, and it is found to pay good dividends 'The simpler it is the better it is '

Bassam Hospital.
near Wellington New Zealand

CECILY M PICKERILL

EPIDEMIOLOGY OF TUBERCULOSIS

SIR,—Your first leading article last week does less than justice to the epidemiological work of medical officers of health There is nothing magical in the epidemiology of tuberculosis that should suggest its transfer to some super authority with appropriate super epidemiologists If we can be entrusted with the epidemiology of smallpox poliomyelitis, and all the other notifiable diseases our practice can be applied efficiently to tuberculosis Epidemiology is not only an academic study but, in the prevention of disease requires the appropriate administrative control measures which largely depend upon the resources of the local authority

Health Department
Brighton.

W S PARKER
Medical Officer of Health

PNEUMONECTOMY

—Your leading article of Oct 15 will doubtless ite further interest in the treatment of lung oma, and I should like to comment on it So many are involved in the treatment of this disease and elf so diverse and unpredictable that a search for it single treatment would seem a fruitless task

ems that in comparing the gain from conservative osed to radical operative treatment as your article two entirely separate problems exist One the to be gained from conservative treatment of a ular case of lung cancer and the other the contribu at conservative treatment can make to the over all gement of lung carcinoma—a disease in which ictory methods are almost pitifully inadequate.

far as the former is concerned it may be true for amous-cell carcinoma situated centrally in a lobe ithout glandular involvement, that radical pneumo my offers no greater freedom from local recurrence a lobectomy Which is the best ' operation will ided by the surgeon s experience judgment and sults which are distributed equally between the rvative and his radical colleague That a convincing er is not yet available to this simple question is a us reflection on methods of accumulating and lating data on a country wide basis

e answer to the other problem can in part be ided by considering the 30% or so of patients who it erally stated are at operation found to be inoper . The only chance of improving this figure is by cal measures if one assumes that removal of the wth offers the only hope of cure and provided the ent s distress is not increased in taking this chance at 2% of patients are at operation found suitable lobectomy If your article is contrasting the results lobectomy with radical pneumonectomy for this p of patients a small proportion of the whole your conclusions are a valuable indication of the operation offering a high survival rate with comfort to the patient —namely, a lobectomy The price however that 3 patients from my own small series of lobectomies have paid for increased postoperative comfort and well being is recurrence of the growth in the remaining lobe without metastasis elsewhere in the body These were young and robust patients and I see no reason for supposing they would have succumbed to the more radical operation of pneumonectomy

Warwick.

R ABBEY SMITH

THE CLIMATE OF DISCOVERY

SIR —When two professors of medicine fall out about the respective rôles of art and science in medicine, cynics may well laugh, while simpler souls without chairs may timidly feel that here are great matters beyond their ken

Yet the theme is an old one and often expounded and it is a little disquieting that two distinguished physicians both vowed—as it were—to the education of the doctors of the future, should seem to be at odds upon so important a matter

Perhaps the difference is one of linguistics only and this may easily be the case since neither writer has thought it necessary to define what he means by art in medicine, and so we cannot know whether or not they are both dealing with the same thing or notion

In his chapter ' Of Reason and Science " in *Leviathan* Hobbes tells us ' how necessary it is for any man that aspires to true knowledge to examine the definitions of former authors and either to correct them when they are negligently set down , or to make them for himself and much more to the point about precision of language Hence to suggest that the notion of art in medicine is sentimental obscurantism can be true only when the writer does not define his terms and thus imparts obscurantism to his exposition

Yet worse is still to come for in Professor Arnott s brave new world of medicine where *all* is science, to use operative terms without making their reference plain is to sin against science itself and to befog the climate of discovery

One cannot withhold sympathy from Professor Platt (Oct 22) in this sad lapse of his academic colleague, so pregnant with meaning

There should, however be comfort for him in the following passage from Aubrey s *Brief Lives* where the author writing of William Harvey says of him that ' All would allow him to be an excellent anatomist but I never heard of any that admired his Therapeutique I knew severall practisers in London that would not have given 3d for one of his Bills and that a man could hardly tell of one of his Bills what he did aime at Can it be after all that even today science, like patriotism is not enough and that medicine is incomplete without a lifegiving infusion of art ?

But if this be obscurantism for all our professors, we must hope that some modest share in the education of our successors is left to those that have learned in the hard school of experience that there is art in medicine who know what this means and are thus best able to pronounce upon the place of art in medicine

London, W 1

F M R WALSHE.

SIR,—In Prof Melville Arnott s oration (Oct 15) there is the statement Medicine in all its activities must be a scientific discipline—that is, a compound of observation deduction and proof of validity of deduction ' Like almost all statements however unambiguous, this can be interpreted with several different shades of meaning but it seems *clear* that in this context Medicine implies the practice of medicine the use by doctors of their special skills and knowledge A scientific discipline could not be effective otherwise Does our knowledge justify itself as scientific ? Is not much of it mere belief, liable to be confounded sooner or later ? Even in the unchanging field of human anatomy we find, according to your annotation, Sir, on p 811 of the same issue, that established and accepted "facts" can be called in question

If the statement is held to indicate only that doctors must make use of scientific methods there is little room for argument, we must and we do But with what results ? We are faced in any patient by factors which cannot be assessed or measured, "confronted," as Bridie put it, "with a concatenation of living, dying and functioning cells so complicated that it is impossible to understand the simplest of the processes involved concatenations (which) are influenced arbitrarily by indefinable things called the will and the mind" Can a scientific discipline, however modified by "solicitude and compassion," cope with such a situation ? Scientific method may suggest a course of action, the imponderable factors may be apparently irrelevant, but even if our treatment is successful it is nevertheless empirical, and the treatment of today may be included among the "absurd superstitions and revolting nostra" of tomorrow Your leader[1] on thrombophlebitis after infusions might illustrate this point

If science is knowing, and a scientific discipline a corpus of established knowledge, medicine, in my view, cannot be called a scientific discipline As doctors we are subject, in part, to scientific discipline but this no more makes us scientists than military discipline makes National Servicemen field-marshals

Falkirk RONALD G HENDERSON

GENERAL PRACTICE

SIR,—I feel that Dr Kempton's letter of Oct 15 should not be allowed to pass without remark

The one aspect of family doctoring which is performed most efficiently and with the minimum of fuss and ostentation is the follow-up of one's patients, although not many would consider it merited a separate department It is a part of one's daily work which is done unobtrusively and regularly over the years as doctor and patients pass through the vicissitudes of life together, and no multiplication of hospital departments can replace it It must not be assumed that because the family doctor, beset by his multifarious responsibilities, does not "complain about it very much" that he is not indignant at the attempts made to usurp him in his chosen specialty

I have always, as do all good family doctors, turned to my consultant colleagues for advice in my difficult cases, and I have always referred to hospital patients requiring the help of the battery of mechanical aids to diagnosis at the disposal of the consultant, but I would never allow a hospital department or specialist to treat or follow up patients *for* me when the facilities for such treatment and follow up were available to me I agree that many consultants treat my patients *with* me, but that is a different matter altogether

The causes of the crowded outpatient department are, of course, the inherent defects of the health service—the deliberate concentration of facilities and expenditure on hospitals, and the equally deliberate deprivation of the family doctor of facilities and starvation of funds for this, the most important and most abused part of the service No improvement will result until provision is made for a general practitioner service staffed by family doctors who have the means and skill necessary to collaborate closely with their colleagues in all other branches of the service

The family doctor must be provided with his three main requirements—time, tools, and training The original N.H.I service gave a completely false impression of the number of patients who could be adequately looked after by one family doctor, since it was based on the healthiest part of the community The National Health Service included children, elderly people, and wives in a much wider field of medical benefits, but the expenditure on the general practitioner service was pegged down on the old N.H.I basis. Our experience since 1948 shows that the general practitioner's list should be quartered and his capitation fee quadrupled

The family doctor should have not only "access to," but the enthusiastic and whole hearted support of, a full range of secretarial and paramedical workers, whose help he himself coördinates Secretaries, technicians, nurses, health visitors, physiotherapists, and trained medicosocial workers all come into this category

The training of the family doctor must be realistically re-cast and re orientated in the light of our experience of the trend of family doctoring in this country This cannot be done without the creation of academic departments of general practice in all hospitals to deal with this super specialty, and the making of provision for general practitioners to engage actively in research and investigation for general practice.

Given the necessary time, training, and equipment, the scope of general practice is limitless and the function of the family doctor will be completely different from that into which the N H I and N H S have forced him. Then, and only then, will the crowding of hospital out patient departments be reduced to a proper proportion. The results which Dr Kempton complains of are the end-product of official policy and until we can educate the politicians (and alas! many of our consultant colleagues) they will remain

Reading W G TAIT

SMOKING AND THE HEART

SIR,—In your annotation last week you say "it is open to question whether the patient with coronary artery disease who smokes moderately should be denied tobacco entirely" If it is open to question, surely we ought to discourage the taking of a risk by a patient with such a serious affection The evidence you adduce seems to me strongly to support the view that stopping smoking may sometimes prevent coronary thrombosis

One of the most dramatic recoveries I have seen was that of a man aged 58, almost in extremis for weeks following a severe coronary thrombosis He admitted to inhaling cigarettes per day I prevailed on him to stop and his condition immediately improved He was soon up and about and lived quite comfortably for 2 years He then died suddenly hurrying for a bus.

You attempt to justify your view—that patients with coronary-artery disease may sometimes be allowed 10 cigarettes per day (you do not stipulate that they should not inhale)—by saying that smoking "may afford solace to someone harassed by the burden of a serious disease" Such solace is obtained, I submit, at a great and, in my view, unjustifiable risk

Wallasey, Cheshire LENNOX JOHNSTON

THE LUNGS IN MITRAL STENOSIS

SIR,—I was interested to read Dr Short's letter of Oct 15, referring to your leading article of Oct 1

He states that "a normal lung architecture is inconsistent with a diagnosis of severe mitral stenosis" This has not been my experience Although severe pulmonary vascular changes, as demonstrated by radiology, are very common in patients with severe mitral stenosis, exceptions do occur when a tight valve is found at operation and a normal vascular pattern is shown on the chest film

Nor can I agree with Dr Short's assertion that the pulmonary vascular changes ascribed to mitral stenosis may sometimes be found in left heart failure I have never seen narrowing and tortuosity of the peripheral pulmonary arteries in patients with left ventricular failure[1] In this group there is nearly always over distension and over-filling of the peripheral vessels rather than under-filling owever, the small horizontal lines at the periphery the lung in the lower zones, which are ascribed to ended lymphatics are frequently seen in patients h pulmonary hypertension due to mitral heart disease also occur in patients with pulmonary hypertension to other causes

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[1] *Lancet* Sept 10, 1955 p 541

[1] Goodwin J G, Steiner, R S, Lowe, K G *J Fac Rad* 1952 4 1

ammersmith Hospital,
London W 12

R E STEINER.

CHILDREN'S APPETITES

IR,—I should very much like to know what are the unds for the widely held conviction that entirely lthy small children should not be allowed to satisfy ir hunger (or should I put it "to eat as much as they nt to eat") Also what are the reasons for the plementation of this idea in English boarding-schools boys between the ages of 0 years and 18 years?

London S W 1

R M DOWDESWELL.

VESICO CŒLOMIC DRAINAGE

SIR,—I have read with great interest Mr Mulvany's ticle of Oct 8 on vesico-cœlomic drainage for the lief of ascites

As Dr Lowsen pointed out (Oct 15) most cases of ronic ascites due to portal hypertension or malignant ease do not require diagnostic laparotomy I also ve successfully drained ascites by means of 'Polythene bing over a period of many weeks.

ize no 2 tubing is introduced through a needle (s w g 13) 3 in. long, which itself has been pushed through a ile rubber disc from the screw-cap of a transfusion bottle en the tip of the needle is inside the peritoneal cavity the ythene is introduced through the lumen of the needle up length of about 4 in. The needle is then withdrawn whilst rubber disc is kept close to the abdominal wall The ber disc will grip the polythene tube firmly and serves as anchor for 4 strips of adhesive plaster fixed to the abdominal l. This device will hold the tube in position for many weeks hout leak or sepsis and with no discomfort to the patient. night the tube drains into a bottle at the patient's bedside l in the case of ambulant patients into a rubber appliance d to the thigh, as used for urinary incontinence

similar technique in which polythene tubing replaces needle can be used in the management of tension mothorax

rpool.

H FULD

EOGRAPHICAL ASPECTS OF MELANOMA

—I have noted that the incidence of melanoma dged by deaths, appeared to be greater in Australia n England, and that this might depend on solar ation.[1] McGovern[2] explained the differences in age lence in his series from overseas by postulating that r radiation might be important He felt that this ht also explain the relatively high melanoma rate on exposed parts of the body in his cases from a Sydney pital. The pioneers in the study of skin cancer in tralia, E H Molesworth and N Paul had shown importance of solar radiation in the production of skin carcinomas but had not, apparently considered importance in melanoma.

tralian statistics on melanoma date back to 1930 th the 6th revision of the *International List of Causes* Death, statistics of melanoma are available for other ntries for the years 1950 onwards. It is possible to e the deaths from melanoma per million persons per num for the individual States in the years 1950 to 53 as follows: Queensland 23 New South Wales 15 stern Australia 15 South Australia 12 Victoria 8 and mania 8 For Australia as a whole the rate is 14 e corresponding figures for England and Wales and Scotland are 7 and 5 respectively

The figures by State in Australia are of interest for they are in the same order as the capital cities as one passes from the tropical north to the south The importance of such figures is strengthened by an analysis of the numbers of cases diagnosed histologically the greatest number annually from any Melbourne hospital being 12, whereas the two largest Sydney hospitals each average about 40 cases annually

Dr A G S Cooper, of the Queensland Radium Institute, has told me that for some years he has held the solar radiation to be an important factor and that the disease is more common in the northern parts of that State He also believes that there are fewer cases of melanoma in Queensland certified on the death certificates, than the spirit of the *International List* would require

The experience of those who have had several years tropical service in the British Armed Forces might well be compared with that of other appropriate British groups

School of Public Health and
Tropical Medicine
Sydney

H O LANCASTER.

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[1] Lancaster H O *Med J Aust* 1954 ii 93
[2] McGovern, V J *Ibid.* 1954 i 139

TONSILLECTOMY WITHOUT TEARS

SIR—Dr Belfrage states in his letter of Sept 17 that he offers himself as a target by saying that he uses chloroform for the maintenance of anæsthesia in these cases for tonsillectomy in children I do not propose to take up the challenge on this account, for I am quite sure that in his hands chloroform is an excellent anæsthetic

I would, however, like to question his statement on the waste of time that occurs when intubation is used with the addition of an unnecessary relaxant' My routine method of anæsthesia for Ts and As in children is now premedication with methylpentynol and atropine induction with thiopentone followed by succinylcholine chloride, and nitrous oxide oxygen and trichlorethylene for maintenance with an endotracheal tube. The average time taken over each case from the insertion of the needle to the placing of the Boyle Davis gag is 80 seconds

When working with one surgeon who prefers an oral endotracheal tube, 5 cases are completed within the hour For very young children who have 'no veins' I use a barbiturate and atropine as premedication, with nitrous oxide oxygen, and ether for induction and maintenance which naturally slows down the time taken over the case by several minutes. I am sure that Dr Belfrage will admit that even in his experienced hands, and using chloroform instead of ether that it is impossible to compete with the very rapid time that the use of a relaxant with endotracheal intubation makes possible and that intubation gives greater control than when an insufflation technique is used.

I quite appreciate that speed is not the all important factor in surgery but long E.N.T lists can become very tedious, both to the surgeon and to the anæsthetist as well as to the nursing staff

Pietermaritzburg

J D M BARTON

Medicine and the Law

Appeal to Privy Council

Viscount Simond Lord Keith of Avonholm and Lord Somervell of Harrow on Oct 24 heard the appeal brought by Dr R T V Simpson against the Medical Disciplinary Committee's finding that he had been guilty of infamous conduct and direction that his name be erased from the Medical Register[1] Their Lordships after consultation and without calling on counsel for the committee dismissed the appeal They will put their reasons in writing

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[1] See *Lancet* 1955 i 1172.

Obituary

NORMAN KLETTS

M B Manc., F R C P

Dr Norman Kletts, a physician at the Manchester Royal Infirmary, died on Oct 14 at the age of 60

He entered Manchester University in 1912 as a Seton classical scholar, and after winning many prizes, medals, and scholarships he graduated M.B in 1917 with distinction in medicine and surgery He spent two years in the R A M C, ending with a period as assistant bacteriologist to the Scottish Command based on Edinburgh There his interest in pathology was aroused, and on his return to civilian life he became pathological registrar and assistant director of the clinical laboratory at the Manchester Royal Infirmary, working for a time under Prof H R Dean He took the M.R C P in 1921 and in the same year became resident medical officer at the Infirmary—a post which he held with notable success for two years By this time his reputation as a physician and his teaching ability were recognised.

He began consulting practice in 1923 while holding honorary appointments at Ancoats Hospital and Stockport Infirmary Though neither of these was an official teaching hospital the students flocked to his clinics and ward-rounds In 1934 he was appointed honorary physician to the Manchester Royal Infirmary and lecturer in medicine at the university He was elected F R C P in 1944

During the late war he undertook more and more civilian and hospital work, including the duties of dean of clinical instruction. In 1945 he broke down with pulmonary tuberculosis and underwent a thoracoplasty. By way of reablement he became adviser in medicine to the Oxford Regional Hospital Board and lived in the Cotswolds He made such good progress that in 1949 he was able to return to his duties at Manchester, but he never returned to private practice In its place he combined his work at the Infirmary with that of adviser in medicine to the Manchester Regional Hospital Board

W B writes "Kletts regarded pathology as the foundation of sound clinical medicine, and it was the basis of his teaching It was not surprising that his practice was one of the largest in Manchester, for his manner, methods, and skill made him the ideal consultant for the general practitioner, patient, and relatives alike In the last few years his best work was done for the regional hospital board, and the effective medical service which he has built up in the region will be his permanent memorial He founded an active regional association so that his physicians could meet together to discuss their problems They and those who came in contact with him, not least the medical students, will remember him for his excellent command of the English language, the clarity of expression which made his teaching so effective, and his intolerance of mediocrity They will also recall his logical approach to a clinical problem Wisely he lived out in the country in an old gamekeeper's lodge on the Adlington Hall estate looking on to the Derbyshire hills His spare time was spent in his lovely garden In the last few months his failing health had caused much anxiety Even so his death came as a shock to his colleagues and friends"

Dr Kletts leaves a widow and a daughter

WILLIAM HAYWOOD HAMILTON

C B, C I E, C B E, D S O, F R C S

Major-General W H Hamilton, a former director of medical services of the Indian Army, died on Oct 18 at the age of 74 at St Helier, Jersey

He was the son of the late W R Hamilton of the Indian Civil Service, and he was educated at Tonbridge School and St Bartholomew's Hospital He played rugby and cricket for Barts and he was also far above the average as a tennis player After qualifying in 1930 he held house-appointments at Barts and other London hospitals before he joined the Indian Medical Service in 1905 He held surgical and ophthalmic specialist appointments in the service till he became D A.D.M S to the Lucknow division in 1911 Later he took part in the Abor expedition In 1915 he was posted to Me potamia, and the next seven years were perhaps the most successful of a successful career He went to Mesopotamia as a captain and D A D M S, and as the Force increased he remained senior staff officer to the head of the medical services Of his work at this time a colleague writes

"Hamilton had a pelmanistic memory, and kept in his head all the details of the medical organisation of the Force, He was thus invaluable to the series of senior men who filled the chief medical appointment He had a gift for improvisation which was exactly what was needed in the early, gloomy days of the Mesopotamia Expeditionary Force The powerful Mesopotamia Commission, which inquired into the medical scandals of 1916, though it took many scalps, left Hamilton unharmed"

He left Mesopotamia with the rank of lieut.-colonel and the honours and decorations which he received for his services there included the C I E., C B E., D.S O., and Corona d'Italia He was also eight times mentioned in despatches

After the 1914–18 war he took part in operations in Kurdistan and Persia before he returned to India, where he served on the North-West Frontier Owing to his early brevet-colonelcy he found himself filling a series of acting posts as A D M S at Waziristan, Pindi, and Bombay, before he was appointed A D M.S at Meerut in 1935 The following year he was promoted major-general and became D D M S to the Northern Command, India, and in 1940 he realised his chief ambition on his appointment as D M S in India He retired in 1941 From 1 to 1941 he was honorary physician to the King

A colleague writes

"Haywood Hamilton was a versatile man His chief was for administration and in this he had few equals he seemed to have no difficulty, when occasion arose, turning to professional work and excelling in it. 'Hamm could be ruthless He neither courted nor achieved popularity, but he made a deep impression on all who met him and mention of his name among people connected with at any time in the last forty years immediately evoked flood of stories and reminiscences"

WALTER HERBERT COLDWELL

M B Lond, F F R, D M.R E

Dr W H Coldwell died on Oct 21 at the age of years at Westminster Hospital, to which he was consulting radiologist

Educated at Christ's Hospital, Horsham, he his medical training at King's College, London, Westminster Hospital Soon after qualifying in he joined the Royal Navy and served in the East until the end of the 1914–18 war He returned Westminster for postgraduate studies, and his interest turned to radiology This may have been a hereditary link, for his father had been one of the pioneer radiographers and his work for the new science later caused his death Coldwell took the D M.R E of the University of Cambridge in 1920 and was one of the first two men in the country to obtain this diploma

From then on a busy private practice and hospital work occupied his time From 1922 to 1934 he one of the two radiologists to the Royal National Orthopædic Hospital In 1923 he was appointed to the staff of the Westminster Hospital, and in 1930, when the buildings were opened, and separate departments radiodiagnosis and radiotherapy were created, he became physician in charge of radiodiagnosis During the war he held an appointment in the Emergency Medical Service, and was consultant in radiology to the R.A These busy years taxed him severely and the end of war saw him sadly reduced in health and strength But though he retired from his hospital appointments he continued with his private practice until ill health forced his retirement in 1953

F M A. writes "Coldwell will always be remembered for his modesty and self-effacement His practice was large and his opinion was widely called for, but he never sought the limelight He believed that radiography was only an adjunct to diagnosis and not the sole answer He refused to subscribe to the practice of drawing false assumptions from indifferent radiographs and would form his opinion only on those appearances which tted the pathology of the case and were demonstrable) the uninitiated on the beautiful radiographs, which ith skilled technical aid he was so long able to produce'

JAMES DURNO CRUICKSHANK

M.D Birm., D T.M & H.

Lieut -Colonel Cruickshank, who was in charge of a ilitary pathological laboratory in the Far East, was owned on Oct. 22 while using an under-water breathing paratus in the sea near Singapore

Born in 1911, the son of the Rev W W Cruickshank studied medicine at Birmingham University, where graduated M.B in 1934 The following year he joined R.A.M C and he served in India from 1936 until 45. During these years he was commanding officer the 6th Indian field ambulance in India and Burma, and entually became an A.D M.S Afterwards he became Army specialist in pathology, and he later held ecialist posts in Western Command and at the Chemical fence Experimental Establishment at Porton In 1947 took the D T.M & H and in 1951 the degree of M D the time of his death he was assistant director of thology to the Far Eastern Land Forces. He was only serving officer in the R A.M C who had been aded as a senior specialist in both physiology and thology

H. C. writes James was a methodical and ustrious worker with a keen and inquiring mind was a delightful colleague, quiet and self-effacing with a dry humour which could be vastly entertaining 1940 he married Isabel Catherine daughter of the Sir John Ledingham F R.S , and it was always a to be entertained by them and their four lovely le daughters.

Dr MARGARET JACKSON

L. S P writes

our admirable description of Margaret Jackson's per ality seemed to some of her friends to miss what had me the real mainspring of her life—that joyful and ed triumphant acceptance of Christian faith and of mbership in the Anglican Church to which she had found way

er upbringing was that of a liberal atheist but her humani an enthusiasm which you rightly emphasise led her in turity to examine the claims of Christianity She found the Christian affirmations of Charity and Reconciliation buoyant answer for both her mind and her heart. Already had found ways to use her gifts to serve the Church and ll have found others, all the more perhaps, because she ld take delight in the Church's tradition of music and drama

M. C N J writes

For years Margaret Nelson Jackson and I have been con d and often rolled into one person and now tragically I lost my other and better half The relationship of r-in-law is not always easy but though it would be lous to say that two people with pronounced views er had any difference of opinion I can say that I never away from an argument however heated with Aunt with anything but a pleasant taste She could always the other's point of view and invariably tempered her forthright opinions with a nice humour One of her endearing qualities was an extreme tenderness of heart could not bear to see or hear of a creature suffering unduly ther it was human or otherwise—her face would pucker nuine distress and her instinct was to hold out a helping d. As an aunt and a cousin she was matchless—no thday was ever forgotten though the date chosen might little relation to the natal day all her young relatives be assured of her loving concern in their affairs and no ter was too small or trivial for her attention As a family are infinitely poorer without her there is a wider family where her humanity and her wisdom and literary will be sadly missed

Births, Marriages, and Deaths

BIRTHS

—On Oct. 13, at Goonpiper Feock, to June wife of Dr L. B Healey—a daughter

Notes and News

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

A MEETING of the society at Manson House, London, on Oct 20 was attended by Dr Albert Schweitzer and Prof R M Gordon the president, announced that Dr Schweitzer had been invited to become an honorary fellow

The President presented the Chalmers medal of the society to Dr W E Kershaw of the Liverpool School of Tropical Medicine this medal is awarded biennially for distinguished work related to tropical medicine the recipient being under 45 years of age

In his presidential address Professor Gordon discussed the host parasite relationship in filariasis. He recalled the state of knowledge of malaria when Manson was making his conjectures, based on the scanty information available over fifty years ago and claimed that our knowledge of filariasis is now at about that stage

The illustration used by Professor Gordon was *Loa loa*. At one time it was thought that this was a parasite of man only carried by tabanid flies of the genus chrysops but recent work has revealed a monkey reservoir apparently little harmed by the infection In the flies *Loa loa* finds a good intermediate host in that a high proportion of ingested microfilariæ reach the infection stage to be passed on at a subsequent blood meal, and in that the fly takes its subsequent blood meal immediately after oviposition (Professor Gordon defined a good ' host as one which allows a suitable proportion of the parasites to reach a stage of development most propitious for propagation of the species such successful propagation generally depending on the parasite's ability to cause no serious injury to its host) Although there is evidence that flies which have discharged their loads of infective filariæ may not live so long as uninfected flies it is clear that the larvæ in their migrations in the tissues of the flies, rarely damage vital organs. *Chrysops* must be regarded as a good host for loa.

The vertebrate host man, behaves unevenly to his guest loa Some human beings are bad hosts in that although constantly exposed to infection some fail to allow microfilariæ to appear in the blood in sufficient numbers, and therefore obstruct the biological cycle necessary to survival of the worm. They are ill adapted hosts. But this does not appear to be true of *Acanthocheilonema perstans* since in that harmless infection the presence of microfilariæ in the blood seems to be the rule. The bad human hosts of loa may be naturally ill adapted from the outset but their power to suppress the appearance of microfilariæ may be enhanced by repeated infection. This conjecture is based on the observed fact that the older exposed Africans tend to show fewer microfilariæ than the younger people.

It therefore seems that the fly chrysops and certain species of monkeys are good hosts for loa and that this association represents the normal and well-established cycle of development man being in this respect a poor imitator of the monkey We still know little of the essential relationship between the worm and man, and until further research has been carried out our understanding and therefore the development of rational methods for treatment and control will remain inadequate

C I O.M.S

THE Council for International Organisations of Medical Sciences held its 3rd general assembly in Paris on Sept. 30 and Oct 1 under the chairmanship of Prof R E Tunbridge professor of medicine in the University of Leeds. The council was founded in Brussels in 1949 under the joint auspices of UNESCO and the World Health Organisation and its object is to facilitate the spread of knowledge in such ways as to promote advances in medical science and to encourage the utilisation of such knowledge throughout the world

The assembly reviewed the present-day problems of communication between doctors They re-examined the real functions of international congresses in the light of the changed situation brought about by specialisation and the increased output of scientific research in various fields. On the one hand the more general congresses were becoming too large and what was worse the number of papers read too great opportunities for real discussion were all too rare On the other hand specialisation tended to increase the number of meetings, and these specialised meetings often lost contact with their parent disciplines As international congresses were not the media for reporting scientific discoveries, it was agreed that much could be done to improve the opportunities they offered for personal contacts, for disseminating information to a wide international audience, and for arranging international symposia and other satellite activities

Symposia were defined as carefully prepared meetings at which 15 to 20 specialists representing various branches of science gathered for several days to discuss a clearly defined subject in private or before a small invited audience They could be held independently but it was a good thing to hold them several days before a congress, so that a rapporteur could bring to the larger audience of the congress the conclusions of the smaller group Special symposia could also be organised in countries in the process of development, and they were an excellent way of stimulating research, and thus leading, in the long run, to the better practice of medicine

Discussing written communications, the assembly agreed that there was much duplication between indexing and abstracting services There were considerable difficulties in achieving over all coördination, but action of limited scope should be undertaken whenever opportunities arose Standardisation of terminology was an important activity that the council would continue to encourage, as it had done in the case of anatomy

The assembly decided to promote through the councils' membership a clearer recognition of present day functions of international congresses, a flexible coördination of congresses of related disciplines, a shift from individual participation to group participation through pre congress working parties and symposia, or by the appointment of experts to make digests of related communications, a greater participation of young research workers, and the holding after a congress of special international courses for the host country, in particular cases

It was decided that the council should continue its policy of organising symposia on general subjects or specially important areas of research, and stimulate the organisation of the pre congress symposia already mentioned and of scientific meetings in underdeveloped countries.

COÖPERATION IN THE NATIONAL HEALTH SERVICE

AT the annual conference of the Executive Councils' Association at Brighton on Oct 21, Mr Iain Macleod, the Minister of Health, discussed coöperation between the various bodies administering the National Health Service and the people working in it

He welcomed the British Medical Association's action in asking local medical committees to coöperate with medical officers of health in ensuring that family doctors were able to play their full part in helping to prevent the break up of families There had, he continued, been a great development of group practice By the end of August there were 169 applications for interest-free loans for the provision of premises for group practices, and the amount of money involved had grown to £286,000, the scheme had been so popular that the amount of money asked for was considerably in excess of that available

Mr Macleod said he would like to see more part-time hospital appointments held by general practitioners Hospitals should welcome family doctors not only at clinical meetings, but also in the wards to see their own patients Hospitals could help family doctors by providing them with the services of the pathological and X ray departments In return general practitioners could help the hospitals by giving full reasons why they referred their patients to hospital

Another valuable link was the domiciliary consultant service, which had grown from just under 60,000 patients visited five years ago to 224,000 visited last year

Many medical officers of health were working for close association between their staff and the family doctors, and in many areas there were now small informal committees whose job it was to ensure that this team work was encouraged Mr Macleod was not satisfied that there was, as yet, close coöperation in the maternity service by the hospitals, general practitioners, and local health authorities especially in antenatal care More should be done to strengthen the link between the family doctors and the non medical social workers and to bring these workers into the team of which the doctor was the leader

It was important that local authorities should integ their own domiciliary, health, and welfare, workers so th they could work together as a team, and one way of achie this was to have them under a single direction. Many wor might be concerned in a single case, and commonly they w into action without having first worked out a coördinat plan, this tended to "departmentalise" the family Effo were being made in some areas to bring the family do into case conferences, and he was sure that this was of t greatest value

Mr Macleod said that pilot schemes to show the benefic effects of the fluoridation of water supplies for the prevent of caries, particularly among children, were being arra *in 2 centres in England, 1 in Wales, and 1 in Scotland,* w the full support of the British Dental Association and Royal College of Surgeons Local health authorities had b asked to give a much bigger place to dental health educ by health visitors and other officers. Of the Dentists Bill before Parliament, Mr Macleod said that one of the purposes was to recognise "the full maturity of the de profession by *granting it the privilege of self-gover* Another purpose was to allow the dental profession to use of ancillary help, subject to suitable safeguards.

HEREDITY AND ENVIRONMENT

ARE large families injurious to the human stock, heredity a more important factor than environment in intelligence and progress? These questions were discu Prof L S Penrose, F.R.S., in this year's convocation of the National Children's Home[1] Professor Penrose p *out that "there is a great fear, among eugenists,* that to a tendency for size of family to be inversely related to intelligence test scores, both of parents and of offspr decline of average ability is in progress." An investigati the Scottish Council for Research in Education m confirmed that low intelligence quotients were found m families, but it showed a general rise in children's intelli which was *attributed by one authority* to improved env ment Eugenists also claim that improved standards of and medical science are harming the human stock by all the survival of weaklings who would perish under n selection.

Professor Penrose takes the opposite view, maintaining it is quicker and easier to improve the human stock by ch the environment than by attempting to improve the by selective breeding "We do not try and breed out p who are short-sighted or astigmatic, for example we c *their vision* with spectacles The cure takes a few instead of a few thousand years" A population growing adverse conditions, he says, is selected so that the form of genes specially helpful in the particular advers encouraged, and, although this may be *helpful* agains hazard, it may be deleterious to the population in ge For instance, the sickle cell trait has probably been dev *genetically in Africans* to resist malaria, but it causes anæmia Malaria control will eventually improv human stock by making the sickle cell trait unnece hygienic measures of this kind are therefore eugenic and dysgenic

Professor Penrose is optimistic about the future of human stock, and declares that our *hereditary* constit makes us change our environment "Hence the gain in st of children, in length of life and in general health which taken place in the last hundred years is not really env mentally determined but based upon heredity"

HOSPITALS IN NORTHERN IRELAND

THERE was an increased demand on the hospital specialist services in Northern Ireland in 1954 comp with the previous year, and overcrowding in mental hosp was complicated by the shortage of specialised nur *(On the other hand,* the general establishment of nu increased from 3516 in July, 1948, to 5277 *at the* en 1954—a rise of just over 50%) The department of social preventive medicine at Queen's University, Belfast, for an increase of 14% in the *admission of elderly* people mental hospitals within the next ten years.

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[1] Heredity and Environment in Human Affairs By L S Pen M D F R.S Published by the National Children's He Highbury Park, London, N 5 Pp 23 1s

[2] Seventh annual report of the Northern Ireland Hosp Authority H.M. Stationery Office Pp 199 3s 6d

To meet these increased demands, two new hospitals are ing built at Londonderry one of which together with a ny being built at Muckamore will be for mental patients. ny additions to existing hospitals were made during 1954 luding new units, outpatient departments and wards. e Duchess of Gloucester opened a new infants ward in the ker Hospital for Children and Women in October 1954 d Dame Dehra Parker the minister of health and local rnment, opened a new unit of the Holywell Mental spital the following month Despite a general rise in missions, one hospital reduced its waiting list during the r from 498 to 260

ollowing a debate on the health services in the Northern land House of Commons early in 1954 the Hospitals thority set up a committee which received reports from pitals as well as 400 general practitioners, and later gested ways in which the health service could be improved ong the committee's recommendations were methods for ucing waiting lists, avoiding delay in patients admission l improving the appointments system in outpatient artments.

During the year the clinical pathological laboratory in fast made a survey of the incidence of *Staphylococcus eus* in the hospital population. The report notes with e misgiving that there was an increase in the number trains resistant to both penicillin and the wide-spectrum biotics such as aureomycin oxytetracycline and tetra line Over 60% of the cultures of *Staph aureus* n from inpatients and outpatients of the Tyrone County pital Omagh were found to be penicillin resistant

ANALGESIA IN DOMICILIARY MIDWIFERY

a report and memorandum submitted to the National iday Trust Fund Mr William Penman a deputy chairman he Trust analyses domiciliary confinements in 1954 rding to the proportion of cases in which analgesia was ided. In his report he remarks that the proportion of s where a doctor was booked increased from 61·1% in to 68·7% in 1954 On the other hand the proportion ses were a doctor was actually present at the delivery fell tly from 20·7% in 1953 *to 20·2% in 1954 In 1954* the portion of cases where analgesia of some sort was provided about 83%. Nitrous oxide was administered in 72% of ements; but of the 146 administrative units in the try there were still 13 where nitrous oxide was adminis l in less than 51% of confinements.

MEDICINE BOTTLES

Ministry of Health has this week launched a campaign e return of empty bottles used for dispensing medicines f the National Health Service The Ministry points that some 100 million bottles are used every year but of them do not find their way back to the chemist great saving will be made if patients will return them to chemist having first washed them in hot soapy water

EXHIBITION OF MEDICAL PHOTOGRAPHY

exhibition of medical photography presented by the ical group of the Royal Photographic Society was opened ndon on Oct 17 This includes a series of panels illus ng the function and scope of illustration departments in itals with the object of showing some of the ways in which ography may be applied to teaching recording illustrating, research.[1] Beside these panels are two novel visual aids ing medical students to view slides and ciné films in ture projectors. Slides are arranged in magazines and projected on to a ground-glass screen in a special viewer looped films may be started by pressing a switch, the or being switched off automatically when the loop has d completely through the machine once The selection ts submitted by members for inclusion in the exhibition based, not only on the photographic quality of the work on its value for illustrating the feature which it is intended ow Probably many of the photographs exhibited form of a visual unit—for instance the excellent pictures ng the surface anatomy of muscles, which should be panied by explanatory diagrams naming the muscles The exhibition also includes colour transparencies. exhibition, at the Royal College of Surgeons Lincoln s elds, W C.2, closes today Saturday Oct. 29 It will view at the Littlewood Hall Leeds General Infirmary ov 20 to Dec 2.

University of Oxford

On Oct 13 the following degrees were conferred

B M—R. G Bannister David Staig

University of Cambridge

On Oct. 15 the following degrees were conferred by proxy

M B B Chir—D N Whitmore, G W Phipps

M B—E F D Gawne K. P Goldman, Mary G Kemp R E. Nagle

University of Leeds

Mr A. V Pollock has been appointed lecturer in surgery and Mr W N Wild lecturer in anæsthetics The title of emeritus professor has been conferred on Prof R. A Willis on his retirement from the chair of pathology

University of Sheffield

The following appointments have been made Mr W J W Sharrard and Mr F W Taylor clinical teachers in orthopædic surgery Dr D MacVicar honorary tutor in obstetrics and gynæcology; Dr R C Curran senior lecturer in pathology Dr D H. Blakey lecturer in obstetrics and gynæcology; Mr B N Catchpole lecturer in surgery; and Dr I M Baird part time lecturer in pharmacology

University of Dundee

On Oct 12 the degree of M.D was conferred in absentia on D A. Kerfoot

Royal College of Physicians of London

On Oct 18 the Baly medal was presented to Prof. A. L Hodgkin. The following extract is taken from the citation:

> Professor Hodgkin is awarded the Baly medal for his work on the initiation and conduction of nervous impulses He has shown that rare combination of originality of thought experimental ingenuity and manipulative skill which characterises the pioneer in scientific investigation. Not the least of Professor Hodgkin s rights to recognition is the stimulating effect he has had on other workers, particularly on the group of collaborators he has attracted to him, who are worthily maintaining the great reputation of the Cambridge School of Electrophysiology"

Royal College of Surgeons of Edinburgh

At a meeting of the college on Oct. 19 with Prof Walter Mercer the president, in the chair the following were admitted fellows

Abdul Salam Al Attar W H Bain, J V Bryer Suhail Daud Bulos Ghafoor Ahmad Burney Saktidas Chatterjee Vinoobhai Mathuradas Cholera, J E Devitt, R E Gristwood Byranna Hanumaiah Abdul Majid Bin Ismail Leslie Linder G E. Mann, A T Marshall, T W Milliken P W Mitchell, A. J G Nicholson Bernard Nolan, J A. Pratt Johnson J A E Primrose W D Roberts, Jagdish Narayan Rohatgi E. F B Rose, Azmy Sadek H R Schaffer Balwant Kashinath Shenolikar D H. Walker F C Walker C C. Wiggishoff R P Yaxley

At the annual meeting of the college held on the same day the following office bearers were elected for the coming year:

President, Prof Walter Mercer vice-presidents, Prof R. C Alexander and Mr John Bruce secretary Prof. George Scott, treasurer Mr. J J Mason Brown president's council, Mr David Band Prof Norman Dott, Mr Andrew Fowler Mr J N J Hartley Sir James Learmonth, Prof. W A. Mackey Prof Bryan McFarland Dr David Middleton, Mr T McWalter Millar, Dr. Douglas Miller Mr R. Leslie Stewart Mr Robert Stirling, and Mr Robert Withers; representative on the General Medical Council, Mr K Paterson Brown; conservator of museum, Prof. D E C. Mekie convener of museum committee Mr John Bruce and hon. librarian, Dr Douglas Guthrie

Royal College of Obstetricians and Gynæcologists

On Friday Nov 25 at 5 30 P.M., Mr Arthur Sutherland will deliver the William Blair Bell lecture His subject will be Tuberculosis of the Endometrium. Tickets may be had from the secretary of the college 58 Queen Anne Street London W 1

Society of Apothecaries

On Oct 10 the society entertained to luncheon the six Russian doctors now visiting this country at the invitation of the British Medical Association. Dr Macdonald Critchley senior warden, welcomed the guests in Russian; and Prof G F Gause deputy director of the Institute of Research for New Antibiotics Academy of Medical Sciences of the U.S.S.R., replied in English. Dr Neville Finzi, Master of the society explained to the visitors some of the chief events in the society's long history The company included Sir Cecil Wakeley (immediate past Master) Sir Charles Dodds, F.R.S. (a past Master) Sir Arthur Porritt Mr T B Layton (a past Master) Dr Reginald Fisher (junior warden) Dr Bernard Myers, and Dr Ian Grant (chairman of the representative body of the B M.A)

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[1] See also J Photogr Sci. 1955 3 51

Wiltshire Research Scholarship in Cardiology

This scholarship, which was founded to encourage research in cardiology and may be used for study and travel abroad, is now vacant It carries an honorarium of at least £400 a year Further particulars may be had from the Dean of King's College Hospital Medical School, Denmark Hill, London, S E 5

Antarctic Expedition

The advance party of the Royal Society International Geophysical Year Expedition sails for Antarctica on Nov 22 The commander of the expedition is Surgeon Lieut - Commander David Dalgliesh, R N, who has been released from his medical duties at a Royal Naval Hospital

Harold Waller Unit

When the late Dr Harold Waller retired from his post as pædiatrician to the British Hospital for Mothers and Babies, Woolwich, which he had held since 1913, a fund was launched to commemorate him and his work With the £2500 soon collected, a flat of two bed sitting rooms, bathroom, and sun balcony was built for mothers and their babies, from any district, who run into feeding or management difficulties which require special supervision This unit was officially opened on Oct 20 by Sir Eardley Holland

Law on Homosexuality

The recommendation by the council of the Magistrates' Association that homosexual conduct in private between consenting adults, aged 30 or more, should no longer be a criminal offence except where a mentally defective person is concerned (see *Lancet*, Oct 8, 1955) was rejected at the association's annual meeting by 256 votes to 91 (*Times*, Oct 22)

Diary of the Week

OCT 30 TO NOV 5

Tuesday, 1st

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W C 2
5 P M Mr J G Sandrey Urethral Obstruction in the Adult Male

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1
8 30 P M *Orthopædics* Prof R I Harris (Toronto) Fat Embolism

ST MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W 2
5 P M Dr Louis Steingold Anæmia During Pregnancy, Labour, and the Puerperium.

INSTITUTE OF DERMATOLOGY, Lisle Street, W C 2
5 30 P M Prof. C A. Keele Physiology of Sweating

INSTITUTE OF NEUROLOGY
5 30 P M (National Hospital, Queen Square, W C 1) Dr J St C Elkington Migraine

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane E C 4
4 30 P M Mr Bernard Schlesinger Modern Advances in Pædiatrics
5 45 P.M Mr Denis Browne Surgical Aspect of Pædiatrics

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Medicine, Keppel Street, W C 1) Prof M. M. Swann Physiology of Mitosis

ROYAL ARMY MEDICAL COLLEGE Millbank S W 1
5 P.M Mr P M. Gunning The British Murderer

Wednesday, 2nd

ROYAL SOCIETY OF MEDICINE
5 15 P M *History of Medicine* Lieut Colonel D McDonald History of the Indian Medical Service
8 P.M *Surgery* Dr I Doniach Mr J E. Piercy, Dr E E Pochin Carcinoma of the Thyroid

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W 12
2 P.M Dr J D N Nabarro Diabetes and Carbohydrate Metabolism

INSTITUTE OF DISEASES OF THE CHEST Brompton Hospital S W 3
5 P.M Dr J Clifford Hoyle Spontaneous Pneumothorax

INSTITUTE OF DERMATOLOGY
5 30 P M Dr R. W Riddell Pathogenesis of Tinea Capitis

ST MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GUIDANCE, 48, Cosway Street, N W 1
5 30 P.M Dr R D Newton Organic Pathology and Mental Disease

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE 28 Portland Place W 1
3 30 P M Prof F R G Heaf Tuberculosis in Geriatrics

MIDLAND MEDICAL SOCIETY
8 15 P.M (154 Great Charles Street, Birmingham, 3) Sir Geoffrey Jefferson F R S Sleep and Stupor

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY, 64, St James's Street Nottingham
8 30 P.M Dr C Keith Simpson Foul Play

MANCHESTER MEDICAL SOCIETY
4 30 P.M (Medical School, University of Manchester.) Med Dr S P Meadows Clinical Aspects of Optic Compression.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS 243, St. Vi Street, Glasgow C 2
5 P M Mr R B Wright Peripheral Vascular Disea Veins

Thursday, 3rd

UNIVERSITY OF LONDON
5 P M (1, Wimpole Street, W 1) Lord Adrian, O.M., P.R.S., Action of the Mammalian Olfactory Organ. (Semon Lecture)

ROYAL COLLEGE OF SURGEONS OF ENGLAND
3 30 P M Dr M. H Armstrong Davison Ut non Percip Dolor (Frederic Hewitt Lecture)
3 45 P M Prof Gilbert Causey Mechanism of Respiration.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M Dr H G. Davies Use of the Interference Micro in Biological Research

SOCIETY OF APOTHECARIES OF LONDON
4 30 P M Sir Horace Evans Medical Aspect of Perip Vascular Disease
5 45 P M Sir James Paterson Ross Surgical Aspect of Perip Vascular Disease

UNIVERSITY OF ST ANDREWS, Queen's College, Small's W Dundee
5 P.M Prof J H Dible Hepatitis and Other Problems Liver

Friday, 4th

UNIVERSITY OF LONDON
5 P M (Charing Cross Hospital Medical School W C.2.) Mr Hammond, F R.S Growth in Animals

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P M Prof Lambert Rogers Surgery of the Carotids.
5 P M Dr J F Goodwin Mitral valve Disease

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn W C 1
3 30 P.M Mr Charles Heanley Fractures of the Nose and

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4 30 P M (Queen Charlotte's Hospital, Goldhawk Road, Mr W Hawkesworth The Occipito posterior Posit

ROYAL SOCIETY OF MEDICINE
10 30 A M *Otology* Mr E G Collins Preservation Restoration of Function in Otology (Presi address.)
2 30 P M. *Laryngology* Mr W A Mill Cancer of the La Laryngectomy after Radiotherapy (Presidential add
5 30 P M *Anæsthetics* Dr T Cecil Gray A Retreat dential address)

INSTITUTE OF DERMATOLOGY
5 30 P.M Dr M Feiwel Occupational Dermatitis.

UNIVERSITY OF EDINBURGH, University New Buildings, T Place, 8
5 P.M Dr J S Robson Physiological and Thera Control of Total Body Sodium (Honyman Gi lecture)

Saturday, 5th

INSTITUTE OF LARYNGOLOGY AND OTOLOGY
11 A M (Royal National Throat, Nose and Ear Hospital, G Inn Road, W C 1) Dr André Soulas, Dr Dub Montreynaud (Paris) Colour Illustrating Bronch and Œsophagoscopy (Film)

Appointments

BOSTOCK A D, M B Manc school M O, Manchester

COUNSELL, P B, M.S Lond F R C.S consultant surgeon, Ip and East Suffolk hospital group

DALY B G, M B Edin. whole-time senior asst. psych Bracebridge Heath Hospital, Lincoln.

NICHOLSON D F, M.B Edin. appointed factory doctor, F

PEPYS JACK M B Witw'srand, M R.C.P clinical asst., allergy Wright Fleming Institute of Microbiology, St Mary's Ho Paddington

RAPER, JOYCE, A M B, D.P H school M O, Manchester

Colonial Appointments

BAKER C H A., M R C.S, D.P H administrative M.O, Fede of Malaya

BELCOURT C L, M.B Lond M O, Mauritius

BERMAN A J M.R C.S M O northern region, Nigeria

CHIA AH KWAN, M B M O, Singapore

COLE A C E M.D Camb, F R C P D.M R.D senior spec Tanganyika

COMISSIONG, L M., M.B Edin, D T.M & H D.D.M.S, Trinid

COORE, L D M B Durh D P M. medical specialist, Jama

KHAKOO, M. M, M B R M O (intern), Uganda

LALLAH P M B M O, Mauritius

LOMEZ J, M.B, F F A. R C S specialist officer (anæsth Federation of Malaya

MCCRORIE LALTOO, J, M.B M O (intern), Trinidad

MCKNIGHT, R. F, M R.C S M O, Kenya

MACNAMARA C D, M B. Camb, D.M R.D specialist (radiolo Federation of Nigeria

OLIVIERO, F X., L.R C P E administrative M O, Feder of Malaya

PECKOVER J R. B M B Lond M O Kenya.

PHILLIPS, P M J, M.R C.S senior M O, Gold Coast

ROSEVERNE V, M B Polish Sch of Med, Edin. spec radiologist, Federation of Malaya

SARAVANAMUTHU, M administrative M O, Federation of Mal

TEN, YOON FONG, L.M.S Singapore Med Coll adminis M O Federation of Malaya

THETHRAVUSAMY, J A, M.B Madras M O, Zanzibar

VAN DER KOLFT, N, M.D Leyden M O, northern region, Nig

MEDITATIONS ON THE SOURCES OF KNOWLEDGE*

Sir GEOFFREY JEFFERSON
C.B.E M.S Lond F.R.S

DURING the last five or six years we have come nearer han at any time in our history to obtaining a glimpse f the ground plan of the integration of the brain of he way in which it works as a whole For the spinal ord this point had been reached some few years ago hough within the life times of many of us Satisfying hough this new orientation is, it has not yet reached a point when it sheds a bright new light on the differences n personal skills, in intellectual ability and imaginative thinking that are the hall marks of individual differences between ourselves Are men born equal and what are the prings from which genius flows?

One hundred years ago your speakers would have had no oubts of the perfectability of Man and in the present ase of this audience, nor would they have questioned is limitless powers of absorbing information Numbers f intelligent influential, and generous men and women ere at that time tireless in their efforts to spread educa on amongst the working classes in the hope let us uppose that the workers would think exactly the same ay as their educational benefactors Any wrong dedness amongst the artisans was thought to be due their ignorance Today there are still many who hold t to this old mythology For myself as a teacher of any years standing my faith in these slogans is feeble ilfred Trotter in one of his luminous addresses remarked at although it is the boasted aim of teachers to make ir students think for themselves they are often rprised and even deeply hurt by the results of that monition I know you all know man's ability to rb information and what is more to make use of it, we also know that this ability is very unevenly tributed. Even more striking when you come to think t is Man's enormous powers of rejecting information although our nervous systems have great ability elect, some are so selective or so unabsorbent that y reject almost everything The odd thing is that e of them nevertheless get into our universities and pitals as students, only to discover that the informa offered is not suited to their particular genius e thoughts led me to believe that it might be rtune to speculate for a few minutes on the sources uman knowledge, on differences in personal skills, in imaginative thinking

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ch one of us takes the acquisition of his own personal of knowledge so much for granted that a thought rely given to the ways in which it was acquired perhaps trite to say that all our knowledge has been has been a personal acquisition the result of our age through life. We inherit nothing but instincts; have no congenital ideas no inborn knowledge, ing but the machinery to acquire such things. It Aristotle who remarked that there is nothing in the but what previously had made its way there through nses That at least came to be the accepted synopsis istotle's passages on psychology though the phrase ding to Sir David Ross, the authority on Aristotelean cannot be found in his works Ancient though statement is, we may still obtain some amusement it, especially when we come to test its accuracy e we do question it we must admit its general —*Nihil est in intellectu quod non prius fuit in sensu* he average man and woman the proposition that precious possessions their individual minds are no more than receptacles comes as something of a shock One's own intellectual processes, one's knowledge and beliefs seem to be such personal and private possessions that it seems derogatory to attribute them to an accumulation of sensations of different kinds So the idea that everything that goes on in our minds is nothing better than the sort of fermentation the simmering or boiling of a colossal stew composed of the odds and ends of all that we ever saw read felt smelt heard or touched from our cradles onwards to the present now—whenever that 'now' is—I am sure that such a definition of what is in our heads would be repulsive to most people I fancy in fact, that there are few who would not feel insulted by Aristotle 'What,' they might say, 'what monster is this that says that this mind of mine is composed of nothing but the odds and ends of the past—much of it in any case, best forgotten? Am I then no better than one of those stuffed toys which no matter how delightful its exterior is found to be packed with repulsive odds and incongruous ends? Surely surely, these thoughts and ideas that I have are essentially my own inventions, the ingenuities of my own fertile and charming mind and not the pickings from the dust heap of my past?' I sympathise deeply with such protestations and agree that you are quite right Individually you have done something strictly personal to your memories But supposing that I grant you this I must ask you before you force poor Aristotle back under the soil from which he has made so unwelcome an eruption to consider one or two facts that are in the man's favour Why is it I must inquire that whatever inventions we hit upon whatever are the productions of our minds or hands they are always of the kinds to which we have been trained or have trained ourselves? If our minds were capable of the pure inventions which our pride tells us is the case, why sir or madam, do you not add to the sum of human knowledge by some flash of intuitive reasoning far outside your usual orbit make some mathematical postulation provide some explanation in atomic physics, some statement on molecular structure in physical chemistry some new discovery in astrophysics or in biology some superb musical composition or work of art such as would not only win the world's approval not only gratify but certainly astonish your friends? You will have to confess that you yourself would be greatly surprised by such a creation The reason is clear—that discovery is only to be made by those who have put into their heads the material necessary for discovery or have assiduously practised skills And so we have regretfully, to allow that there is something in Aristotle's annoying remark A question however will certainly crop up here The question is this If all that our minds produce is no more than the choices we make of what has happened how comes it that some people make more of their experiences than others? You will very rightly say something like this: 'From your description of what you thought Aristotle meant, it should be that the only thing that mattered was richness of experience and variety in life. How then would you account for people like John Bunyan or Keats or de Quincey or the Brontës or Dylan Thomas, people whose lives were not a blaze of colour? Information alone is surely not enough Is there no talent no genius inherent in the mind dilute unrecognisable in some gloriously alive in the few? How in short do we make the choices that, in summation, build up our intellectual store? What are' you inquire again 'and where the springs of genius?' The question has, as you know, or can readily imagine been answered differently at different periods, theologically metaphysically and mechanically—to follow in that order Evidently there are the greatest differences between individuals and lucky are we that it should be so for uniformity breeds dullness Jean

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* address of the session at University College Hospital Medical School, London Oct 4 1955

Jacques Rousseau may be permitted to break in at this point and repeat something that he said in his once famous *Discours sur l'origine de l'inégalité parmi les hommes* (1754) He held that the untutored unspoiled mind of the savage must necessarily have given him nobility, a gentle, good, and sweetly unselfish character It had been, Rousseau held, the rapacity of those who acquired property who had spoiled him But, it will be remarked, these evil people must necessarily have arisen from the same delightful people Rousseau had to admit that the noble savage had probably never existed but held, like a true demagogue, that objections such as the foregoing were fit only for slaves Having destroyed his thesis as soon as he postulated it Rousseau might have been expected to tear up his manuscript and try a different theme But not a bit of it, he develops his theory based on false biology with sufficient conviction to make a deep impression on European thought in the mid 18th century, which was ready enough in its mood of questioning the correctness of traditional opinion as would so quickly appear in the *Liberté, égalité, fraternité* of the French Revolution This idea was quickly adopted and early written into the American Declaration of Independence by men moved more by emotion than by common sense—that all men are born equal and have certain inalienable rights In a withering attack on Rousseau's theories J H Huxley called the equality of men "probably the most astonishing falsity that ever was put forth by a political speculator, and that, as all students of political speculation will agree, is saying a good deal for it" Rousseau had admitted that the state of nature no longer existed, perhaps never existed, and probably never will exist Huxley dryly commented "the amount of philosophy required to base an argument on such grounds may well be unattainable"

No man today will hold that all men are born equal in anything but impotence, whatever their political rights may be, though even there we would well guess that some men and some peoples would use them with greater wisdom than others Suppose that we take that for granted, problems still arise—can inherent inequalities be erased by education, by training ? I confess that when I was an undergraduate I thought that they could, believing that those who found difficulty in learning anatomy or grasping physiological ideas did so because they lacked diligence How sadly was I mistaken I confessed it early enough by saying during a medical students' debate, on what subject I have forgotten that "You can lead an ass to knowledge but you cannot make him think" Slender though this witticism is, it does contain a truth Universities, colleges, and schools certainly protect themselves so far as they can by extorting entrance tests In parenthesis, the evidence that these tests are much harder than they were 10, 20, or 30 and more years ago is based on extremely suspect evidence—that of fathers and mothers who have difficulty with their children's homework or are unable to answer their examination papers But mother has long ago lost one kind of knowledge whilst acquiring new and that is true of father also You may interject "You infer now that my mind is, as it were, a horse that needs exercise to prevent it becoming fat and lazy Is that what you really suggest ?" I reply "Yes, indeed I do mean that—it is like not one but a whole string of horses (to continue your simile) each of whom requires constant work if it is to retain its qualities Only too easily will these creatures lie down and forget" Whilst it would be unwise to omit mention of these mental frailties it would be more than foolish to give it all up as a bad job and say that no one can teach anybody anything, that everything is learned, not taught But that is not really so foolish because it is largely true Yet it is a fact that teaching does help the willing learner Words are our difficulty, the right words for the right people, because the same vocabulary does not have the same meaning for everyone We think that language, our own language, is polyvalent for every English man and woman but it is not so A concept apparently clearly expressed has one meaning for one group, a different for others Hence no doubt the fact that a committee or any group given what appear to be the facts clearly expressed will so often arrive at different conclusions and often end in violent disagreement and hostility There is always a minority opinion I know that differences in interpretations stem usually from the different personal histories of those who seek a truth, that *emotions* (which Aristotle left too much out of account) colour meanings, twist interpretations so that different conclusions ensue Hence party politic and "party" everything Probably the inherent pugnacity of man, which Huxley in his famous Romanes lecture thought to be the essential reason for his survival over the difficulties of his environment, has much to with the creation of differences That pugnacity is variably apportioned in individuals, but is present in most people, both male and female Let us not forget that progress is by no means inevitable, that it has to be fought for and that energetically If there seems to be a conveyor belt carrying civilisation steadily onward it is because the many profit from the efforts of the few who when their stories are known have had to strug hard if not to fight for their inventions Emotion the though a danger when uncontrolled is the real motivat power that can and does drive the intellect excellencies

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A conclusion that seems to emerge very clearly fr this discussion is that we should take care quantitat and qualitatively what we feed into our minds W happens to such of this input as is actually stored be a strictly individual affair In school and univer the nature of the input is standardised but the indiv can vary it, and certainly should, by extracurr reading and inquiry The great ones in human his cannot have had anything but conventional educat (I am thinking of men like Newton and Ruther yet the conclusions that they drew from what they read or been taught were strictly unorthodox there, of course, we have it—unconventionality conformity in thinking is the mark of genius As as you think along the straight lines your tea draw for you nothing really new can possibly em In saying that I do so provocatively knowing well that by design or by accident they will have ind the point at which certainty disappears It is for in your good time, to go on from there Which of will do it ? Not all Some will lack the insight, curiosity, the passion to explore an idea or, having may fail to see how to verify it It is the test of a idea that it is eventually verifiable Others again lacking in energy, in the power to pursue thinking sufficient continuity, will lack what the Victo so well called "diligence" It is a most valuable qu It is here that so many fail because they are too distractable, too lazy, though everybody is that to extent These qualities are certainly inherited, families either possess or lack them sufficiently remarkable as both the biographies of some successful families and eugenic studies show We more information on this fascinating subject

What I have said about the inequalities in the of mental qualities is equally true of hand and skills at which the few so greatly outmatch the There seems to be a sort of "wisdom of the bo in a coordination of timing of eye and hand and fo a different sense from Cannon's original meaning of phrase, a perfection of balance and rhythm, of fac movement that is as uneven in its distribution amo human beings as is wit or beauty of face and form But let us not forget that we are in all things one with animals—racehorses, for instance, dogs, and perhaps performing fleas Wherever we search we are sure to find those disparities There are sure to be some dunces.

* * *

I have not yet answered the question with which I started—the why or how of the natural inequalities amongst men Any answer must be purely conjectural because it is impossible to do anything better Do brains differ from one another in the numbers of their cells? Almost certainly 'yes.' We do not know yet for certain because of the immense labour of counting the 10 thousand and more million that have been roughly computed. New methods—electronic—of scanning and counting them are now being devised so that an answer will come before many years have passed One wonders rather whether nerve-cells are standardised whether some sorts are '*better*' *than others and by that* I mean more perfect fragments of mechanism We do not really understand the differences in their appearances as we see them through the microscope Histochemistry is bringing us information on the composition of the cells of the brain which is basically a chemically operated machine in which the endocrines most variably play a part. It will not be so easy to attach a clear physiological or psychological meaning to what we learn this way Do some kinds fatigue more easily than others? Is there, perhaps a quantitative difference in the proportions of the different sorts of cells in the cortex and subcortical grey masses? Very likely there is Which cells are the most important for a human being to have richly and in what areas should they be? If these possibilities should one day be proved to be true, will not these differences also be found in the 'visceral brain,' those parts more responsible for emotional feelings and urges? I should think so Given such differences there should be personal or familial variables in the internal workings of our nervous systems, variables in the speed of synaptic transmission differences from man to man in the facilitations of his association pathways, differences also in inhibition Something like this must be the foundation of the great differences in powers of memory which make anatomy, for instance an easy subject for some, a torment for others Physiology which depends more on logical argument, should be easier for those with the better powers of association There could be too, in the variables of association the basis of the power to pounce upon an idea which my colleague the mathematician Maxwell Newman I think rightly takes as the real root of original speculation—of genius.

I have made no mention of mechanical minds, of machines that certainly act at times in ways recognisably like human mental processes They are interesting and valuable counterfeits. It is conceivable that they may one day give us a clearer insight into how our nervous systems work than will direct anatomical and electrical studies of nervous constellations. I do not invoke their aid today, not because I believe that brains work in some supernatural way—far from it—but because so far they give us only the faintest glimpses of how to explain those differences in mental powers in intelligence character and personality which I have been attempting to explore I still believe that the only valid answers to the problems set by the human nervous system must be tediously and painstakingly wrung from the study by all means at the time available of man himself

Meantime, and surely always, we must each of us learn to make the best of the apparatus which our genetic inheritance has given us and try to steer this potentially treacherous machine through life as best we may The how of it lies far far ahead but one answer and it might not be the complete one should emerge along the lines of the speculations just indulged in

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COMBINED RADIOTHERAPY AND RESECTION FOR CARCINOMA OF THE BRONCHUS

EXPERIENCES WITH 66 PATIENTS

L L BROMLEY
M Chir Camb F R C S

LEON SZUR
M B Witwatersrand D.M R Lond D.M.R D

OF THE DEPARTMENT OF SURGERY AND THE MEDICAL RESEARCH COUNCIL RADIOTHERAPEUTIC RESEARCH UNIT
HAMMERSMITH HOSPITAL

IT is generally accepted that pulmonary resection offers the best possible hope of permanent cure of carcinoma of the bronchus. But surgery is applicable to only a small proportion of the apparently increasing number of patients with this disease Smithers (1949) estimates that out of 8000 people suffering from carcinoma of the bronchus in 1945 only 150 were treated by surgery—*i e*, about 2% of the total Even though surgical facilities have improved in the last ten years, the number of patients who are suitable for a thoracotomy is still probably less than 15% Besides this fact that only a small proportion of patients with carcinoma of the bronchus are assessed as clinically operable and have a thoracotomy between 20 and 25% of these are found to be inoperable when the chest is opened

The five year survival rate of patients undergoing a resection has been quoted by Mason (1949) as $12^{1}/_{2}$% by De Bakey et al (1952) as 19% by Gibbon et al (1953) as 22%, and by Thompson (1952) as 34% The figures may continue to improve but it is still true that surgery can help only a small fraction of patients with cancer of the lung

Radiotherapy is widely held to be an unsatisfactory method of achieving a permanent cure The salvage of inoperable and advanced cases has been the relatively cheerless task of radiotherapists who have had very little opportunity of treating the disease at an early stage Irradiation has certainly been accepted as being of palliative value for certain distressing effects such as superior mediastinal obstruction hæmoptysis, dyspnœa dysphagia, or pain It has been debated whether radiotherapy does actually prolong the life of the patient To establish this point clearly by comparing a series of patients treated by irradiation with an untreated series would hardly be practicable The survival rates of patients treated by irradiation alone, as judged by figures from various departments have not been encouraging and among the long term survivors the histological diagnosis has often been doubtful Dobbie (1944) reports 2 five-year survivors out of 170 patients treated Smithers (1951) 1 five year survivor out of 285 Hilton (1955) 8 five year survivors out of 203, Mason (1949) 2 five year survivors out of 113 and Brown (1952) 2 five-year survivors out of 218 It should be noted however that the second figure quoted in each case refers to all patients treated and not to the possible number of five year survivals Although surgical results show an obvious balance in favour of resection no comparison with radiotherapeutic results can in fact be made, since favourable cases are referred for surgery and mostly salvage cases for radiotherapy Treatment of carcinoma of the bronchus has also been attempted with a number of chemical substances—e.g nitrogen mustard, urethane œstrogens, H11 and others Davidson (Davidson et al 1951) summarising his experience of the use of chemotherapy in the treatment of lung cancer concluded: 'It would hardly appear that their use has been vindicated'

Combined Treatment

In view of this somewhat gloomy picture it was felt that it would be valuable to give clinical trial to a method combining radical radiotherapy with surgery in all suitable cases A bronchus tumour clinic was organised at Hammersmith Hospital, and this was attended by radiotherapists, chest physicians, and thoracic surgeons Patients were referred to this clinic mainly by members of the staff of Hammersmith Hospital, St Helier Hospital, St Charles' Hospital, and Mayday Hospital The clinic was held weekly Each patient was assessed on clinical, radiological, and bronchoscopic grounds and placed in one of the following groups

Group I Operable —To be treated by radical radiotherapy

Group II Technically operable only —Considered inoperable because of poor general condition, resection thought to be contra-indicated by insufficient cardiopulmonary reserve or other physical defect To be treated by radical radio therapy

Group III Inoperable due to site —Growth found to be bordering on the carina, or enlarged glands causing subcarinal deformity To be treated by radical radiotherapy

Group IV Inoperable due to intrathoracic extent of the disease —Gross mediastinal gland involvement, chest wall involvement, or paralysis of the recurrent laryngeal nerve To be treated by radical radiotherapy

Group V As group IV —Patients unsuitable for radical radiotherapy because of poor general condition To be treated by palliative radiotherapy

Group VI Inoperable due to distant metastases —To be treated by palliative radiotherapy

Group VII Recurrence after operation —A small group confined to patients who had had a resection prior to the start of the clinic To be treated by palliative radiotherapy

Group VIII Patients unsuitable for any form of treatment

When X-ray treatment was finished, a further bronchoscopy was performed After a period of convalescence the patient was again seen at the clinic At this attendance a further assessment was made and if the condition was considered operable on clinical, radiological, and bronchoscopic grounds, the patient was advised to come into hospital for a possible thoracotomy

The clinic began on Nov 1, 1949 Between this date and Oct 31, 1953, 732 patients were seen and of these 573 were treated This paper is concerned with those 66 patients (58 men and 8 women) who underwent resection It is hoped that in a further paper the whole series will be analysed in detail

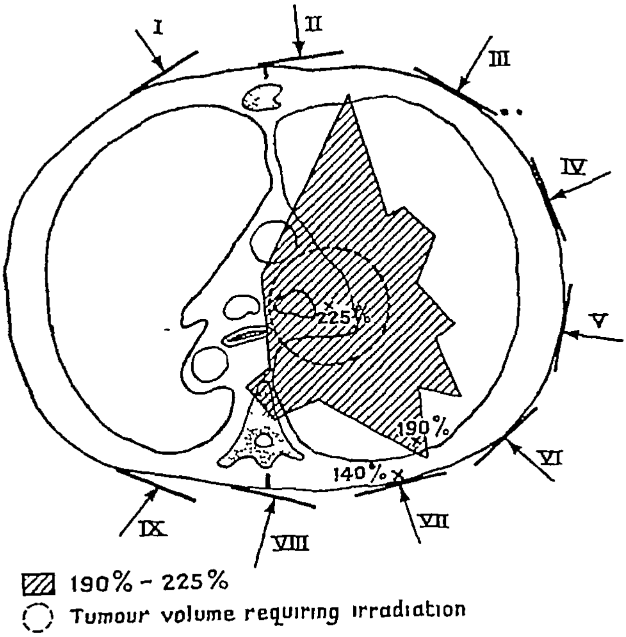

Fig 1—Cross-section of the chest at the level of the tumour centre showing the distribution of X-ray dose This represents a typical example of field planning for a carcinoma situated in the region of the right main bronchus

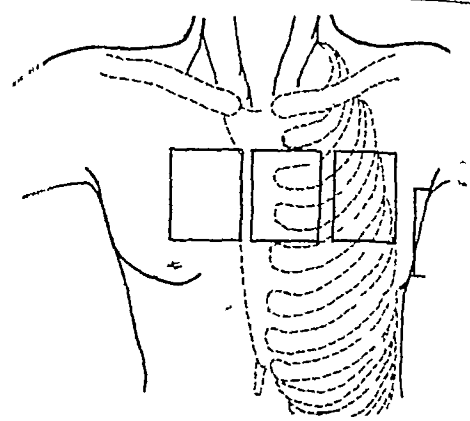

Fig 2—Typical 8 × 6 cm fields for a patient with a carcinoma in the region of the left main bronchus Anterior and axillary fields are shown There are also four posterior fields

The patients who ultimately had a resection drawn from groups I, II, and III The inclusion of patients from group I is self explanatory The inclusion of some from group II was possible because of the occasional remarkable improvement in general condition following radiotherapy The inclusion of patients from group was possible when there was bronchoscopic evidence marked regression of the tumour and its d p naked-eye and in biopsy specimens, from the region the carina or trachea, and a normal subcarinal No patients in any of the other groups were operated

The average time between the first attendance at clinic and the start of radiotherapy was nineteen and between the completion of irradiation and opera seventy-four days (this includes twenty eight days for convalescence) The average time between attendance at the clinic and operation was nine weeks This long period was extremely disturbing to concerned and is to a great extent a reflection on shortage of available beds both for radiotherapy and surgery

Radiotherapy

Radiotherapy was given with the apparatus available—i e, varying between 190 and 250 kV half-value layer in all cases was 2 mm of copper area to be treated was decided on the basis of the clin bronchoscopic, and radiological findings The program of treatment for each patient was carefully planned the tumour and skin doses were estimated individu (fig 1)

Treatment was based on multiple small fields careful beam direction A coplanar field arrangement employed (fig 2) The treatment set-up was checked most cases by screening or X rays The number of fie varied from 5 to 10, field sizes were 6×8, 6×10, 8×10 cm The dose aimed at was 5000 to 5500r five to six weeks but whether this could be achieved the apparatus available often depended on the ante posterior diameter of the chest In practice the tumo dose varied between 3700 and 6000r, the average in 66 patients being 4700r The time taken to comp the course of treatment varied between thirty two fifty days, the average being about six weeks

Because of the frequency of pulmonary sepsis in associ tion with the tumour, usually in the lung distal to carcinoma, and the likelihood of a flare up of this sep when irradiation was started, antibiotics were fre used, especially in the first few weeks of treatment

The treatment was pushed in these "radical" ca to the limit of skin tolerance and was stopped at the st of beginning moist desquamation or severe erythem These skin reactions responded satisfactorily and quick to the usual measures Dysphagia due to an irradiati sophagitis was generally not severe enough to necessitate stopping treatment Its height was reached usually after the completion of treatment and was never sufficiently severe to affect the nutritional state of the atient. Field planning paid no regard to that area of kin likely to be within the region of the future horacotomy incision

Surgery

Thoracotomy was carried out under general anæsthesia iven through an endotracheal tube The pleural cavity as entered usually through the bed of the resected 6th ib No particular technical difficulties were encountered lthough in some cases it was the surgeon's impression hat the hilar structures were surrounded by more dherent fibrous tissue than usual This made dissection f the vessels sometimes difficult but not unusually ormidable There was no excessive bleeding either from he skin or muscle layers. The tissues held stitches well nd healing of the chest wall was normal except in one stance where resuturing was necessary (the particular tient concerned also developed an early bronchopleural tula)

LE I—SIDE AND SITE OF THE CARCINOMA IN 66 RESECTED CASES

—	Total	Main bronchus	Upper lobe	Middle lobe	Lower lobe
ht	39	7	13	1	18
ft	27	7	6		14

The vessels of the hilum were individually ligated with read and the bronchus closed with stainless steel wire tures in most cases but in a few thread was used No mal procedure was adopted in this series for giving fled cover to the stump of the bronchus Routine ection and removal of mediastinal glands was performed. The operation was pneumonectomy in 64 ients and lobectomy in 2 Of the patients undergoing ection 52 originated in group I 3 in group II and 11 roup III.

Pathology

istological proof of carcinoma was obtained in all s. In the overwhelming majority the diagnosis was ablished by a biopsy taken at the first bronchoscopy will be realised from this that most patients had inomas which can be termed 'main bronchus' s rather than 'peripheral' tumours although a few mples of the latter are included in the series Dr ard Lennox, of the department of pathology at mmersmith Hospital examined and reported on the g specimens of which there were 62 4 were unfortely lost. In these 4 histological diagnosis had ady been made at the original bronchoscopy

LE II—HISTOLOGY OF THE GROWTHS IN 66 CASES SHOWING HE RELATIVE INCIDENCE IN THE VARIOUS PRETREATMENT SESSMENT GROUPS

—	Total	Group I	Group II	Group III
amous	42	35	1	6
	11	9	1	1
nocarcinoma	3	3		
ers	10	5	1	4

The side and site of the neoplasms are shown in le I

Table II shows the histological classification in the 66 ents. Besides the three main types which are well ned (squamous, oat-cell and adenocarcinoma) re were 10 cases which did not clearly fall into one of these categories These included some described as 'mixed adeno and squamous carcinoma' "anaplastic carcinoma,' or "carcinoma simplex", the majority of these were probably of squamous origin They appear in the table as 'others.' This table shows that the relative incidence of the main types is similar to that found in an unselected series of carcinoma of the bronchus. It will also be observed that no significant difference in histological distribution is found when the cases are analysed according to the pretreatment assessment groups I II and III

TABLE III—LUNG SPECIMENS: MACROSCOPIC AND MICROSCOPIC CLASSIFICATION BASED ON EFFECTS OF PREOPERATIVE IRRADIATION ON TUMOUR

—	Total	Group I	Group II	Group III
No tumour present	29 (46·7%)	24		5
Tumour present but degenerate	14 (22·5%)	11	1	2
Tumour present and viable	19 (30·8%)	14	1	4
Specimen lost	4			

Table III shows the findings in 62 of the lung specimens received by Dr Lennox classified according to the effects of irradiation on the tumour It will be seen that no tumour could be found either in the lung or in the glands in 29 cases (46·7%) In all lungs many blocks were taken but when no tumour was found special efforts were made to confirm this finding further blocks being taken and examined The ultimate fate of this group of patients who apparently had the primary tumour eradicated by radiotherapy is shown in tables VIII and IX.

TABLE IV—SUMMARY OF RESULTS

Total	Operative mortality	Died with cancer present	Died from intercurrent disease	Alive with cancer	Alive without cancer
66	10	38	5	2	11

In 19 specimens (30·8%) viable tumour cells were clearly present although the histological report often commented on the considerable regression of the growth that had taken place

The category "tumour present but degenerate" includes those cases which histologically showed overwhelming degeneration of the tumour but cells were found which may have been viable There were 14 such specimens (22·5%)

Results

The majority of the patients who died did so at home, and necropsies were performed on a limited number only Where one was not performed the patient was considered for the statistical analysis to have died with cancer present, irrespective of the clinical findings at the last examination The grouping 'intercurrent disease' refers only to those patients on whom a necropsy was in fact done and in whom cancer could not be found Table IV gives an over all summary of the results these obviously require more detailed analysis The results are given as found on May 31 1955 Thus the survival time of patients lies somewhere between nineteen months and five years seven months

TABLE V—PATIENTS' SURVIVAL TIME

Survivors	5 yr and over	4 yr	3 yr	2 yr	Over 18 mos
No possible	11	21	20	12	2
No actual	2	3	5	3	

Table v shows the actual survival time in years of the patients at present alive, and compares this with the number who could have survived this particular period

Table vi shows the duration of survival of the patients now dead It excludes 10 who died during the postoperative period in hospital (the latter are discussed separately below) This table may be of value in assessing the possible prolongation of life by the particular method of treatment used It should again be pointed out that the grouping "cancer present" is used because the majority died at home and no necropsy was possible

Table vii analyses the results according to the histological type of tumour and it will be seen from this that the majority of survivors come from the group of squamous carcinomas, this conforms with general surgical experience

TABLE VI—SURVIVAL TIMES OF 43 PATIENTS

(Excluded from this table are 13 patients still alive and 10 patients who died postoperatively)

—	No of patients	Survival time				
		Under 1 yr	1–2 yr	2–3 yr	3–4 yr	Over 4 yr
Cancer present	38	21	11	4		2
Intercurrent disease	5	2	1	1	1	

Tables viii and ix give the results according to the pathological examination of the removed specimens (compare table iii)

It is interesting that 7 of the 13 patients still alive come from the "no tumour present" group and that 12 of the 13 survivors come from group i Of the 14 patients originally assessed as inoperable and who, after radiotherapy, had radical surgery, only 1 is alive (three and a half years after beginning treatment and at the last attendance showing signs of recurrence) In 4 patients, however, necropsy showed no evidence of malignancy, and 1 of these lived nearly four years

Mortality and Morbidity

The immediate operative mortality in the 66 patients was 3, 1 dying from hæmorrhage 1 from a coronary thrombosis, and 1 from cardiorespiratory failure All these deaths occurred within twenty-four hours of operation 7 patients died during the postoperative period in hospital—5 from an early developing bronchopleural fistula, 1 from a pulmonary embolus, and 1 from secondary hæmorrhage from a pulmonary vein

TABLE VII—RESULTS ACCORDING TO HISTOLOGY

Type	No of patients	Alive	Alive with recurrence	Died post-operatively	Died (intercurrent disease)	Died (cancer present)
Squamous	42	9	1	6	4	22
Oat	11			3	1	7
Adenocarcinoma	3		1			2
Others	10	2		1		7

Empyema

There were 5 patients who developed an empyema not associated with a fistula All these were diagnosed later than one month after operation, the earliest being five weeks and the latest six months All patients had left hospital and had to be readmitted for further surgery Of these patients, 1 still survives five years after a pneumonectomy, having had his empyema treated by a lateral thoracoplasty, 1 died four years after resection without evidence of malignant disease at necropsy, the remainder died shortly after developing the empye

TABLE VIII—RESULTS ANALYSED ON THE BASIS OF PATHOLOGICAL FINDINGS IN REMOVED SPECIMENS (GROUP I)

Pathological findings	No of patients	Alive	Alive with recurrence	Died post operatively	Died (inter current disease)	Died
No tumour present	24	6	1	4	3	10
Tumour present but degenerate	11	2		1		8
Tumour present and viable	14	2		2		10
Specimen lost	3	1		1		1

Bronchopleural Fistula

Infection of the pleural space inevitably accompa all cases of bronchopleural fistula There were 13 pat who developed fistulæ Of these 9 were considered to early—i e , they were diagnosed prior to their disch from hospital, whilst 3 developed the condition w three months of operation, but following disch from hospital, and 1 eight months after operation. gives a total complication rate of empyemas, and f with empyema combined, of 18 patients out of th who had a resection This is 27% of the total, und edly a high figure and one far in excess of that nor encountered It is nowadays a comparativel complication of a resection for carcinoma In our fistula was a fatal complication in all cases except

TABLE IX—RESULTS ANALYSED ON THE BASIS OF PATHOLOGICAL FINDINGS IN REMOVED SPECIMENS (G II AND III)

Pathological findings	No of patients	Alive	Alive with recurrence	Died post operatively	Died (inter-current disease)
No tumour present	5			1	
Tumour present but degenerate	3				1
Tumour present and viable	5		1		1
Specimen lost	1			1	

We have further analysed in detail these 18 pa who developed empyema and bronchopleural fistul found no correlation with age, sex, or histology complications were more common on the right sid on the right, 4 on the left) With regard to tumour it was found that the average given to this group was 4780r as compared with the over all average of It was found, however, that a proportionally gr number of these 18 received 5000r or over than wa case in the remainder of the series

Of the 11 patients in group III who, when first seen tumour present at the future line of section of bronchus, 3 developed these complications This do appear to be significantly different from the ov incidence of empyema and fistula in the series.

Discussion

Even a superficial study of the figures presented in tables reveals that there can be no claim that this f of combined treatment has produced impressive re There are several drawbacks to the method

Firstly, the treatment takes a long time to comp Even if we eliminate all waiting time before adm and initial treatment, the over-all time betwee patient first being seen and the resection being perfo would be about seventy-eight days This is made about forty-two days for irradiation and investiga fore and after it, twenty-eight days for convalescence d eight days for pre resection preparation This is doubtedly trying for the patient particularly when mission delays are added to the total time taken to mplete treatment This is especially serious because e average survival time of a patient with an untreated rcinoma of the bronchus is known to be short, and has en variously estimated to be between four and nine and half months from the time of diagnosis Further, it nnot be excluded although difficult to prove, that tients develop metastases during the period of treat ent. Certainly in our experience of some other patients eated at this hospital, metastases did become apparent hilst undergoing radiotherapy, or during convalescence llowing it

Secondly the high incidence of empyema and fistula this series appears to be associated with the method treatment adopted and must be viewed very seriously thological examination of the specimens failed to veal any visible lesion to account for inadequate healing the bronchus stump There was no frank endarteritis the vessels of the bronchial wall seen in blocks taken m near the line of section, neither was there any finite tissue damage although fine changes might not ve been observed These empyemas and fistulæ were t more common in the early cases of the series nor eed at any particular time The incidence was spread ly evenly over the years covered by this report Our pression was that most of the 18 patients with these plications were in a poorer general condition than er patients of the series, although this point is of me, difficult to establish

here are certain features of interest Tumour had arently been eradicated from the chest in nearly half cases, thus tending to establish that irradiation can erilise a significant proportion of operable lung ers. Nevertheless in the patients under discussion total results obtained did not show an over all rovement

nlike some observers we have not found that patients unduly upset by planned and carefully fractionated otherapy using small fields On the contrary we have d that the constitutional effects were slight and have often been impressed by the considerable rovement in the general condition of the patient patients who were originally assessed as inoperable me operable and had a pneumonectomy performed irradiation. Although the results in these patients ups II and III) are unsatisfactory the numbers lved are too few for any definite judgment to be Whatever assessment is reached of the method whole it seems to us that a case might well be made reating a selected group to a high dosage in the hope aking them operable

hen this inquiry began we hoped for better results we can now present Nevertheless we feel that a t deal has been learnt from this experience of com therapy New methods of irradiation with more rful apparatus now available as well as improve- ts and variations in surgical technique may influence future approach to the problem of carcinoma of the chus.

Summary

method of assessment was devised for patients with noma of the bronchus attending a joint clinic. Of patients who attended the clinic 66 were given a e of radiotherapy which was followed by resection e lung Details are given of the method of irradia employed and the type of surgery carried out The ment of the results included an analysis according e pathological findings and the histological changes irradiation The tumour had apparently been eradi d from the chest in nearly half the cases, but there a high incidence of empyema and fistula It is not considered that the method of treatment has produced impressive results, but several interesting features have emerged from this inquiry

We should like to express our great indebtedness to Dr Constance Wood and Mr W P Cleland under whose direction and guidance the work has been carried out. We should also like to acknowledge the contributions of our many colleagues in the departments of medicine, surgery radio therapy and physics who have participated at various times in the investigations undertaken by the clinic at Hammersmith Hospital.

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PNEUMONIA AND INTERSTITIAL INFLAMMATION OF THE LUNG

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IN recent reports the terms interstitial, virus, or atypical pneumonia have been commonly used (see Golden 1944 Dingle 1947 Reimann 1947) Some workers have designated very slight changes in the lung as inter stitial pneumonia or pneumonitis, with the implication that something of importance has been recognised It has seemed useful to study pneumonia, especially in children where it is, perhaps, least likely to be compli cated by other chronic respiratory or circulatory diseases, and to assess the importance of inflammatory changes in the interstitial tissue of the lung

Material

This study is based primarily on an analysis of 800 unselected necropsies of children, aged 1 month to 15 years who died in the hospitals for children, or in the infectious-diseases hospital, in this city between 1938 and 1952 These cases were collected in the department of pathology Queen's University

Pneumonia in the neonatal period present special problems, since œdema fluid then collects very readily in the lung and facilitates wide dissemination of infection through the air spaces and lymphatic pathways, and immature reflexes often allow the aspiration of infected material from the air passages. Accordingly no neonatal cases are included.

In all cases each organ was examined histologically Usually about twenty sections, including two or more lung sections and often also sections of trachea and of larynx, were on file for study These cases are probably not representative of all deaths in infancy but they are from the general pædiatric practice of hospitals and are not cases referred to a highly specialised research centre

The primary causes of death are listed in table I Half the cases were due to acute infection and almost 10% of all deaths were due primarily to pneumonia In roughly another 10% pneumonia was present as a complicating factor but as far as can be assessed it was not the factor primarily responsible for death. In children under 1 year all types of pneumonia were about twice as frequent relative to other causes of death as in later years

Classification and Incidence of Different Types of Pneumonia

It is most desirable to distinguish pneumonia as a complication of other diseases from pneumonia as a primary disease of the respiratory tract The lungs are influenced by changes in the cardiovascular system, especially those leading to circulatory stasis in the lungs, and by infections elsewhere in the body The integrity of reflexes and the efficiency of other protective mechanisms guarding the airways are influenced by the nervous system and disturbed by vomiting and by such conditions as infantile diarrhœa Pneumonia, complicating these and other disturbances, may not be distinguishable from primary pneumonia by study of the lungs alone The sequence and relative importance of the different disease processes is often difficult to determine, but nevertheless a distinction may usefully be attempted

In bronchopneumonia the infection apparently spreads by the lumen of the small air-passages to the air spaces The walls of these air-passages take part in the reaction at the same time and in the same degree as do the air-spaces The severity of the reaction may differ greatly between closely adjacent areas of lung In contrast inflammation spreading uniformly, and apparently almost at the same time, throughout the air-spaces of all or the great part of one or more lobes can be described as lobar pneumonia, but this is extremely rare in infancy and childhood Aspiration of gastric contents or other foreign material into the air-spaces provokes an inflammatory reaction, but in all the cases reviewed this occurred only as a complication of pre-existing disease elsewhere Pneumonia in fibrocystic disease of the pancreas (mucoviscidosis) and in bronchiectasis is not a primary infection, but the chronic changes in the walls of the bronchi are of considerable interest for the present problem Terminally in many diseases the air spaces become filled with œdema fluid, and when a complicating acute infection occurs in these it may be difficult to distinguish the resultant hypostatic pneumonia from bronchopneumonia In bronchopneumonia œdema fluid, formed as a result of the infection, may also collect in excessive amounts, especially in children In the pneumonias complicating other conditions (tables II–IV) this distinction has not been made

TABLE I—800 NECROPSIES OF INFANTS AGED 1 MONTH TO 15 YEARS · PRIMARY CAUSES OF DEATH

Primary cause of death	Proportion (%) of total
Congenital	13
Trauma	7
Infection	
Pneumonia	9
Various	37
Syphilis	1
Tuberculosis	9
Tumours	6
Miscellaneous	11
Uncertain	7

In some cases in the present study there was inflammation in the interstitial tissue of the walls of the air passages, which had spread out into the interstitial t and the air spaces around the smaller passages Wh there was no disease elsewhere to cause death, this almost always complicated by varying degrees of a inflammatory exudation into the air spaces Whether not it is so complicated, such an inflammation, affect the walls of the air passages and adjacent lung t is here termed acute interstitial bronchopneum Some prefer to call it an acute interstitial pneum When severe, and especially when unobscured by a h acute inflammatory reaction in the air spaces t condition can be readily recognised When slight when complicated by a heavy secondary infection, it very easily be overlooked by the pathologist prevalence of these various types of pneumonia in 157 cases found in the 800 necropsies in the ser shown in table II

TABLE II—PNEUMONIA IN 800 NECROPSIES

Type	Primary	Complicating	Total
Interstitial bronchopneumonia	49 (69%*)	14 (16%*)	63 (40%*)
Bronchopneumonia	21	50	71
Lobar	1		1
Aspiration		7	7
With mucoviscidosis		9	9
With bronchiectasis		6	6
Total	71 (9%†)	86 (11%†)	157 (20%†)

* Percentage of all pneumonias
† Percentage of all necropsies

TABLE III—TYPES OF PNEUMONIA IN 800 NECROPSI

—	Acute alveolar reaction	Primary: Acute onset		Primary: Insidious onset		Complicating
Interstitial bronchopneumonia						
Mild reaction	Absent	3		4		
	Slight	1		6		1
	Extensive	2		12		4
		—	6	—	22	
Severe reaction	Absent	2		1		2
	Slight	1		7		2
	Extensive	2		8		4
		—	5	—	16	—
			11		38	[illegible]
Bronchopneumonia			11		10	[illegible]

Interstitial Bronchopneumonia

The histological picture of interstitial broncho monia has been described under various names, su virus pneumonia, virus pneumonitis, atypical monia, and interstitial bronchopneumonia of m and whooping cough, and it is part of the pictu inclusion-body pneumonitis and giant cell pneum

TABLE IV—DISTRIBUTION OF TYPES OF PNEUMONIA BY PE

—	1935–46
Total necropsies	384
Type of pneumonia	
Interstitial bronchopneumonia	
Acute	6
Insidious	18
Complicating	2
Bronchopneumonia	
Acute	5
Insidious	4
Complicating	25

The body has only a limited number of ways in wh can react to stimuli, and this reaction is not speci any one agent or to any one group of agents Measles whooping cough are probably among the most impo single agents responsible, but other respiratory viruses, febrile catarrhs, and influenzal like and thosis-like viruses are important It has been recog for many years, and MacCallum (1919) gave an exce morphological account

Both the gross and the histological features are gre modified by the severity and type of the asso bacterial inflammation In some degree such inflamm was present in most of the present cases in which a was present in most of the present cases in which infection was the only cause of death In cases there is little or no secondary infection the gross app ances of the lungs may escape comment, but u there are numerous small areas of collapse and th patchy congestion and some œdema Congestion of ronchial mucosa is commonly noted, and more distinct hanges, such as œdema and membrane formation, ay be found usually in those cases of acute laryngo acheobronchitis in which the patient has survived or a few days and interstitial bronchopneumonia is resent.

Histologically the most distinctive changes are in elation to the walls of bronchi and bronchioles. Changes the epithelial cells of the air passages may be present, ut are usually absent or unrecognisable. Descriptions f special forms where there are giant-cells (Pinkerton al. 1945; Wolman et al. 1952) or cells with intranuclear oodpasture et al. 1939) or intracytoplasmic (Adams al. 1942) inclusion bodies tend to obscure the fact at these are only occasionally present. In fresh and ell fixed material and in bronchi normally lined by liated epithelium, groups of cells may be cuboidal or ttened with loss of cilia. Mononuclear cells, chiefly sma-cells and cells resembling them predominate in istinctive infiltration of the subepithelial tissues, and is results in thickening and increased prominence of onchial and bronchiolar structures of all sizes. The verity of this reaction varies widely from area to area. both larynx and trachea there is almost invariably me infiltration by plasma cells, but the severity of this es not correlate well with the reaction in the lung, and can occur without recognisable evidence of interstitial onchopneumonia.

The changes in the terminal portions of the respiratory tem are less distinctive. The walls of the air-spaces ecially those bordering on the small air passages, en appear thickened. Mononuclear cells resembling thelial cells may appear to line these air-spaces and the ls themselves may seem unduly cellular. Generally these air-spaces are filled with protein containing ema fluid and are collapsed. An objective assessment changes in the walls of the air spaces elsewhere is ult. The reaction may indeed sometimes spread and involve the partition walls between many of the ll air-spaces and often this may be best recognised in slight condensations of loose connective tissue and small venules. Occasionally this may even ear more significant than the reaction around the nchi. However if the air spaces become and remain d with œdema fluid the reaction must in time—often haps a week or more rather than a few days—become use and thus resemble inflammation in œdematous enchyme elsewhere. In general and until this hap s, the reaction predominantly affects the peribron l, peribronchiolar and perivenular tissue—that is e parts of the lung through which the lymph-channels and which are thus most exposed to the stimulus oreign antigens absorbed from the respiratory surfaces. n many of the ætiological agents are probably viruses h attack the epithelium of the air passages and do produce a reaction in the ultimate air-spaces as do genic bacteria.

he frequently superimposed acute bacterial inflamma may cause confusion. An adequate number of sec s should be available for study because both the titial reaction and the acute exudate into the air s may vary greatly from area to area of the lung. n there is no interstitial bronchopneumonia any tion present is predominantly in the air spaces and morphs are numerous. Even in an unresolved umonia mononuclear cells of the plasma-cell type are than in interstitial bronchopneumonia, and their dis ution is not comparable. Occasionally areas bordering small abscesses, often those of a staphylococcal umonia may cause difficulty. A chronic, low grade terial infection of the bronchi and bronchioles such that apparently due to the abnormal mucus in muco idosis (fibrocystic disease of the pancreas) may prove al, especially when the infection spreads to the air spaces. It provokes a cellular reaction in the walls of the air passages very similar to that of interstitial broncho pneumonia. Indeed, the numerous plasma-cells present are probably reacting to the same cause—that is, to the continuing presence of a foreign antigen.

Inflammatory changes in the interstitial tissue around bronchi and bronchioles as described were revealed at post mortem examination in two thirds of all the infections of the lung responsible for death (table II). In contrast they were found in only one-sixth of the cases where a lung infection complicated some other disease process.

Clinical Features and Cause of Death

Most cases in which death is primarily due to an interstitial bronchopneumonia fall into one of two groups. First there are those in which death occurs after a brief illness of under forty-eight hours and more often of less than twenty four hours usually with no localising signs or symptoms. Careful questioning may reveal some symptoms of upper respiratory infection and sometimes there has been diarrhœa or vomiting. Often these cases are of medicolegal concern. In the other group the illness has an indefinite and insidious onset and is of some duration and may even have been present for a month or more. Only in about one-third of these cases is there a history of measles or whooping-cough. Symptoms are often non specific. They may include gastro intestinal disturbances, and those of respiratory origin include troublesome cough and distressed breathing. Physical signs in the chest such as poor air entry and faint tubular breathing are usually slight. Radiographically there may be an increase in the density of the hilar shadow. As complicating non-specific alveolar inflammation develops clinical features may be modified and may become more evident.

In both groups the acute non-specific inflammation in the air-spaces is of great importance. Every degree of this will be found. It is rarely entirely absent but in some cases it may be found only with difficulty. In the majority it is easily detected at least in some of the areas sectioned. Some attempt to group cases under these three grades has been made in table III. The results are of little significance. Acute cases of short duration tend more often than cases of insidious onset to have little or no acute polymorph reaction as evidence of superimposed bacterial infection. Though polymorphs are absent there is often fluid of high protein content in the air spaces and focal congestion and hæmorrhage in the walls of the spaces. In the lung moreover perhaps even more than anywhere else in the body the extent of cellular response is little or no measure of the severity or significance of a bacterial infection. When the epithelium of the bronchial tree and the other defence mechanisms which guard the air-spaces, are damaged by interstitial bronchopneumonia it is possible that organisms of high virulence may sometimes gain access to the air spaces in such numbers that an overwhelming infection occurs and invades the blood stream without local cellular reaction in the lung. Post mortem cultures of the lung have proved of little value as evidence for or against bacterial infection during life.

Death almost certainly occurs in only a very small proportion of cases and since it is very often determined by the presence and nature of the superimposed bacterial infection it is scarcely to be expected that there will be much correlation with epidemics of virus disease of the respiratory tract. In the material reviewed there was no grouping of cases in the periods of influenza epidemics and the relatively uniform distribution of cases throughout the year probably also indicates that a wide variety of organisms are responsible. Comparing the incidence before 1946 with that after 1946 when the newer antibiotics were introduced it would appear that these antibiotics have had little influence on the incidence of fatal cases or on the development of acute alveolar exudation (table IV) In the more acute cases antibiotics were often not administered, and in the more chronic cases scanty or fluctuating symptoms sometimes resulted in intermittent treatment terminated before death

Reaction in Interstitial Tissue

The ultimate air-spaces of the lung may or may not be lined by a greatly flattened epithelium which, if present, may form a continuous or discontinuous layer Recent evidence again favours the existence of such a layer (Low 1953) but whether it is present or not it encloses no real space in the partition wall of the air spaces In the aerated lung the few connective-tissue elements holding the blood-capillary networks together can contain few mononuclear inflammatory cells As œdema fluid collects in the air spaces and as these collapse mononuclear cells may increase in the walls and escape into the lumina of the air spaces Because the walls of the air-spaces are then no longer stretched, and perhaps often because mononuclear cells are migrating through them into the air-spaces, they appear thicker and more cellular than normal, and this probably depends to some degree on the duration of the collapse and œdema Assessment of this change can only be a subjective impression Such œdema arises from many different causes, and commonly low-grade infection and reaction to aspirated material modifies the histological picture

It is misleading to recognise as an entity a non-specific change limited to the air-spaces and unassociated with distinctive infiltration of the walls of the air-passages The title interstitial pneumonia or interstitial pneumonitis, frequently applied to this change, tends to imply such recognition, and, by failing to separate cases of secondary œdema and alveolar collapse from cases where there is some evidence of infection, it must confuse the issue Especially in some reports (Menten and McClosky 1951, Gruenwald and Jacobi 1951) changes of this nature have been recognised in such a very high proportion of all necropsies that doubt must arise as to the correctness and value of the assessment

In some cases the air space partitions themselves are grossly thickened and cellular, and the intervening spaces are collapsed and lined in part or in whole by cells which are either swollen alveolar lining cells or downgrowths of the bronchiolar epithelium Many of the cells in the thickened partitions resemble plasma cells, and these cases may appear to differ from those described here since the reaction is not predominantly in the tissue around the air-passages and blood-vessels In 3 cases reviewed these features predominated, but other cases showed transitions and the condition is probably not a distinct entity Clear examples resemble the plasma cell pneumonia of Continental workers, and, while the protozoan parasite (see Baar 1955) recognised in some cases of that condition was absent in all material examined, it seems probable that that condition also is not a specific reaction to a simple agent

The histological picture in all pulmonary interstitial reactions suggests a basic type of response to some common stimulus When a microbic organism enters the body it may be rapidly destroyed in the inflammatory reaction it provokes, or it may survive for a time especially when it grows within the cells of the host as does a virus When it survives and multiplies it is a continuing source of antigenic material The trend of recent studies suggests that plasma cells, and cells resembling them, are concerned with reaction to antigens and with antibody formation While lymphoid tissue may be the chief site of antibody formation, the reacting cells may appear in any condensation of incompletely differentiated mesenchyme close to the site of antigen stimulation In the lungs the reaction could be provoked in the mesenchyme, especially that around bronchi and vascular spaces, by a wide variety of agents, including viruses invading the bronchial epithelium Bacteria, if not destroyed by a prompt polymorph reaction, may survive in œdemato lung tissue and serve as an antigenic stimulus. In seriously ill children repeated aspiration of small amounts of food may provoke some reaction, but lipoid is a poor antigen and produces a different type of reaction. Some toxins circulating in the blood can probably stimulate the mononuclear cells of the interstitial tissue of the lung. Beryllium forms a compound with body proteins which antigenic (De Nardi et al 1953), and, probably for this reason, when inhaled as fumes or fine dust it provokes a reaction with considerable thickening of the air-space walls which in its early stages is somewhat compara to that under discussion Such general factors as collap œdema, and vascular stasis influence the distribution any antigen and also the ability of the different parts the respiratory tree to respond Endless minor variati can be recognised , but study of any large series of ca or review of the extensive literature, must suggest th the histological changes are essentially non specific can give little or no indication of the exciting caus any particular case

Summary

Non-specific inflammation of the lung has been stu in a series of 800 necropsies on children aged 1 month 15 years

Pneumonia was the primary cause of death in 9%. two thirds this was an interstitial bronchopneumo but in at least three quarters of these there was a dis tive inflammatory reaction in the air spaces due to su imposed acute bacterial infection The occurrence nature of the bacterial infection probably dictates outcome in most cases In the 86 cases where pneum occurred as a complication of some other disorder, i stitial bronchopneumonia was present in 16%

In interstitial bronchopneumonia the course ma acute and rapidly fatal, or else there may be an ins onset and indefinite symptoms for some weeks

The tissue reaction is primarily related to the bron tree and to the lymphatic pathways of the lung relatively non specific

Thickening and increased cellularity of the walls o air spaces alone is difficult to assess objectively; and assessment is much influenced by non specific lung lapse and œdema It is suggested that patho diagnosis of interstitial pneumonia or pneumonitis s not be based on such changes alone

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OSURE OF WOUNDS AND INCISIONS WITH ADHESIVE TAPE

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x an analysis of the healing of surgical incisions llman et al 1955) we have described several phenomena yet generally recognised including vigorous epithelial ngrowths into the dermis in the line of the incision l especially along the sutures These epidermal tions, particularly well marked in relation to the dle puncture wounds, always complicate wound ling considerably and contribute much to the ultimate Consequently methods for sutureless closure of ical incisions were sought

fter trying several published methods of closing skin ions without sutures, including the use of ordinary plaster-strips (Radcliffe 1943) and various combina of plasma bovine thrombin and calcium (Tarlov l 1943, Young and Favata 1944, Mandl et al 1946) undertook a trial of transparent plastic sive tape.

n five ambulant active volunteers we e experimental incisions through the of the forearm and down to sub neous fat These incisions, of which al were made in the skin of the fore of the same person were closed with sive plastic tape and the results this type of closure were compared those obtained in another equivalent on in the same person, closed with interrupted silk sutures

Methods

the incisions, each 2 or 3 inches long deep enough to permit full gaping of wound In each case the control wound closed with five or six size 0 black silk es in a no 10 cutting needle

r tape-closure we used at first a ally prepared adhesive plastic tape y provided by Dr P Williamson of U.S Army Hospital in Albuquerque Mexico who informed us that the was 'self sterilising' but could be ilised Subsequently, however we ordinary plastic tape available in stationery stores and found it quite ient Since the adhesive of this of plastic tape contains phenol and it is virtually self sterilising We now used such ordinary stationery plastic tape in major plastic opera on the breasts and elsewhere without ing the tape at all and without any healing infections The tape was ed as follows

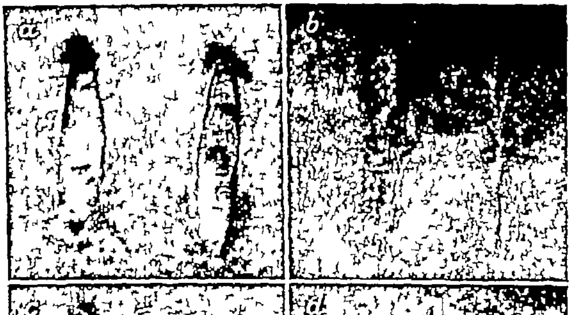
piece of tape $2^{1}/_{4}$–3 inches long was used one end of it was applied with firm about $1^{1}/_{4}$ inches away from the ion, to provide a firm grip on the skin by pulling on the free end of the tape simultaneously squeezing the wound together with the fingers, or by coapting them with fine forceps, the tape strip was firmly pressed on to the skin on the opposite side of the incision once the operator was satisfied on viewing the incision through the transparent tape, that the edges of the incision were correctly apposed With only a little practice, almost hair line closure was easily achieved

A greater number of $^{1}/_{4}$ inch wide strips was preferred to fewer strips of broader tape since the narrower tape permitted more precise apposition and greater security Successive strips of tape were applied with narrow intervals between each The ends of the transverse strips of tape were then made more secure by fixing two broad pieces on each side parallel to the incision and across the ends of all the transverse strips.

Dressings of tulle gras or of erythromycin ointment on dry gauze and lint were applied and these were covered with a crepe bandage kept in place by plaster strips at the proximal and distal borders of the bandage The volunteers then went about their daily duties, which varied from clerical or laboratory and animal room work to mountaineering in one case Thus healing took place under conditions which were far from the surgical ideal of complete rest making these experiments rigorous tests of the method of wound closure

Removal of the tape was facilitated by moistening the skin with 95% alcohol or preferably with ether when necessary In the case of the sutured wounds, alternate sutures were removed at five and at ten days after operation

Three methods of making observations were used (1) macroscopic inspection almost daily after the fifth



Tape-closure of skin incisions.

(*a*) Initial incisions.

(*b*) Sutured wound (left) and tape-closed wound (right) on 10th postoperative day Note erythema and œdema of wound edges in sutured wound and hairline closure of taped wound

(*c*) Same wounds on 16th postoperative day when tape was removed from (transverse) biopsy wounds (A) made on *10th* postoperative day Note excessive pigmentation and scaling around sutured wound and absence of these from taped wound also wrinkling of skin due to dressing.

(*d*) Wounds on 26th postoperative day showing hyperpigmentation and suture scars around sutured wound very fine scar of taped wound and *spreading of taped biopsy wounds* (A) from which tape was removed prematurely Original taped incision was kept taped for 10 days and has *not* spread postoperative day, (2) crude assessment of the tensile strength of the wounds at the time of biopsies; and (3) microscopy of serial sections of the biopsy specimens

Results

As illustrated in the accompanying figure, the healing of the taped wounds was in every way as good as, and in many respects considerably better than, the sutured wounds The edges of the latter were always somewhat inflamed and congested, especially in relation to the fine silk sutures These reactions were clearly aggravated by the constant use of the incised arms and were greatest at the suture-needle puncture wounds The localised inflammation associated with sutures, compared with the absence of such reactions in taped wounds, was particularly clear in an Asiatic (see figure)

So impressed were we with the results obtained with tape-closure in our first volunteer that we soon discarded suturing of biopsy wounds in favour of tape closure

Very little discharge was formed beneath the tape, and no volunteer complained of any irritation or discomfort attributable to the plastic tape used in the wound closure Nor was there any accumulation of sweat beneath the tape, despite the fact that these experiments were made on active workers in the humid tropical climate of Durban Ordinary zinc plaster or elastic plaster, on the other hand, caused itching and discomfort in several volunteers It was found that covering the taped wounds with a second layer of plastic tape provides an excellent airtight comfortable dressing which has the added advantage of allowing frequent scrutiny of the incisions without disturbing either the patient or the wound

At the fifth postoperative day the sutured wounds, probably owing to the presence of sutures themselves, seemed to be stronger, with less tendency to "split" when tension was applied, than the taped wounds However, by the tenth postoperative day, especially when the tape had been left undisturbed all the time, the tensile strength of the taped wounds was equivalent to that of the sutured wounds If tape is retained in position for fifteen days after operation, one may expect perfect hairline scars which do not "spread" after the removal of the tape

We recognise that these findings are based on the study of relatively small incisions not quite so deep as the usual surgical incision—i e, only down to subcutaneous fat and not to or through the fascia and/or muscle But the conditions of the present tests were rigorous in that the surgically treated part was never placed at rest

Remarks

For general surgical practice, in dealing with incisions extending through all the layers down to peritoneum, the usual sutures required for the closure of subcutaneous tissues are obviously still necessary However, for the closure of extensive incisions in the skin alone all that is necessary is two or three widely spaced stay-sutures, sometimes with a few subcuticular stitches For the rest, speedier and much better apposition of incised edges can be achieved by completing skin closure with plastic tape as described above Spread of infection along sutures and suture needle puncture scars are thus avoided Drains, when required, can always be placed between strips of tape and, when superficial, can easily be taped into position

Apart from the better healing and the better scar, tape closure has the advantage of being simple and rapid The patient is spared the discomfort, or even pain, attending removal of sutures, and the usually overworked nurses are saved the time and effort of taking down dressings repeatedly, in fulfilment of the common present day practice of removing alternate sutures on different days Healing is quicker there is less interference with the operation site, especial if tape closure is used alone without any dressings.

Our microscopical studies (Gillman et al. 1055) provided reasons for diminishing the number of used in closing the cutaneous portions of major incisions and for discarding sutures entirely for closure whenever possible Tape-closure, the acceptable alternative, is also highly suitable for rap wound closure in patients who are severely injured an shocked, and for treating minor injuries in gener practice and in casualty wards We have already fou it useful in plastic surgery, and we believe that the use adhesive tape will find other applications in surge especially in fixing split skin and other free grafts recipient sites, and wound closure in patients liable keloid

General Conclusions

A method is described for closing skin incisions w transparent plastic adhesive tape

Preliminary tests show this method to be closure with sutures

It should have further trial for closing skin inc in major surgery and in plastic surgery, for appl free skin-grafts, and in the emergencies of practice and the casualty ward

We are glad to acknowledge the generous grant from Schlesinger Organisation, South Africa, which made execution and presentation of this work possible Messrs Lilly kindly provided the erythromycin ointment here We also wish to thank our very willing and coöper volunteers, Dr S H Ripley, Dr M K. S Hathorn, Mr Farr, Mr H J Klomfass, and Mr K Perumal, and Dr Williamson for his collaboration

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NEPHROSIS TREATED BY MALARIA

RESULTS IN 65 CASES

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In 1952 Byrne and Gairdner independently rep cases of nephrosis in which remissions had been ind by infecting the patient with malaria Following t reports the Malaria Reference Laboratory sup many hospitals with infected blood or mosquitoes for purpose of inducing malaria in nephrotic patients. malaria was of the benign tertian variety, excep 2 instances where a second bout of fever was de when quartan malaria was used

We report here the results of malaria treatmen 65 cases Details of 55 cases were collected by m inquiries from the physicians concerned, 10 were personally studied by one of us (D G)

The intention was to find out (1) what proportio nephrotic patients are benefited by malarial treatm (2) what hazards the treatment carries, (3) whe those patients with nephrosis who are likely to be from this treatment can be distinguished, and whether the length and severity of the malaria factors in its effectiveness in inducing a remission nephrosis

Material

Details of 72 cases of the nephrotic syndrome were vailable, but 7 of these were discarded because the ffects of the malaria could not be assessed for the follow g reasons in 4 cases death took place from causes nrelated to the malaria; in 2 cases a spontaneous mission of the nephrosis preceded the malarial pyrexia, I case another treatment was given concurrently with alaria There remained 65 cases

51 cases fulfilled the conventional criteria of 'pure phrosis,' showing gross œdema and proteinuria po albuminæmia, and hypercholesterolæmia but no pertension or sustained azotæmia and little or no maturia.

Most of the remaining 14 cases showed in addition to e nephrotic picture well marked hypertension and otæmia and nephritis was clearly present In a few se signs were more equivocal cases where the diagnosis s in doubt were classified with the nephritic group

BLE I—RESULTS OF MALARIA TREATMENT IN 65 CASES OF NEPHROSIS

Result	Pure nephrosis (51 cases)	Nephritic nephrosis (14 cases)
nplete remission	14	
rtial remission	11	5
remission	26	9

Immediate Results of Malaria Treatment

I a diuresis began any time after the onset of the larial pyrexia and up to a week after the end of the exia it was ascribed to the malaria A *complete ission* was defined as loss of all œdema sustained at least three months and a *partial remission* as where the loss of œdema although substantial, either incomplete or was not sustained for three nths.

he results in 65 cases of the nephrotic syndrome are n in table I

TABLE II—AGE-DISTRIBUTION OF CASES OF "PURE NEPHROSIS" WHICH HAD A COMPLETE REMISSION

Age (yr)	"Pure nephrosis" (51 cases)	Complete remission (14 cases)
1–5	23	7
6–10	7	1
11–15	6	3
16–20	3	
21–30	3	1
31–40	4	
41–50	4	2
51–60	1	

A remission, partial or complete occurred in about half the "pure-nephrosis" group and in about a third of the nephritic group A *complete remission*, however was seen only in the "pure nephrosis" group in which it occurred in 14 of 51 cases—an incidence of 28% Table II shows the age-distribution of the 14 cases which had a complete remission and in table III additional details of these cases are set out—the duration of nephrotic symptoms previous remissions, whether spontaneous or the result of treatment with either corticotrophin or cortisone and the subsequent course

A relapse of malaria sometimes initiated a nephrotic remission after a primary attack of malaria had been ineffective, as in the following instance

Case 24 (table III)—A boy aged 11 had had nephrosis for four and a half years with unrelieved œdema for three and a half years He was infected with benign tertian malaria by mosquito bites and had pyrexia lasting thirteen days, terminated by a course of proguanil There was no change in his nephrosis Two months later (February 1953) his temperature suddenly rose to 103°F and continued at about this level for eleven days before being brought under control by proguanil. Diuresis started on the third day of pyrexia and his gross œdema rapidly cleared He has subsequently (April 1955) remained well and free from œdema, although a severe proteinuria persists

Late Results of Malaria Therapy

The fate of the 14 patients who had complete remissions is summarised in table III In 4 patients the nephrosis

TABLE III—DETAILS OF 14 CASES OF NEPHROSIS WITH COMPLETE REMISSION AFTER MALARIA

Age (yr)	Sex	Duration before treatment	Spontaneous remissions	Previous treatment with cortisone or corticotrophin	Late result
1½	F	10 wk.			Well 2 yr later no proteinuria blood chemistry normal
2	M	5 wk.			Well (except for proteinuria) for 2 yr then relapse of nephrosis Second treatment with benign tertian malaria followed by remission and 3½ yr after this well no proteinuria blood chemistry normal
3½	M	4 wk.			Well (except for trace proteinuria) for 9 mos then relapsed, second malarial treatment (quartan) given 17 mos after first treatment; death on 5th day of pyrexia
4	M	2 mos.			Well (except for proteinuria +) 5 mos later blood chemistry normal
4	M	7 mos			Well 2½ yr later no proteinuria; blood chemistry normal
4½	M	2 yr	Twice	1 corticotrophin; 2 cortisone; both caused transient partial improvement	Well (except for proteinuria + +) for 6 mos then relapse of nephrosis
5	F	1 yr			Well (except for proteinuria +) 6 yr later blood chemistry normal
9	M	10 mos			Well 1½ yr later no proteinuria blood chemistry normal
11	M	10 mos.		Cortisone twice first course caused transient improvement	Well 2½ yr later no proteinuria blood chemistry normal
11	M	4½ yr	One 3 month after onset lasting 9 mos		Well 2 yr later but proteinuria + + (blood chemistry not available)
12	M	6 mos		Corticotrophin no effect	Well for 1 yr then relapse; second malarial treatment (quartan) induced further remission well 2½ yr later no proteinuria blood chemistry normal
21	[illegible]	5 mos.		1 corticotrophin 2 cortisone; no effect	Well 7 mos later but proteinuria + + serum cholesterol and albumin abnormal
43	F	3 wk.			Well 2½ yr later no proteinuria blood chemistry normal
48	F	4 mos.		Corticotrophin no effect	Well 1½ yr later no proteinuria; blood chemistry normal

Case 16 was reported by Byrne (1952) case 22 by Porter (1951) relapsed after periods of six months, nine months, a year, and two years Subsequently 3 of them were reinfected with malaria, this procedure apparently contributed to the sudden death of case 42 (see below) but was successful in initiating a long lasting remission in the 2 other patients The latter cases are instructive case 16 because the proteinuria, which persisted after his first postmalarial remission, was abolished by the second malarial treatment, and case 52 because quartan malaria was used

Case 16 —(Byrne 1952 and personal communication) — A boy, aged 2 years, who had nephrosis for six weeks was infected with benign tertian malaria and had pyrexia for ten days Two days after the fever had been terminated he had a diuresis Thereafter he remained free from œdema (except for transient "puffing up" of the face on two occasions following coryza), although continuing to have moderate proteinuria After two years œdema recurred and benign tertian malaria was again induced, in August, 1951, the pyrexia being terminated after nine days Seven days later diuresis began, with complete clearance of œdema, disappearance of proteinuria, and return of blood chemistry to normal—a state of affairs which has persisted for more than three and a half years

Case 52 (case 2 of Gairdner 1952) —A boy, aged 12 years, had nephrosis for a year Benign tertian malaria was then induced and was followed by loss of all œdema and a return to normal of the blood chemistry During the next twelve months the boy remained well, his urine containing either a trace or no protein, but the œdema, gross proteinuria, and abnormal blood chemistry then recurred Several unsuccessful attempts were made to infect him a second time with benign tertian malaria, but to this he proved immune, Quartan malaria was therefore induced by blood inoculation After an irregular pyrexia for three weeks, latterly complicated by episodes of hæmaturia coinciding with rigors, diuresis set in, and again a complete remission followed The boy has remained well for two and a quarter years since his second remission, with normal urine and blood chemistry

Summary —The late results in the 14 patients who had a complete remission were as follows 10 patients have remained well, in 2 patients the œdema has recurred but has cleared after a second malaria treatment, both patients having remained well for more than two years, 1 patient has died, and in 1 patient the œdema has returned Of the 12 patients who were still well in May, 1955, the follow up period had been six years in 1 case, three years in 1 case, two years in 5 cases, a year in 3 cases, and from five to seven months in 2 cases The urine was normal in 8 cases, but proteinuria persisted in 4 The blood chemistry (urea, serum proteins and cholesterol) was normal in 10 cases, abnormal in 1, and unknown in 1

Factors Influencing Results of Malaria Therapy

By comparing the 14 cases which showed a complete remission (malaria-responsive) with the 37 cases of "pure nephrosis" which did not (malaria unresponsive), it was found that the age, sex, and duration of nephrosis did not differ significantly between the two groups

Spontaneous remissions had previously occurred in 2 of the 14 malaria responsive cases, and in about the same proportion of malaria unresponsive cases

Nine courses of corticotrophin and/or cortisone had been given to 5 of the 14 malaria responsive cases but in none had produced more than transient partial improvement, hence lack of response to these agents did not imply that malaria treatment would fail

The height of the malarial pyrexia and the length of time it was allowed to continue were factors which, it was anticipated, would influence the success of malaria therapy, but the data did not support this conjecture In 5 of the 14 malaria-responsive cases the pyrexia lasted less than two weeks, and in 1 of these cases the temperature never rose above 102°F Conversely, in many of the malaria unresponsive cases pyrexia had lasted two or three weeks with temperatures exceeding 105°F

Thus there seems to be no way of recognising wh patients with nephrosis will respond to malaria, excep that, if there are signs of nephritis, they are most un to do so

Some observations may, however, be offered on th criteria for judging whether a nephrotic remission following malaria is likely to prove long lasting (Probabl the same criteria would apply to nephrotic remission induced by other means) Unless the œdema is completely cleared and is followed within a few weeks by a return to normal of the serum albumin and serum-cholesterol levels, relapse is probable A raised α_2 globul level may, by contrast, persist for many months with implying that relapse is likely Moderate proteinur also does not necessarily indicate impending rela and 4 of the 12 patients who remain well to date hav residual proteinuria which may signify damage done the kidneys in the past rather than a continuance of t nephrotic state

Dangers of Malaria

Malaria was thought to have contributed to death of 1 patient, although the exact cause of d was obscure

Case 42 —A boy, aged 3½ years, had had nephros two months before benign tertian malaria was induced October 1953, pyrexia being allowed to continue for weeks A nephrotic remission followed, the œdema cl the blood chemistry became less abnormal, and prote was much diminished The boy remained well for nine m until œdema recurred in August, 1954, with ascites and albuminuria Various treatments, including corticotro were tried in vain Since the boy became immune to atte reinfection with benign tertian malaria, quartan malaria induced by blood inoculation On March 19, 1955, py began with temperatures continuing between 100°F 102°F until March 22, parasites being present in the b From March 23 he remained afebrile, but became progres feebler, he died suddenly and unexpectedly on March Necropsy was not permitted

Anæmia develops in a large proportion of neph patients given malaria Usually the hæmoglobin returns rapidly to normal after termination of malaria, especially if iron is given However, in 6 pat 4 of them children, the anæmia was severe enoug require blood transfusion

Case 52 (see above) developed hæmaturia but made a seemingly complete recovery from neph his urine becoming normal Hæmaturia also compl 2 of the cases of nephrosis treated by malaria by S (1955)

We conclude that malaria may sometimes pro drastic treatment, since patients are often alread a seriously weakened state, but that most pat tolerate it surprisingly well, especially since the py can be modified by the use of 'Thio Bismol' (W and Shute 1943) or terminated at will by qu mepacrine, or proguanil

The hazards of malarial treatment must be view perspective against the mortality of the disease At least 8 patients in this series are known to have from the direct or indirect effects of nephrosis. is hormone therapy with corticotrophin or with cort currently the most usual form of treatment, wi danger, Metcoff et al (1952) reported 4 deaths result of corticotrophin administered to 45 children

Course of Nephrosis in Malaria-induced Remissi

In 4 of the cases observed by one of us (D G), wh partial or complete remission followed malaria. was possible to follow the day to day changes in plasma-cholesterol levels, the electrophoretic pat of the plasma-proteins, the eosinophil count, and proteinuria (figs 1 and 2)

The first change affects the plasma cholesterol le which declines steadily from the beginning of the pyre eaching normal or near normal levels within about wo weeks

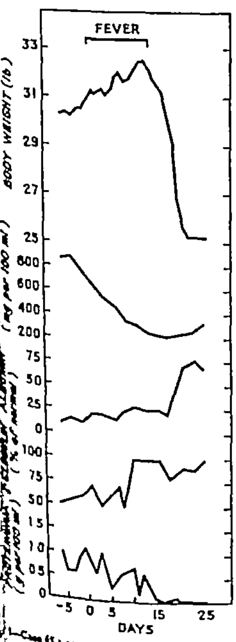
The next change has been a rise in the γ globulin vel, typically depressed in nephrosis This rose sharply n the tenth day in the case shown in fig 1, in other ases a similar change took place at about the same time, hough the rise was not so clear cut in those cases where e initial depression of γ globulin was less pronounced ig 2)

Diuresis, when it took place, began in some instances uring the pyrexia, but more often a day or two after s termination and proteinuria usually diminished arply at the same time as diuresis set in Several ays then elapsed before the serum albumin level started rise. An abnormally high level of α_2 globulin persisted ng after all other clinical and chemical evidence of phrosis had cleared in case 65 the α_2 globulin became rmal only fifteen months after œdema and proteinuria d disappeared and the serum albumin and serum olesterol levels had returned to normal

Fig 1 displays the sequence of events in a case which d a complete remission, and fig 2 where the remission as partial and transient

It is obviously of interest to know whether the pattern events is the same in a nephrotic remission irrespective whether the remission is spontaneous or is induced such agents as infection corticotrophin or cortisone xtran and nitrogen mustard Measles induced remis ons have been studied by Blumberg and Cassady 47) and Janeway et al (1948) hormone induced missions by Luetscher and Deming (1950) Metcoff al. (1952) Heymann et al (1955) and others and nitrogen mustard induced remissions by Kelley and Panos (1952) It seems that in remissions induced by each of these three types of agent diuresis begins either at the same time as proteinuria sharply diminishes or a day or two after this. The serum albumin level begins to rise only after diuresis is well under way (one of a number of facts which indicate that hypoproteinæmia is not the cause of nephrotic œdema) In these studies the cholesterol level showed no decided fall until after other signs of remission had become evident

When remissions induced by malaria are compared with those induced by other agents it is seen that the pattern is essentially the same in both The only obvious difference is that in malaria induced remissions the cholesterol level starts to fall steadily from the onset of pyrexia and well before any other changes in the signs of nephrosis have appeared This may be due to the same mechanism by which malarial pyrexia depresses the cholesterol level in healthy people (Fairley and Bromfield 1933) Possibly therefore the fall in the cholesterol level has nothing to do with the initiation of the nephrotic remission and this view is supported by the fact previously noted (Gairdner 1952) that hypercholesterolæmia disappears in nephrosis treated by malaria irrespective of whether or not remission follows



1—Case 61 : course of nephrosis (weight ; serum cholesterol, serum albumin and serum-γ-globulin levels ; and proteinuria) following malarial pyrexia. The remission in this case lasted a long time

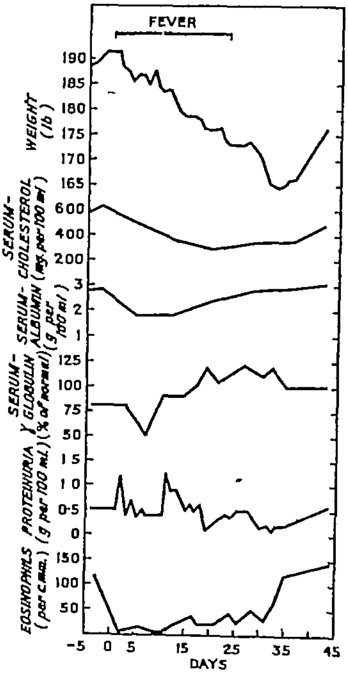


Fig 2—Case 49 : course of nephrosis (weight ; serum-cholesterol serum-albumin and serum-γ-globulin levels ; proteinuria ; and eosinophil-count) following malarial pyrexia. The remission in this case did not persist, œdema and proteinuria clearing only transiently Note eosinopenia induced by malaria.

The production of eosinopenia (in 3 of the 4 cases observed) by an attack of malaria (fig 2) is consistent with the view that the ability of this infection to provoke a nephrotic remission depends partly on adrenocortical stimulation McCall and Singer (1953) observed that a nephrotic patient who developed a severe infection leading to a remission might excrete as much corticoid hormone as when given corticotrophin However additional factors may well operate, and this possibility is supported by the observation that *many* of the malaria responsive patients with nephrosis had previously received one or more courses of either corticotrophin or cortisone with little effect

It is tempting to speculate further on the mechanism of malaria induced remissions but in view of our fundamental ignorance of the cause of nephrosis, such speculations would be nugatory

Summary and Conclusions

Of 65 patients with the nephrotic syndrome treated with malaria 51 had pure nephrosis 14 (28%) of these achieved remissions lasting longer than three months and 12 (24%) have remained well subsequently with follow up periods of up to six years.

No lengthy remission occurred among 14 cases of nephritic nephrosis. Apart from this no criteria were found by which the likelihood of remission could be judged Lack of response to either corticotrophin or cortisone did not imply that a nephrosis would not respond to malaria

1 death was partly ascribable to the malaria The only common complication of this treatment was anæmia, which sometimes necessitated blood-transfusion

Nephrosis is a long and disabling illness, carrying still a considerable mortality While its ætiology remains obscure, only empirical treatments exist Among these malaria has a place, since long-lasting remissions can be induced in about 1 in 4 patients with "pure nephrosis," sometimes after hormone treatment has failed

This study has depended entirely on the goodwill of some 60 physicians, too numerous to name, who have been generous in providing us with many facts about their patients and in granting us permission to use this information We take this opportunity of expressing our warm thanks to them.

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PREOPERATIVE PREPARATION OF THE BOWEL WITH NEOMYCIN

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The ability to suppress the intestinal flora has profoundly altered the management and prognosis of large-bowel surgery Before the introduction of intestinal antisepsis, primary intraperitoneal anastomosis carried a high risk of infective sequelæ, either with or without an actual leak at the site of anastomosis Devine (1940), discussing resection of carcinoma of the proximal colon, suggested that the over-all mortality-rate of a right sided hemicolectomy was as high as 35%, and that of primary anastomosis in the distal colon 30%. He also advocated that resection and anastomosis of the sigmoid colon should be done only after it had been completely isolated by a "disconnecting" colostomy This operation and its many modifications were universally adopted by surgeons who were constantly preoccupied with the dangers of operating on bowel containing pathogenic organisms

Since the introduction of bacteriostatic and bactericidal drugs and in the absence of obstruction it has become possible to perform intraperitoneal resection of large bowel with reasonable safety and without a previous defunctioning colostomy The presence of obstruction prevents effective sterilisation of the bowel and for this and other reasons remains an absolute indication for preliminary decompression The dramatic improvement in the mortality-rate following preoperative sterilisation of the bowel is indicated by Allen (1950), who reporte 159 resections of carcinoma of the colon with only deaths, a mortality-rate of 1·2%

The drugs available for sterilising the bowel befor surgery are those of the slowly absorbed sulphonamide and the antibiotics Of the sulphonamides, phthaly sulphathiazole is in common use, and a course of it lastin from three to five days has been found effective i inhibiting the fæcal flora to such a degree that th infective risks of operating on the large intestine can b largely eliminated (Poth and Ross 1944)

Trials of antibiotics for the same purpose have generall proved disappointing. The exhibition of streptomyci leads to the development of resistant strains within few days Chlortetracycline (aureomycin), chloramphen col, and oxytetracycline depress the intestinal flo effectively but often produce toxic side effects, such nausea, diarrhœa, and vomiting Another and mo serious limitation in the use of these broad spectru antibiotics is the occasional development of a severe often fatal secondary intestinal infection with resista strains of staphylococci The dangers of such a staphyl coccal enterocolitis were summarised recently by Fow (1955)

Neomycin as an Intestinal Antiseptic

Neomycin was isolated by Waksman and Lechev (1949) from *Streptomyces fradiæ* It is water solu thermostable, and bactericidal in vitro against a w range of gram-negative and gram positive bacteria parenteral administration is limited by its toxic effe such as renal damage, tinnitus, and deafness The lo application of neomycin ointment has been fo effective in the treatment of pyogenic skin dis (Church 1954)

Oral administration of neomycin is not accompa by toxic side effects, for little is absorbed from the bo This antibiotic has the additional advantage of remain unchanged in the gastro-intestinal tract (Poth et 1950) and has been used successfully in various intest infections, including amœbiasis and bacillary dysent (Waksman 1953) As compared with streptomycin incidence of drug resistant strains is found to be Its use as an orally administered intestinal antiseptic investigated by Poth and his co workers and favour commented upon (Poth et al 1950, 1951a) Its bact cidal action is rapid, it was shown in 154 patients received 1 g of neomycin by mouth every four h that the bacterial flora of the bowel was reduced to than 100 organisms per gramme of wet stool in twe four to forty-eight hours (Poth et al 1951b)

The results of a trial of neomycin as a preopera bowel antiseptic in 50 cases have been published Davis et al (1954), who emphasised the importance three-day preoperative régime of saline cathartics an low-residue diet, basing this requirement on the sugge by Baker and Pulaski (1950) that intestinal antisep are much more effective if the solid fæcal matter in colon is removed before the drug is administered their patients received a single dose of neomycin twenty four hours before operation, while the remain were given neomycin 1 g four-hourly for twenty- hours preoperatively Their results indicate that, either therapeutic régime, neomycin effectively pressed all intestinal bacteria without the developmen resistant forms Overgrowth of yeasts and fungi was demonstrated Complete details of the operations these patients were not given, however, nor were clinical results indicated

The present trial was therefore instituted to as the use of neomycin in the preparation of the la bowel for surgery and to determine the optimal dose neomycin for the suppression of fæcal pathogens surgical importance The dose of neomycin is correlated with the clinical result

Material

Altogether 51 unselected patients were investigated who were expected to undergo major colonic surgery ut 16 of them either had no operation or else only a alliative colostomy and these have been eliminated om this trial. The operations on the remaining 35 atients were:

Operation	*No of cases*
ight hemicolectomy	7
bdomino-perineal resection of rectum	14
ft hemicolectomy	3
terior resection of rectum with primary anastomosis	5
rtmann's operation	1
forming of colostomy	1
sure of colostomy	3
rtosigmoidectomy	1

Methods

Either a specimen of fæces or a rectal swab was sub itted for bacteriological examination forty-eight hours fore operation Liquid paraffin ½ oz and 'Milk of gnesia 2 drachms were given by mouth twice daily seventy two hours before operation during which e a low residue semi fluid diet was permitted Twenty r hours before operation treatment with oral neomycin s begun either 1 g four hourly (régime A 14 cases) a total of 6 g or 1 g hourly for 4 doses, followed by g four hourly for the rest of the twenty four hours gime B 21 cases) to a total of 9 g

At operation a swab for bacteriological examination taken either from the lumen of the colon at the site operation or from the operation specimen immediately er removal, according to the type of operation

Bacteriological Findings

The trial was mainly clinical, but it was thought irable to determine whether in fact the bowel was tilised and to detect the emergence of any resistant ains.

A specimen of fæces or a rectal swab taken forty-eight rs before the operation was examined as follows first 9 specimens were cultured on blood agar con ing 10 µg of neomycin per ml The remaining 26 drug specimens were cultured in digest broth con ing 10 µg of neomycin per ml and then plated out plain blood agar Swabs taken at operation were ured on plain blood agar

The sensitivity to neomycin of all organisms isolated determined by inoculation of serial dilutions of dard neomycin in Fleming's medium (May et al 7) The range covered was 500 000–0 007 µg of mycin per ml Specimens from 35 cases were examined e cases were divided into two groups régimes A B

me A

4 cases are included in this group The pre-drug imens yielded predominantly enterococci and *Escheri coli* and less frequently yeasts and proteus All the nisms isolated were sensitive to 125 µg neomycin ml, or less. One specimen yielded a *Bacterium genes* sensitive to 0 5 µg neomycin per ml.

ll the swabs taken at operation 20% were sterile yielded a mixed growth of an enterococcus and *h coli* 14% grew a yeast and 14% an enterococcus e The remaining three specimens yielded a mixed wth of *Pseudomonas pyocyanea* an enterococcus and *h coli* a yeast and enterococcus and *Esch coli* no case was an organism more resistant to neomycin r operation than it had been preoperatively

me B

1 cases are included in this group As in régime A predominant organisms isolated from the pre-drug imens were enterococci and *Esch coli* One specimen yielded a micrococcus and one a diphtheroid Again all the organisms isolated were sensitive to 125 µg neomycin per ml or less. Of the swabs taken at operation 45% were sterile 15% grew *Esch coli*, and 20% grew a yeast. The remaining four specimens grew *Ps pyocyanea* an enterococcus a proteus and mixed *Esch coli* and yeast Apart from yeasts, no organisms were isolated which were completely resistant to neomycin

Poth et al (1950) reported the persistence of *Bact aerogenes* in 3 cases prepared with orally administered neomycin In this series *Bact aerogenes* was isolated from one pre drug specimen only, and this was sensitive to 0 5 µg neomycin per ml *Staphylococcus pyogenes* was not isolated either before or after operation, but no special attempt was made to isolate it

Clinical Results

None of these operations was fatal and there was no intraperitoneal infection or sepsis in the abdominal incisions In the cases of abdomino perineal resection the perineal wounds healed satisfactorily in the normal manner There was no systemic reaction to neomycin, no intolerance of neomycin, and no toxic side effect.

Comment

In these cases neomycin sufficiently suppressed the fæcal flora for intraperitoneal bowel anastomosis to be undertaken with safety

No instance of staphylococcal enterocolitis followed the use of neomycin in this small series and so far as can be ascertained no such complication has been reported in America, where the drug has been in use on a wider scale for a considerable period Similarly intestinal moniliasis which also may complicate oral antibiotic therapy, has not been reported as following neomycin therapy (Waksman 1953)

The failure of neomycin resistant strains to develop after the clinical use of neomycin corroborates the findings of Davis et al (1954) Poth et al (1951b) however found in 3 of their patients a resistant strain of *Bact aerogenes* and indicated that it might therefore be desirable to give a supplementary course of phthalyl sulphathiazole to eliminate this pathogen In this present trial we did not discover any neomycin resistant strain of *Bact aerogenes*

The main advantage of using neomycin, compared with other forms of preoperative drug therapy is that the bowel can apparently be safely prepared for surgery within twenty four hours Although there was no apparent difference in the clinical results in régime A and régime B the results of bacteriological assay indicate that 9 g of neomycin given over twenty four hours suppresses the bowel flora far better than do other drugs and therefore produces optimal conditions. As with other forms of preoperative bowel sterilisation, intestinal obstruction diminishes the effect of neomycin

We emphasise, however that the presumed sterility of the bowel lumen should in no way excuse any deviation from the exact and carefully performed technical minutiæ which are the foundation of successful bowel surgery

Summary

35 cases requiring major bowel surgery were prepared with oral neomycin

In 14 cases neomycin 1 g was given four hourly for twenty four hours preceding operation (régime A); in the remaining 21 neomycin 1 g was given hourly for 4 doses followed by 1 g four hourly for the remainder of the twenty four hours (régime B)

Complete sterilisation of the bowel was achieved in 20% of the cases under régime A and in 45% of the cases under régime B

No neomycin resistant organisms developed

There was no difference in the clinical results obtained with the two methods of preparation

None of the operations was fatal, and there was no intraperitoneal infection or wound sepsis

We are indebted to the consultant surgeons of the Royal Infirmary, Sheffield, for permission to cite their cases, to Prof R P Jepson for his advice in the preparation of this report, and to Dr J Colquhoun for advice in the bacteriological investigations The Upjohn Company supplied 'Mycifradin,' the brand of neomycin sulphate used in this trial

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PHYSICAL GROWTH AND THE PROGRESS OF MYOPIA

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HAVING previously shown that myopic children grow faster and more irregularly than other children (Gardiner 1954), I have now studied their growth-rates in greater detail

142 myopes were weighed at the beginning and end of a period of six months, and their proportional annual increase in weight was calculated from the figures thus obtained Table I shows that in active myopes this increase was half as much again as in stationary myopes

TABLE I—MEAN DIFFERENTIAL INCREASE IN WEIGHT OF MYOPES IN SIX MONTHS

Myopia	Stationary	Active		
		Change not measured*	–1 0 D or less yearly increase	> –1 0 D yearly increase
No of myopes	23	86	22	11
Mean proportional annual increase in weight	0 081	0 084	0 105	0 125

* Judging by change in visual acuity myopia had increased but not to an extent necessitating examination with a view to change of glasses

A further series of 43 unselected myopes were studied for a year They were weighed and measured at regular intervals, and their refractive errors were measured at the beginning and end of the year It was found th 12 remained stationary, 23 increased by amounts –1 0 dioptre (D) or less, and 8 increased by amoun greater than –1 0 D Table II shows for each group th mean proportional increase in height and weight ov the year

TABLE II—DIFFERENTIAL INCREASES IN HEIGHT AND WEIGH OF MYOPES IN A YEAR

Myopia	Stationary	Active	
		–1 0 D or less	> –1 0
No of myopes	12	23	8
Mean proportional increase in weight	0 102	0 104	0·135
Mean proportional increase in height	0 037	0 045	0·016

TABLE III—MEAN WEIGHT INCREMENTS CORRELATED WI ACTUAL YEARLY DIOPTRIC INCREASE

Actual dioptric increase per annum	Actual mean increment of weight (lb) per annum
0 0	9 9
0 25	7 5
0 75	8 0
1 0	7 2
1 25	8·0
1 5	12 0
2 0	16·0

The children with more active myopia increased weight a third as fast again as those with station myopia, and in height about a quarter as fast ag This is rather less than the greatest difference fou previously between myopes and others

The differences in physical growth are expressed more detail in figs 1–3, where the proportional incre in myopia is used instead of the actual increase

Curves B in figs 4 and 5 show that it is quite possi for a child to become more myopic even if his rates increase in height and weight are less than those of stationary myope of comparable initial weight or stat

Discussion

The number of patients is too small to permit statis analysis, but the results are in line with my previ observation that a high level of myopia at a given was associated with a high weight height ratio In previous work there was also an indication that myo increased during periods of rapid growth, and the pre results show more precisely that the faster myopia p gresses the faster the child grows This can be dem strated in a period as short as six months (table Individual exceptions, however, are common (figs and 5)

If the actual increase in weight is used, the pict becomes much less clear In fact the actual wei increment of active myopes is less than that of station myopes up to increases of –1 25 D Even so, the inc

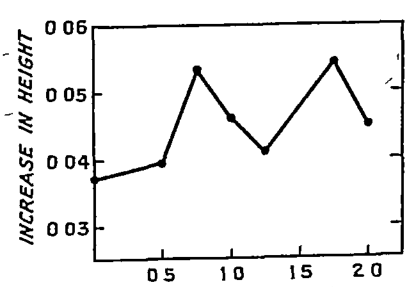


Fig 1—Average proportional increase in height related to average proportional increase in myopia in a year

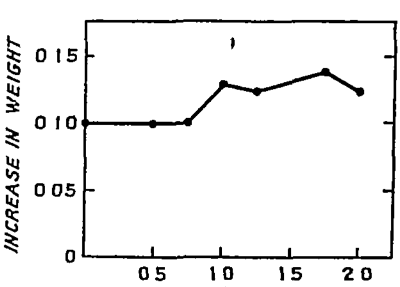


Fig 2—Average proportional increase in weight related to average proportional increase in myopia in a year

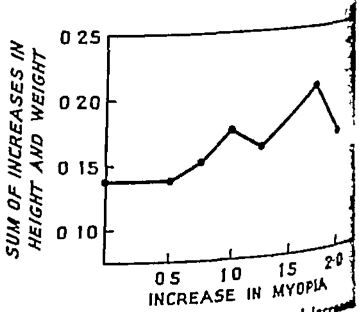


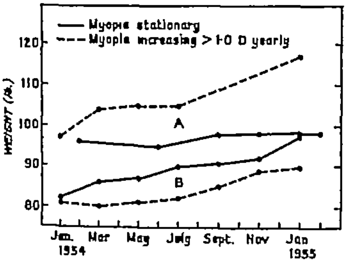
Fig 3—Sum of average proportional incre in height and in weight related to aver proportional increase in myopia in a year

nent is highest among the myopes whose refraction has hanged the most (table III)

There is therefore no simple rule whereby an increase f myopia in a child can be predicted from an increase n growth rate unless the initial height and weight are aken into account, and even then there will be xceptions.

The figures show that the mean rates of proportional ncrease in height and weight are usually higher in ctive myopes than in stationary myopes and that the lifferences in rates of growth get bigger as the myopia rogresses

Most of these observations were made in terms of eight because it is easier to measure than height Since e children are healthy their weight increase as a up is probably a fairly accurate indicator of their of growth Exceptionally however height may ease while weight remains relatively stationary and versa Fig 3 shows the curve obtained by ing the proportional changes in height and those in ght



4—Individual actual increases in weight of two pairs of myopes —one stationary the other progressive (> –1 0 D in a year)—of comparable initial weight. Pair A illustrate the difference in growth-rate ually seen while pair B represent the exceptions.

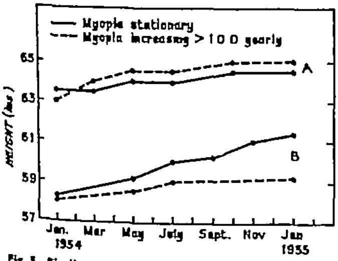


Fig. 3—Similar curves for actual increases in height.

either height increase nor weight increase is more ely associated than the other The sum of the two es a closer measure of the chances of an increase in opia than either separately

Summary

he differential growth rates of active and stationary opes were studied for a year

he progress of myopia in children is closely related he rate of their growth

s expected it was found that in general the more ive the myopia the greater were the growth changes t there were exceptions

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DO TRANSPLACENTAL HORMONES CAUSE ECLAMPSIA?

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ECLAMPSIA although described by Hippocrates 2400 years ago was reported by the Ministry of Health (1950) as being Now much the most frequent and the most baffling cause of maternal death.

Hamlin (1952) says that the earliest sign in pre eclampsia is an excessive gain of weight between the 20th and 30th weeks of pregnancy, and at his hospital in Sydney eclampsia is seemingly being eradicated by preventing excessive gains with a diet that is low in carbohydrates but high in proteins and vitamins

Hamlin says that the second important sign appearing in pre-eclampsia usually about the 31st or 32nd week, is swelling of the fingers severe enough to cause patients to remove their rings He has called this œdema of the fingers prehypertensive pre-eclampsia The fact that he did not refer to œdema of the feet is interesting because it suggests that pedal œdema is not a constant finding in eclampsia

Observations on Œdema

RELATION OF ŒDEMA TO PARITY

With only limited obstetric material available in general practice I obtained information about œdema in pregnancy at first by questioning my patients some of whom had been confined outside the practice in Reading or in other parts of the country In 1000 patients who between them had had 2312 confinements œdema of the feet unaccompanied by œdema of the fingers was reported by 13 9% of the primiparæ and 14 5% of the multiparæ

Œdema of the fingers was commoner in the primiparæ, being found in 13 4% of 1000 first pregnancies and only 8 8% of 1312 subsequent pregnancies In this predilection for primigravidæ particularly the younger primigravida œdema of the fingers resembles eclampsia and differs from pedal œdema, which affected primiparæ and multiparæ nearly equally

RELATION OF ŒDEMA TO SEX OF FŒTUS

Of 506 male bearing primiparæ 18·4% reported œdema of the fingers, compared with 8 3% of the 494 primiparæ who bore girls Of multiparæ 8 8% of the 647 who bore boys and 8 0% of the 665 who bore girls had œdema of the fingers

When there was only pedal œdema neither primiparæ nor multiparæ showed a significant difference between the numbers of male and female offspring but 98 9% of the mothers who had swollen fingers reported also swelling of the feet

Evidence based on retrospective interrogation is open to numerous criticisms yet the fact that the œdema reported had been sufficient to make a lasting impression on the mother's memory suggested that the swelling had been considerable A prima facie case for further investigation seemed therefore to have been established

CLINICAL CORROBORATION

At every subsequent examination I asked the patients about œdema in case œdema should be absent at the time of examination but present at other times On the record card of each patient the absence or presence of œdema was noted and if present its situations in hands, feet or both Any unusual tightness of the ring was recorded as œdema of the fingers, irrespective of whether it became necessary to remove the ring Many minor degrees of swelling were thus included and, as a result it became clear that œdema was very common in the second half of pregnancy

Of the 502 patients examined 174 were primiparæ and 328 multiparæ The primiparæ bore 93 boys and 81 girls, and the multiparæ bore 159 boys and 169 girls

Situation of Œdema

There was œdema in either hands or feet in exactly half (50 0%) the 502 patients 21 3% had œdema of the feet but not of the fingers, 23 3% had œdema of the feet and the fingers; and 5 4% had œdema of the fingers but not of the feet When the œdema was present in both hands and feet it usually appeared from one to four weeks earlier in the feet than in the fingers

Œdema of feet—When there was no accompanying œdema of the fingers, pedal œdema was rather commoner in multiparæ than primiparæ and in mothers (both primiparæ and multiparæ) who bore boys than in mothers who bore girls

18 of 93 (19 4 %) of primiparæ who bore boys
14 of 81 (17 3 %) ,, ,, girls
41 of 159 (25 8 %) of multiparæ ,, boys
36 of 169 (21 3 %) ,, ,, girls

Œdema of fingers—Œdema of the fingers, with or without pedal œdema, was found in 43 7% of the primiparæ but only 20 7% of the multiparæ Its incidence also differed strikingly in primiparæ according to the sex of the baby, being 52 7% in those who bore boys and 33 3% in those who bore girls In multiparæ the incidence of œdema of the fingers did not vary appreciably with the sex of the baby

49 of 93 (52 7 %) of primiparæ who bore boys
27 of 81 (33 3 %) ,, ,, girls
34 of 159 (21 4 %) of multiparæ ,, boys
34 of 169 (20 1 %) ,, girls

These figures confirm the findings reached earlier by questioning the mothers, but also they showed even more emphatically a connection between the sex of the baby and the presence of œdema in the mother, the relationship being most apparent when the mother was a primipara and the œdema affected the fingers

Time of Onset of Sex-linked Œdema of Fingers

The earliest development of œdema of the fingers was at the 24th week, but in most cases it appeared between the 28th and 38th weeks, the peak period being shortly after the 30th week, confirming Hamlin's (1952) finding

4 % between the 24th and 27th weeks
18 % ,, ,, 28th ,, 30th ,,
42 % ,, ,, 31st ,, 34th ,,
34 % ,, ,, 35th ,, 38th
2 % ,, ,, 39th ,, 40th ,,

Relation of Sex-linked Œdema of Fingers to Preceding Maternal Weight

The œdema of the fingers usually appears to be related to the amount of weight gained between the 20th and 30th weeks Large gains—e g, 18 lb or more—during those ten weeks are regularly followed first by œdema of the fingers and later by considerable hypertension and albuminuria Moderate gains of 10–12 lb are often followed by œdema of the fingers, but the subsequent hypertension and albuminuria are generally slight The smallest gains during pregnancy are seen in rapidly reproducing multiparæ, and these are never accompanied by œdema of the fingers

Relation of Sex-linked Œdema of Fingers to Subsequent Maternal Weight

Women who do not get œdema, hypertension, or albuminuria usually gain weight more slowly in the last two months of pregnancy than in the preceding months, their rate of gain is sometimes cut by half This reduction takes place in those weeks during which œdema is apt to appear, and it is a useful and reliable sign both that there will be little or no subsequent hypertension or albuminuria and that premature induction of labour will b unnecessary Its absence indicates probable troub ahead

Some of the mothers who have œdema of the finger mild hypertension, and a little albuminuria also sho slowing of the weight increase, but it is less well marke In those mothers who develop severe hypertension an gross albuminuria it is usual to find acceleration rath than slowing, the weight continuing to increase b 2 or 3 lb each week

Eclampsia and Sex of Fœtus

Both œdema of the fingers and eclampsia are precede by heavy or excessive gains of weight Eclampsia preceded by œdema of the fingers, and thus (as has bee shown) may be related to the sex of the fœtus, its inc dence being highest in male bearing primiparæ. eclampsia itself related to the sex of the fœtus?

Unexpectedly this question could not be answered b reference to maternity hospital reports, because they d not record the sex of babies born to eclamptic mother Seemingly this information has been considered unim portant or irrelevant It therefore became necessary arrange special searches through the case records various hospitals Figures were obtained, either for fiv year or ten-year periods, from different areas in Englan Scotland, and Ireland In Reading the records were known cases of eclampsia among our own patients cases at Battle Hospital (1948–53) From Oxford at th Radcliffe Infirmary (1942–52), from London at Que Charlotte's Hospital (1941–51), University College Ho pital (1941–51), and Edgware Hospital (1942–52), fro Sheffield at the Jessop Hospital (1947–51), from Edi burgh at the Simpson Memorial Pavilion (1948–52) from Dublin at the Rotunda (1942–52)

The number of cases of eclampsia in which the sex the fœtus was ascertained was 402, 294 of the moth were primiparæ who had borne 315 babies, and multiparæ who had borne 118 babies There were triplets and the incidence of twins was high (*see* table

TABLE I—402 CASES OF ECLAMPSIA

—	Primigravidæ			Multiparæ		
	No of mothers	No of babies		No of mothers	No of bab	
		Male	Female		Male	Fe
General practice	9	7	4	2		[illegible]
Battle Hospital	19	13	6	6	5	[illegible]
Radcliffe Infirmary	18	9	9	14	8	[illegible]
Queen Charlotte's Hospital	43	29	18	4	1	[illegible]
University College Hospital	18	16	3	2	1	[illegible]
Edgware Hospital	31	11	21	9	5	[illegible]
Jessop (Sheffield)	40	23	22	17	10	[illegible]
Simpson (Edinburgh)	62	39	24	21	13	[illegible]
Rotunda (Dublin)	54	32	30	33	10	[illegible]
Total	294	178	137	108	53	[illegible]

In the population it is usual for 105 boys to be b for every 100 girls (De Lee and Greenhill 1943)— 5% more boys than girls In the present series, of babies born to eclamptic mothers 231 were boys and girls—i e, 14 4% more boys—and of 315 babies born primiparous eclamptics 178 were boys and 137 girls i e, 29 9% more boys On the other hand, of 118 babie born to multiparous eclamptics 53 were boys and girls—22 6% more girls If, however, the figures for Rotunda multiparæ are excluded, the sexes are ne equal—43 boys and 42 girls Investigation showed th the Rotunda multiparæ were of unusually high parit 15 were for the 4th–6th time and 10 for the 7th-1 time, they were clearly much older mothers than th more male producing primiparæ

Effect of Maternal Age

Apart altogether from the fact that the relatively old Dublin eclamptics bore more girls than boys, two other observations attracted my attention to the age of the mothers (1) the primiparæ with œdema of the fingers had borne more boys than girls much more noticeably when the mothers were in the early twenties than when they were over thirty and (2) Hamlin's (1952) statement that grave rapidly progressive pre-eclampsia occurs almost exclusively in primiparæ aged 23 years or less.

In 12 cases the age of the eclamptic mother was unknown but the remaining 421 babies were divided into four groups according to whether their mothers were primiparæ or multiparæ and under or over thirty

	30 years or less Boys	*30 years or less* Girls	*Over 30 years* Boys	*Over 30 years* Girls
Primiparæ	150	98	21	38
Multiparæ	20	10	31	44

Of 248 babies (150 boys, 98 girls) born to primiparous eclamptics aged less than 30 there were 53 1% more boys than girls Of 30 babies (20 boys 10 girls) born to multiparous eclamptics aged less than thirty there were 0 0% more boys than girls

By way of contrast of 59 babies (21 boys, 38 girls) born to primiparæ aged more than thirty there were 80 9% more girls than boys, and of 75 babies (31 boys 44 girls) born to multiparæ aged more than thirty there were 41 9% more girls than boys The primiparous and multiparous eclamptics aged more than thirty therefore bore 134 babies, of whom there were 57 7% more girls than boys.

Discussion

The normal sex ratio of babies is 105 boys to 100 girls = 51 2% male. This male majority increases with pre maturity (Greulich 1921) and is possibly due like prematurity to toxæmia.

Of the babies borne by the eclamptic mothers Prof radford Hill decided that two groups were statistically gnificant the 248 babies of primiparæ under 30 0 5% male = +0 3) and the 59 babies of primiparæ over 0 (35 6% male = −15 6) These provide strong evidence at both maternal age and the sex of the fœtus are ncerned in causing eclampsia. This conclusion is upported by the other groups whose numbers however e too few to be significant

How then can one explain why eclampsia can arise th a sexless hydatidiform mole? The following planation is offered.

ransplacental Hormones

Eclampsia is the result of resistance by a mother to the try of transplacental hormones produced by a fœtus mole Antibody formation in rhesus negative hers shows that mothers may react to fœtal products as entry of fœtal blood into the mother is abnormal y of fœtal hormones is not The incidence of eclampsia ases pari passu with the strength of invading mones hence eclampsia is very rare when the ntration of fœtal (but not vesicular) hormones is —i.e., in the first half of pregnancy—but it becomes ressively commoner as the growing baby produces hormones and it is commoner still with the double unt of hormones produced by twins

he relation between the sex of the fœtus and eclampsia ests that the mother is intolerant of fœtal sex mones The intolerance appears greatest among ng primiparæ, towards the male hormone since they r more boys than girls but the opposite findings in r eclamptics who bore more girls than boys, suggest t the initially high intolerance to the male hormone lines with advancing age while intolerance to the ale hormone is stationary

Rapidly progressive pre-eclampsia according to Hamlin 52) affects only young primiparæ—i.e. those likely to bear more boys than girls—and I have not yet heard of fulminating eclampsia accompanying the birth of a girl. Moreover those primiparæ who at Edgware Hospital bore more girls than boys were unusually old—over half (16 of 31) were 29 or older and 9 who were over 34 bore 7 girls but only 2 boys

TABLE II—AVERAGE MONTHLY WEIGHT INCREASE IN 1000 PREGNANT WOMEN
(Cummings 1937)

Month	1	2	3	4	5	6	7	8	9
Gain (lb)	—	1	1	1	4	5	5	3	3

Stimulation by Invading Hormones

A sustained acceleration of weight increase beginning in the 4th month, occurs normally in pregnancy (table II) but is more pronounced in women who overeat and develop toxæmia or eclampsia I believe that invading fœtal hormones are responsible for the acceleration particularly fœtal insulin, whose aid is thought to explain the reduced insulin requirement of diabetic mothers during the second half of pregnancy (Brown 1944) They stimulate the mother to store instead of burn up surplus calories. To prevent (in those who overe large gains of weight, Nature, after a period of toleranc resists the entry of further hormones

Resistance to Hormones

By subtracting the weight gained by the averag fœtus from the weight increase of the average mothe (table II) one finds that the mother gains 8 lb (10 −2) in the 6th and 7th months, and 2 lb (6 −4) in the 8th an 9th months her gain is reduced by three-quarters, thu neutralising the fourfold acceleration observed in the 4t month This slowing I believe, denotes resistance to th cause of the acceleration—i.e to the hormones. (Resi tance to another hormone from an external source illustrated by the failure, after a few months of succe of administered thyroid gland to cause loss of weigh When there is either œdema or hydramnios, the slowi of weight increase is obscured by retention of fluid b resistance to the hormones is still acquired

Parity and Resistance to Invading Hormones

Some resistance to the hormones which is acquire the first pregnancy, is retained usually increa maternal tolerance to their presence and action making eclampsia less likely in subsequent pregnanc But sometimes intolerance persists and recurr toxæmia results

Effects of Maternal Resistance to Entry of Hormones

The maternal reaction resisting the entry of hormone damages the syncytium and villi sometimes causing hæmorrhage or infarcts It impedes nutrition of the fœtus and often kills it and it may interfere with the production and absorption of liquor amnii causing hydramnios or interfere with the production of placental hormones, leading to a fall in blood œstrin and urinary pregnanediol (Smith and Smith 1935) Owing to this, possibly premature labour is common

When damaged the syncytium produces toxin which causes œdema toxæmia and eclampsia if pumped into the maternal circulation by fœtal heart beats or by uterine contractions The ejection of toxin by contrac tions explains both the frequent appearance of albumin uria during labour and the reappearance during labou of eclampsia some days after improvement has followe death of the fœtus

For the first day or two of the puerperium until th organs have had time to recover from the last intensifi (through contractions) exposure to toxin eclampsia remains a diminishing danger

The mother's tolerance to the invading hormones varies with her diet The more she eats the more rapidly does her weight increase, the greater is her need to resist the entry of the hormones, the stronger is her reaction, the greater is the disturbance in the placenta, the greater are the danger to the baby and the damage to the syncytium, and the greater are the resulting production of toxin and the likelihood of toxæmia and eclampsia Overeating encourages eclampsia, and the supposed effects of climate and season are probably due to diet, overeating is more common in cold climates and cold seasons, as also is eclampsia Moreover, there is a higher incidence in certain carbohydrate consuming communities—e g , Dublin with popular potatoes—in whom the diet encourages heavy gains of weight

Maternal Resistance to Syncytial Toxin

The danger of eclampsia and recurrent toxæmia is increased by factors reducing resistance to the toxin Such factors are defects of diet (inadequate vitamins, protein, and calcium), excessive sodium, inherited tendencies to obesity and fits (Rosenbaum and Maltby 1943), and certain diseases—e g , beriberi, essential hypertension, and chronic nephritis *A feature common* [illegible]se factors is their tendency to encourage signs of [illegible]ping eclampsia—excessive weight, œdema, hyper[illegible]n, albuminuria, and fits

[illegible]stions for Confirmatory Tests

[illegible]he entry of fœtal hormones is resisted, there should [illegible]h toxæmia, less of the hormones in the mother Thus [illegible]e or no fœtal insulin would, during toxæmia, be [illegible]ering to assist a diabetic mother, and, although she would need less insulin in mid pregnancy (to avoid a heavy gain in weight) and until term in the absence of toxæmia, she would require more insulin, if she became toxæmic, to compensate for the lack of fœtal insulin and to prevent ketosis With the double danger of toxæmia and ketosis, one would expect (and one finds) a high fœtal mortality with diabetes

Blood sugar estimations may confirm these suggestions concerning the thorny problems of diabetes and toxæmia

It is claimed that a certain substance, appearing in the saliva, indicates a male fœtus (Rapp and Richardson [illegible]2) If this substance is related to the sex hormones [illegible] the fœtus, one can explain both the success and the [illegible]ure of those who have tried using it to predetermine [illegible] The accuracy claimed by Rapp and Richardson [illegible]52) has not been reported by other workers, but the [illegible]ner were looking for it in the 6th and 7th months [illegible] before the onset of toxæmia) whereas others may well [illegible] searched either later or among hospital inpatients and outpatients (i e , when toxæmia is common) If the amount of fœtal hormones in the maternal blood is reduced, the related androgenic substance would probably disappear from the saliva Tests on the saliva, before and after the onset of toxæmia, may clarify this matter, and may confirm the theory of eclampsia that I put forward

Conclusion

Do transplacental hormones cause eclampsia ? Apparently, yes The mother at first responds to their stimulation but later resists their entry, her resistance varying with the carbohydrate content of her diet The placenta, damaged by her resistance, produces toxin which, when pumped into the mother by the fœtal heart-beats or by the uterine contractions, gives rise to toxæmia and eclampsia Dietetic deficiencies and certain diseases render the mother more vulnerable to the toxin Fœtal, maternal, placental, and dietetic factors are concerned in producing eclampsia, but fundamentally transplacental hormones from a boy, a girl, twins, triplets, or a hydatidiform mole cause eclampsia

Summary

The verbal evidence of 1000 mothers suggested tha œdema of the fingers was more common in primipara than in multiparæ, and in primiparæ who had borne boy than in those who had borne girls

This apparent connection between œdema of th fingers and the sex of the fœtus was confirmed from th antenatal records of 502 patients The incidence o œdema of the fingers in primigravidæ was 43 7% and i multiparæ 20 7% , but, whereas it was 52 7% in primiparæ who bore boys, it was only 33 3% in primiparæ wh bore girls In multiparæ who bore boys it was 21 4%, an in multiparæ who bore girls 20 1%

Œdema of the fingers is usually preceded by large gain of weight and appears shortly after pedal œdema, but it i sometimes found without the latter

The rate of weight increase is slower in the last tw months than in mid-pregnancy, provided there is n œdema, but with œdema rapid increase continues ti term Slowed weight increase in the eighth month mean no subsequent toxæmia

There was statistically significant evidence of a relationship between the sex of the fœtus, maternal age, an eclampsia in two groups among 433 babies born to 40 mothers with eclampsia primiparæ under thirty bor 248 babies of whom 60 5% were males (9 3% more tha the expected percentage) and primiparæ over thirty bor 59 babies of whom 35 6% were males (15 6% less tha the expected percentage) Other groups also showed variations of fœtal sex ratio, but their numbers are too fe for the results to be significant

It is suggested that hormones from the fœtus produc variations in the maternal weight, and that the occurrenc of eclampsia is controlled by (1) maternal resistance t the action of the invading hormones , (2) her resistanc to the entry of the hormones (from the uterus) , an (3) her resistance to the toxin produced by the secon resistance The first resistance towards the male sex hormone is acquired by parity, weakened by an excessiv carbohydrate diet, and increased by advancing age Th second resistance depends on the adequacy or inadequacy of the first, and the third is weakened by dieteti defects and certain diseases

The three resistances are interdependent but all aris in response to the invasion by the basic cause of eclamps —i e , transplacental hormones from a fœtus or hydatidiform mole

Two investigations are suggested for confirming th correctness of this theory

I wish to thank Prof J Chassar Moir for criticism, advic and the records from the Radcliffe Infirmary , Mr F E Wheeler, Miss A Johns, and Miss M M Harvey for the Bat Hospital records , Prof W C W Nixon and Dr D Pe Cocks for those of University College Hospital , Mr G Gibberd for those of Queen Charlotte's Hospital , Mr E Rosser and Miss H Ridge for those of Edgware Gene Hospital , Prof C Scott Russell for those from Sheffield Dr Clifford Kennedy and Dr T L Adamson for those fro Edinburgh , Dr E W L Thompson and Miss M E Aherne for those from the Rotunda , Dr H S Le Marqu and Dr F O MacCallum for advice and help , and Prof Bradford Hill for advice about the statistical significance the findings

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MONILIAL (CANDIDA) ENDOCARDITIS
FOLLOWING TREATMENT WITH ANTIBIOTICS

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ENDOCARDITIS due to fungi is rare. It is described by merican authors, including Zimmerman (1950) and ieger et al. (1945–46) but does not seem to have been ecorded in this country

Case-report

A married man, a park keeper aged 43 was admitted to New End Hospital Hampstead on Aug 21 1954, with a perforated duodenal ulcer This was repaired the same day and convalescence was uneventful. A history extending over fourteen years with two episodes of perforation made further surgical treatment advisable At operation by Mr D B Caro on Sept. 21 1954 a chronic ulcer was found in the anterior wall of the *first part of the duodenum adherent to the liver* and an antecolic Polya partial gastrectomy was performed.

The postoperative course was stormy, including transient jaundice, paralytic ileus with severe disturbance of biochemical balance and bronchopneumonia. Treatment included intravenous fluids and electrolytes, penicillin hlortetracycline (aureomycin) and streptomycin, with itamin supplements When discharged on Dec 22 he was aining weight eating well and having no pain Between ugust and December he had had large doses of antibiotics rystalline penicillin, 30 mega units streptomycin 27 g and lortetracycline 6 g)

He was again in hospital in March for investigation of dominal pain. This was controlled by decreasing the size, d increasing the frequency of his meals. He was afebrile uring this period

On April 19 he was readmitted because of the sudden onset severe pains and numbness in the left leg For some weeks had had symptoms of intermittent claudication Tempera re 100°F pulse was regular and rate 110 per min. No terial pulses were palpable in the left groin and in the ripheral arteries of the left limb Blood pressure 125/85 m. Hg. The heart sounds were closed and there was a soft stolic murmur at the apex The urine contained numerous d blood-cells.

He was treated with anticoagulants His symptoms proved and weak pulses returned to the limb but on May 6 showed signs of occlusion of the right external iliac artery d on May 15 he developed a left hemiplegia. He died the xt day

cropsy

A thin, prematurely aged man with multiple petechiæ over ce and trunk *Heart* weight 305 g Pericardium normal derate hypertrophy of the myocardium of the left auricle and ventricle *Stenosis of mitral valve with fibrous thickening* of the cusps, and shortening and fibrosis of the chordæ tendineæ There was a mass of polypoid vegetations 1 5 × 2 5 × 1 cm on the auricular aspect of the anterior cusp of the mitral valve. The other valves were normal. *Arteries* severe atheroma of the aorta and its main branches with many calcified plaques Fibrinous masses looking like the vegetation on the mitral valve occluded both external iliac arteries. *Lungs* purulent bronchitis and bronchopneumonia at the bases. *Brain* recent softening 2 cm in diameter in the right parieto-occipital region Fatty *liver* Chronic septic *spleen* Flea bitten *kidneys*

Histology

Mitral valve[1]—Subacute fibrino purulent vegetation containing profuse non branching septate spore-producing fungus on a fibrotic (chronic rheumatic) valve cusp (figs. 1 and 2) *Arteries* ante-mortem (organising) embolic thrombi in left and right external iliac arteries both containing similar fungus (fig 3) *Brain* recent hæmorrhagic purulent softening *Kidneys* focal embolic inflammation.

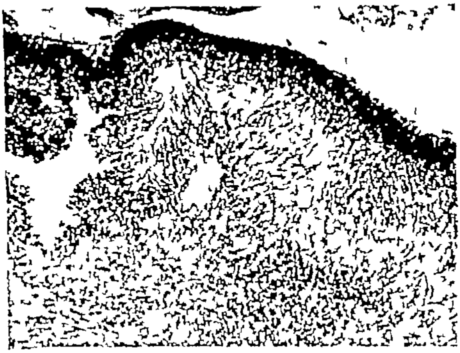


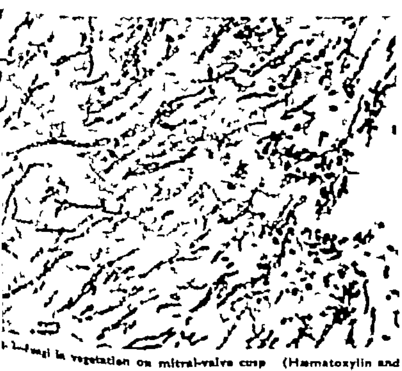
Fig 1—Fungi in vegetation on mitral-valve cusp. (Hæmatoxylin and eosin. × 46.)

Comment

Identification of the fungus—As the fungus was not cultured its identification can only be presumptive

Heavy inocula of the material should be made with Sabouraud's dextrose agar Littman's medium (Littman 1948) or penicillin-streptomycin blood-agar if bacterial contamination is likely (Riddell 1951)

At least five different genera of fungi may at times be confused with one another These are candida (monilia)



Fungi in vegetation on mitral-valve cusp (Hæmatoxylin and eosin. × 285.)

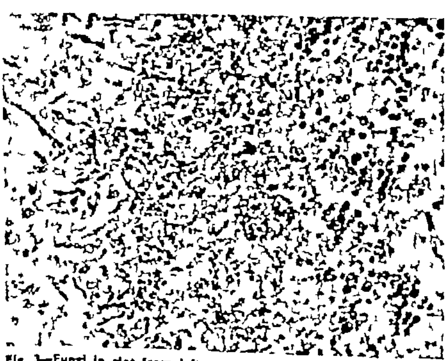


Fig 3—Fungi in clot from left external iliac artery (Hæmatoxylin and eosin. × 40.)

aspergillus, mucor, cryptococcus, (torula), and histoplasma (Zimmerman 1950) *Cryptococcus neoformans* and *Histoplasma capsulatum* may be excluded if mycelial structures are seen (Baker 1945) Mucor may be readily distinguished from candida and aspergillus by its characteristic mycelium (Gregory et al 1943), lateral branching is prominent, and the hyphæ, which are non septate, show considerable irregularity of width due to areas of swelling and constriction It is more difficult to differentiate candida from aspergillus, for both have septate hyphæ, but the hyphæ of aspergillus are larger than those of candida and show more lateral branching Spore forms are usually not seen in tissue aspergillosis (Zimmerman 1950)

Chemotherapy —There is much laboratory and clinical evidence suggesting that chemotherapy encourages the spread of candida and other mycotic infections in the human body Foley and Winter (1949) found that a single injection of penicillin on the chorio-allantoic membrane of ten-day-old chick-embryos increased the mortality-rate resulting from *Candida albicans* infection, and several authors (Moore 1951, Pappenfort and Schnall 1951, Huppert et al 1953) have shown that chlortetracycline exerts a direct stimulation to the growth of *C albicans* in Sabouraud's broth and agar

C albicans is present in the gastro intestinal tract of many normal people Sharp (1954) reported the frequency of this organism in throat swabs, sputum, and rectal swabs before and after treatment with oxytetracycline (terramycin) After a five day course (mean total dose 14 2 g), the proportion of specimens with candida in throat swabs rose from 16 to 42%, in the sputum from 32 to 61%, and in rectal swabs from nil to 59%

Monilial vaginitis has been described following chlortetracycline therapy (Harris 1950), oral and intestinal lesions following penicillin, chlortetracycline, and chloramphenicol (Woods et al 1951), and following sulphadiazine (Beemer et al. 1954) Reynell et al (1953) reported general peritonitis caused by *C albicans* following perforation of chronic duodenal ulcer in a patient receiving chlortetracycline and oxytetracycline, and cases of monilia pneumonia (Ormerod and Friedmann 1951, Wolff 1952) and moniliasis of the urinary tract (Taylor and Rundle 1952) have been reported in patients treated with chlortetracycline or chloramphenicol Zimmerman (1950) quotes Dr S Farber's experience at the Children's Hospital, Boston, where disseminated moniliasis occurred in seven children who were being treated with various chemotherapeutic drugs (mostly penicillin and chlortetracycline) for other diseases *No similar cases were seen prior to 1946*

On the other hand, Kligman (1952) reported no adverse influence of antibiotics on the course of experimental moniliasis in mice, and he believes that *C albicans* cannot cause disease except in the presence of some debilitating illness McGovern et al (1953) investigated the incidence of *C albicans* in the gastro intestinal tracts of normal children before and after treatment with chlortetracycline and chloramphenicol They concluded that the danger of moniliasis arising from their use is small, provided relatively short courses are given Our patient and most of the patients mentioned above received protracted courses of antibiotics

Summary

A case of infective endocarditis in a man aged 43 due to an organism morphologically indistinguishable from *Candida albicans* is reported There is strong evidence that protracted courses of chemotherapy may encourage the production of systemic moniliasis, and unless these causes *can* be curtailed, there is a danger that the incidence of this serious disease may increase

I wish to thank Dr A B Bratton and Dr S Robinson for advice and encouragement, Mr J E Piercy and Mr M J Lange for access to the case papers, and Mr G W Moore for the photomicrographs

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Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

THE association's autumn meeting was held in Liv pool on Oct 6–8, under the presidency of Prof BRY McFARLAND On Oct 8 the new president, Mr PHI WILES, took the chair

Was Lucas-Championnière Right?

Prof GEORGE PERKINS (London) proposed the motion t Championnière was right Lucas Championnière, he had written a book on fractures, the basic theme of wh might be summarised as "to hell with splints." Wh Professor Perkins could not support this in *toto* Lu Championnière was certainly *more right than wrong* Spl age caused stiffness and this did *not* always disappear w time Stiffness resulted from (1) inextensibility of musc (2) incongruity of joint surfaces, and (3) organisation exudate If a muscle was held in the shortened positio lost its ability to extend and muscle tone was inhibited T only way to prevent this loss of extensibility was to stre it occasionally to the full, but splintage made this imposs With regard to the joint surface, it was impossible to prod perfect reduction of most fractures into joints, but e movement moulded the joint surfaces and reproduced c gruity At the same time avoidance of splintage preven the muscles binding together from the organisation hæmatoma and exudate

Splintage was of two types, the *pure*, which was prolon uninterrupted, rigid, and extensive, and the *simple*, wh was none of these things and was simply used to main reduction where displacement would otherwise recur T "splinters," Professor Perkins said, held the tenet that bec a few need it, all need it Only three fractures needed p splinting—the neck of the femur, the carpal scaphoid, and th mid shaft of the radius, the latter because no other meth would control rotation strain Hinging movements rotation were the causes of fibrous union, because th stretched the early callus, and the philosophy of the " splinters" lay in their faith that with few exceptions mo alone would prevent this stretching There was no need set a fracture if there was no displacement, if the displa ment did not matter, or if reduction was impossible Finally he proposed that the non splinters' creed should be (1 don t burden the patient with purposeless splints, (2) "simple" splint does less harm than a "pure" splint, only a few fractures need "pure" splintage, and (4) red the use of "simple" splintage to the minimum

Sir REGINALD WATSON-JONES (London), opposing th motion, said that in Lucas Championnière's era (1843-191 splintage was very complete and extensive, and he had n known that it was possible to hold bone still and yet cont to use the overlying muscles He had said that perfect red n was neither possible nor desirable and had advocated ssage and mobilisation of *all* fractures Sir Reginald could t accept Professor Perkins's differentiation of splintage; one fracture needed immobilisation they all needed He believed that if a fracture was to unite with certainty must be immobilised completely and all fractures would ite if they were immobilised for long enough Non union sulted from splintage that was physiologically not complete ough or not maintained for long enough We should not ar the *temporary* resultant stiffness; if functional activity as maintained there was rapid recovery of a full range of ovement The immobilised knee or shoulder always recovered s movements if reliance was placed on active exercises alone Many new hip operations were based on the fundamental ut in Sir Reginald's view unfounded fear of permanent nee stiffness if this joint were immobilised but in 200 cases f hip arthrodesis with the limb in plaster for many months, ss than 8% had stiff knees. All the fears of Lucas Championnière would have been put at rest had he had our nowledge of the need for maintaining muscle activity in a plinted limb

Mr **Norman Roberts** (Liverpool) seconding the motion maintained that what Lucas-Championnière had really said as that the immobilisation of fractures as practised in his ay gave pride of place to union and disregarded function he resultant withered limbs were worse than the results of o treatment at all. Böhler and Watson-Jones had recognised he dangers and assured us that with their methods of treat ent the danger was over the trouble was that we had elieved them! Mr Roberts believed that immobilisation as losing ground year by year There were only two indica ons for splintage to make a fracture unite which would not herwise do so and to keep a fracture in good position. He oke of the perils of internal splintage and said that nothing ut good could follow the abandonment of unnecessary lintage especially in joint fractures. According to Mr oberts, who demonstrated his possession of the book or least a book by Lucas-Championnière the latter had said that his method was applicable to *all* fractures—certainly immobilised some fractures of the tibia and ula.

Mr **Robert Roaf** (Oswestry) seconding the opposition vised the meeting to leave the realms of fantasy and get back reality He then played a long recording of quotations from as Championnière which the president translated as ssage is a good thing Mr Roaf maintained that Roberts was in reality an exponent of perfect reduction fixation and he was therefore quite unable to believe at he had just said Lucas-Championnière was an arrogant ter but no true scientist, a believer in all or nothing urgical Karl Marx Innovations must have a scientific s; even now we had no fixed concept as to what consti ed union and when, but Lucas Championnière maintained t massage and passive movement reduced the fracture d promoted union—a statement for which he produced no dence whatever He looked backwards to the mysticism the Middle Ages and he lacked the true artist's "feel his material. 'In science dogmatism is always wrong e principle of reducing a fracture and holding it reduced mained a sound one John Hunter had demonstrated the se connection between form and function but Lucas ampionnière believed in neither To vote for Lucas ampionnière he concluded, was to vote against Hunter

In the discussion, Mr **Philip Wiles** (London) said that the flict was as old as surgery itself the bone needed rest, soft parts needed mobilisation. The advocates of the flicting beliefs might be compared to fascists who regi ented everything and anarchists who preferred a free for In reality right lay between the two He remarked on the efits to be expected from the use of hyalase in reducing binding in soft parts, and said he would prefer to vote for entre party which made use of the best in both creeds.

Mr **G Fisk** (London) supported the motion. The physio ical immobilisation of Watson-Jones was in reality physio ical mobility The contractile effect of the muscle tube e the earliest recovery of function and he had had only se of delayed union (due to muscle interposition) in 120 s of fractured femur treated by early movements.

Mr **John Charnley** (Manchester) thought that a middle se as advocated by Mr Wiles, was dangerous The tion was either right or wrong he felt that massage was e real basis of Lucas-Championnière's theme There were three possible causes of failure to unite: (1) the callus never crossed the gap (2) the callus succeeded in crossing the gap but was too fragile broke down, and reverted to (1) and (3) the callus would cross the gap successfully if only it were immobile If a bone were plated only (1) could be relevant because immobility was far greater than could be achieved by any other method He had ventured a 'law of conservative treatment full mobility could be restored if all bones and joints in a limb were fixed no longer than the physiological maximum of eight weeks. If union were delayed and longer fixation were required joint stiffness would follow But prolonged splintage alone was not the cause there was some other factor

Mr **F G St C Strange** (Canterbury) said that in Nature immobilisation of a fracture was unknown—it was a wonder to him that an immobilised fracture united at all The principles of reduction maintenance of reduction and restoration of function were out of proportion We should take a lesson from Nature. He believed that all fractures would unite if *not* immobilised except those where there was interference with the local blood-supply Mr **H. Osmond Clarke** (London) remarked that in spite of this veterinary surgeons shoot race horses with broken legs.

Mr **W Sayle-Creer** (Manchester) replied that this was merely because it was uneconomic to treat the horse He found the debate confusing because the terms of reference were too loose Quoting the instance of the fractured os calcis, he said that no treatment was only modified treatment The failures in fractures were due to over treatment

Mr **M Alms** (Liverpool) discussed the importance of the patient's state of mind The hunger stimulus forced the injured animal into activity there was no such stimulus under the Welfare State 90% of children needed no treatment for their fractures they were still at the animal stage The madman with no sense of pain and the tough keen extrovert both did well He felt that both the opening speakers were right; they had sold themselves to their patients by virtue of their enthusiasm

Prof **Walter Mercer** (Edinburgh) called attention to a patient whose ankle and knee were immobilised for two years while an arthrodesis of the knee proceeded to fusion At the end of this period the ankle was completely stiff but within two months had regained normal mobility

Professor **Perkins** summing up remarked that the Pyrford hip arthrodesis was designed with the object of putting the hip at rest not of leaving the knee free Lucas Championnière should be accepted as no more than a great figure in medicine and a pioneer of physiotherapy

Sir **Reginald Watson-Jones** said that non union and mal-union *do* matter He agreed that immobilisation was bad for the soft tissues, but reiterated that he kept the soft parts moving

The motion that Lucas Championnière was right was defeated by 94 votes to 73

Recurrent Dislocation of the Shoulder

Mr **J W Dickson** and Mr **M B Devas** (London) had reviewed recurrent dislocation of the shoulder with special reference to the late results of Bankart's operation. Bankart had left no detailed follow up they had collected 50 cases done by Bankart himself or strictly according to his technique with special reference to the presence of the lesion he described the range of movement after operation and the recurrence rate. The initial trauma followed no set pattern, and they had found no association between the side of the dislocation and hand-dominance The classical lesion was present in 32 absent in 9 and indefinite in 9 50% had less than 10° loss of external rotation range 7 cases had more than 60 loss of external rotation, but in only 3 of these was it directly attributable to the Bankart operation itself Recurrence of the dislocation occurred in 2 cases, but in each instance was due to severe trauma; neither had a defect in the humeral head. They concluded that the operation was very effective with no significant resultant loss of movement They showed a film of a thirty year result in the 7th case on which Bankart had operated.

Mr **Osmond-Clarke** said that only two operations regularly enabled a man in the Services to return to A1—the Bankart and the Putti Platt He felt that a substantial majority had a defect in the humeral head and any operation that permitted this area to come into contact with the glenoid was liable to produce a cog action. In a series of over 100 cases he had

had only 2 recurrences, both readily explicable Loss of external rotation gave rise to no disability He advised the use of either operation, but the boring of the necessary holes in the glenoid margin in the Bankart operation was difficult

Displacement Osteotomy for Hip-Joint Disorders

Mr D **WAINWRIGHT** (Stoke on Trent) had reviewed 69 cases of displacement osteotomy in the treatment of disorders of the hip joint, 4 for old congenital dislocation, 4 for congenital coxa vara, 3 for slipped epiphysis, 7 for fractures of the femoral neck, 3 for old septic arthritis, 22 for tuberculous coxitis, and 26 for osteo arthritis In the fractures there was a fair chance of producing union if the operation was done early enough In the tuberculous cases 10 out of 11 with fibrous ankylosis proceeded to bony fusion Of 11 with active disease, 7 fused by bone In the osteo arthritic cases relief of pain was almost constant, and improvement in the joint itself might continue as long as fifteen years 5 of these, all very severe and stiff before operation, proceeded to bony ankylosis Even with inadequate displacement, results were often very good, and Mr Wainwright wondered why this was so and whether the displacement was really necessary He thought that the provision of a pelvic *point d'appui* was not vital, but that the operation worked by correcting deformity and correcting the lines of stress It was possible that the mere division of the bone produced some beneficial vascular change He paid tribute to T P McMurray and reminded the audience that in his hands the operation used to take five minutes and involved the use of a knife, an osteotome, a pair of forceps, and three short pieces of silk

Prof J **TRUETA** (Oxford) discussed the reasons for the apparent thickening of the joint cartilage which followed the operation. The changed mechanics might allow some regeneration Pauwels said it was the varus which helped, but McMurray had said it was the valgus In reality it was probably the freeing of the femoral head, so that one was making use of an unworn area of cartilage in the new region of stress He had noted that patients with the best results walked in slight flexion, and he thought that the results in the tuberculous cases confirmed that an increased blood supply was an important factor

Professor **MCFARLAND** said that if the operation was done under local anæsthesia it was apparent that division of the bone itself did cause pain

Mr K I **NISSEN** (London) thought that the answer lay in Trueta's work, whence it appeared that pain was related to hyperæmia and that it was the diminution of blood supply that was beneficial Eventually it might prove unnecessary to divide the bone completely, some minor local intervention might be equally successful

Volkmann's Contracture

Mr H J **SEDDON** (London) said that his personal experience of Volkmann's contracture was extensive only because cases had been sent to him from all over the country, in many of which ischæmia had apparently been inevitable In the forearm there was an ellipsoid zone of ischæmia, worst at its centre The deep forearm flexors were also involved, and the median nerve passed through the centre of the zone Flexor digitorum profundus and flexor pollicis longus were the most affected He divided cases into three grades those where the changes were reversible, those leading to some fibrosis, and those with severe fibrosis and necrosis The nerve lesion might also be recoverable if there had been no more than Wallerian degeneration distally, but usually there was a length of thin dirty yellow nerve through which axons could never pass He advised that after a delay of three months the complete infarct which acted as a foreign body and stimulated fibrosis, should be excised, thus converting the forearm into a condition comparable to that after a severe injury operation was *not* always required For repair, various tendon transplants were feasible, and nerve grafting or repair by nerve pedicle was usually required to bridge the large gap He thought it better to complete the tendon operations before undertaking repair of the nerve for fear that the former, if done subsequently, might interfere with the recovery of the nerve graft Assessment of the need for a nerve graft was helped by biopsy at three different levels if there was doubt, a graft was certainly required if the nerve narrowed to less than one third of its normal diameter

Osteochondritis Dissecans

Mr I S **SMILLIE** (Dundee) said it had been known for ten years that healing of the lesion of osteochondritis dissecans was possible in children, but this potentiality was lost at adolescence He proposed deliberately to over-simplify the question of ætiology and regard it as a fracture which was never seen in the acute stage Where the fragment remained in situ, he regarded the position as one of delayed union, requiring rest and improvement of local blood supply He had obtained union and healing by plaster immobilisation alone in 3 cases, and by drilling and immobilisation in 15 Where the fragment had shifted from its bed the condition was one of established non union He had treated 8 such cases by clearing out the bed, reshaping and replacing the loose body, drilling, and fixation by screw or special pins which were removed when union had occurred The simple drilling operation might need X ray control if an intact articular cartilage made localisation uncertain He stressed that the fixation of a loose body in its bed was difficult and that this was only a preliminary report He suggested that it might later be found possible to make use of frozen homografts to fill the cavity, and that this might open up great possibilities in joint surgery generally

Cartilage Grafting

Mr K H **PRIDIE** (Bristol) believed that in osteochondritis dissecans a vascular calamity set up a chain of events finally leading to osteo arthritis, there was a cold area in a hot joint As an experimental procedure in a few cases he had tried removing the loose body, excising the infarct, packing the resultant cavity with cancellous bone chips, and covering them with a thin graft of articular cartilage taken from the opposite femoral condyle The knee was then immobilised in extension for three to six weeks. The results were v satisfactory He had applied the same principles to eburnated condyle in osteo arthritic knees, gouging down healthy bone and covering it with cartilage He said that the cavity so formed filled up He also showed films of a knee which he had drilled the eburnated condyle, but did advocate this as a method of treatment He used a v extensive exposure in which the patella was turned downwa

New Inventions

A MALLEABLE CANNULA FOR TUBAL INSUFFLATION WITHOUT ANÆSTHESIA

THE finding of apparent tubal occlusion on insufflat may be due not to organic obstruction but to t spasm possibly induced by the method of insufflat Consequently at the infertility clinic, Manchester Victo Memorial Jewish Hospital, insufflation is done with anæsthesia or premedication in the first place It th has to be done with extreme gentleness because p can cause spasm of the tubes[1], many of these patie have endocervicitis, and the cervical canal can be v tender Even in the absence of cervicitis, the use o volsellum may cause pain, despite the assertion of te books that the cervix is insensitive

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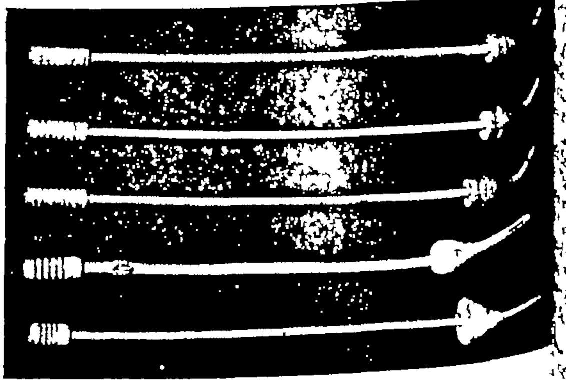
[1] Rubin I C J Fertility 1954, 5 320



The rigidity and length of the nozzle of the usual types of insufflator (Provis, Bonney) seem to be important causes of pain when the uterine canal is shorter than the nozzle or irregular in shape Similarly the use of the Leech Wilkinson cannula in the presence of endocervicitis will cause pain The cannulæ illustrated here are graduated in the same sizes as Hegar's dilators and are malleable so that the curve can be adjusted to the individual cervical canal and the rubber obturator can be moved on the cannula to permit variations in length of the portion entering the cervix They are light to handle and easily manipulated It is rarely necessary o put any kind of traction on to the cervix because usually one of the sizes will give an airtight junction

Where the cervix has been lacerated or is patulous, the obturator may not be large enough to give a tight fitting in that case a thick flat rubber disc (not illustrated) ¾ inch in diameter is slipped on the cannula in front of the obturator

These cannulæ have been in satisfactory use for over lve years, and with these instruments a painless airtight unction without traction on the cervix may usually be btained They are made by Messrs Jas Woolley Ltd, ictoria Bridge Manchester

I am indebted to the department of photography of the anchester Royal Infirmary for the photograph, which shows ree sizes of malleable cannulæ (above) and the Bonney and is types (below)

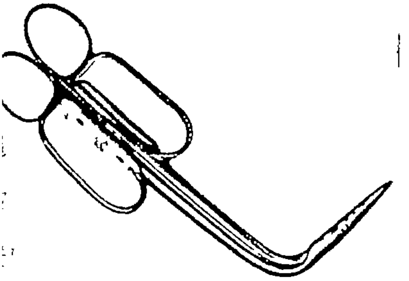
nchester Victoria Memorial
Jewish Hospital

BERNARD SANDLER
M D Manc D.M R. D OBST

A USEFUL PAIR OF SCISSORS

HERE are situations in operative surgery where culty arises in using any of the common types of sors, mostly when the surgeon requires to cut towards self and finds that a turn of the wrist is insufficient e tissues to be cut lie at a considerable depth, as in ledochotomy cholecystectomy pneumonectomy, and ctomy

he modified scissors illustrated here have proved r worth in abdomen pelvis and chest. Since they are delled on garden edging-shears, the same problems strength and length of the shafts apply here For ample too thin or too long shafts may impair strength d efficiency because of the whip that occurs in use e pair of scissors illustrated are for general purposes length of shaft and blade the over-all length of shaft m handle to curve being 6 inches and the blades being inch long Finer pairs of scissors with longer handles inches) or shorter handles (5 inches) and with shorter des (½ inch) have also been constructed The extra s with flat plates on the handles were added to give bility The loops and plates were put on both shafts that the scissors could also be used for cutting away the surgeon



he curved shafts were made by Philip Harris & Co mingham. The loops and plates were made and fitted in instrument department of the Queen Elizabeth Hospital I thank Mr W H Biffen and his staff for their help

Elizabeth Hospital
Birmingham

A J H RAINS
M.S Lond., F.R C.S

Reviews of Books

Growth at Adolescence

J M TANNER, M D PH D., senior lecturer in physiology St Thomas's Hospital Medical School, London Oxford: Blackwell Scientific Publications. 1955 Pp 212 32s 6d

THIS useful and important book surveys the developmental physiology of human adolescence including anthropometric endocrine, psychical and psychomotor changes over the whole period of maturation There is no competing textbook, and one was badly needed The difficulty of studying developmental change in man or in long lived animals is familiar and it has been aggravated by large secular changes in human nutrition and habits over the past century It is now agreed that longitudinal studies are essential, especially to compare the behaviour of different somatotypes during growth and puberty Dr Tanner's own studies of this kind provide much of the material for this book and show the importance of planning clinic and hospital record keeping so that biologically important information can be readily obtained

The adolescent growth spurt which Dr Tanner discusses at length is possibly a key to the nature of the change from the growth-economy of the child to the non-growing equilibrium of the adult which is biologically as radical as the metamorphosis of insects. Much research is being done at the moment on this and on the timing mechanism which initiates puberty because of their connection with the problem of life span and ultimate senescence. Comparison with other species is especially difficult because of the long interval between birth and maturation This is probably man's prime biological difference from and evolutionary advantage over other mammals. The whole endocrine pattern of maturation in man differs radically from that of the rodents used in laboratory studies of growth and senescence Dr Tanner attempts to compare growth-curves and identify an adolescent growth spurt in some other mammals, but his data are sketchy He considers that the timing of puberty is primarily determined by the hypothalamus—a hypothesis which may be correct, but is rather too simple to command categorical assent at present. One striking fact about human development is that in some European countries puberty is reached three to four years earlier than a century ago and that adult growth is completed proportionately earlier The reasons for this are unknown; better living and nutrition are probably not the whole story though they account for much of the shift Dr Tanner mentions the increased tendency to outbreeding in urban societies, but doubts its importance The increase in developmental rate whatever its cause is important because of its effects on personality and because mammalian experiments suggest that a high growth rate might significantly reduce the life-span. Dr Tanner does not mention this, though he points out that optimal growth may not be *maximal* growth.

He describes the photographic and X ray techniques which he used to obtain anthropometric data and discusses the different growth patterns of different somatotypes The results suggest that some of the methods of the longitudinal study may be used prognostically Comparisons of the growth of muscular coordination maturity indices and aptitudes in individuals of various shapes may prove effective in vocational selection.

Because of the interest and the tantalising incompleteness, of the results so far obtained all doctors, and not only research teams, should be aware of them Observation in human biology is within the power of all doctors who take the trouble to acquire the necessary biological discipline and vast opportunities for collecting data are being neglected Dr Tanner is a good biologist, whose enthusiasm is likely to prove infectious and he has written an excellent book that will be read with profit by clinicians and biologists alike

Differential Diagnosis of Internal Diseases

Clinical Analysis and Synthesis of Symptoms and Signs on Pathophysiologic Basis 2nd ed JULIUS BAUER M D., F.A C P., clinical professor of medicine College of Medical Evangelists, Los Angeles. New York and London: Grune & Stratton. 1955 Pp 987 $15

IT is difficult to believe that Julius Bauer published the first edition of his classic *Konstitutionelle Disposition* *zu inneren Krankheiten* in Vienna in 1917 Now from Los Angeles comes the second edition of his book on differential diagnosis, written this time in almost flawless English As in his earlier work, this shows the same searching and provocative spirit and the same evidence of deep and far-reaching knowledge Indeed, it is remarkable that so much of the unusual and the little known could be included in the same volume, with so much well-established information As in all his writings, Professor Bauer provides a great many references to original papers collected from many journals in many languages He must now be recognised as one of the greatest living authorities on rare diseases—a distinction that he combines with great breadth of vision and clarity of mind

This book is full of interest and information, and we commend it confidently to senior as well as junior students of medicine Certainly consultants and teachers will enjoy it and clinical clerks will find it exciting, though not perhaps ideal as a preparation for pass examinations!

Each chapter has a brief summary, there are useful illustrations, the index is adequate, and the general production is excellent If there are from time to time some long and difficult polysyllabic words and a few involved phrases needing extra mental care, this is no serious detraction

Advanced Surgery of Cataract

DANIEL B KIRBY, M D, F A C S, professor emeritus of ophthalmology, New York University College of Medicine Philadelphia J B Lippincott London Pitman Medical Publishing Co 1955 Pp 271 £11

Professor Kirby's *Surgery of Cataract*, which had a deserved welcome in 1950, is now followed posthumously by a volume which fully maintains the standard set in the first book. It not only deals with more recent advances in the subject but adds considerably to Kirby's earlier detailed descriptions of technique His aim was to express his opinion on controversial questions in cataract surgery and to enlarge on points mentioned in his previous book which he had found important in his own practice

Although the book is complementary to *Surgery of Cataract*, it can equally well stand by itself It is full of interesting details on all aspects of cataract surgery and its complications, both physical and psychological This mass of minutiæ of varying importance will make it very useful for those with personal experience of the problems he discusses In many passages, however, there is a lack of relative emphasis which makes it hard for those with less experience to judge what is really important

Fractures in Children

WALTER P BLOUNT, F A C S, chairman of the orthopædic section, Milwaukee Children's Hospital London Baillière, Tindall, & Cox 1955 Pp 280 72*s* 6*d*

NO-ONE is better qualified to write this admirable book than Dr Blount As he remarks, it was "needed by the general physician, the general surgeon, and, I fear, many orthopædists", for "the fact that most fractures in children heal fairly well with indifferent treatment has led the unwary to neglect the fact that other fractures terminate disastrously unless expertly handled" His style is lucid and pithy, the book is full of sound common sense, there is no "padding," and he has firm and salutary words to say condemning unnecessary and ill-advised operations on children Very valuable, too, is the clear-cut advice he gives about what degree of deformity can or cannot be safely accepted when allowance for the future growth of the bone is made He stresses the fact that early mobilisation is of no importance in children, that physiotherapy has virtually no place, and that in view of the rough treatment that many children give their plasters one need not be too careful about freeing the child's hand in the occasional difficult fracture of the forearm where deformity is so apt to recur Many experienced orthopædic surgeons have had cause to regret their omission to take a radiograph of the normal limb, which Dr Blount advises as a routine, with awkward fractures in and around joints

There are very few criticisms The paragraphs on the treatment of impending Volkmann's contracture are not very satisfactory, and there could be improvements perhaps in the account of the manipulative reduction of an avulsed medial epicondyle incarcerated in the elbow joint Not many British surgeons would agree with the recommendation that a greenstick fracture of the forearm should be completed without anæsthesia, the child's fearful memory of those who hurt him lasts a very long time But this is merely a difference of practice according to circumstances, a remark applicable to the greater tendency to admit to hospital patients who would be treated as outpatients in this country

There are excellent additional chapters on the hand and on facio maxillary injuries by Dr W H Frackleton and on cranial injuries by Dr D Cleveland—a subject perhaps too specialised to be included in a book of this kind There are also some interesting observations on "wringer" injuries of the arms by Dr I Schulz—lesions still fortunately rare in our relatively unmechanised households The illustrations and general production are outstandingly good—the former enhanced by attractive cartoons to bring home the unwise things that parent or surgeon may do

Backache in Women

E SCHLEYER SAUNDERS, M D, F I C S Bristol John Wright & Sons 1955 Pp 80 7*s* 6*d*

Few doctors find it easy to diagnose a backache, but in this small book they will find practical help Accepted teaching is succinctly put and here and there some interesting concepts are proposed

Readers are usefully reminded of fundamental points, f instance, that the line of gravity in the standing postur passes posterior to the bodies of the lumbar vertebræ, divid and passes through the centre of the sacro iliac joints to bot legs Disturbances of this equilibrium can be caused not onl by pathological processes in the spine and elsewhere but als by a pendulous abdomen or a compensatory lordosis due t wearing high heels In trying to correct a disturbed equili brium, groups of muscles go into spasm. As long as the stand the strain, no backache occurs, when they tire lig ments and joints such as the lumbosacral and sacro-il cannot bear the burden, and pain results.

Dr Schleyer Saunders describes in detail methods o gynæcological surgery which are outside the scope of m practitioners, yet he gives little space to the use of phys therapy and active and passive movements in the treatm of backache He says little, too, about the management adhesions, yet these may cause more disability than the ini lesion

Secretion of Adrenaline and Sympathins

Y SATAKE, emeritus professor of physiology, Toho University Tokio Nanzando Co 1955 Pp 158

NEARLY 30 years ago Professor Satake began h studies of the medullary secretion of the adrenal glan using dogs which had been prepared by cutting t nerve-roots from the eleventh thoracic to the seco lumbar segments The animals thus had a perman regional anæsthesia and he could expose the adrenal ve and collect over periods all the blood flowing from t adrenal gland without having to anæsthetise or inde even to restrain them The blood was assayed for t content of adrenaline-like substances (at that ti adrenaline and noradrenaline were not distinguished i the adrenal secretion) In many experiments conduct over the years he was able to measure the effect of vario physiological and pharmacological stimuli on t medullary secretion

This book brings the results together While t English rendering is at times obscure, the specialist w be glad to have a summary of this well conceived wo and a source for the extensive Japanese literature on t subject

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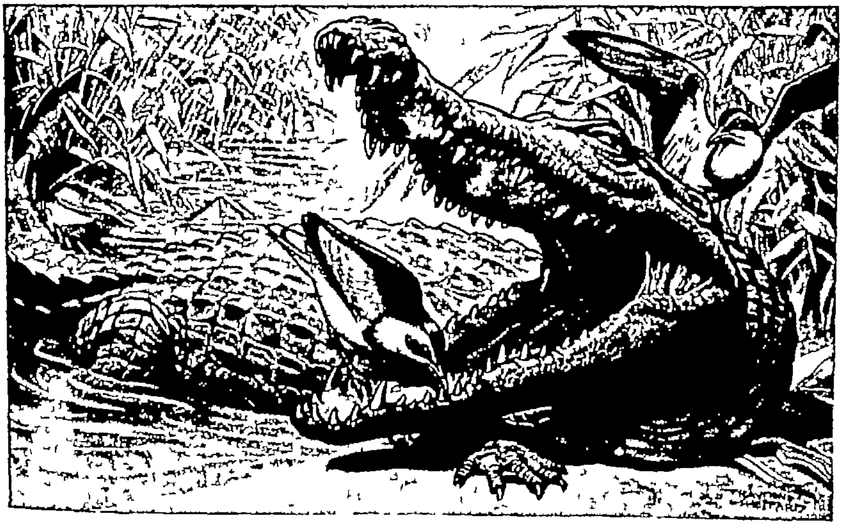
German-English Medical Dictionary (London J & A Churchill 1955 Pp 513 45*s*)—Mr W O Gould ha compiled this dictionary, which contains 50,000 medi words, with the help of his associates at Cologne Universit Dr B Amos and others at Guy's Hospital, and Dr Loth Busch He has modestly aimed only at helping the reader the library, for he has omitted phonetic spelling and pr nunciation In an appendix he gives a useful set of equival which will enable the clear headed English reader to conv simple metric measurements into the complexities to which h is accustomed

An unusual degree of tolerance....



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REFERENCES

Practitioner 173 46, 1954. Brit. Med J., 2 7 1955

Ibid Editorial, 2 31 1955.

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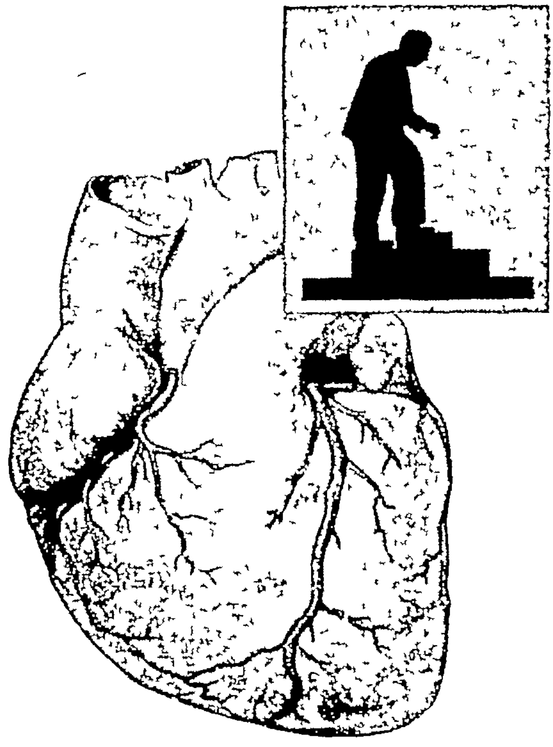

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THE LANCET

LONDON SATURDAY, NOV 5 1955

Radiotherapy for Lung Cancer

RADIOTHERAPY has proved disappointing in lung cancer No-one has yet demonstrated convincingly that it prolongs life, but clinical impressions suggest that its influence on survival is slight and unpredictable. The cases of lung cancer treated by the radiotherapist are usually incurable but the Medical Research Council's Radiotherapeutic Research Unit at Hammersmith Hospital, have been trying to extend the scope of radiotherapy by using it in association with lung resection and Mr BROMLEY and Dr SZUR report the results in this issue

Between 1949 and 1953, 732 patients were seen at the bronchus tumour clinic of Hammersmith Hospital All believed to have technically operable tumours were treated initially by a course of radiotherapy after a period of convalescence they were re examined, and if the lesion was still thought to be operable thoracotomy was done A further group with cancers initially assessed as technically inoperable were also treated, some of them when bronchoscoped after radiotherapy were judged to be operable and had the lung removed. 66 patients in all were treated by a radical course of radiotherapy followed resection of whole or part of the lung The results ere disappointing 10 (15%) died during the post erative period—an operative mortality of the same der as that previously reported from many centres it empyema with or without a bronchopleural la developed in 18 (27%) This incidence is igher than that normally experienced after lung tion and BROMLEY and SZUR suggest that it is sociated with the method of treatment adopted " s not surprising that the survival rates were thus only 25% survived for three years and for four years The corresponding survival s after resection without radiotherapy are of the r of 35% and 30% if an operative mortality of is assumed [1] Moreover the combined treatment other disadvantages As BROMLEY and SZUR t out the treatment before operation lasts about ive weeks even if all unnecessary waiting time is inated and the patient still has to recover n the operation before resuming work During s long preoperative period cryptic metastases y become patent and no doubt some patients will reby be spared unnecessary operations But also ring this period new metastases may develop For urate comparisons of resection after radiotherapy th resection alone it would be necessary to compare fate of all with operable tumours treated by radiorapy (whether or not they later had a resection) th all in whom resection was done at once

BROOKS et al [2] reported 4 cases in which post tem examination showed no evidence of residual tumour at the primary site after irradiation. In the Hammersmith series no tumour was found in nearly half of the resected lungs examined[1] Yet 14 of these 29 patients are known to have died with recurrence of the cancer, and the results were no better than in cases where tumour tissue was still present The one hopeful feature is that radiotherapy appeared to have made operation possible in some patients previously judged inoperable For instance, 11 originally assessed as inoperable because of the bronchoscopic appearances eventually had a pneumonectomy, and 3 judged initially to be in too poor condition to withstand operation improved enough during radiotherapy for a resection to be done The final results in these 14 patients are said to have been unsatisfactory, but BROMLEY and SZUR suggest that there is a case for treating selected patients by irradiation in the hope of making them operable although " there can be no claim that the combined treatment has produced impressive results " Their report leaves little doubt that radiotherapy before resection has little to commend it

It is as difficult to judge the palliative effect of radiotherapy as its effect on survival Dr BLANSHARD [3] last week reported the results of an inquiry into the symptomatic changes in a group of 35 treated patients A little under two-thirds showed some general improvement, half were able to lead an independent life after irradiation and about a fifth returned to work Dyspnœa was improved in about a half and cough and dysphagia were alleviated in three quarters Hæmoptysis was lessened in more than half the patients, and chest pain was usually relieved unless it arose from direct invasion of the chest wall Symptoms from obstruction of the superior vena cava were relieved in 5 of the 6 patients with this complication These findings are similar to those of BROOKS et al [2] and BROWN [4] But this is not the whole story, for the symptoms may return BROWN [4] reported that the improvement lasted less than three months in about half his patients Although radiotherapy commonly alleviates distress due to obstruction of the superior vena cava this complication also may recur before death

There is now general agreement on the symptoms that are relieved by radiotherapy and few would doubt that patients should be selected for palliative treatment because their symptoms warrant this, and not solely because they have cancer But there is still doubt whether relieving symptoms by radiotherapy makes the patient's lot easier than relieving them in other ways Few patients can nowadays be so ignorant of medical matters that they fail to associate " ray treatment " with cancer Possibly knowledge of the truth may help some, but others may be made more unhappy, even though they cough less and have less pain. Undoubtedly the patient's mental state and the palliative result depend considerably on the personality of the radiotherapist and the outlook of *his staff* There is need for more precise knowledge of the effect of radiotherapy on the patient's mind as well as on his body, but investigation of this wider aspect will be far from easy

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[1] Bignall, J R, Moon, A J *Thorax* 1955 10 183

[2] Brooks, W D W, Davidson, M, Price Thomas, C, Robson, K, Phillips, D W *Thorax* 1951 6 1

[3] Blanshard G *Lancet* Oct 29 1955 p 897

[4] Brown D K M *Brit J Radiol* 1952 25 479

Immunohæmatology

AT first sight "immunohæmatology" might be thought to be concerned with blood-groups But in fact the term denotes the study of immune reactions in blood diseases The idea that immune mechanisms are important in the development of some blood diseases is not new , about fifty years ago WIDAL, CHAUFFARD, and other French physicians distinguished two types of hæmolytic anæmia—a congenital type with abnormal red cells, and an acquired type in which red-cell agglutinins or lysins could be detected Subsequent workers filled in the details of the clinical differences between the two forms of hæmolytic anæmia , but in the majority of patients the presence of red-cell agglutinins or lysins could not be detected by the methods available In 1940 DAMESHEK and SCHWARZ [1] stimulated investigation into immune hæmolytic anæmias by producing these experimentally in animals and showing that many of the features of clinical hæmolytic anæmias could be reproduced But it was the use of the anti human globulin test, originally devised in 1945 by COOMBS, MOURANT, and RACE [2] for the detection of weak or incomplete rhesus antibodies, that really enabled us to demonstrate with certainty the immune nature of cases of acquired hæmolytic anæmia , by the Coombs test it was shown that the patient's red cells had antibody adsorbed on to them, when the usual tests for serum-agglutinins were negative So the position now is, as DACIE [3] says, "that the majority of patients who develop acquired hæmolytic anæmia do so because they form proteins, having the properties of anti-erythrocyte antibodies, which are capable of seriously diminishing the life-span of the patient's own corpuscles These proteins are referred to as *auto*-antibodies in contradistinction to *iso*-antibodies, such as the naturally occurring anti-A or anti-B and the immune type of antibody developing as the result of transfusion or pregnancy, which do *not* affect the patient s own corpuscles "

An auto-antibody is defined by DAVIDSOHN [4] as "a substance produced in our own body in response to an autoantigen, a component of our own body, and reacting with and exerting a damaging influence on elements of our own tissues " , and hè points out that the idea is gaining ground that such antibodies are responsible, not only for anæmias, but also for other blood disorders such as thrombocytopenia, and for blood changes such as the " L E -cell phenomenon " French workers,[5] have applied the descriptive term " diseases of auto-aggression " to disorders caused by antibodies or antibody-like substances produced in vivo by the patient himself It is the study of this group of blood diseases that is comprised in the term " immunohæmatology " , and STEFANINI [6] shows in how many blood diseases immune phenomena may play a part

STEFANINI declares that ideally three criteria should be satisfied if an immune ætiology is to be considered These are (1) the patient's plasma or serum should contain an agent that destroys or inhibits specific blood constituents (e g , a hæmolysin or a platelet lysin) , (2) normal constituents of blood injected into the patient's blood-stream should have a relatively short survival , and (3) injection of the patient's plasma or serum into a healthy person should temporarily reproduce the pathological blood picture These three criteria have been satisfied in only few disorders—some cases of acquired hæmolytic anæmia and some cases of thrombocytopenic purpura—but one or two are fulfilled in many more STEFANINI lists as hæmatological diseases presumably due to antigen-antibody reactions the following some cases of hypoplastic or aplastic anæmia, acquired hæmolytic anæmia, immunoleukopenia, immunothrombocytopenia, immunovascular disease, and some hæmorrhagic syndromes , and immune phenomena may play a part in sarcoidosis and leukæmia The hypoplastic and aplastic anæmias concerned are those following small doses of drugs, such as chloramphenicol, or acu exposure to chemicals The acquired hæmoly anæmias include those associated with leukæmi reticuloses, and tumours, in addition to the well kno idiopathic type Immunoleukopenia can be idiopat or be induced by drugs, or it may arise in the co of some other condition such as Hodgkin's dise Some cases of idiopathic thrombocytopenic pur seem to be due to immune phenomena, and dr sensitivity comes into this group too In the c of immunovascular disease STEFANINI puts anaphy toid purpura and some cases of polyarteritis nod The hæmorrhagic syndromes are those in which antibody develops to a blood clotting factor—e an antithromboplastin

The evidence for the importance of immune re tions in so many blood diseases is admittedly fr mentary One of the main difficulties is the detect of the antigen responsible for producing the a antibodies The antigen is thought to be a patho cally modified normal protein, but it has not b possible to detect clear antigenic differences betw normal blood cells and those produced by the bo marrow of patients with possibly auto immune b diseases Several observations suggest that immunisation may lead to auto immunisation. example is the drug sensitivity caused by 'Sedorm or quinidine , these drugs probably modify plate thus producing iso-antibodies , later auto antibo develop, by a process of which we know nothing, these antibodies act only in the presence of sensitising drug, so that agglutination and lysis platelets occurs when the patient is given the dr It has been suggested that viruses and bacteria act in the same way as drugs This hypothesis no very firm basis since sensitisation to drugs not yet been produced experimentally and there no evidence that protein synthesis can be tempor or permanently modified by drugs, bacteria, or viru Unless there is direct evidence of sensitisation s as a positive Coombs reaction or diminished surv of red cells and platelets, there is at least eq justification for the alternative view that dr bacteria, or viruses damage blood elements and m them more susceptible to the normal disposal proce

The immunological aspects of leukæmia have b little investigated, and STEFANINI draws attenti three possible examples One is the development uto immune hæmolytic anæmia with demonstrable ed cell agglutination that occurs in the course of ome leukæmias, especially chronic lymphatic leukemia Another is the deficiency of antibodies in eukæmia that leads to undue susceptibility to bacterial nd virus infections, and the third is the occasional evelopment of antibodies of Forssman type in eukæmia which may be linked with the antigenic properties of leukæmic cells

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[1] Dameshek, W , Schwarz S O *Medicine Baltimore*, 1940 19 232

[2] Coombs, R R A , Mourant, A E Race R R *Lancet*, 1945 ii, 15

[3] Dacie J V *Amer J Med* 1955, 18 810

[4] Davidsohn I *Amer J clin Path* 1954 24 1333

[5] Tzanck, A Dausset J *Sem Hôp , Paris* 1952, 28 793

[6] Stefanini, M. *Proc Inst Med , Chicago* 1955 20, 335

Immunohæmatology, as STEFANINI says, "while ich in speculations, is still poor in experimental facts" hese experimental facts are hard to come by, the ngs awaiting the investigator are many, and the echniques are difficult to apply This is well illustrated y the contradictory results obtained by different nvestigators working on platelet antibodies in the tiology of thrombocytopenic purpura [7] Really firm nowledge of immunohæmatological disorders is still mited to the auto-immune hæmolytic anæmias [3 4], nd we have some less complete, evidence about the mmune purpuras [8] The distinction between depres ion of blood-cells due to immune phenomena and hat due to toxins is not entirely academic, since the ethod of treatment differs If abnormal antibodies n be demonstrated and shown to be ætiologically nportant, treatment with cortisone or corticotrophin ay hold out some hope of control, whereas if the pression is due to a toxin cortisone is unlikely to effective, and only supportive measures with ectation of natural recovery, are worth while

Tomorrow's Citizens

HE upbringing of children and young people uld be the concern not only of parents but of all onsible adults *Citizens of To-morrow* [9] a report ed by the King George's Jubilee Trust, is one of most comprehensive accounts of young people's s and problems since A. E MORGAN's *The Needs Youth* appeared before the late war The r working parties appointed by the trustees idered the period of full time school attendance, period after leaving school with particular refer e to employment opportunities and conditions, ng people's use of leisure time, and their experi es as members of the Armed Forces It cannot be d that all their investigations went very deeply or t much more was essayed than the collection and ng of the informed opinions of the many people d organisations who gave evidence Moreover one piece of original research undertaken by the up concerned with National Service was somewhat dly conceived for they studied the impact of litary life by asking questions of the young n's mothers We all know that young men between ages of eighteen and twenty are hardly likely to part all their problems and experiences to their thers however affectionate the relationship, and s difficult to understand why the questionary was administered to ex National Servicemen them shortly after demobilisation. But methodo- ical considerations apart the report is a valuable ument not only because of its findings and ommendations, but because it opens up an portant field for discussion and future inquiry

All four groups are unanimous in emphasising the importance of home life and parental training in moulding young people's lives and shaping their destinies This theme is reiterated by Sir BASIL HENRIQUES [10], and it is indeed echoed by most social workers and teachers Most of our social problems involve a malfunctioning of family life, and there is a consensus of opinion that these problems can be mitigated only by trying to create good homes and loving, happy families where at the moment there are frustrations, antagonisms, disharmonies, and neglect that poison relations between husband and wife and between parent and child Both HENRIQUES and the authors of the Jubilee Trust report are firmly convinced that this can be achieved only by a reawakening of the religious conscience and by training in spiritual values But there is a danger apparent on reading the Jubilee report that some may seek to spread the influence of religion simply to solve social problems and reduce delinquency

The section on education in the Trust's report displays a realistic appreciation of the difficulties facing teachers in their attempts to influence the quality of home life Parent-teacher associations and other similar devices touch the converted parents who are keen to accept the school in a partnership devoted to their children's welfare The disinterested parents who will not attend, who neglect their offspring and give them little incentive or encouragement, are the real problem. The group recommend that in cases where "teachers are unable to establish adequate contact with the homes of their pupils, there should be made available to the school the services of a special worker who would, if necessary, visit a home and by discussion and advice try to secure the fullest coöperation between school and parents" Such workers would endeavour to prod lazy, ignorant indifferent parents into making a better job of their family life and one presumes where necessary bring to them whatever skilled help might be at hand If implemented, this scheme would be an interesting experiment in 'aggressive casework" and the results might be startling Such family workers would supplement the splendid work already being accomplished in a limited way by marriage guidance councillors by the family service units, and by other social workers committed to the task of improving parentcraft and buttressing the crumbling walls of family responsibility

One of the distressing facts pinpointed by these books and other recent publications concerns the uncreative use by so many young people of their leisure time and the alarming symptoms of growing public neglect of the services for youth The magnificent partnership between voluntary and statutory bodies established during the war is in peril of collapsing for lack of support and interest The most serious factor impairing this service is the scarcity of leaders Too few men and women are offering them selves either as full time paid workers or as voluntary helpers to man the clubs and youth groups, and consequently thousands of youngsters are denied opportunities for recreative education in their leisure time, and a potent weapon for combating delinquency and other undesirable forms of behaviour is being

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Lancet 1955 i 191

Brit med. Bull 1955 11 29

London Odhams Press for the King George's Jubilee Trust 1955 Pp 142 3s

10 The Home Menders The Prevention of Unhappiness in Children. By BASIL HENRIQUES C.B.E M.A J P London Harrap 1955 Pp 192 10s 6d

allowed to rust and atrophy Any doubt about the immense personal and social value of a well-planned, well-managed, youth club must be dispelled by the brilliant account by Mr JORDAN and Miss FISHER of the work of their evening institute in the London area Their book,[11] which appears at an opportune moment to remind the public of what can in fact be achieved educationally by a free community of youth under wise and expert adult guidance, may dispel the cloud of gloom and despair that might be occasioned by reading other descriptions of youth activities Mr JORDAN and Miss FISHER show how they succeeded in getting their members to submit to the discipline of a regular discussion group concerned with serious social topics, and how the young people became conscious of their own problems and finally set forth as social investigators in their own right to discover the facts for themselves

Such books as Mr JORDAN and Miss FISHER' add weight to the plea in the Jubilee Trust report for the establishment of "a broadly based national body whose business it would be to keep constantly under review every aspect of the welfare of young people whether at school, at work, or in the Services." Such an influential national youth council should make recommendations to the Government and have some power for initiating action, and not be purely advisory It may be doubted whether Parliament would agree at once to such a council being established or would allocate funds for many new schemes fo youth and child welfare, but the idea is excellent Only in such a way can the authentic needs of youth be kept constantly in the public conscience and proper system of further education be maintain to cope with that "battle of the gap" which present faces young people until the provisions of th 1944 Education Act for universal part-time educat up to eighteen years can be brought into force

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[11] Self Portrait of Youth or the Urban Adolescent By G W JORDAN and E M FISHER London Heinemann 1955 Pp 176 12s 6d

Annotations

HYPOTHESIS IN RESEARCH

SPEAKING in London on Oct 27, Sir Wilfrid Le Gros Clark, F R S, declared that "each step in the advance of knowledge made by scientists is the result of either the verification or the correction of hypotheses advanced by their predecessors" Sir Wilfrid, who was delivering the first of a series of lectures concerning the Scientific Basis of Medicine which have been arranged by the British Postgraduate Medical Federation, went on to say that hypotheses were no more than provisional interpretations of observed facts, and it was only by pushing them to their extreme limits that they could be validated or discarded, and thus pave the way for new observations and new interpretations Hypotheses might be pictured as temporary bridgeheads for incursions into a territory of new ideas

For example, there was the hypothesis which had sought to explain how it was that we could discriminate between the different sensations arising from cutaneous stimuli Following on the resonator hypothesis of hearing, elaborated many years ago by Helmholz, which postulated that each fibre or group of fibres of the auditory nerve was related to one particular tone frequency, the idea had naturally suggested itself that a similar functional specificity of nerve fibres for sensory discrimination might be demonstrable in the skin This reasonable inference, which might indeed contain a large measure of truth, had been pushed further, and attempts were made to codify cutaneous sensation in terms of the sharply defined categories of touch, warmth, cold, and pain, and to relate these to different morphological types of sensory end organs The development of the hypothesis to this extreme had revealed its inherent weaknesses It had now been demonstrated that all types of sensory discrimination were possible even in areas of the skin where the different end-organs postulated by the hypothesis were absent One of the main arguments for the specificity of end organs had been that the cornea was supplied only with free nerve endings, that pain was the only sensation which could be elicited there, and that therefore the sensation of pain (not only in the cornea but in the skin generally) depended on the stimulation of free nerve endings But recently it had been shown that sensations, not only of pain, but also of touch, warmth, and cold could be elicited from the cornea Investigations were now leading to the development of ideas of spatial and temporal patterns of stimulation of nerve endings as the more probable phys basis of sensory discrimination in the skin

Scientific workers seemed sometimes to deprecate th construction of hypotheses, on the ground that they w speculations and the scientist's work was to observe a not to speculate Yet it was impossible not to specul or formulate hypotheses in the course of a scient inquiry—after all, that was how the human mind wor naturally Moreover, effective observation was imposs without hypotheses to guide it, "a construction of th mind must precede the detection of a construction Nature" It was perhaps the fate of all hypotheses be superseded sooner or later Hypotheses, like the who created them, "may rise on stepping stones of th dead selves to higher things"

CARDIOVASCULAR SURGERY TODAY

A PROGRESS report on British cardiac surgery in latest issue of the *British Medical Bulletin*[1] gives a heart ing account of developments in the past ten ye Significantly, two of the most valuable contribut come from physicians Dr Maurice Campbell Dr Paul Wood remind us of the prime importance case selection Their emphasis is on clinical finding an important example to those who tend to lose s of the patient during their calculations Cardiac cathe isation, in fact, is not often needed in morbus c or in mitral stenosis, for changes in the pulmon arterial pressure can generally be assessed on the clin evidences There is now no doubt that in uncomplic patent ductus arteriosus in young patients operat closure should be undertaken, but the correction aortic coarctation is more hazardous It is best d before the age of 20–25, even though symptoms may yet have developed Mr O S Tubbs deals with th two anomalies He takes the middle course in the "c or tie" controversy, and divides and sutures the d only if it is short and wide Arterial grafting is nee to complete about 10% of coarctation operatio The future of these patients, as Dr Campbell rem us, is still uncertain the late results of homograft in man have yet to be assessed Prof C G Rob a Mr H H G Eastcott review methods of aterial rec struction and mention recent experience with gra made of plastic cloth[2] Among all these new enterpr in surgery perhaps the most impressive is the stor mitral valvotomy Mr Holmes Sellors, himself a pion in this field, relates the mechanics of mitral steno ul how to relieve it showing how much can be learnt y a discerning finger within the auricle It will be noted hat he like Dr Parry Brown and Dr B A Sellick their section on anæsthesia no longer uses drugs to educe cardiac irritability Correct anæsthesia and above ll adequate oxygenation now largely avert the risk of angerous arrhythmias

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[1] Surgery of the Heart and Thoracic Blood Vessels. Bri *Bull* 1955 11 no 3

[2] See *Lancet* Oct 1 1955 p 711

In cyanotic congenital heart disease, indirect opera ions Mr G A Mason finds, have on the whole fulfilled he hopes which were held for them They provide a ery great measure of relief, which should last for many ears, though as Dr Campbell points out, there remains he strain on the right heart which is still working against ystemic pressure The same is true after direct opera ions on the pulmonary stenosis element of Fallot s etrad Direct operations as they exist today can do ttle more than reduce the pulmonary stenosis but hey do represent a more logical approach since they emove an anomaly rather than add yet another hey are perhaps more risky in that they involve the anipulation of an ailing heart but they are less tedious nd roundabout than the anastomotic operations Ir Russell Brock who has been mainly responsible for irect operations for pulmonary stenosis emphasises at, except in pure pulmonary stenosis the condition still incompletely treated only complete restoration a normal heart action can be regarded as a cure he prospect of achieving this has lately come a good deal arer To operate on the open heart with the deliberate d accurate technique of surgery in other parts of the dy has been the hope of surgeons for many years ow it seems, the chances are good Three completely fferent methods have already been used with some ccess. An artificial heart lung apparatus has for veral years been the subject of research in at least six ntres Tremendous technical difficulties have been countered Mr W P Cleland and Dr D G Melrose the Postgraduate Medical School of London have had eir share of these cannulation has not always been equate (the venous return in particular is difficult to sure) hæmostasis is troublesome partly because ticoagulants must be used and partly owing to platelet ses during the perfusion The machine has, however en successfully used in patients with mitral incom tence and may soon prove suitable for other operations the open heart. Induced hypothermia as Mr F J lorme was one of the first to show by reducing the ygen needs of the tissues allows a greatly diminished culation to be tolerated while heart and vessel opera ns involving caval or aortic clamping are carried out he open heart operations of limited duration have n done with its help and Sir Russell Brock and D N Ross describe their experiences with a simple rporeal blood cooling coil But the myocardium y in its demands for oxygen and below 25°C manipulated irritability is intense and serious n fatal arrhythmia develops in almost half the Selective cooling and re warming of the heart reduce this danger

third and newest of the open heart techniques es the use of a donor circulation [3] Mr A T aen its originator shows how it is based on a new t in circulatory dynamics—the azygos flow ple Experimentally clamping the venæ cavæ t the only venous return to the right heart is the s flow has been shown to reduce the cardiac output than a tenth of the accepted minimum value, yet nimal survives If a donor cross circulation is used ovide this new low minimum operations can be with safety within the excluded heart We may ps have been over-conservative in not applying this ant British discovery to patients There can be ouble ethical objection to the use of parent-donors That the risk to them is small has now been shown by Lillehei and his co workers [3] who have successfully repaired many ventricular septal defects under cross-circulation with unprecedented therapeutic success and no deaths among the donors

Which of these widely differing methods will prove the best has yet to be seen Here the *Bulletin* leaves us intrigued and wondering, with the open heart perhaps just ahead as the only possible solution to the problem of correcting the grosser malformations and the even more pressing need for effective repair of valvular incompetence

PARTHENOGENESIS IN MAMMALS?

THE possibility that a woman might become pregnant without at least one spermatozoon having entered the uterus is not one which the reasonable man ' would lightly entertain Scientific opinion for several centuries has sided with the reasonable man but today biologists, and cytogeneticists in particular would be less dogmatic in dismissing such a possibility To them the rarity of spontaneous parthenogenesis in vertebrates is ground for remark

Some considerations of this kind were discussed last week by Dr Helen Spurway, lecturer in biometry and eugenics at University College London in a lecture entitled Virgin Births. The occasion of this was the observation that in the guppy (*Lebistes reticulatus*) a small live bearing fish females segregated from birth are sometimes fertile, giving birth to litters which consist almost entirely of females (1 male and 1 intersex have been recorded out of 92 fatherless offspring) Since spontaneous parthenogenesis is so rarely described in vertebrates it is important to determine whether this is an example of it or of the alternative possibility —self fertilisation in a hermaphrodite producing both sperms and ova The studies which Dr Spurway has undertaken suggest that both these processes may possibly be occurring in lebistes A third possibility—that the embryo fish have been fertilised in utero by paternal sperm—can be excluded on genetical grounds, and in view of the abnormal sex ratio

Hermaphroditism in which the same individual produces functioning ova and sperms (usually alternately or successively rather than at the same time), is already known in fish and amphibia and occurs on occasion in birds where the destruction of the ovary may be followed by the regeneration of a serviceable testis Parthenogenesis in which an ovum begins to divide of itself,' producing a haploid embryo or recouping the missing paternal chromosome complement by some form of doubling is much rarer in warm blooded vertebrates but it is common in invertebrates. Parthenogenetic cleavage has been reported in cat [4] and ferret [5] ova, and lately in unfertilised turkey eggs.[6] None of the embryos have been shown to be viable But parthenogenetic development going to full term and producing a viable and healthy offspring can be induced in mammals by cooling the fallopian tubes and many fatherless rabbits have already been reared by this technique [7] though the failure rate is high In view of this, we may have to re examine the justification for our belief that spontaneous parthenogenesis is rare in vertebrates and absent in mammals If it were rare in mammals but occasionally present, would it in fact be noticed? For the event to be recognised Spurway points out it has to occur in a species which is under observation in stringently critical conditions and whose sexual cycle is thoroughly familiar and the offspring should preferably be distinguished from sexually produced offspring by an obvious character In some cases such as that of the turkey eggs the character may be simply inviability If mammals produce fatherless offspring at all, they would almost certainly have to do so by parthenogenesis, and not by self-fertilisation in a mixed gonad Quite apart from the mechanical complexity of mammalian fertilisation and pregnancy compared with that of fish, most mammals cannot produce live sperms at body-temperature

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[3] See *Ibid* Oct. 8 1955 p 756

[4] Strassmann E O *Amer J Obstet Gynec* 1949 58 337

[5] Chang M. C. *Anat Rec* 1950 108 31

[6] Olsen, M W Marsden S J *Science* 1954, 120 545

[7] Pincus G Shapiro H *Proc nat Acad Sci Washington* 1940 26 163

There are sound reasons which might lead biologists, if not to expect parthenogenesis occasionally in mammals, at least to look out for it Many breeders of laboratory animals will privately admit to having met a few examples of pregnancy in segregated females for which "mating through the wire" with a hypothetical "escape" is not a fully satisfying explanation Although the analogy with spontaneous generation in cultures is close, a rare event which is hard to prove is likely never to be reported at all if it is also an event which according to common experience is "known" to be impossible

Man is clearly the mammal in which parthenogenesis would be least likely to pass unnoticed If it does occur at all it is extremely rare Suppose that its frequency were to be only one half that for the birth of sextuplets —another rare event which undoubtedly does occur (with a frequency of about 1 80⁵ pregnancies or less) Most of these cases would occur in women with a history of recent intercourse, and would be missed In the few which might remain the chance of any woman successfully asserting the facts in face of an evident pregnancy would be small enough to make her keep her own counsel Perhaps, as Dr Spurway remarked, claims might be entered with more confidence if the women concerned knew that today these could be vindicated beyond any reasonable doubt The offspring of parthenogenesis would be a female, or less probably an abnormal male, and its immunological make up would be such that it could be recognised with absolute certainty—"no specialised knowledge would permit faking" Most claimants could be sifted on the repertoire of blood grouping tests alone The culminating proof would be the ability of the mother to take a skin graft derived from the child without breakdown and with indefinite persistence of the graft (Dr Spurway emphasises that the reciprocal need not be the case—the child could have only the mother's antigens, but it need not have all of them) To biologists such evidence would be conclusive, and recognition of such a case might spare a patient some of the effects of an emotionally difficult situation But if parthenogenetic births do occur, not all will occur in circumstances which lead to strife They could be recognised most easily in retrospect, by immunological comparison between a mother and the daughter who strikingly resembles her They might show a *familial* distribution

Whether it is worth doing more in this matter than keeping our eyes open when we conduct a research that might reveal such a case, and awaiting claimants, is doubtful But if such a claim were now made it could be proved Possibly some of the unmarried mothers whose obstinacy is condemned in old books on forensic medicine, or cited as a curiosity by their contemporaries, may have been telling the truth

STRUCTURE OF CORTICOTROPHIN

THE establishment of the structure of oxytocin and pitressin[1] showed clearly that the protein chemists now have refined techniques for exploring the structure of polypeptides Recently these methods have laid bare the structure of corticotrophin This is a long chain polypeptide, whose structure was analysed by a process that may be likened to doing a jigsaw-puzzle in reverse It was fragmented by enzyme attack into a few polypeptide units Each of these in turn was broken down by a chopping process until recognisable fragments were found and the sequence of the amino acid residues in the original molecule was established

Two independent schools, one working on β-cortico-tropin from pig pituitaries,[2] and the other on α-cortico-trophin from sheep pituitaries,[3] have established that the structure of these pituitary hormones is remarkably alike In each case the active molecule appears to be a straight chain polypeptide of 39 amino acids, the porcine corticotrophin differs from the ovine only in the replacement of one serine unit by leucine, together with the slight rearrangement of four amino acid units The synthesis of either molecule will be a formidable task.

PYRIMETHAMINE IN UVEITIS

RECOGNITION that toxoplasmosis is an importa cause of uveitis in adults dates from the histologi observations of Wilder,[4] who first demonstrated th parasite in necrotic choroidal foci. Her observatio have since been confirmed,[5] and the parasite has bee identified in the excised eye in a case of uveitis[6] Previously the only recognised form of ocular toxoplasmo had been that in infants with congenital infecti characterised by the triad of choroiditis, cereb calcification, and a positive serological test for the dise

The diagnosis of ocular toxoplasmosis depends serological tests, and Woods and others[7] and S and Ashton[8] have found a high rate of positive te in the groups they term granulomatous uveitis posterior uveitis But Smith and Ashton point that toxoplasma antibodies are widespread in the co munity, and so, in the absence of a rising or high ant body titre, the diagnosis cannot be made with certain

The difficulty of diagnosis might be reduced if th were a specific antitoxoplasmal drug, the response which would establish beyond doubt the presence this disorder Of the drugs that have any apprec antiparasital action only pyrimethamine ('Darapri has the necessary specificity The activity of pyrimeth mine was investigated by Eyles[9] and confirmed Summers,[10] and by Trevino et al[11] who suggested t there was a strain difference in the sensitivity to drug Ryan et al[12] noted the value of this drug combination with sulphonamides[9] in uveitis

At a meeting of the ophthalmological section the Royal Society of Medicine on Oct 13, Dr C. Smith reported on the use of the drug in experime choroiditis Although the strain used was highly sensi to pyrimethamine, this did not modify the lesion, attempts to increase the local concentration by conjunctival injection led to cataracts Mr E S Per described the use of the drug in a clinical trial noted that the objective response to treatment greatest in cases with serological evidence of to plasmosis, he suggested that the difference between results in treated and in untreated cases was *only* significant statistically, but, because of the care take exclude bias in the trial, even this slight difference important Mr Perkins remarked that treatment m be closely supervised, since blood changes, such macrocytic anæmia and neutropenia, sometimes aris

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[1] See *Lancet* 1953, ii 842

[2] Bell P H, Davies, D S Elgnet, E A, Shepherd, R. G, Hor K S *J Amer chem Soc* 1955, 77, 3419

[3] Li C H Geschwind I I, Cole, R D, Raacke, I D., Ha J I, Dixon J S *Nature, Lond* 1955 176 687

[4] Wilder, H C *Arch Ophthal. Chicago*, 1952 48, 127

[5] Duke Elder S Ashton N, Brihaye van Geertruyden Br *J Ophthal* 1953 37 321

[6] Jacobs L Fair, J R., Bickerton, J H *Arch. Ophthal Chi* 1954 51 287

[7] Woods, A C, Jacobs, L Wood R M, Cook M. K Tr *Amer Acad Ophthal Otolaryng* 1954, 58 172

[8] Smith C Ashton, N *Brit J Ophthal* 1955 39 545

[9] Eyles D E Coleman, N *Antibiotics* 1953 3 483.

[10] Summers, W A *Amer J trop Med Hyg* 1953 2, 103.

[11] Trevino A Varela, G Palencia, L *Rev Inst salubr Enf trop, Mex* 1953 13, 339

[12] Ryan R W, Hart W M Culligan, J J, Gunkel R. D, Ja L Cook, M K. *Trans Amer Acad Ophthal Otolaryng* 1 58, 807

In the Mental Hospital *

THE FORGOTTEN PATIENT

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II ONE SOLUTION

In my first article I described the unhappy conditions be found today in many of our mental hospitals, and gested that some useful reforms are possible without nding money [1]

A year ago I gave an account of an experiment made the male side of this hospital [2] and I shall now carry account a little further—not because we are content h what has been achieved but because it shows what be done in an ordinary medium-sized hospital without special advantages It is true that this hospital has a nal hospital board which views experiment sym etically that the hospital management committee ctive and coöperative and widely regarded in the ital as a great asset, that all the administrative staff helpful with every problem that arises and it is cessary to single one department from another ther its responsibilities lie outside or inside the walls he building But there are presumably many other pitals equally fortunate in these respects

Progress Report

he male side has about 500 beds there are 90 nurses ll categories There are always two doctors working he male side and there may often be three but one of n is away from the hospital on other duties every noon Inadequate as the staff is it is better than in hospitals so here we have some slight advantage admission rate is not high, but for practical purposes otics are treated at outpatient clinics The admission and the number of patients of the male side of the ital for the past ten years are as follows

Admissions	*Total no of patients*
70	491
100	490
110	460
140	467
165	498
178	486
193	490
241	511
265	496
380	477

e experiment was started without premeditation on 1 1953 and the following figures for the chronic ds show how we have got on :

	195 –53	*1953–54*	*1954–55*
er of patients transferred from don ward	55	74	78
er of deaths	13	30	31
er of patients discharged	33	63	103
e no of patients in wards	449	447	429

the beginning of the experiment about 30% of the nts were in unlocked wards Now the proportion is and when I look at these remaining 10% I have doubt that in a year or so there need not be a single nt kept behind a locked door Figures are often ading, but there are fewer male patients in the hos now than two years ago though the number of ssions has increased and patients are not admitted ivil reasons.

GENERAL METHODS

The object of treatment is to discharge the patient so that he can take a useful place in the community again There is no point in discharging patients merely for the sake of discharging them. Patients will have to conform with the community after leaving hospital and they have to do so within the hospital Life in our hospital is therefore disciplined and well ordered but we arrange that patients gain by behaving well rather than lose by behaving poorly We believe that all the men are happiest when they are working and that they most enjoy work which they share with others, about which there is no compulsion which is useful and which has a finished product which they can see. They are encouraged if their work is critically examined and praised when good They are made to feel that their progress matters, by their psychiatrist trying to speak a few words to each every morning If they ask for leave and it is refused, they are told the reason for the decision and how it can be reversed If they feel they are unfairly treated, they are encouraged to seek an interview with the hospital management committee If a patient fails to help the community by doing as much work as he is thought capable of doing, he is sent to another ward—not necessarily a less comfortable one—where his day's routine is more closely ordered and where his personal responsibilities are less If a patient fails to behave well enough to remain in a ward the psychiatrist asks himself how he came to overestimate that patient's powers how he caused that patient to fail. He does not say 'That patient has had his chance and he won't get another in a hurry It's somebody else's turn now ' If a patient behaves badly, perhaps he needs less not more, discipline. If he escapes, perhaps that is a sign that he is ready for discharge Patients are not lightly discharged If the psychiatrist has a code which governs his relations with his patients it is to be quick to praise and slow to criticise and never to blame

In a hospital one or two wards are sometimes regarded as the stars, but this does not happen with us, except that in wards where progress seems difficult the greatest attention is given A great strain is placed on the nurses at the start of each fresh scheme though they are glad to be nursing they are accepting extra responsibilities and work

For nearly two years we did not ask for money but when we had proved that we were in earnest and willing to work without an extra grant a sum of money was spent on the furnishings of the wards and now a third of them are very comfortable

SPECIAL GROUPS

Some Young Men

A villa of 40 beds was allocated to young schizophrenics who had no reasonable chance of ever leaving hospital and for most of whom even day leave was impossible even if their relations could be persuaded to visit them. Their average stay in hospital for their present admission only was seven years Their average age was thirty two years 12 of them had received courses of electroconvulsion therapy (E C T) alone 7 had also had deep insulin-coma therapy 1 had had both these treatments as well as being leucotomised and 5 more had had E C T and leucotomy only 9 others had been leucotomised and received no other form of physical treatment. They had all had every form of physical treatment which was thought likely to benefit them. Some of it I feel was misguided A past prefrontal leucotomy may be the only thing that makes a patient's recovery impossible Of these patients only half a dozen could carry on a conversation and most of the others were incapable of replying logically to a simple question or were largely mute This was not due to recent

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roup of articles chiefly concerned with the value of ctive occupation and work for mental patients and the rans whereby it is best provided

ncet, Oct. 29 1955 p 917

t 1954 i, 924

neglect, because over the previous year a considerable effort had been spent on their care, but this effort had largely been for the forenoon and the afternoon, and had not included all their waking day Most of the patients were in constant need of care with their dress and their washing The following simple daily routine was planned

They were grouped in tens and slept, rose, washed and dressed, ate, played and worked in their groups, always having the same nurses with each group In the working day they wore battle-dress They had to keep this neat, their hair brushed, their shoes clean They had to shave themselves like practically every other patient in the hospital They had to wear a necktie except during hard work and games At 4 P M they all changed into lounge suits Each group had special duties each day Every week each group changed duties with another, so that their weekly routine was different for four successive weeks The details for two days are given below

		Tuesday	*Wednesday*
Group 1	A M	Mess duties	Mess duties
	P M	Bowling green construction	Bowling green construction
Group 2	A M	Bowling green construction	Bowling-green construction
	P M	Country walk	Hockey Educational discussion
Group 3	A M	Educational discussion Lacrosse	Country walk
	P M	Carrying ashes to bowling green	Carrying ashes to bowling green
Group 4	A M	Bathing	Carrying ashes to bowling green
	P M	Educational discussion. Hockey	Educational discussion Lacrosse

When the occupational therapy unit is reopened, we hope to substitute some sessions there for wheeling ashes, necessary though this is Each group in turn act as messmen for a week This means that in the forenoon they tidy the dormitories, the dining-room, and the sitting-room, wash up the cutlery and crockery, and fetch the laundry and the food from the central kitchen No patient is allowed to appoint himself as the kitchen worker

To say that miracles have been worked with these unpromising patients would be false, but there are good signs Within two months the charge nurses were asking for the door to be unlocked One patient has tried to run away and one has succeeded One curtain has been torn, one coat has been damaged A peculiarly restless patient, classified as suicidal and homicidal, whom the relatively liberal régime of the year past had done little to improve, became one of the nicest men in the hospital neat and polite, very hardworking, and able and willing to carry on a sensible conversation When we see the pleasure he gets out of working it is a little humbling to think that he had never before been given the chance to do it Two years earlier he was quite rightly accompanied everywhere he went by a nurse Today he goes where he wishes within the grounds and nothing stops him from being granted leave save his reluctance to leave the hospital

On some evenings, groups are allowed to stay up to the end of the television programme if they wish They enjoy their walks into the nearby village and across the fields We try hard to get them home for the weekend, and we find that the most unlikely relations are willing to try the experiment On the first visits a nurse may accompany the patient Then the family say they would like to try on their own

Lacrosse, tennis, and hockey were chosen as the games to be played because they would be unfamiliar and initially difficult The educational discussions are arranged a week in advance and we try to choose a topical subject which appeals to the nurse holding it Subjects lately chosen have included how to run a small holding, chrysanthemum growing, dairy farming, the Liberal point of view, local government, the job of a cricket captain, care of a motor bicycle, prospects the Derby, and how to run a seaside boarding Discussions are not high faluting, but one does ge discussion of sorts, and, bearing in mind that natural inclination of nearly all these patients would to keep apart from one another and never utter a wor we feel that progress is being made One young ma who for eighteen years had been smiling and grimac to himself, wildly gesticulating, and constantly talkin or shouting out to himself, often striding up and dow and never saying a sensible word, is now a neat har working, quiet, pleasant man He does not spea much, but what he says is nearly always sensible an he can talk well about music Another man has a moth who was told ten years ago by a psychiatrist that should forget she had a son, and should never vi him because he was incurable He now goes home leave

At present a bowling-green is being constructed, once this is done many other tasks suggest themselv A long jump, a swimming pool, a tennis-court, so on On these and all other activities every pati in the hospital gets a hot drink in the middle of t morning

Of course things go wrong Patients are sent on le when they are not fit Occasionally a patient wa away Someone is discharged and immediately rel —but these are not faults of the system but in psychiatrist's judgment

Some Older Men

There are another 90 patients—schizophrenics, m defectives, general paretics, epileptic psychotics— are not fit at the moment to work without superv Most of them are over forty years old They are in wards—one locked, the other open In each ward patients are divided into small groups of about 1 again each group is kept under one nurse for two m at least if possible Again all members of each g do things together

In the forenoon one group is responsible for th the ward and in the afternoon it plays games The groups may be carrying cinders from the ash he many years past to a cinder-road which it is hoped encircle the grounds Another may be digging out road, a third rolling the cinders in, a fourth doing phy training There is a special group of middle-aged tonic schizophrenics whose statuesque poses or less purposeless activity once seemed to defeat attempt to help them Their present varied and day is the remarkable achievement of their two n one a nursing assistant The problem of paid wor chronic psychotics might be solved by contract for outside farmers This autumn we have sent parties to the potato-picking on neighbouring f Patients and nurses alike have welcomed these ex tions, which offer fresh faces, picnic meals, new sc and a coach ride For each day he works a p pays 2*s* 6*d* to the hospital, and the whole of the m that the farmer pays is divided between the picke

The old men are given a pleasant day, but we try lend some point to it by seeing that they join in communal activity and always have a walk and a r the fresh air Some of them largely look after an ward garden They may, as will physically enfe psychotics, do useful tasks in a large day-room or garden They scrape old bedsteads and revarnish t mend canvas chairs, clean cutlery and metal jugs, card games and dominoes, and rarely make woollen

LINKS WITH THE COMMUNITY

In other wards the patients are all usefully work the gardens, in the kitchens, or with the porters, they are not lost on these tasks We try to find th outside employment, sending them for interviews to whether they are fit for the industrial rehabilitation in Hull, and trying to get their relations to accept t at home I may mention that the charge nurses of t rds of up to 80 patients not only work short handed that other wards may have more nurses, but also have llingly moved from a small ward to a large and convenient one for no other reason than the good of e hospital

A large piece of land was set aside for a nurse to look ter and he has turned this into allotments for some patients and also to grow flowers for the wards The tients who work these allotments are outpatients, t they are not from the admission wards or the out tient clinics They come from the chronic wards and ey are all people who would still be inpatients if this ovision had not been made Some are boarded out or trial, but most were discharged to their homes with a daytime occupation provided They come from A M to 4.30 P M Their bus fares are paid and their dday meal provided and part of what they grow theirs to take home That they like this work, as the inpatients who also help is shown by the fact at they ask to be allowed to come on bank holidays d that snow and rain are no deterrent

From time to time a patient is found a job and leaves her discharged patients may attend the occupa nal therapy department and no patient is discharged m the chronic wards until there is something definite him to do and somewhere for him to go

Voluntary organisations who visit the hospital to ertain the patients are another link with the outside ld but I sometimes feel that entertainments are erally designed to keep the patient contented rather n to aid his recovery and discharge This is particu y true of concert parties and films. Those who hold certs do so for the pleasure of small numbers of the ff and not for the patients Generally speaking ients go to entertainments quite mechanically and e little notice of what is going on, for films and concerts k to their particular norm and provide no stimulus years I have been asking patients the name and the of the film they saw the previous evening and I r got any answer suggesting that any impression been made or retained until J B Priestley s *An ector Calls* was lately shown In many hospitals patients sports day is a remarkable institution onic patients leave the wards and airing-courts for one afternoon and watch and probably sit con dly without any thought of running away, and yet following day they are locked away for another year etimes there are more events for the nurses than for patients

Some Results

he material with which we deal is not easy because admission and convalescent units are efficiently run we receive only their failures

is interesting to see what has happened to the 205 ents, including 100 readmissions, admitted in 1953

died in hospital 7 during the first year
have never left the hospital
are still in hospital, but have all been discharged and mitted since 1953
were discharged in 1953 have since been readmitted are now again discharged

f the 25 patients who have never left the hospital :

came from other hospitals (4 foreigners with schizo nia, 2 schizophrenics and 1 consumptive mental defec

were direct admissions (5 with gross organic brain damage ental defectives 1 recurrent depressive, and 8 schizo nics) Of these 3 are likely to be discharged this year

f the 14 patients who were discharged but readmitted are still in hospital, 2 have gross organic brain ge, 4 are depressed (1 with tuberculosis) 1 is in n, and 7 are schizophrenic. Of these 8 are likely to discharged this year

Conclusion

Many of our mental hospitals are depressing, inconvenient, ill equipped and understaffed The psychiatrist often feels that he is expected to undertake an arduous and exacting task without reasonably adequate equipment and help But he ought not to be easily overwhelmed by material handicaps In our hospital, without spending extra money or obtaining extra staff we have reorganised the male chronic block

Our results can no doubt be improved but they show how much can be achieved by the doctors and nurses alone. They also suggest that much more can be done for the chronic patients who spend long years in hospital, too often existing rather than living in drab conditions more conducive to physical and mental deterioration than to cure. In solving the problem of overcrowding positive therapy may well be more important than new buildings Given help many so-called chronic patients prove themselves able to return to the community Those who must remain in hospital should be the psychiatrist s special concern Without his aid they only too easily lose their tenuous links with relatives, friends, and ordinary life

If the community is to fulfil its responsibility towards these people they must no longer be allowed to become the forgotten patients of our mental hospitals

Early in their career most psychiatrists have felt that they knew how to improve the lot of the patients in their hospital. To do this, however they needed the support of their physician superintendent and the senior nurses and for a variety of excellent reasons such support has rarely been given I would be ungrateful indeed if I did not say how much I am indebted to Dr H B Miller physician superintendent of the De la Pole Hospital and to Mr P Archer chief male nurse

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Special Articles

UNRESTRICTED VISITING IN A CHILDREN'S WARD

EIGHT YEARS' EXPERIENCE

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S.R.N
SISTER IN CHARGE OF THE CHILDREN S WARD

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PHYSICIANS

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IF a child is old enough to understand, his parents can explain to him that he has to go to hospital to be made well Some children look forward to a time in hospital as an adventure Even those who are distressed at leaving home can understand that it is for their benefit But the younger child feels only that he is taken from his mother and familiar surroundings and abandoned by his parents to strangers in a strange world The most independent young child wants only his mother when he is sick and to deprive him of his mother at that time imposes on him a double burden. It is wrong to assume that the child who does not cry or make an outward showing does not mind being left The young patient who ' frets inwardly ' is a real entity

The very young child separated from home and parents and facing the abnormal life of hospital feels forsaken and alone Not only is he taken from his mother he is looked *after by* nurses who change every eight hours or more often This lack of continuity increases his forlornness and distress

For the past eight years we have encouraged parents, adult relatives and *friends* to visit our children s ward at any time of the day or night We have not found it necessary to ration the number of visitors at any one time When the whole day is available and not a set limited period, the visitors, of their own accord, spread themselves over the day by arrangement between themselves Usually there are one to five visitors in the ward Seldom is there no visitor present

The ward takes 30 to 40 children, girls up to the age of fourteen years and boys to the age of seven Babies up to the age of a few months are nursed in a special ward off the main ward The cases are both surgical and medical

How the Parents Help

The parents sit with the children and take their babies in their arms if the child is well enough and is comforted by nursing They read to the children, play with them, give them their food, and settle them down for the night, and in fact perform any parental duty which they want to do and which the condition of the child allows

As well as entertaining their own child and any other children in the vicinity, the parents, if they wish, make the bed and change the baby They are supervised at first to note their standard of hygiene, and if it is faulty it is tactfully corrected

If we find them reliable we allow them to test urine and help with the simpler treatment If the child has to undergo some unpleasant treatment—such as intravenous infusion, injections, or paracenteses—the parents may help to hold the child if they so desire The child gains comfort and confidence from the nearness of his parents

The parents know their own child in health, and, if intelligent, they will detect small variations in his condition more quickly than even an experienced nurse

To the sick child with the flagging appetite, even the best hospital food may be uninviting This is especially true of the children of foreign parents The parents know the child's preferences and distastes and can help in procuring dishes which the child relishes Contrary to our expectations the domestic staff have welcomed them into the ward pantry and helped those who wanted to make special dishes for these children

A tray is kept set with crockery and tea, and any visitor who is staying a long time may go to the pantry and make tea and have simple refreshment

When the child is admitted we have found it best for the parent to stay till the next meal and then settle him to sleep The mother gives him a toy and tells him she will be back tomorrow If the child cries and is wakeful he is given a sedative After twenty-four hours the children will usually wave goodbye with equanimity and after the second day they rarely cry when left

Some parents are upset if the child cries when they leave It is a good plan for them to wait and watch the child from some vantage point where they cannot be seen They will see how quickly the crying stops and the child settles, and they will go away comforted

We always tell the child the truth To an older child admitted for operation, it is explained that he will be put to sleep to be cured, that it may be uncomfortable for a time, but that his mother will be there when he wakes up

Benefits

We believe that unrestricted visiting by the parents is good for the child, the parents, the nurses, and the resident medical staff A great deal is learnt about the social background of the patient, the attitude of the parents to the child and to each other, and the type and capabilities of the parents

To the Child

The main benefit to the child is the sense of security he gains He realises that his parents have not deserted him and that when they go away they always return They remain part of his life away from home The importance of this security, both during the time hospital and later, cannot be overstressed One of nurses still remembers vividly her grief of seven years ago when, as a patient in a children's hospital. stood crying for her mother at the ward window her mother, who was not allowed to visit her, weeping in the street below

The child who is away for any length of time lo his place in the family If the parents visit the chil daily he is kept in touch with the family doings, and they with his If the other children are brought to th door of the ward to wave, as we encourage, the ties kept still closer Also, the infant often needs phys contact with his mother, and this may soothe him bett than sedatives

Not only is a parent's knowledge of the child's feedi pattern useful, but sick children will often eat be when given meals by their parents than by strang

A 2 year old girl who had been desperately ill with laryngo tracheo bronchitis, necessitating tracheotomy, ob ately refused food She was a country child whose father stayed in the city to be with her The father finally suc in getting her to eat by placing himself in the 'Oxyge tent with her while they both drank some beer and ate sandwiches

Many children, in going to sleep or taking meals, little habits which mean a great deal to them. parents are helpful with these fads which, though tri may have important effects

A little boy of $2^1/_2$ years had subacute nephritis with œdema necessitating the insertion of numerous needl lieu of Southey's tubes He had earlier been treated in an institution and had been splinted, which had caused constant distress and agitation. In our ward his pa who had previously sat with him, continued to do so. child required no splinting and was quite unconcerned happy throughout The parents were greatly impressed b difference in his behaviour

Another child who had been in hospital for months tuberculous meningitis from which she recovered had admitted later for another condition. She came into ward willingly, bade her mother goodbye happily, and down without any distress

While some routine is essential in a hospital the presence of the parents prevents routine beco unnecessarily rigid

As parents visit at different hours, some pare usually in the ward who, while amusing her own c has time to give to the others in the beds along This greatly lessens the loneliness of the children.

To the Parents

To the parents the main advantage of the visit that it gives confidence and lessens the strain of par They become part of a team caring for their child this satisfies the urge to be doing something ac They see all the work done for the patient and co realise the extent of the care given They are reas that nothing is "covered up" or hidden They learn how to carry out simple treatment, such as appl splints for eczema or giving injections for diabete

The over-anxious parent is helped to get a sen perspective by mixing with the parents of the o children Mistakes in handling and management of child can be observed, and a mother can be helped care for her child in a more sensible manner and understand that her many fears are groundless.

Parents who are inclined to "dump" their children evade their responsibilities have their interest in child increased The parents of children with incur conditions often find their grief eased by talking to staff

In addition the parents watch all procedures with close eye and have at times pointed out errors possible improvements Their criticism has usually b constructive he traditional visiting hours are usually awkward he mother in the home and impossible for the father hift work Unrestricted visiting hours do not disrupt routine of the home

feeling of camaraderie springs up between the nts and the staff On one occasion, when it became wn that the father of one of the children was too ill work the staff of the ward collected a handsome unt for the family

Vith foreign families free visiting is particularly ortant for in these cases the language bar may ve distressing to both child and parents

the Nurses

urses who have worked under different régimes have n enthusiastic in their approval of free visiting

The nurse can visualise the child in the family setting l not merely as a little sick patient in a hospital bed also gains extra training in maintaining successful sonal relationships, and from her contact with the rents she is sometimes able to glean information of ical value She realises that it is part of her work listen to the parents and to help them as much as she lps the child

A capable and efficient mother considerably lightens e nurses work and by her comments helps the nurses accept constructive criticism

With unrestricted visiting the visiting hours are tomatically staggered and there is none of the hausting rush inevitable when all the parents arrive ether and leave together—after which all the children together

the Residents

The honorary and senior staff, in their contacts and versation with the relatives are able to demonstrate correct relationship of the doctors to parents and ients. The residents learn to listen and to obtain uable information They also learn to handle people Frequent contact with the parents gives the young tors an increased sense of responsibility and enables m to see the patient as a sick child not as a clinical ase. It also gives them the opportunity of assessing worth of the parents, so that they are less likely to the escape mechanism of those practitioners who ibute all the ills of infancy to ' maternal mismanage nt.

Disadvantages

There are inevitably some disadvantages. There are e parents who will not complain to the sister in rge but telephone the doctors about minor matters occasional parent will be oblivious of the life-saving atment given and will complain of small things— ding being a little late or the nurse using the wrong her Foreign parents who do not understand English sometimes give food to a child shortly before an thetic is to be administered

One big difficulty is that parents persist in asking ses for information about the child instead of asking sister in-charge They may be given conflicting orts from different people and then confusion arises ce it is a good plan to have printed notices affixed to h bed to ensure that all inquiries are addressed to the er in-charge Our notice is as follows

> **NOTICE**
>
> You, the parents, and we in the hospital are working ether to make your child well
>
> We believe it is good for the child to have you visit henever you desire
>
> You will see all that is done for the patient.
>
> If there is anything you wish to criticise or if you have y suggestions for improvement please speak to the ter in-charge. We welcome such suggestions.
>
> *If you wish to know anything about the child do not ask the nurse Ask the Sister in charge*

It will be obvious that the success of this régime depends almost entirely on the personality, tact, and understanding of the sister in-charge She must have a real love of humanity and be prepared to take frequent interruptions cheerfully She must also be a continual source of help and comfort. Where this is given willingly and generously it is reflected in the psychological climate of the ward

The success of our scheme is we think shown by the fact that during the eight years we have had only two children taken from hospital against advice

One was the child of an incompatible marriage in which the parents were at loggerheads and the child was made the chopping block of the dispute The second was a child con valescent from nephritis who had been told prematurely by a resident medical officer that she could go home When it was later found that the child required to stay longer in hospital the parents removed her at their own risk

Conclusion

Our experience has convinced us that unrestricted visiting is good and that by it we minister to the emotional needs of the child in his enforced unnatural institutional environment It is of benefit to the child's physical condition and it reduces the risk of psychological injury

It is a pleasure to acknowledge the debt we owe to Miss E Schafer matron of the hospital Without her generous coöperation and sympathy this experiment would not have been possible. We have availed ourselves freely of her wisdom and the maturity of her knowledge in the nursing profession

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Medicine and the Law

A Broken Needle

A FIFTEEN YEAR OLD schoolgirl developed a blister on her heel which became septic She went to a hospital clinic and a doctor advised an injection of penicillin The girl was told to sit on a form and while the nurse was giving her an intramuscular injection using a no 16 needle, the girl made a sudden movement and the needle broke and remained embedded in her thigh The needle was $^{20}/_{32}$ in long and broke $^{1}/_{32}$ in from the mount An operation to remove the needle was success fully performed and there was no remaining disability except for a $3^{1}/_{2}$ in scar on the thigh The girl through her father brought an action alleging negligence against the borough council (who were in occupation and control of the hospital) and the nurse

Mr Justice Pearson said that the question was whether the accident was caused by any negligence on the part of the nurse for whom the hospital were vicariously liable There was nothing wrong with the method used by the nurse but it was said that she had used too short a needle and had pushed it in too far The plaintiff's expert witness thought that it was wrong to use a no 16 needle he would have used a no 2 which was longer and thicker and therefore presumably stronger The defendants expert witness thought that the selection of the needle and the method used were both right The plaintiff s theory was that the needle must have been pushed in right up to the hilt before it broke, while the defendants theory was that it might very easily have been pulled in All that was highly con jectural He, his Lordship was faced with the fact that the needle broke very suddenly If a longer and thicker needle had been used it would cause more pain to the patient and he would think that if one inflicted more pain it would be more likely to cause a convulsive reaction He his Lordship was not satisfied on the evidence that the needle was pushed in too far, and he thought that a nurse with the defendant s experience would not have pushed it in further than the right distance The infrequency with which this kind of accident occurred had to be borne in mind, and all that was asked of nurses was that they should use reasonable care The accident could be explained as being due to an unexpected movement on the part of the girl, that was not the kind of thing which could reasonably be foreseen and therefore it would not be right to use a thicker and longer needle and inflict extra pain on all patients to meet the possible contingency that one of them might flinch in the way this girl did There was no negligence and there would be judgment for the defendants

Marchant *v* East Ham Borough Council —*Queen's Bench Division* Pearson J Oct 10, 1955 Counsel and Solicitors I G K Sheldon (Churchill, Clapham & Co), G R F Morris (Blount Petrie & Co)

C J ELLIS
Barrister at Law

Parliament

The Budget and Hospital Building

PARLIAMENT reassembled on Oct 25, and the following day Mr R A BUTLER, *the Chancellor of the Exchequer,* introduced his autumn budget In announcing that Government lending to local authorities was to be checked and that other public authorities were to be asked to coöperate in restraining both current and capital expenditure, he added that the Minister of Health and the Secretary of State for Scotland were communicating with hospital boards in this sense In the hospitals, as in the local-authority services, the Government were not reducing the programmes which had already been announced, but, subject to that proviso, they were asking the hospital boards to ensure that only the most urgent and necessary works were undertaken

In the course of a hard-hitting debate Mr HAROLD WILSON suggested that because the Chancellor refused to cut inessential building in the private sector, he had been forced to impose a savage cut on the social services Petrol stations, pubs, and cinemas were going up, yet council houses and hospitals had to be cut City offices were mushrooming, yet schools had to be cut

Mr BUTLER I have said that the hospital programme is going on as announced I have made no statement that hospitals will be cut

Mr WILSON The Chancellor has made it plain that the hospital authorities are asked to review capital expenditure

Mr BUTLER I am referring to the hospital building programme May I say that no new hospitals have been built since the war It has been a source of pride to us that we have been able to keep our undertaking to maintain the education programme and also to start on a modest new hospital programme, which will be a very good thing for the country

Mr WILSON That was in the programme announced in March and April A lot of things have happened since March and April. Will the Chancellor give an assurance that there will be no cut in National Health Service expenditure, or on capital investment in hospital building?

Mr BUTLER I will adhere to the statement I made on July 26 and the statement I made in the course of my Budget speech As I have said, the Minister of Health has communicated with regional hospital boards about capital expenditure which is not of the first priority

Mr WILSON *again asked for an assurance that there* would be no cuts in expenditure on building for the hospital service Did the Chancellor, he continued, really think it a higher priority to build petrol stations and public houses than hospitals at the present time? If he really wanted to "blow off the froth," the Government should reintroduce building licensing and cut out the inessential building which was going on today, so that essential building could take priority

At the end of the debate the PRIME MINISTER stated that the hospital building programme was not to be cut

Replying to later questions, Mr IAIN MACLEOD, Minister of Health, said the hospital-building programme which he had announced for 1956–58 in two statements, one in February and one in July, stood in respect of every hospital, ward, and bed There were other programmes of regional boards and a period was now being entered upon when building would be twice as much as that undertaken by the Socialist Government He had thought it right to write to all the chairmen and to them that the allocations were not being cut, nor there any change in the special undertakings in regard to Whitley awards, and so on But, in view of the Chancellor's decision, Mr Macleod regarded it as the duty of everyone to do everything they could to see that the moneys available were not wasted Preparation of the hospital building plans was proceeding but no building was due to start under the expanded programme before April 1, 1956

Mr KENNETH ROBINSON asked why only 8% of the centrally financed capital programme was being devoted to mental hospitals in view of the urgent need for additional beds and for the reconstruction of existing mental hospitals

Mr MACLEOD It is true that this percentage is considerably less than the amounts devoted by hosp boards to mental hospitals, which have been steadily increased in recent years But the centrally financed programme deals only with major projects and does include the large number of small extensions and improvements that are being carried out. As regards the buildin of mental hospitals, it is true that none had been bu for 20 years That adds to my delight in being a to start them

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Viscount Malvern

On Oct 26 VISCOUNT MALVERN of Rhodesia and of Be in the county of Kent, F.R.C.S. (formerly Sir Godfrey Hugg prime minister of the Federation of Rhodesia and Nyasa was introduced and took his seat in the House of Lords

QUESTION TIME

Hospital Visiting-hours

Replying to a question, Mr MACLEOD said that, at the 1954, 506 of the 1362 hospitals admitting children did allow daily visiting On the advice of his Standing Advisory Committee he proposed shortly to send hos authorities a further memorandum on the subject He do everything he could to encourage visits by childre their parents and relatives who were sick in hospital, it was a matter which must be left to those in charg hospitals and not one on which he would issue an ab direction

Cost of Drugs and Appliances

Replying to a question, Mr MACLEOD said that discu about the method of fixing the prices of proprietary prep tions had continued Proposals which had been framed representatives of the industry had recently been revised them in the light of these discussions, and he was at pr examining in detail the revised proposals With regard standard drugs and the main types of surgical dress investigations of *manufacturers' costs* and profits in these fields were concluded earlier this year, and he satisfied that there was at present no call for intervention the Government Basic drugs, which could not be dealt separately from proprietary preparations, were still u investigation, and meanwhile the firms themselves had tinued to reduce the prices of some important drugs. the price reductions to which he referred in his reply on Jun last, he understood that the manufacturers had further red the prices of many penicillin products by about $12^{1}/_{2}\%$, streptomycin products by about 15%, of chloramphe products by $2^{1}/_{2}\%$, and of a number of hormone products varying amounts ranging up to 50%

New Hospital for West Scotland

Replying to a question, Mr JAMES STUART said that altho the new hospital at Alexandria was built primarily as a res of accommodation for civil defence purposes, arrangeme were now being made and staff recruited to bring the hosp gradually into ordinary use from Dec 1 Finance was be provided from the sum available for expansion of the hosp service in the current year, partly by diverting funds originall allotted to another board which was not at present in a posit to apply them to projects of equal importance

Public Notification of Executions

Mr MARTIN LINDSAY *asked the Home Secretary whet* he would introduce legislation to provide for the date place of executions not to be made public until after th had taken place —Major GWILYM LLOYD GEORGE I do think that it would be right to refrain altogether fro announcing the date and place of an *impending* executi t I have noted for legislation at a convenient opportunity s recommendation of the Royal Commission that notice ould be given in the press instead of by posting outside o prison gate

Schools for Handicapped Children

Replying to questions, Mr DENNIS VOSPER, parliamentary cretary to the Ministry of Education said that excluding placements 11 new special schools had been opened so far 1955 None of these was specifically for physically handi pped children. Several schools for spastics were in the urrent programmes, and by 1958 there should be no need r any spastic child to be kept out of a special school. For e more severely handicapped spastic he was sure that the ecial spastic school was the right answer; but for the less ndicapped, the ordinary school for the physically handi pped would he believed be adequate In December 1954 al education authorities reported that nearly 10 000 children re awaiting places in special schools, of whom over 12 000 re educationally subnormal. Most of these children were ing educated either in ordinary schools or at home

Milk Tablets for Schools

Replying to questions, Mr VOSPER said that 17 local educa n authorities were providing either dried milk or milk blets, with the approval of the Minister to 90 schools which they had been unable to make satisfactory arrangents for the supply of fresh milk. There was no suggestion at milk tablets were as good as liquid milk but they were adequate substitute There has always been a number of ools which on account of their remote situation had been able to get a supply of liquid milk.

Public Health

Ammonia against Smog

FOLLOWING investigations by the atmospheric pollution ction of the Fuel Research Station, experiments are ng carried out this winter on a possible method of ulating the sulphur acids in smog The method nsists of releasing small quantities of ammonia to utralise acids in the air

During the great fog of 1952 a number of prize cattle d at the Smithfield show, in spite of improvised methods ave them such as breathing masks soaked in whisky; no pigs or sheep died at the show The prize cattle e kept in scrupulously clean quarters and under the d hygienic conditions possible, while the pigs and ep lived in more natural surroundings. It was able that the ammonia gas given off from the pigs sheep's litter mixed with the air they breathed with eficial effect. This possibility pointed to the use of monia as a means of preventing damage to human es by acid vapours, particularly those in smog

The atmospheric pollution section is coöperating with Bartholomew's Hospital, London, where outpatients some medical staff have been provided with a bottle taining a solution of ammonia. This is rather like a orophyll deodoriser wick and bottle During a smog wick is pulled up and ammonia is released into the osphere of the room The proportion of ammonia st be exact enough to neutralise the acids, so a special icator paper is used to record the acidity of the osphere.

Poliomyelitis

Uncorrected notifications of poliomyelitis in England Wales in the week ended Oct. 22 (42nd week) showed ght decrease in the total number of cases; but there an increase of 21 in paralytic cases The figures re (41st week in parentheses) paralytic 210 (189) paralytic 137 (177), total 347 (366) Thus, the proion of paralytic to non paralytic cases was very much her to the normal The total uncorrected notifications the 42nd week during the past six years were (perage of paralytic cases in parentheses): 1950 278 6%) 1951 119 (50.3%); 1952 120 (71.0%) 1953 (6 4%); 1954, 62 (62.9%) 1955 347 (60.5%) far this year the proportion of non paralytic cases in gland and Wales has been approximately 45.0% of total. The figures for the whole of the preceding years were: 1951 41.5% 1952 20.8%; 1953 ; 1954 32.8%

In England Now

A Running Commentary by Peripatetic Correspondents

IN our department we don't worry about calendars or solstices or any new fangled nonsense like that our winter begins when Ernie says it does. Ernie is the chap who works the furnace and the only man who understands our complicated heating system. If we are in early enough on the great day we are privileged to hear a great tone-poem in sound A vast roaring noise begins somewhere in the basement and gradually builds up into a high pitched scream as it sweeps its way through the lower reaches of the building By the time it has reached the lab below our eyrie the pipes around our walls have started to shake with excitement and the scream gives way to a series of titanic hammer-blows which lift our typewriter off its perch and send our reprints flying Eventually the tumult quietens to a steady ticking noise, and when we stretch our legs under our bench we find that the radiator is red hot Winter has come

This time, however, winter did not come so smoothly as usual. The hammer-blows stopped on the second storey, and our radiator remained obstinately cold. We felt it necessary to inform Ernie of the hitch in his plans, and he honoured us with a personal visit The consultation left us a trifle uneasy It appeared that there was cement in one of the valves controlling our radiator, and it was a miracle that we had not blown up long ago Ernie retired to the basement to shut off winter while the affected valve was dealt with, and when he came back we got under the bench with him to inspect the outrage It was then that we noticed another valve on the pipe, hidden in an inaccessible corner and asked Ernie what it was for Oh said Ernie carelessly, that's a by pass for Biochemistry; you're first on the circuit here and if that's shut they get no heating '

This dangerous information has been in our possession for some time now and our baser impulses are simmering We have a spanner from the workshop in our drawer, and only yesterday the Professor of Biochemistry spoke *harshly to us when we backed into his car* It is exceedingly cold, and Ernie is on holiday

* * *

In the Cameroons names are splendid in variety and rich in imagination Fineboys and Freeboys are common and hardly worthy of inclusion in a collector's list Culinary specimens, such as Sunday Curry and Mango Jam financial ones such as Money Hard and German Money, and exhortative specimens like Mantry and Try Yourself vie with descriptive specimens such as Jolly Boy, and *medical specimens, of which* M & B is a good example. We are hoping that among the babies born in the hospital we will soon have a Penicillin if not an Achromycin

* * *

Faced with the problem of removing a Foley catheter the balloon of which refused to be deflated by the usual channel, we first applied to the Old Man of the Ward who had lately successfully removed his own with balloon fully inflated and without apparent trauma. Unfortunately he was flat *on* his back *in a trance* and unable to supply any information

We anæsthetised the patient in the theatre and fell to theorising

Obviously extreme inflation ought to burst the balloon. *This had already been tried, albeit timidly,* and followed up by sodium iodide X ray showed the balloon distended with several irretrievable ounces The bladder was of small capacity owing to prolonged drainage and further inflation might distend the bladder thus protecting the balloon and laying the former open to the fate *intended for the latter*

Bimanual palpation elicited an elusive tumour, and attempts at compression were met by successful evasion.

A ureteric catheter stilette insinuated along the passage towards the balloon's interior failed to reach its destination.

Total insertion of the Foley catheter on the *end of a* cystoscope followed by diathermy was suggested. "Rubber's a non-conductor' objected the Consultant drily; ' Nip it with the biopsy forceps, said the Registrar Suprapubic acupuncture' volunteered the H.S whereupon a spate of hydrostatic hypotheses circulated

We eventually agreed that the pressure in the bladder—however high—would always be less than that in the balloon by the amount due to the elasticity of the rubber. Therefore, any puncture hole, due to a fortunate aim, would empty the balloon into the bladder. Q.E.D.

Meanwhile the Consultant was examining the Foley which, to his surprise, he had withdrawn *per vias naturales with the balloon still inflated and without apparent trauma*.

We went back to the ward. The Old Man was lying in the left lateral position in a state of natural sleep. There was the slightest suspicion of a smile on his peaceful face.

* * *

The entrance fee to the zoo was more than we thought, but it would be worth it to see six-year-old Jennifer clapping her hands with joy when she saw the animals.

We had a look at the monkeys first. "I know what I'd like," said Jennifer. "What's that?" "An ice cream." We all had ice creams.

"Now for the bears. Look at that little one, Jennifer—like your Teddy isn't he?" "Yes, and I've got nine teeth and I'm only six years old."

We tried the aquarium. Jenny's face lit up. "From down here," she said, "you can see a rainbow if you look up into that corner."

"What would you like to see now?" "I want to run up those steps and down the other side." These were the steps used for helping children on to the elephant. "If you wait until the elephant comes back from his tea, you could have a ride on his back." "Can't I just run up those steps and down the other side?"

The next day we wondered how much had stuck in her mind of her visit to the Zoo.

"Where did we go yesterday, Jenny?" She wrinkled her brow and chewed the end of her spoon. "To the seaside," she exclaimed triumphantly.

So we spent the day quietly in the garden and Jenny made mucksie-pies. She had the time of her life.

* * *

At 8.30 A.M. on a Thursday our lecture-room usually resounds to the noise of Mrs. Mop's electric polisher, but this morning it was silent. No lecturer had appeared, no students had clumped down the corridor, but from a low murmuring within it seemed that the anæsthetics lecture had begun. There is a side-door with a porthole. I looked in.

To an audience of two—her cronies from the wards—our cleaner was demonstrating the projector with the skill born, it was evident, of long practice. On the screen was the lecturer's introductory slide, Dürer's woodcut of the first surgical operation under anæsthesia. "And the Lord God caused a deep sleep to fall upon Adam, and he slept: and He took one of his ribs, and closed up the flesh instead thereof; and the rib, which the Lord God had taken from man, made He a woman, and brought her unto the man."

How did this primitive masterpiece strike these elderly cinema and television fans? Giggles? Sniggers? There were none. The audience was rapt. As I regretfully opened the door the audience rose and the meeting came to a dignified, if hurried, close. But the spell was not broken. A wispy old dame smiled up at me as she grasped her broom. "'e done it lovely!" she said.

* * *

The Thoracic Surgeon sat in state behind a large desk, with his secretary at his elbow, and held a follow-up clinic on some of his patients whose mitral stenosis had been treated by valvotomy. Onlookers were impressed by the gratifying results, but the pleasant atmosphere was a little marred by a blue panting woman who took at least two minutes to reach her chair from the door. But finally she was settled.

"Now, my dear, how have you been since your operation?" he asked.

"Well, Sir, ——"

"Put that down, Miss Jones, put that down," he cried.

Letters to the Editor

CHEST PHYSICIANS

SIR,—With the recommendation of the Strach Committee under consideration, we believe there is sti widespread concern among chest physicians concerni their future prospects in the National Health Servic Data published in your journal earlier this year,[1] di closed that in no other branch of specialist medici have so few of the senior staff been graded as con sultants, and what is even worse, in no other branch i the *establishment* fixed for such a low proportion o consultant rank. It is true that before the N.H.S tuberculosis had, unfortunately, become divorced fro other chest medicine, and its specialists were expecte to have a higher qualification in the public health fie rather than in general medicine, but the treatment me out to some of these senior colleagues by the grad committees was surely harsh indeed. Furtherm many who have entered the specialty in more rec years have fared no better, in spite of the intens training that has been demanded of recruits to th specialty since the inception of the service. It may be claimed, with some justification, that of all specialist medical fields, the practice of chest medi comes nearest to that of general medicine in sev What chest clinics today are only concerned with th management of tuberculosis patients? The mana ment of patients seen at the chest clinic nowadays ca for the exercise of a wide range of diagnostic skill, a this is expected of the chest physician whether he graded S.H.M.O. or whether he be graded consulta Nearly every chest physician doing clinic work is acce ing responsibility for the diagnosis and proper mana ment of any patient suffering from any chest dise and this is as it should be.

Very few indeed of these specialists graded S.H.M.O. not hold either the recognised diploma in public hea which was the "open sesame" to the specialty in the p or a higher degree in medicine which has now, per rightly, supplanted the public health diploma in field, or else has shown by long experience that th have in fact the skill to carry such responsibility.

Why does this extraordinary exploitation of ch doctoring persist so blatantly in the field of chest m cine? Would any reputable trade union tolerate a state of affairs? It is, we believe, entirely due to quite remarkable and unjustified bias held in cert happily diminishing circles, against whole time doctors A further contributory reason may even be that certain authoritative, but not always well infor quarters, little (or nothing) is known of what goes in a chest clinic—does one occasionally hear a dis guished leader of the profession refer to them "dispensaries"?

The Ministry of Health, in receiving the Strach report, is committed to increasing the consultant establ ment in our hospitals. Without doubt, the diagno work in chest clinics, now that these have virtu become ordinary hospital outpatient departments (w inpatient accommodation under the same physicia is going to increase substantially for at least anot decade. Provided that the leaders of the professio realise the importance and variety of work now bei done in chest clinics, it is difficult to see how the Minis of Health can resist the recommendation for a ve substantial increase in the consultant establishment this specialty.

A. T. HENDRY
W. H. TATTERSALL.

Bournemouth Chest Clinic.

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[1] *Lancet*, 1955, i, 448.

MECAMYLAMINE IN HYPERTENSION

SIR —In hypertensive patients under treatment with nglion blocking agents given by mouth, it is possible at some of the difficulties of management such as egular fluctuations of blood pressure and gastro testinal atony might be due to the poor absorption and, nce large local accumulations of these drugs in the mach and intestines Stone and his associates[1] have ported recently that 3 methyl aminoisocamphane hydro loride (mecamylamine) is completely absorbed from the stro intestinal tract of animals This facility of sorption is related to the fact that mecamylamine is a ondary amine whereas all other effective ganglion cking agents have been tertiary amines (quaternary monium salts)

Hypertensive patients treated with mecamylamine in s clinic have shown an equal hypotensive effect ether the dose is given intravenously or orally ective dosages by either route in man have ranged ween 2 and 20 mg The duration of the hypotensive ect has been as long or longer than with pentolinium trate

18 patients with severe hypertension have been given tinuous treatment with oral mecamylamine for iods varying from one to four months The blood ssure was significantly reduced in every case although range of effective dosage was wide varying between nd 90 mg per day (average 30 mg) In comparison the quaternary ammonium compounds there usually less fluctuation in blood pressure after mecamyl ine, both at different times during the day and from day to the next

ecamylamine however, failed to induce any less rees of constipation or gastro intestinal atony This gests that these side-effects may not be due to large accumulations of a ganglion blocking agent in the but rather to the effect of the absorbed fraction on aptic transmission in the ganglia In addition, the ly absorbability of mecamylamine did not obviate n appreciable extent the need for carefully adjusting dose to fit the individual responsiveness of each ent.

n spite of these disappointments mecamylamine by on of its complete gastro intestinal absorption seems rovide the reliability of parenteral injection with the venience of oral administration The drug therefore, ld prove to be a useful addition to the treatment of re hypertension.

eorgetown University and the
terans Administration Hospitals
Washington, D C U S A

EDWARD D FREIS

MATOGENOUS OSTEITIS IN THE NEWBORN

IR,—It is fortunate that most of the pædiatric surgeons ughout Europe now know one another very well visiting one another's clinics we have learned that ough many of our problems are similar some diseases ifest themselves in different ways in different areas may account for Dr Neligan s very different erience in osteitis of the newborn (Oct 22)

nce upon a time I too was deluded into thinking I had solved most of the problems of staphylococcal ermia Perhaps further experience will alter Dr gan s optimistic outlook in the unpredictable effect the unconquered staphylococcus in the newborn Neligan reports 34 cases with only 1 death We fortunate enough to treat 31 cases without a death cases 32, 33 and 35 all died! Dr Neligan aims treat every case with appropriate antibiotics till the bone infection has been completely eradicated the Glasgow series case 32 died a few hours after admission, case 33 (case 5 in the article) died after seven weeks of continuous therapy with the "appropriate" antibiotics, and case 35 died of pneumococcal meningitis three weeks after discharge from hospital At necropsy there was no evidence of active bone disease. The last patient in the series (case 41) apparently developed osteitis while under 'appropriate antibiotic treatment for a staphylococcal umbilical discharge He died at the age of eight weeks after five weeks of continuous antibiotic therapy It is perhaps unfortunate that we decided not to include in the article the table reporting all the severe cases in our series

Apart from the small series reported from my own surgical unit there have been many more cases in the other surgical and medical units of this hospital I have also had the opportunity of seeing further cases in other children s units in Glasgow While admitting that the mortality in the reported series is unusually high, the risk is there and few pædiatricians obstetricians or family doctors can afford to be happy about the effects of the unconquered staphylococcus in the newborn

Royal Hospital for Sick Children,
Glasgow

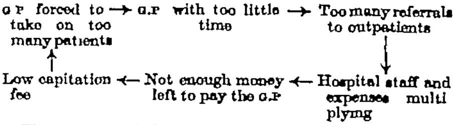
W M DENNISON

GENERAL PRACTICE

SIR —Dr Tait s letter last week was so realistic and stimulating that I would like to develop his arguments further

The three requirements of good general practice which he so rightly says are lacking today—time, tools (including ancillary help) and training—could be fulfilled more simply than he suggests, without re-educating the politicians and without quartering the lists and quadrupling the capitation fee Things could very largely be put right by the doctors themselves, within the service

The vicious circle responsible for the present unsatisfactory state of affairs runs like this


G P forced to take on too many patients
G.P with too little time
Too many referrals to outpatients
Hospital staff and expenses multiplying
Not enough money left to pay the G.P
Low capitation fee

The overcrowded outpatient department is the point at which this circle or spiral can be broken Let the consultants and registrars exert a little kindly discipline on their general practitioner colleagues and refuse to see outpatients without a proper letter sent in *before* any appointment is made A minority of consultants do this already This applies of course only to ordinary outpatient appointments not emergencies

Results would be salutary all round General practitioners would have to take proper histories and examine patients before referring them to hospital They would also find it helpful to employ secretaries to keep their records in order and to type the letters. An immense amount of time would be saved at outpatients and consultants would have a chance to plan ahead seeing patients in roughly priority order and adjusting the appointments to fit the probable time required for each case

Before long the pressure on the hospitals would ease and their expenses would fall There would then be more money to pay the family doctor for doing his work properly Eventually the capitation fee *might* be doubled and the maximum list halved.

To prevent the G P suffering financial hardship during the transition period perhaps an extension of the supplementary annual payment scheme already in operation for doctors with small lists might be introduced

The family doctor could contract in or out of the new scheme as he wished If he came in he would receive a grant for secretarial help, a training grant to enable him to have regular postgraduate education, and a supplementary payment on a sliding scale related to the number to which he undertook to reduce his list by a specified date

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[1] tone, C A, Torchiana M L, O'Neilly G P Beyer K H Meeting of the American Society for Pharmacology and Experimental Therapeutics Sept 7 1955

Richmond, Surrey RICHARD MACKARNESS

THE LUNGS IN MITRAL STENOSIS

SIR,—Dr Steiner's letter last week refers to the small "horizontal lines at the periphery of the lung in the lower zones which are ascribed to distended lymphatics" and then implies that they are a feature of pulmonary hypertension

The pulmonary œdema of phosgene poisoning in goats is associated with a large increase in the effluent from the thoracic duct [1] Serum injected into the trachea of dogs is removed by the lymphatics [2]

Whether these lines are due to enlarged lymphatics, or to interlobular œdema, it would be logical to assume that they are a feature of pulmonary œdema Mitral stenosis is, of course, by far the commonest cause of chronic pulmonary œdema, and it is in this condition that they are most commonly seen I have recently seen these lines in a patient with the nephrotic syndrome, they disappeared with the systemic and pulmonary œdema

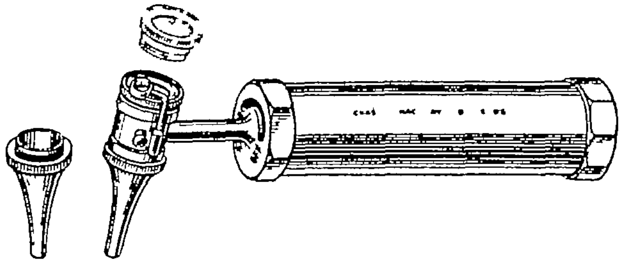
It would be helpful to know the "other conditions" with pulmonary hypertension and these lines to which Dr Steiner refers In particular, I would challenge him to produce an example of these lines in primary pulmonary hypertension without fluid retention

Edinburgh M B MATTHEWS

AURISCOPE WITH FIXED HEAD

SIR,—With most auriscopes two very annoying faults develop before the instrument has been long in service first, the light tends to flicker owing to faulty connection between the head and the battery handle, and secondly, the specula soon become loose in their attachment to the head of the instrument

I have had an instrument made in which the head and the top of the battery handle are from a single casting This unit is fitted to the battery handle by a quick running thread, and a retaining ring inside the battery handle prevents the batteries from falling out when the instrument is not assembled The specula are fitted to the head again by a quick running thread which prevents them from accidentally falling out or coming out of alignment In addition the angle at which the head is set has been carefully adjusted to make it more convenient for the user when using the instrument as an "operating" auriscope, and instead of the usual three specula, five are supplied in graded sizes, the smallest being suitable for even the tiniest babies



This auriscope has proved satisfactory in practice

The auriscope is made by Messrs Chas F Thackray, of Leeds

West Hartlepool,
co Durham F FLEMING

MODIFIED ELECTROCONVULSION THERAPY

SIR,—The article by Dr Kelleher and Dr Whiteley (Sept 17) was of particular interest to us because we also have been investigating this subject

We have confined our observations to the action of su-ethonium bromide ('Brevidil E') in a series of male p and we have used a standard dose of 50 mg cation—that is half that used by Dr Kelleher and Dr Whiteley

In our cases (over 300 treatments to date) the onset of fasciculation has been slower than in theirs and we have not induced the convulsion until the phenomenon ceased—on average, 30 seconds after the injection

During this interval restlessness, and in some cases distress have been apparent in at least one third of the patients, subsequent amnesia, however, has been complete in all but a few cases We consider the anxiety can be related to the longer interval between injection and induction of shock and intend to attempt to confirm this in a later series

The degree of muscular relaxation achieved on our dose has been considered adequate throughout the series

Post-ictal apnœa has generally been shorter than in Dr Kelleher and Dr Whiteley's cases, and has on no occa been so prolonged as to cause anxiety

To sum up, our findings, compared with those repor by Dr Kelleher and Dr Whiteley, suggest that a sm dose of relaxant can give adequate muscular relax and a shorter period of apnœa, but further investig is required to determine the optimum interval bet injection and induction which will avoid distress to t patient and give adequate modification of the fit

J K HEWAT
J G JESSON
Knowle Group of Hospitals, Hants DEREK S G M BAIL

SIR,—My experience here with electroplexy parallel to that of Dr Tyndel (Oct 15) All worke my own wards are unanimous that the effects of ele plexy are considerably more effective and lasting if t is no previous anæsthesia, as by thiopentone—that say, when the brain is not damped down

For some time now, I have been using the techniques side by side for comparison (i) Str E C T, (ii) Modified E C T, using suxethonium bro ('Brevidil E'), and (iii) Modified E C T, using pentone and suxamethonium chloride ('Scoline') and more are we inclined to abandon the use of prelim anæsthesia except in the odd case

The choice would then seem to lie between mo and straight E C T, and since the risks of straight have been greatly exaggerated, I think that (in vi the slightly added element of danger in the use of muscle relaxant) straight E C T should be our first c if there are no serious contra indications

Over many years now, I have done thousands of "strai without (touching wood!) any fatality and, as Dr T observes, the risk of bone complications is very small same applies to dislocations, always provided that p precautions are taken—namely, adequate staffing, the p holding of the jaw, an elastic hold on points of most " where shock is taken up (shoulders, knees, hip joints, and adequate and early oxygenation

Staff should be trained to hold these impact points "firm gentleness," giving yet holding under the rebou the convulsive state It is my custom to start oxygen before the convulsions have fully subsided, using a funn preference to the bag, which I reserve for the muscle-rela technique when the patient may not be capable, for a ti of breathing for himself

If the jaw is properly held, dislocation will not occur most common fracture—a fracture of the dorsal spine been infrequent in our experience, and when the patie held properly will seldom occur When it does occur, have not found any really serious consequences.

To be sure, you will always meet cases where straight E cannot be undertaken—at any rate cannot safely be und taken—as in the aged with brittle bones Then, after ru out straight E C T, *and only after*, one is faced with alternative of anæsthesia or not In such circumsta less the patient was very apprehensive my choice would be t I would prefer to use some muscle-relaxant technique ch as suxethonium *alone*; and I would prefer this even re emphatically when there are difficult veins However ilful the administration of thiopentone there is always, certain cases, a risk of leakage from a vein. Much less has be injected in the case of suxethonium Thiopentone is itating and any leak may cause inflammation or an abscess the arm.

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[1] Cameron G R, Courtice F C *J Physiol* 1946 105 175

[2] Courtice, F C, Phipps, P J *Ibid* p 186

One must never forget—as one is sometimes inclined to —that for *any* anæsthesia, even thiopentone preparedness d availability of a full range of emergency equipment uld be that of the most carefully planned surgical opera n. This is not always possible at outpatients or when portable machine is taken to a patient's house Nor is always possible to find an anæsthetist available or willing conduct the anæsthesia for routine electroplexies.

There is no escaping the fact that there is added risk life with thiopentone and it is this which has to be ighed against a supposedly greater risk to limb (and ne at all to life) in the case of straight E C T Can s be said even about modified E C T ?

Quite apart from the fact that results are so much ter when E C T is given straight, I know which I uld prefer if I were the patient.

xminster Hospital
Axminster Devon.　　JOHN W FISHER

FECT OF ADRENALINE ON ADRENOCORTICAL SECRETION

IR —The paper by Dr Hunter and his colleagues[1] a great help to me in the explanation of an important blem The authors stated that the eosinopenia pro ed by adrenaline is independent of adrenocortical vity, the degree of eosinopenia found with a high sma-steroid level being identical with that accompany normal plasma steroid values In their view, it is presence of adrenocortical hormones, rather than r elevated level which is responsible for the nopenia of over 50% after adrenaline administration

y problem is concerned with a study I have been ding of the action of X rays on the sympathetic trunk procedure was first applied to the treatment of lic ulcer by Nemenov[2] I have confirmed his good lts in 200 patients. In the course of this investiga I noted that healthy persons and patients with cent gastric ulcer reacted to each irradiation with nsiderable eosinopenia on the other hand patients an active ulcer showed much less change Thus an nopenia identical with that obtained by the cortico hin or adrenaline Thorn test was observed in healthy ons. On the basis of the findings of Hills et al [3] I attri d this to the increased production of ketosteroid Yet parallel estimation of eosinophil cells and ketosteroids r irradiation has shown that the eosinopenia was ciated with an unchanged ketosteroid content of the These results were controlled by the determination the patients' serum adrenaline by Trendelenburg's test—a test of debatable significance but the only available to me at that time After 12 examinations ing identical results, we concluded that in the frog iments, the serum of irradiated persons produced ssure increase. From this we judged that the sera ained an increased quantity of adrenaline

hese results disturbed my explanation of the effect of liation and I was unable to form a definite opinion l the paper by Dr Hunter and his colleagues clarified apparent contradictions of my experiments The on of irradiation on the sympathetic nerve may be ained as follows: irradiation produces by a neuro onal mechanism adrenaline mobilisation This is wed by eosinopenia as after the administration of adrenaline If the plasma steroid level is normal, the eosinopenia will exceed 50%, while subnormal ketosteroid levels will be accompanied by an eosinopenia of less than 50% Low ketosteroid levels, such as occur in the active stage of peptic ulceration are never associated with an eosinopenia exceeding 50% after the adrenaline Thorn test or after adrenaline mobilisation due to irradiation

Department of Roentgenology
Korányi Hospital Budapest.　　MICHAEL FÓTI

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[1] unter J D., Bayliss R. I S Steinbeck, A. W *Lancet* 1955

[2] *Radiol* 1931

[3] A. G., Forsham, P H Finch, C A *Blood* 1948 3 755

TREATMENT OF SHOCK

SIR,—We wish to reply to the letters by Dr Powell and Dr Buxton Hopkin (Oct. 15)

Dr. Powell wondered whether the possibility of fibrinogen deficiency was considered. In the original draft of our article we described the intravenous administration of 200 mg of fibrinogen, which had no effect, 3¼ hours after the patient's admission to hospital This was omitted in the shorter version that was published

The first point raised by Dr Buxton Hopkin with reference to the cardiovascular depressant properties of ether in the presence of adrenergic blockade is a valid criticism However we wonder if the degree of adrenergic blockade induced by an intramuscular injection of chlorpromazine (25 mg) is clinically comparable to the conditions quoted in his letter as being those under which the danger exists In any case the fall in blood pressure at the stage under discussion did not occur during the induction of anæsthesia nor yet after induction during the preliminary steps of the operation, but when the uterus was being packed This procedure frequently does result in the patient becoming shocked, and we must re affirm that we believe it to have been culpable in this instance

We regret our apparent misrepresentation of Dr Buxton Hopkin, as we are aware of his views on this subject. He has said Workers in this country and in France agreed that all the advantages claimed for the use of chlorpromazine in anæsthesia could be obtained without resort to hypothermia. [1] We wished to obtain the benefit of these advantages, but, as Dr Buxton Hopkin said in his letter 'there is a danger of hyperthermia if these patients are overheated, and for this reason it is advisable to work in cool theatres."

Does this not imply a mild degree of external cooling ? If a slightly greater degree of external cooling is applied, is it then necessarily a different type of anæsthesia ?

We subscribe to the view that chlorpromazine has valuable properties in relation to shock and surgical aggression. In addition to facilitating the induction of hypothermia, chlorpromazine was given, as indicated above to obtain the benefit of these properties Hypothermia provides additional protection against the occurrence and/or the effects of anoxia, particularly in a case such as this, and is surely a further stage in the same process. It was on this reasoning that the references to poor risk surgery and this type of potentiated anæsthesia were made The danger of hyperthermia was emphasised in our paper

With reference to the suggestion that hypothermia be omitted until the value of chlorpromazine has been assessed under normal working conditions we were careful, although our patient survived to avoid claiming that hypothermia was more than a supplement to orthodox resuscitation Nevertheless, we have grave doubts about the outcome if hypothermia had not been employed in this case

In the anæsthetic department of the Southern General Hospital our interest in chlorpromazine is not solely in its relation to hypothermia. We are amongst those who are striving clinically to assess also the value of the drug itself in anæsthesia

Southern General Hospital,
Glasgow　　DAVID B MURRAY
DONALD F BRUCE.

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[1] Hopkin, D A. B *Proc. R. Soc Med* 1954 47 517

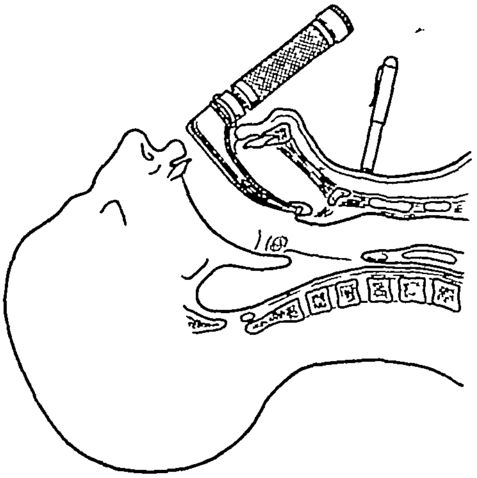
REGISTRARS

SIR,—When the situation of registrars is discussed, little or no attention seems to be given to the most important point—that they are "in training" It is apparently quite usual for a hospital management committee, observing that this is a "whole-time" appointment, to require a registrar to attend at the hospital daily from 9 A M to 5 30 P M , to be ready to stay on until 7 30 or even 10 P M whenever required , to be "on call" for emergencies one week in three, or so, which entails being at home and "on the telephone" (unpaid for, and not even allowed as income tax expense), *every* evening and the whole weekend Sometimes indeed he is required to sleep at the hospital—even to *pay* for doing so ! And all this without any compensatory "time off duty" Management committees, it seems, are usually astonished when they are reminded that it is their *duty* to allow every registrar adequate time to attend courses of instruction, for reading, for research—even for "thinking"—as *part of the appointment* Until these things are everywhere accepted, the whole purpose of a registrar's appointment is frustrated and he becomes merely a cheap substitute for a consultant

Cambridge E WATSON WILLIAMS

TRANSILLUMINATION OF THE LARYNX

SIR,—A common fault of most laryngoscopes—particularly those subjected to daily use—is failure of the light This can be exasperating and dangerous when short acting muscle relaxants are being used to aid intubation of the trachea An accessory light shone over the anæsthetist's *right* shoulder will sometimes allow intubation to be carried out under direct vision A satisfactory transilluminated view can, however, be obtained if a light (e g , that of a fountain pen torch) is shone on the larynx externally—even if the neck is thick This observation was first recorded in 1859 by Czermak,[1] who used sunlight concentrated by lenses and concave mirrors , but modern textbooks of laryngology make no reference to transillumination For the brightest illumination the light should be directed through the cricothyroid membrane , but adequate transillumination is obtained through the upper two inches of the trachea



Pressure of the torch on the larynx can facilitate intubation by pushing the larynx posteriorly In the "difficult" patient this manœuvre brings more of the posterior commissure into view

Using transilluminated light, a patient can be intubated under direct vision, with the aid of a tongue depressor, a dessert spoon, or a shoe horn The head should be well extended and the tongue pulled out over the lower jaw as far as possible Then, when the base of the tongue is pushed forward with the instrument, the larynx comes into view It should be possible to intubate a patient requiring resuscitation, using household articles and a Magill endotracheal tube

Transillumination of the larynx is now being used again as an aid to the diagnosis of disorders of the larynx.

Anæsthetic Department,
King's College Hospital,
London.

NORMAN TATE

WARTS

SIR,—If, as your correspondents Dr Lyell and Dr Friedlander (Aug 13) contend, warts, especially planta ones, are spread by going barefoot on floors infected by warty feet, we in India should have the highest incidence of warts in the world For here the vast majority of people go barefoot for various reasons, and on surfaces no better than dancing floors for that matter But actually it is not so, showing that infection is not the only thing responsible for these nasty excrescences. Even if the infectivity theory were to be believed, what about the causative organism and the source of infection !

That warts are primarily a localised degenerative process of the skin of dietetic origin, with perhaps superimposed infection, is borne out by the fact that they quickly disappeared in 5 of my patients, 3 of whom had plantar warts, after administration of methionine in doses of 1–2 g. daily, and maintenance of local hygiene

Kanpur, India KRISHAN K KAPU

ABUSE OF ANTIBIOTICS

SIR,—A patient of mine, a man aged 32, was admi to hospital with an accidental gunshot wound of the chest There was no penetration of the thorax, pepperıng of small shot beneath the left breast Inc of the track was carried out and the report from ho said that "primary healing has occurred with the of penicillin intramuscularly for a week"

I wonder how much notice is taken, particularly the younger doctors, of the warnings of the indiscrim use of antibiotics and its possible future danger creating resistant strains In your leader of Oct 8 stated "It is desperately and dangerously wrong abuse them as placebos, febrifuges, substitutes diagnosis, and covers for imperfect methods of asep

After all, primary healing of wounds used to place without the use of antibiotics

London, S E 25 A FR

EXPELLING TAPEWORMS WITH MEPACRIN

SIR,—I read with interest Dr Seaton's article Sept 24 In my experience, too, mepacrine has be success 20 patients were treated and in 16 the comp worm was passed In the remaining 4 most of the t but not the scolex, could be demonstrated Follow showed that in none of the 4 patients had proglott reappeared

A Ryle's tube was not used except in the first 2 cases dosage was 0 8—1 0 g The tablets were given two by two fifth minute with a little milk 7 of the 20 patients moderate nausea, but vomited either not at all or once 1 patient had intense nausea and vomited several ti Among the 8 patients with nausea was 1 of the 2 patients had a Ryle's tube passed

Opinions have varied about whether the duodenal tu is advisable or not Sodeman and Jung[1] cured 11 o of 11 patients and Hernandez Morales[2] 13 out of without using the duodenal tube , whereas Hornbo and Dorken[3] cured 20 men out of 20 and 13 women of 23 after passing the tube In my experience, at le the omission of the tube has not decreased the suc of mepacrine, and to many patients the usually very moderate nausea when tablets are given with a little milk may seem preferable to having a tube passed

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[1] Czermak, J N On the Practical Uses of the Laryngoscope In New Sydenham Society, Selected Monographs 1861, p 17

[1] Sodeman W A Jung, R C *J Amer med Ass* 1953 149

[2] Hernandez Morales, F *Puerto Rico J publ Hlth* 1952 25

[3] Hornborstel, H , Dörken, H *Dtsch. med. Wschr* 1954, 77,

Adequate purging is absolutely essential I have had failure with mepacrine after my report [4] was published The patient was a mental defective with severe chronic onstipation and purging was ineffective

With careful purging mepacrine treatment should be ust as practicable for outpatients as inpatients if, as I elieve, the tube can reasonably be omitted

State Mental Hospital
near Aarhus, Risskov Denmark.

OLE J RAFAELSEN

INVESTIGATION OF VIRUS INFECTIONS

SIR—I was most interested to read Dr Breen s lea last week for facilities for routine investigation virus infections It is extremely difficult to diagnose ith certainty the many types of virus infection admitted hospital, with the result that the guess of the general actitioner is as good as, if not better than that of the nsultant

The standard of work in infectious disease hospitals s improved beyond recognition in the past twenty years ld one of the factors responsible is the ancillary work ne by the laboratories the need for a virus labora ry for routine work is urgent and we must do all we n to persuade those responsible that this project erits high priority

In the meantime let us pay tribute to those benign ologists working in private laboratories who are d enough to undertake occasional investigations in ceptional circumstances

St. John s Hospital,
Uxbridge Middlesex.

F VIVIAN LAMBERT

INFECTION ACQUIRED IN HOSPITAL

SIR,—Dr Colebrook is to be congratulated on his eresting article last week

I agree with his suggestion that an infection-control cer should direct and coördinate all the activities ich make for safety from infection in hospital His suggestion that ' there will of course be difficulty first in finding suitable officers, &c implies that has overlooked the one person in each area who can im to have the necessary qualifications for the job—mely the medical officer of health.

I would suggest with all respect to such a distinguished ert as Dr Colebrook that the failure to control ction and indeed to recognise its magnitude, has n due in some cases to the firm refusal by hospital horities to act upon the suggestion contained in a ular issued by the Ministry of Health many months that they should form a control of infection com ttee on which the medical officer of health should ve.

In other instances the medical officer of health has n given neither the necessary authority nor information to investigate and deal with problems of infection ny of your readers must have witnessed the narrow proach to these problems made by experts in other ds—e g., the concentration on sterilisation of bed ns and urine bottles by the surgeon the stress laid the plate-count by the bacteriologist &c—while er lines of approach have been almost completely lected.

I am convinced that until the medical officer of health o can take a broad view of the problem involved brought into the picture we shall still have no answer the wise observation of Dr Colebrook that hospitals ve unfortunately been the places in which grievous rm has frequently been done to a great number of ople "

Dunmow, Essex

I ADRIAN GILLET
Medical Officer of Health.

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[4] Rafaelsen, O J Ugeskr Læg 1955 117 54

DEATHS AFTER ANÆSTHESIA

SIR—Your annotation of Oct 22 correctly stresses the fact that the patient must never be left unobserved for a moment and that suction should be immediately available

It is true that patients are sometimes inadequately supervised At night a busy surgical ward often has a proportionately smaller staff who have to guard their patients in semi-darkness During the day the task is easier, but the increased staff has more duties to perform However many hospitals have only a limited number of skilled nurses available, and it is unlikely that ward routine could be altered to provide the suggested unremitting vigil

Suction is of value in the treatment of some patients who have vomited but often the vomitus is solid In this circumstance suction is of little help The provision of suction devices immediately available for every contingency would be expensive in installation and maintenance, and of limited value

The idea of a recovery room for postoperative cases is not new Its presence will enable a skilled staff to supervise these patients in a satisfactory light If it is near the theatre, an anæsthetist might be available for an emergency The room need not be large, for patients usually recover consciousness fairly rapidly, and can then be taken back to their wards. With slight reorganisation it is possible that no extra nurses would be needed and the purchase of large quantities of equipment would be avoided

St. Albans

J W R MCINTYRE

SIR,—I would like to support Dr Hex Venn s plea last week for the provision of a postoperative observation ward close to our operating theatres Such a ward can certainly be life saving staffed as it is by highly trained nurses equipped with apparatus for suction and intravenous therapy and with really good illumination But surely the position in this country is not quite so black as Dr Hex Venn paints it At the Southend General Hospital we have a six bed postoperative observation ward very close to the twin theatre suite, and I have seen similar rooms in several other hospitals

Southend-on-Sea

J ALFRED LEE.

NUCHAL-BULBAR HÆMANGIOMATOSIS AND ENCEPHALO FACIAL HÆMANGIOMATOSIS

SIR,—There can certainly be no doubt as to the great frequency of ' nuchal nævi, ' which are superficial telangiectatic vascular nævi of the nape of the neck, often more or less hidden by the hair of the scalp [1–4]

Sklarz [4] refers to the early description by Unna in 1896 It seems that the number of adults affected, though very large would be much greater if it were not for the fact that in many infants the nuchal nævi disappear spontaneously in early childhood

The question with which I am concerned is whether nuchal nævi may ever be accompanied by a hæmangiomatous condition in the bulbar region (brain stem) thus constituting a condition of nuchal bulbar hæmangiomatosis analogous to encephalo facial hæmangiomatosis (Sturge Weber Kalischer disease)

The observations of Shafar and Doig [2] suggest that a condition of this kind does occasionally occur but I could not find any supporting evidence until Dr Macdonald Critchley kindly informed me of a paper published recently in Paris in the volume dedicated to Dr André Thomas [5] Krabbe describes the case of a man of 55 with a nuchal vascular nævus and bulbar

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1 Bettley F R *Brit J Derm* 1940 52 363
2 Shafar J Doig A *Brit med J* 1953 i 913
3 Dixey J R B *Ibid* p 1032.
4 Sklarz, E *Ibid* p 1021
5 Krabbe K H *In* Jubilé du Docteur André Thomas Paris 1955; pp 189 19?

nerve symptoms (apparently developmental) This may be considered as a possible genuine example of nuchal-bulbar hæmangiomatosis, for which I was searching

London, N W 1 F Parkes Weber

PLASMA-INSULIN ACTIVITY IN DIABETES MELLITUS

Sir,—In Dr Vallance Owen's absence, we should like to reply to Dr Edwards's letter of Oct 8

Though, in their article of Sept 17, Dr Vallance-Owen and his colleagues enumerated evidence for the similarity of what they assay to insulin, it is of course true that the plasma activity measured has not been proved to be insulin But, since it is measured against an insulin standard and has many attributes in common with insulin, "plasma-insulin activity" seems an appropriate description In bio assay parlance, "insulin-like activity" means the sum of the effects of the substance concerned its antagonists and its synergists That the proof is not absolute applies equally to very many biological assays and Dr Edwards's objections to calling this assay "insulin" would apply to the identification of the substance in many bio-assays

Postgraduate Medical School of London W 12

N W Please
Russell Fraser

Sir,—The results of our investigations completely agree with the view expressed by Dr Edwards in his letter For a long time we have been studying the influence of insulin and glucagon on the glucose uptake of the isolated rat diaphragm and estimating the insulin effect of plasma in this test The plasma of pancreatectomised dogs, which theoretically has no insulin, has in fact some insulin effect This effect does not disappear with the addition of cystein When cystein is added to the plasma in sufficient quantity to destroy the insulin it theoretically contains, the insulin effect continues

We agree, therefore, with Dr Edwards that the effect H is not the same as effect I

Instituto de Metabolismo y Nutrición, Madrid

José Luis R Candela
R R Candela
J Rovira
Y Valladares

A NEW DESIGN OF SYRINGE

Sir,—I was most interested in Dr Camber's ingenious syringe (Oct 15) which utilises the hollow plunger as a reservoir By incorporating an attachment at the end of the handle of the plunger, or to one side of it, to take the rubber tubing from an infusion set, dispensing with the hole and groove A (see Dr Camber's diagrams), this syringe could be used for delivering intravenous fluid under positive pressure in the following way

> By driving the plunger home, aligning hole B in the plunger with groove B in the barrel, and holding the syringe with the nozzle upwards, the reservoir would fill with fluid, expelling all the air By twisting this nozzle out of alignment the syringe may now be used in the normal manner for inserting the needle into a vein Once this is achieved the groove and hole are re aligned The positive pressure in the infusion system will then force the plunger outwards to its limit (a chain will be needed to restrict further expulsion) By disaligning the groove and hole, fluid can now be injected The special tap and needle described in Dr Camber's syringe are not needed.

This syringe would be useful in children as an improvement on the popular Kaufman syringe, but it might also find a place in anæsthesia by incorporating it in the tubing of the infusion apparatus some distance from the limb It could then be used for controlled positive pressure administration of fluid

Royal Manchester Children's Hospital, Pendlebury

M A Kibel

HYDROCORTISONE IN PAINFUL SHOULDER

Sir,—On reading this discussion in your columns I find two matters that seem to me inadequately stressed.

One relates to *diagnosis* a proportion of these cases show a not inconsiderable degree of cervical spondylosis with associated nerve root irritation I feel that in such cases, Dr Cyriax's criteria of examination will not lead to diagnosis of the condition

The other is *in treatment* in a fair number of patients with painful subdeltoid bursitis, a varying amount of effusion is present in the bursa Aspiration of 15 ml of fluid presents little difficulty, but removal of a small amount is another matter It is of little use, however to inject 1 ml of hydrocortisone or anything else if it is immediately diluted by two or three times its volume of mucous fluid

Sunderland W Grant Waugh

AN INCOMPLETE VICTORY

Sir,—The night after reading your leading article Oct 22 I was called to see a colleague's patient in a common lodging house and, as on a previous visit this year, was confronted by a known case of tubercul with a productive cough I do not know if this partic patient was sputum-positive, but I think there can little doubt that many infected patients, wheth diagnosed or not, do live in these lodging houses

This particular one has places for over a thous inmates, two hundred of whom sleep on each floor minute cubicles separated by partitions which do reach the ceiling Their main population seems consist of migrant labourers, mostly Irish, and the intimate contact of infected old men and suscept young adults presents terrifying possibilities

On the same weekend, I was called to *another* kno tuberculous case with a productive cough, living very crowded private lodging house with eighteen inm It would seem that the provision of hostel accomm tion for homeless patients with chronic tuberculosis co play a real part in completing the victory

London, N W 5 Anthony Ril

DOSAGE OF CORTICOTROPHIN

Sir,—With reference to Dr Leese's article of Oct. and to other articles published and to be published which the use of corticotrophin is described, I would to make a plea that more information be given In article referred to and in many others we were told th so many milligrammes of corticotrophin were given so long Corticotrophin is the name given to extract animal pituitaries that contain adrenocortical stimulat properties These extracts differ greatly in their pot per mg and so should be prescribed in units and not The method by which the manufacturers have arr at their unit should be noted Further the ther given is that of adrenal stimulation and although degree of adrenal stimulation given may very rou correspond to the number of units of corticotrop injected in the first week or two of treatment, it later bear no relation at all This is due to the abi acquired by many patients to destroy intramuscul (or subcutaneously) administered corticotrophin and the fact that one batch of corticotrophin may be m readily destroyed than another

As things are, we can make no proper assessment the value of corticotrophin therapy unless the adre cortical stimulation produced and maintained has be measured This can be done by repeated urinary ass of 17 hydroxycorticosteroids At the present time lot of money is being wasted in giving large doses virtually impotent corticotrophin as maintenance therap

Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases.

H F West

MUMPS MENINGO-ENCEPHALITIS

SIR,—Mumps as a cause of pyrexia with meningeal rritation is extremely difficult to diagnose when neither arotitis nor orchitis occur In their article on mumps neningo-encephalitis[1] Dr Wallman and Dr Vidor have learly shown the value of serum amylase estimation in he diagnosis of the febrile child with mild meningeal ritation The clinical diagnosis of mumps meningo ncephalitis in the absence of the more usual manifesta ons may be suggested by the presence of abdominal ain In 10 cases of mumps in young adults which I ave seen recently the serum amylase levels were arkedly raised in 6 of these only 1 experienced dominal pain of any severity, while 1 of the 4 with rmal serum-amylase levels complained of mild abdom al discomfort Thus it appears that abdominal pain is frequent and bears little relationship to the level of rum amylase

Dr Wallman and Dr Vidor comment on the invari ly normal amount of sugar and chloride' in the cerebro inal fluid (c.s.f) The following case illustrates that w levels of chloride and sugar may occur and that anges in the c.s f may persist for a longer period than usually realised It is in precisely such a case as this at serum amylase estimations may well have been of gnostic value and obviated the frequent repetition of nbar puncture

A schoolboy aged 15 was admitted on Jan. 26 complaining frontal headache nausea, and repeated epistaxis for four rs. On admission his temperature was 101 6 F he looked e and drowsy and he had photophobia The abdominal l lower limb reflexes were absent the upper limb reflexes ninished, and the plantar responses normal. There was a ne nystagmus on looking to the right but no neck rigidity Kernig s sign. Soon after admission he became very less and confused the temperature rose to 103°F and a ther examination showed bilateral extensor plantar onses. Lumbar puncture was performed and repeated at rvals during his illness. He had previously been treated chronic sinus infection and as X ray examination of the es showed some opacity of the right antrum due to chronic sitis, an intracranial infection was suspected Treatment an with crystalline penicillin and streptomycin and was tinued for eight days.

n the day after admission (Jan 27) he was still febrile and sed and incontinent of urine Next day he was mentally and the plantar responses were normal The pyrexia sted at levels of 100°–102°F until Jan 31 although clinical condition improved considerably Intermittent xia at lower levels continued for a further week (until 7) during which time the patient felt well. Thereafter emained afebrile.

vestigations —An electro-encephalogram on Jan. 31 ved a grossly abnormal record consistent with active ralised brain pathology but there was no evidence of any l brain abscess Blood-counts urine examinations, X ray nination of chest and skull, and Paul Bunnell reactions ved no abnormalities, the Wassermann reaction was ative in blood and c.s.f and repeated examinations of um and c.s.f showed no tubercle bacilli The c.s.f ngs were :

Cells (lymphocytes per c mm)	*Protein*	*Chlorides (mg per 100 ml)*	*Sugar*
322	45		65
304	55	620	54
415	90	640	53
	320	700	27
483	240	600	71
411	360	700	52
161	240	660	55
53	240	720	60
20	1[illegible]0	710	71

rum taken on March 1 was examined by the Public Health ratory Monsall Hospital Manchester and found to be ve at 1/2[illegible]0 on complement fixation test for mumps S n, consistent with a recent infection with the mumps . Further inquiries revealed that there were no cases of ps at the patient s boarding school prior to his illness but that on the day he fell ill another pupil developed bilateral parotitis and these two cases were followed by a small epidemic of mumps in the boarding school

This case of mumps meningo encephalitis showed a pyrexia for fourteen days, C S F changes for at least seven weeks, and an initial reduction in the chloride level of the C S F When faced with the common problem of a febrile child showing signs of meningeal irritation an estimation of the serum amylase and/or urinary diastase may well prove a valuable aid to diagnosis.

Hammersmith Hospital
London W 12

A G SHAPER

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[1] *Lancet* 1955 i 1105

ASTHMA, BRONCHITIS AND EMPHYSEMA

SIR —I have read with great interest Dr Lister's article of Oct 8 But I am surprised that he did not refer to the great benefit which infra red and ultraviolet irradiation can give in these conditions

Patients with asthma, bronchitis, and emphysema are unfortunately all too often referred to the specialist in physical medicine as a last resort Yet the nasal catarrh or sinusitis which almost always precedes or accompanies these conditions can be effectively treated by intranasal and postnasal application of ultraviolet rays combined with general ultraviolet and infra red irradiation It is a great pity that medical students are taught so little of this subject—or indeed of physical medicine as a whole

Eastbourne

W ANNANDALE TROUP

TRAUMA AND ADRENAL HÆMORRHAGE

SIR —Your annotation of Oct 22 does not provide a convincing explanation of this condition

Anyone familiar with the work of Reilly[1] and Tardieu[2] in France on the effects of autonomic irritation will be impressed immediately by the fact that, in the series described by Levene[3] and Sevitt[4] adrenal hæmorrhage was associated either with lower thoracic and upper abdominal injuries on the same side or with intracranial damage in the region of the brain stem

Hæmorrhage of the suprarenal can be produced experimentally in animals, not only by injecting small amounts of bacterial toxins, and chemical irritants directly into the splanchnic nerve but also by simple injury These lesions occur as part of the generalised non-specific responses which include hæmorrhagic lesions of the gastro intestinal tract and cardiovascular collapse indistinguishable from severe shock. Animals vary in their susceptibility The lesions can be produced regularly in guineapigs, but less constantly in dogs.

When, however irritants and sclerosing solutions are injected into the brain stem of dogs, death rapidly occurs associated invariably with the same non-specific lesions and cardiovascular failure

It is surprising therefore that these well-established facts have not been considered in attempts to explain suprarenal hæmorrhage following injuries in which the splanchnic nerve or brain stem is involved. It is possible that most of Sevitt s cases and all of Levene s could be explained either as the result of irritation and damage to the splanchnic nerves on the same side of the adrenal hæmorrhage or to disturbance of autonomic centres in the brain stem Certainly so far as Levene s account is concerned both Reilly and Tardieu agree that this offers a rational explanation.[5]

This is far from being an academic question If the adrenal lesion is part of a generalised non specific response to trauma then the adrenocortical failure (if it occurs) is a secondary manifestation and in the first instance treatment would be better directed towards modifying or restraining the non specific response as a whole Both Tardieu and Reilly have shown that chlorpromazine *prevents* these non specific responses in animals, but that neither cortisone nor corticotrophin have any preventive or curative properties [6]

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[1] Reilly J Rivalier E Compagnon A Laplane R *C.R Soc Biol Paris* 1931 116 [illegible]4

[2] Tardieu G Tardieu C Silvestre J Pocidalo J J *Rev Neurol* 1950 82 81

[3] Levene M *Lancet* Aug. 13 1955 p 321

[4] Sevitt S *J clin Path* 19[illegible] 8 18[illegible]

[5] Tardieu G Personal communication

It is therefore more logical to explore the possibilities of prevention of the effects which follow severe injury by the use of chlorpromazine, than to treat with corticotrophin and adrenocortical steroids

Lambeth Hospital,
London, S E 11

D A BUXTON HOPKIN

ANTICOAGULANTS IN A HOT CLIMATE

SIR,—During the Egyptian summer, patients with coronary infarction receiving maintenance doses of phenylindanedione may bleed easily This bleeding is due to (1) dilatation of peripheral vessels in hot weather, and (2) insufficient intake of fluids with consequent rise in the blood level of the drug and reduction in the prothrombin concentration percentage

During summer, these patients must be examined daily for any bleeding The prothrombin-time and percentage must be determined every few days and when there is any bleeding When bleeding occurs and the prothrombin concentration is below 10% of normal, the drug should be stopped and plenty of fluids given to help its excretion

Suez, Egypt

ATTIA TAWFIC

Obituary

JOHN BARKER NEAL

T D , M R C S , D C P

Colonel J B Neal died at the Tidworth Military Hospital on Oct 2, at the age of 43 Born at Whitby, Yorkshire, on Feb 26, 1912, he was educated at Dulwich College and Westminster Hospital, from which he took the conjoint qualification in 1935 He became junior assistant pathologist to the Seamen's Hospital, Greenwich, in 1939 In 1930 he had joined the Territorial Army as an infantry officer, he transferred to the R A M C (T A) in 1938 and was embodied for service in the rank of captain just before the outbreak of war in 1939 He was promoted major in 1940 and served from 1942 until the end of the war in the Middle East mainly as a staff officer, passing a Staff College course in 1944 He was appointed to a permanent commission in 1945

In 1947 he was promoted major and returned to the practice of pathology After passing the senior course and the specialist course in pathology at the R A M College in 1949–50, Neal assumed the appointment of demonstrator of pathology there While at the college he was the second officer to take charge of the recently established Army Tumour Registry, and he was responsible for producing the report on its first five years' work In 1952 he took over the editorship of the *Journal of the Royal Army Medical Corps*, which he retained until his death. He was appointed assistant director of pathology, Southern Command, in 1953, with the temporary rank of lieut -colonel, and later that year assumed command of the David Bruce Laboratories He was granted the temporary rank of colonel in February this year He is survived by his widow and two young sons

A colleague writes

In the untimely death of John Neal the R.A.M C has suffered the loss of an outstanding officer He was an excellent pathologist, particularly in the field of morbid histology, and the Army Tumour Registry owes much to his work He was also most deeply interested in military history, with special reference to that of the Army Medical Services, on which he has written papers and delivered addresses As an editor he was very successful, being accurate, painstaking, and the possessor of a scholarly literary style He had all the qualities desirable in an officer, including sound judgment and a high capacity to exercise command and to assume responsibility These attributes were combined with a most soldierly appearance and bearing As a man he was courteous, kind, sociable, and the best of company His loss will be keenly felt

PERCY EDWARD HEDGMAN TURNER

M D Durh , D P H

Dr Percy Turner, founder of the Catherine Booth Hospital at Nagercoil in South India and a former chief medical officer of the Salvation Army, died on Oct. 19 at the age of 85

He was brought up in the Church of England, but joined the Salvation Army, then in its early days, while he was a student at Barts He qualified in 1893, and the following year he was awarded the Brackenbury scholarship in medicine Soon afterwards he entered the Salvation Army training college for officers, and for the next few years he commanded corps in Dartford, Forest Hill, and Lewisham, becoming wholly engross in this ministerial work.

The opportunity then arose to share in the medi missionary work of the Salvation Army He deci that for work of this kind he would need higher qu fications He took a medical appointment while studied for his matriculation, and then in successive months took the 1st, 2nd, and final M.B examinatio completing his degree in 1898 The same year he awarded the Luke Armstrong scholarship in comparativ pathology, and the following year the Stephen Sc scholarship in surgery He also took the D P H 1899

In 1900 he left for India and began to transform dispensary at Nagercoil into a general hospital— Catherine Booth Hospital Later he formed b hospitals in charge of Indian doctors who were tr by him in a seven-year course Their final qualifica in medicine was recognised by the government of Tra core, for at that time there was no medical college the State During his first furlough, in 1909, he took M D Durh

In 1923 he returned to England and became medical officer at the international headquarters of Salvation Army in London He held this post he retired in 1937 He wrote a manual on trop medicine for the use of Salvation Army officers. represented the Salvation Army on the committee the Medical Missionary Association, London, and Public Morality Council

A colleague writes " At the beginning of his asso tion with the Salvation Army Dr Turner experien much opposition, but he was always convinced that had done the right thing in joining this organisat his faith was simple but inspiring , he was ge courteous, and kind, and a true Christian gentle in the highest sense of the word "

In 1902 Dr Turner married Minnie Magyer, a n who died in 1948 His only daughter died in 1 and he is survived by his two sons, one of whom doctor

Appointments

BOYD, J M , M.B Glasg , D P H whole time senior asst M
Fife
BRUNTON, D P , M B Glasg , D P.H asst M O.H , Gloucester
CAREW NORAH, M B N U I , D P.H asst M O.H and school
Croydon
CHURCHILL DAVIDSON H C , M D Camb , D.A anæsthetist
sultant), Chelsea Hospital for Women, London
DUNCAN MARGARET M.B Edin school M O , Derby
GILLIAT, R W M.A , D M Oxfd, M R C P asst. physician for dis
of the nervous system The Middlesex Hospital London.
HALL, F J S , O B E M B Lond , F R C.S appointed fa
doctor, Deal, Kent
HUNT F T M.B Lond school M O , Derby
McVITIE G E , M B Edin appointed factory doctor, Ke
Cumberland
MOSELHI, ABDULLA F R C.S E senior *casualty* officer, Gate
and district H.M C
PLEWS, W R , L.R C P E D OBST , D P.H M O.H , Stoke on Tr
SPALDING, JOHN, M A , D M Oxfd, M R C P part time consult
and research neurologist, Radcliffe Infirmary Oxford.
SPELLER, P J , M B Brist , D P H asst M O.H , Gloucestershire
WHARTON, RALPH, M B Lpool asst M O.H , Barrow in Furness
WILLIAMS, E A , F R C.S M.R C O G part-time consultant
obstetrics and gynæcology, Banbury and district H.M.C

South-Western Regional Hospital Board :

ELRICK, W L M B Melb surgical registrar, Chelten
General, Eye and Children's Hospital
GRAHAM A J , M.B Aberd , D.P M senior psychiatric regist
Tone Vale Hospital, near Taunton
HABIB G G , M B , B SC Birm medical registrar, Bath gr
of hospitals

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6 Reilly, J , Tournier P *Bull Soc méd Hôp Paris*, 70, 467

Notes and News

FIRM FOUNDATIONS

1636 Thomas Macy of Chilmark in Wiltshire settled Newbury Massachusetts. Some three hundred years later descendant Mrs. Walter Graeme Ladd, set up in memory er father the Josiah Macy Jun Foundation, to promote an welfare by assistance to scientific medicine and roved health care. She left her trustees free to adapt Foundation's programme to the changing needs of medicine health, but she expressed the hope that they would help evelop 'the spirit which sees the centre of all its efforts e patient as an individuality

Willard C Rappleye president of the Foundation since in his review of its first twenty five years[1] has described artnership with the scholars 'who explore the outermost ndaries of knowledge The strength of the independent ndation, as he sees it, is its freedom to back its fancy ke an official body it can risk money on an untested cept "that may open new windows on the scientific scene may lead only to a blank wall The Foundation has d the grant in aid the most useful tool in helping the arching worker Encouraged by its founder's interest in whole patient it has for instance offered ready and istent support to psychosomatic medicine Its interest whole life cycle has led it to sponsor studies in genetics, th, maturation and ageing It has also fostered research the emotional nature of human beings and into ways of ng people to live harmoniously together The studies helped range from Prof Karl Lorenz's work in West on innate behaviour patterns to Dr John Bowlby's igations into human infant mother relationship at the stock Clinic in London.

Foundation has also done much for medical education here Dr Rappleye's own work on the commissions on cal education (1932) and on graduate medical education were a notable contribution. The Foundation has struck by the changing pattern of medicine forms methods of medical care are rapidly evolving in unpro- ble directions The only clear fact is that there will ue to be change In its view the growing complexity cheme has made administration of crescent importance it has backed with counsel and money the institute ministrative medicine set up in 1952 by Columbia rsity

many people in this country the name of the Macy dation is perhaps best known through its conferences. im reports of these informal meetings allow the reader eavesdrop, if a reader can eavesdrop on the free and easy ions of experts on topics which have ranged from betics to liver injury

older but equally alert body the Rockefeller Foundation, has lately presented its accounts. In 1954 it allocated over $19 million, of which $5 million went to medicine public health. In his review[2] the president Mr Dean has this year singled out for special mention the dation's experience in awarding fellowships. This began 14 when four Chinese doctors began their advanced training as Rockefeller fellows. Since then 7000 ships have been awarded to men and women from ferent countries and territories. In retrospect Mr Rusk that no investment has been more rewarding "Col e terms like mankind, public health increased ction, and international understanding encompass often conceal real people Improved medicine means, other things more and better trained nurses and rs." The Rockefeller fellowships by offering extra stim n and help beyond the limits of formal training have us many able and competent scientists in the places they are most needed.

VIRUS SYNTHESIS

report[3] from California tells of the partial synthesis of us. Under the direction of Dr Wendell Stanley two ch-workers of the University of California Dr Heinz kel-Conrat and Dr Robley Williams, have been studying bacco-mosaic virus and they have been able to break down the living viruses into inanimate parts and then reconstitute these so as to recover the same viruses as they started with An announcement from the university pointed out that if one self-duplicating system could be made from inert material it might be possible to reproduce other self duplicating systems, such as chromosomes The reconstruction of immunity producing viruses might have far reaching effects in preventing disease

ELECTRONIC STETHOSCOPE

AN electronic stethoscope which magnifies heart sounds and murmurs is a necessity for the deaf physician and should be of help in detecting faint sounds or murmurs to those with normal hearing The 'Maico Stethetron' is made by a well known American manufacturer of hearing aids. In use it is most convenient The microphone is built on to the amplifier (partly operated by transistors) the whole measuring $10^1/_2 \times 4^1/_2$ cm and the chestpiece is as conveniently applied as that of an ordinary stethoscope The instrument is connected by electric flex to a crystal earpiece which is fixed to a very well designed stethoscope headpiece There are three filter positions, but only the one with low frequency attenuation is of much clinical value. Unfortunately if the volume control is turned too far there is a good deal of distortion which gives the impression of heart murmurs when these are absent. Faint aortic diastolic murmurs can be heard about as well as with an efficient diaphragm stethoscope and in one case such a murmur was heard a trifle more easily The microphone is a great advance on those previously available because it is sensitive only on actual contact and so does not readily pick up extraneous room noise

This instrument is a considerable improvement on previous devices of this sort and should be a great help to the deaf With some modification it might prove of value to all physicians, but unfortunately at 80 guineas it is rather expensive It is marketed in Britain by Messrs. R Camrass & E Dayno, 71 Portland Place London, W 1

THE PORTUGUESE EXHIBITION

THE winter exhibition of the Royal Academy which opened last week, shows us this year the arts of Portugal Though not large it is comprehensive and varied; sculpture paintings, faience tiles, gold and silver plate embroideries, carpets, furniture even a gilded coach have all been gathered at Burlington House Their selection and arrangement is the work of Prof Reynaldo dos Santos president of the National Academy of Fine Arts of Lisbon, and an honorary fellow of the Royal College of Surgeons of England. The exhibition is open on weekdays from 10 A M to 7 P.M and Sundays from 2 P M to 6 P M until Feb 19

University of London

Mr C H Barnett senior lecturer at St Thomas's Hospital Medical School has been appointed to the university readership in anatomy at that school. Dr R S F Schilling, reader in the Nuffield department of occupational health in the University of Manchester has been appointed to the university readership in occupational health at the London School of Hygiene and Tropical Medicine

University of Liverpool

Prof R I Harris, formerly associate professor of surgery (orthopædics) in the University of Toronto will deliver the Lady Jones lecture in orthopædic surgery on Wednesday Nov 16 at 5 15 P.M. at the Medical School He will speak on Hypermobile and Rigid Flat Feet

University of Aberdeen

On Oct 26 the degree of M.D with honours was conferred on N S Clark and A D Morgan.

National University of Ireland

The degree of M.D has been awarded to M. L. Conalty

College of General Practitioners

On Saturday Nov 19 at 11 30 A.M. at B.M.A House Tavistock Square London, W C 1 Dr G O Barber will deliver the second James Mackenzie lecture when his subject will be Medical Education and the General Practitioner On Sunday Nov 20 at 10 A M at the Imperial Hotel, Russell Square W C 1 a symposium will be held on the Position of the General Practitioner Obstetrician Today The speakers will be Dr E B Hickson Prof. W C W Nixon, and Mr A J Wrigley

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[1] e Josiah Macy Jr Foundation 1930–55 Published by the Foundation, 16 West 46th Street New York 36

[2] President's Review from the Rockefeller Foundation Annual Report 1954 Published by the Foundation, 49 West 49th Street New York

[3] chester Guardian Oct. 29; Times Oct. 31

Royal College of Physicians of London

At a comitia held on Oct 27, with Sir Russell Brain, the president, in the chair, Dr K. Shirley Smith, Dr A A Moncrieff, Dr W S C Copeman, and Dr William Brookbank were elected councillors, Dr A Feiling was re elected representative on the committee of management, Sir Russell Brain, Sir Harold Boldero, Dr W G Barnard, Sir Allen Daley, and Dr A M Cooke were re elected members of the standing joint committee of the three Royal Colleges, and Dr C A Keele and Dr Donald Hunter were reappointed representatives on the Joint Formulary Committee Dr D D Reid was appointed Milroy lecturer for 1957 His subject is to be Environmental Factors in Respiratory Disease

The following candidates, having satisfied the censors' board, were admitted to the membership

Ahmad Ali, M B Punjab, Harry Barkley, M B Lond, M C Brain, B.M Oxfd, Winifred Burgess M B Lond Mani Kumar Chhetri, M D Calcutta E N Coomes M B Lond, R F P Cronin, M D McGill, C J Dickinson, B M Oxfd, Lieutenant R A M C D E Dunn, M B Adelaide, P W Dykes, M B N Z., Peter Ebeling, M D Melb, Prudence A. Fitzgerald, M B N Z., John Fraser, M B Lond, R B Gove, M B Aberd J H Hale, M D Birm R H Jackson, M C, B M Oxfd E H Jellinek, B.M Oxfd, E M Jepson, M.B Lond, Trambaklal Bhailal Kasudia, M B Bombay, D F King M D Melb, M H. King M B Camb, R C Lambert M B Birm J G Lewis, M B Lond Colin McCance M B Camb, D A F McGill, M B Lond, P G F Nixon M B Durh, I D K North, M B N.Z H G Penman, M B Camb H A J Reay M B Edin, Captain R A M C R E Richardson, L R C P, V M Rosenoer M B Lond R S F Schilling, M D Lond, D N Seaton, M B Camb Olive Sharpe, M B Sheff, P D Swinburn, M B N Z, Joan Yell, M B Durh

Licences to practise were conferred upon the following 118 candidates who had passed the final examination of the conjoint board

John Aaron, James Adams, R J W Adamson, Anne Ambrose, J P H Anderson J T Andrews, M R H Ashken George Atkins, J S Bagnall, J R Batchelor A E Bennett, Marian Bevan A T Birmingham J W Blaxland, I R F Boger, W A Boyle A E Boye, A. A Buchanan, R M. Buckle, S T G Butterworth, W C Canning, B P Carroll, Audrey L Carus W D Chalmers, Jay Gopal Chitnis, J M. Clark J R T Colley, J L Croft, Peter Curzen Rosemary L Dart, W B Davies David de Souza A R Dewsbury, Dorothy M H Dickinson, M N G Dukes W R O Eggington C D'Arcy Ellis, Judith F Farrar, Hilary K J Fisher, T I M Furniss, J F Garner Elizabeth P Gibbs N W Glendinning, John Goulton P J Gregory P H Gwynne, P A Halford, W H H Hamilton Deane, Margaret E Happold Thomas Hargreaves, G C B Hawes R I Henry, Sylvia K Hepton Mary Higginbottom, A H Hodson, G P Holden G I Horsfield P J E Hubbard, Rachel E Hudson, Warwick Hutchings A C Ikeme, W D Jeans, R B Jenkins, Janet R C Jones, Margaret L L Jones, R P Jordan, L W Kay, J F Keighley, R A. Lacey D M Lasman, R H Lavelle Wai Hing Lee, A W F Lettin A F Lever, Alexander Livingston, Dawn C M Llewellyn J H L Lloyd Thomas J C McAlpine Moira A McLellan, H R T A McLeod, A J Martin, K D F Martin, R H Martin T C E Mbanefo J W Mellows H F Molloy J E U Moxon, J E Newcombe, Margaret E Noad P O Nwachukwu E D A Ormond Idris Owen, M A Pallister, Katrina M Parry Joyce M Pearce, P O Reeves E F Rice Joan M Ridley E C Smart, R B F Smith, D H Somervell M B Stanton H M Swallow Marian A Taylor J G Tees J S Toner, Shirin Abdulhussein Visram P F Wale A R Walker Alison S Wallace, Jean M. Watkins, Ivan Weisz J D W Whitney, Marie P Wigmore Mary E Wood J A Wright, B C Wyatt, Janet C J Young

Diplomas in child health were conferred on those named in the report of the Royal College of Surgeons in our issue of Oct 22 (p 884) The following diplomas were also conferred

D L O—Mohamed Hassan Ashruff

D M R T—Kirikankanange Mahondrapala Chandrasena de Silva, D J Duffy D N Edwards, J F Filbee, J B A Healy, Jessie L Hood, K M Jones L M Liegner, R J M Whittle

Addingham Medal

This medal, which is awarded for "the most valuable discovery for relieving pain and suffering in humanity," has been given this year to Mr A. T Glenny, F R S, formerly head of the immunology department of the Wellcome Foundation, for his work on immunisation for the prevention of diphtheria

Royal Society of Health

On Wednesday, Nov 16, at 11 A M, at 90, Buckingham Palace Road, London, S W 1 there will be a sessional meeting of this society on the Design of Health Buildings The speakers will include Dr C W Gordon and Dr A B Stewart

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Handbook for General Medical Practitioners—The Ministry of Health have issued a new edition of this handbook revised to March 31, 1955

Births, Marriages, and Deaths

BIRTHS

JARVIS—On Oct 31 at Southmead Hospital Bristol to Valerie wife of Dr D J A Jarvis—a son

Diary of the Week

NOV 6 TO 12

Monday, 7th

Postgraduate Medical School, Ducane Road, W 12
4 P M Dr Dermod MacCarthy Hypertension in Childhood.
Society of Apothecaries of London Black Friars Lane E
4 30 P.M Dr R S F Schilling Byssinosis
5 45 P M Dr A J Amor Industrial Hazards

Tuesday, 8th

British Postgraduate Medical Federation
5 30 P M (London School of Hygiene and Tropical Med Keppel Street, W C 1) Dr O G Edholm Effect Cold on Man
Royal Society of Medicine 1 Wimpole Street W 1
8 P M *Psychiatry* Dr L Z Cosin, Dr John Watkin, Dr F Post Geriatric Problems in Psychiatry
Institute of Neurology
5 30 P M (National Hospital, Queen Square, W C 1) Dr M McArdle Facial Pain
Institute of Dermatology, Lisle Street W C 2
5 30 P M Dr R H Meara Skin Testing
St Mary's Hospital Medical School Paddington W 2
5 P M Dr W Hawksworth Clinical Value of X ray Pelvim
Manchester Medical Society
8 P.M (Medical School University of Manchester) S Mr Henry Thompson *Anal Fissures and Fistulæ*

Wednesday, 9th

Royal Society of Medicine
4 30 P M *Physical Medicine* Prof F J Nattrass Dr J W Dr P Bauwens Dr A T Richardson Clinical Electromyographic Aspects of Polymyositis
Postgraduate Medical School
2 P M Dr Paul Fourman Salt and Water Metabolism.
Institute of *Diseases of the Chest* Brompton Hospital, S
5 P.M Mr O S Tubbs Mitral Valvotomy
Institute of Orthopædics
8 P M (Royal National Orthopædic Hospital W 1) Prof. Harris (Toronto) Syme's Amputation.
Institute of Dermatology
5 30 P M Dr H Haber Squamous-cell Epithelioma
St Marylebone Hospital for Psychiatry and Child Gu 48, Cosway Street, N W 1
5 30 P M Dr G Parsons Smith Value of the Electro gram in Clinical Psychiatry
Oxford University
5 P M (Radcliffe Infirmary) Prof Carl Semb *Partial Re* of the Kidney
Manchester Medical Society
4 30 P M *Pathology* Dr K McCarthy *Recent Laborator* with Measles Virus

Thursday, 10th

Royal College of Physicians, *Pall Mall East* S W 1
5 P.M Dr Denis Williams Emotions Arising in E Attacks
Royal College of Surgeons of England, Lincoln's Inn W C 2
5 P M Prof L Deloyers (*Brussels*) *Description* and Jus of a New Curative Operation for Peptic Ulcer—Re Gastrectomy
British Postgraduate Medical Federation
5 30 P M Dr A C Dornhorst Physiology of Lower Œso and Cardia
Royal Society of Medicine
5 P M *Ophthalmology* Mr Frederick Ridley Mr A G Mr H Ridley, Mr B W Rycroft Keratoconus
Institute of Obstetrics and Gynæcology
3 P M (Chelsea Hospital for Women, S W 3) [illegible] A M Dyspareunia
Society of Apothecaries of London
4 30 P M Sir Clement Price Thomas Surgical Treatme Pulmonary Tuberculosis
5 45 P M Dr Clifford Hoyle Medical Treatment of Pul Tuberculosis
Alfred Adler Medical Society
8 P M (11 Chandos Street, W 1) Dr J C Sawle Th Psychiatric Administration
University of Edinburgh University New Buildings, T Place 8
5 P.M Dr C R S Jackson The Ageing Eye (Ho Gillespie lecture)
University of St Andrews Queen's College Small's W Dundee
5 P.M Prof H G Callan, D SC The Structure of Chromo

Friday, 11th

Postgraduate Medical School
2 P M Mr J A C Fleming Irradiation Injuries in Cli Practice
4 P M Dr J B Gaylor Facial Pain
Institute of Dermatology
5 30 P M Dr H J Wallace Eczema
Royal College of Physicians, Edinburgh 2
5 P M Dr C A H Watts Neuroses in General Practice (Matheson Shaw lecture)

Saturday, 12th

Institute of Obstetrics and Gynæcology
11 15 A M (Queen Charlotte's Hospital Goldhawk Road, W Prof Ian Donald Pitfalls in Forceps Delivery

HE CONTRIVANCE OF COLLEGIATION*

Sir JOHN CHARLES
K C B M.D Durh., F R C.P D.P.H
CHIEF MEDICAL OFFICER, MINISTRY OF HEALTH

ome men, like Cortes and Gibbon to mention two rely dissimilar examples are possessed by a sense heir destiny and life s purpose Among men of science h an indwelling certainty is perhaps less commonly t with though it was present in the characters of racelsus and Pasteur Harvey too had some glimpses nsight into his mission They are manifest in the oric of the prefatory page of the *Prælectiones* that st precious of the manuscript protocols of English dicine At the head of the page stand two lines of remembered Virgil

> Stat Jove principium, Musae
> Jovis omnia plena
> "In the beginning the Almighty and the
> earth is full of his works.

the foot is written Harvey s free Latin translation of significant passage in Aristotle's *Historia Animalium* ich postulates the need for comparative anatomy ich had been rendered by D Arcy Wentworth Thomson

> The inner parts of man are to a very great extent unknown, the consequence is that we *must have recourse to an* amination of the inner parts of animals whose nature in y way resembles that of man.

between comes a simple comprehensive announce nt in Latin, which in English reads thus

> These lectures on General Anatomy were delivered by me liam Harvey Physician of London Professor of Anatomy Surgery in the year of our Lord 1616 in the 37th year my age on the 16th 17th and 18th of April.

or one reason or another the *Prælectiones* have been little studied in Harveian orations The two surviving nuscripts are part of the Sloane collection in the tish Museum and although the more important and roductory Visceral ' lectures, from whose preface have been quoting were reproduced in facsimile enty years ago only recently has a photographic copy the more pedestrian and less familiar Muscular ures found a place on the shelves of our library

The Visceral lectures are a treasure house indeed At e very heart are the half-dozen pages of close and mulative argument which Harvey used on the morning April 17 1616 in presenting his discovery of the *rculation* of the blood They culminate in that vivid yet homely analogy which tumbles out of Latin into glish as the crisp comparison is stated

> It is clear from the structure of the heart that the blood borne continuously through the lungs into the Aorta as two clacks of a water bellows to raise water

Harvey had returned from Padua Medicinæ Doctor ' the summer of 1602 He was then 24 As his diploma described him *Idoneus et sufficientissimus in artibus Medicina* his incorporation as doctor of medicine in home University of Cambridge naturally followed in the same year But we know little of him from t time onwards until we meet him in the pages of *Prælectiones* the Lumleian professor designate tching out the plan and the content of the lectures ch he was due to deliver in the April of 1616

On May 4 1603 he made the first of four appearances re the comitia of this college which were to end in being elected and sworn in the degree of candidate on l. 5 a year later For him four appearances before the se authorities were not the persevering and luckless ings of an urgent and unfulfilled ambition At his first appearance he had replied so aptly and completely to all his questioners that it was agreed that, although his candidature must be deferred, nevertheless the postponement would be "*cum conniventia ad praxim* — for a young man of 26 an unprecedented compliment.

Seven weeks after his election as candidate Harvey was married to Elizabeth Brown, daughter of Launcelot Brown a distinguished fellow of the college Nearly three years were to pass before he himself was admitted to the fellowship, and another before he commenced that association with St Bartholomew's Hospital which is one of its glories Between whiles in the *Annals* we can note Harvey s attendance at comitia and from that source we know that he was constantly in and about the City On the Monday after Palm Sunday 1611 he was fined £6 13s 4d for failing, during the previous summer to provide in his turn the customary feast for fellows

In 1613 Harvey became a censor, and his voice was heard alongside those of his fellow censors in passing judgment on the apothecaries and empirics who came before them But of his home life, of his studies of his practice we have no knowledge save that in the long interval of preparation his assiduous application to anatomical and physiological investigations had not passed unnoticed A contemporary Cambridge poet who dealt scurrilously with the reputation of many London physicians asks only of Dr Harvey "Is he still dissecting? '

From the *Prælectiones* and the wealth of research and inquiry they enshrine it is clear that Harvey's appointment as Lumleian lecturer on Aug 4 1615 was a recognition of an established reputation

Norman Moore in his Harveian oration of 1901 appositely applied to Harvey the dictum of Clarendon

> Men were seen some time before they were known and well known before they were preferred.

The *Prælectiones* consist of 98 pages of divided foolscap written upon in a script, crabbed cursive and corrupt they present a text half English, half Latin moving elliptically from one to the other without regard to gender number case or tense They are synoptic and allusive lecture-notes, requiring both patience and the microscopic eye to follow the order of presentation and the march of the always coherent argument There is hardly a page without some flash of humour a pungent English phrase, a penetrating observation or comparison The main scheme is simple covering as was *intended* the anatomical study of the whole body in three days. The Harveian prescription reads

> To serve in their three courses according to *the hour glass.* 1st the lower belly nasty yet recompensed by admirable variety 2nd the Parlor or Thorax, and 3rd the Divine Banquet of the brayne

The argument is clearest and most cogent, the script more fully legible the clipped form of writing least apparent in the nine pages where he deals with the heart and dispels that error held for two thousand years "so old and cultivated by so many men '

But the lectures are no dry skeleton of articulated *arguments* They are illuminated by apt clinical references, by disquisitions on physiology and comparative *anatomy* sometimes erudite sometimes earthy and occasionally by one of those philosophical dicta of greater or less profundity which are so common in the *De Generatione* There are for example, amongst many others the reference to the bird in St James's Park, ' bemealing as a man with Scarlet, ' the comparison of acid eructations to a motion from the lower house the comment on the hysterical that ' they all use this panting fighting fashion of breathing the advice to cut their laces and the brief aside *signum summæ imbecillitatis* Individual cases are quoted—the boy about Holborn Bridge with

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he Harveian oration, delivered at the Royal College of Physicians of London on Oct 18 1955 a beard growing on one cheek only, the several patients with gall stones and jaundice—of which Harvey had seen and remembered many more in Italy, the man behind Covent Garden with a rupture bigger than his belly Humour steals in to touch off many of the physiological and anatomical comparisons "It is all one intestine," says Harvey, "but with differences in structure, situation, function and name Just as from St Pauls to Ledenhall is all one way, but with many a name as Cheapside, Poultry"—and the rest

Two short sections make one engaging sequence The avian neck has been compared to a human hand or to the trunk of the elephant, a mobile device whereby the bird is able to reach every part of its anatomy and the "communicable earth" But the note continues "A long neck in man is a sign of timidity, if subtile, of weakness of mind, short thick necks are the mark of the pertinacious, headstrong and stubborn A prominent 'pomum Adami' is commonly regarded as the sign of the cuckold" To this the dubious Harvey appends his personal comment—"perhaps"—and then continues

> "It betokens a chill mind and temperament, whence impotence and timidity, which two conditions, the one made them wonder, the other dare to commit"

And finally the little essay on the stomach and its capacity The elephant has a small stomach but that is compensated for by the length of its intestine But mighty stomachs are to be found amongst "Hellumones, Gourmandisers and Drunkers" There was "the favourite of Aurelius who ate a boar, a mutton and a pigg", and Milo of Croton consumed 20 lb of meat "at a meale, and eate the bull the next day" But of drunkards says Harvey *Non minor fama* "Alexander sett a prise—many fell, many died" On that occasion Promachus, the victor, drank four congii, or 20 quarts or better And, adds Harvey, there was "a Syracusan who drank until an egg hatched"

In the same vein of lighthearted aside are the recognition of the valour of bastards, and a repetition of the old assumption that equitation was the cause of sterility amongst the Scythians But Harvey had thoughts and ideas of infinitely greater percipiency Almost at the very end of the *Prælectiones* when "the divine banquet of the brayne" is set before us, he broods over the movement of the spirit in the nerves—"whence sense and movement come like light in the air, or perhaps like the ebb and flow of the sea"

Nor in phrases which are re echoed 34 years later in the *De Generatione* has he any self consciousness in saying of the organs of reproduction

> "Though nature has not granted the individual man immortality, yet through these paths he may have a 'species aeternitatis', by begetting for himself those who will be similar to himself in the ages to come For in the sacred books it is written that the greatest blessing is issue, and that their seed shall remayne for ever"

Harvey's Learning

Practically every one of the pages of *Prælectiones* mentions, not only the anatomists of the epoch, but the ancient authors The bias is heavily in favour of Aristotle, Galen, and Hippocrates, but out of the recesses of his memory Harvey conjures the apposite reference in Virgil, Vitruvius, Cæsar, Cicero, Horace, Plautus—and even in Saint Augustine This dissector of 80 different types of animals had read his full score of Greek and Roman writers to good purpose The learning is lightly worn but implicit, and Harvey, the first modern physiologist, one of the earliest proponents of inductive reasoning, was even by the standards of Linacre, a scholar and a physician The commonest of all attributions in the *Prælectiones* is to Aristotle, "the master of those who know," "the prince of philosophers," whom "foremost among all the ancients" he followed

Apart from this intellectual sympathy Harvey had possibly another bond with Aristotle, for there is an old tradition that the latter had for a time followed the physic line, and it is an historical fact that for tw years at least he was, as Harvey became, a member of the household of a king

The tradition that Aristotle (384–322 B C) had some form of medical training is an ancient one It depends upon the words of two individuals one an almost contemporary historian, Timæus (356–260 B C), nicknamed the Censorious, and the other the gossiping Athenæus, writing about A D 200 (500 years later), who in his *Deipnosophistæ*—the "Gastronomers" or "Doctors at Dinner"—produced not only the first known cookery book but, like Aubrey in the 17th century, a mass of scurrilous tittle tattle about the great Together, these authorities, if one may so dignify them, recorded that Aristotle, the apothecary, devoured his inheritance, served in the army, and then betook himself to drug selling and the liquidation of his father's surgical equipment before he assumed the role of the philosopher and joined the Academy of Plato

Gossip apart it is certain that Aristotle was the of Nichomachus, the court physician and friend Amyntas II, father of Philip of Macedon and gr father of Alexander the Great It is also known that lived as a child in Pella, the Macedonian capital, w Philip as a contemporary, and unless the Asclep traditions were entirely set aside he would be instruc in the simple therapy of the time, in the arts of bandag and nursing, in the care of instruments, and in practice of dissection Thirty years later Aristo found himself again at Pella as the tutor of the you Alexander, who, as Plutarch reminds us, learnt from mentor the glories of Homer and the use of drugs, becoming in fact the pharmacological terror of his frie At the age of 16 Alexander succeeded his father, Regent, and Aristotle returned to Athens That influence in scientific matters lived after his depart is shown by Alexander's organised provision of biolog specimens for his teacher But Aristotle's lack of influ in matters more political was blazoned by the execu of his nephew by marriage, the historian and philoso Callisthenes Like Harvey he learnt that one can cherished in kings' houses, and yet be of little acco in the monarchs' actions and policies

Next in Harvey's galaxy of quoted authors co Galen Sometimes the reference is to some point clinical interest, more often the nexus lies in Harv agreement or disagreement with Galen the anato and physiologist Harvey was well versed in Ga His quotations come both from the Latin translat and from the Greek itself

To know one's Galen in any detail is to have enjo both a liberal and a laborious education Of all authors of antiquity he holds the palm for prolix and in comparison Plato and Aristotle are men modest output and few words In the vast body some 500 separate works—many admittedly no than tracts or annotations—Galen gives not only apposite commentary on every branch of medicine in scattered phrases and paragraphs the vivid out of an autobiography One can gather from these ca obiter dicta the date and place of his birth, the charact of his parents—his father informed in the disciplines philosophy, astronomy, geometry, and architect his mother a good housekeeper, but a shrew Xanthippe Thence too we learn the content of education and how, at the instance of a dream of father, the young Galen migrated momentously from schools of literature and philosophy to the study medicine Apart from his importance as source mate Galen had another tie with Harvey He served fo Roman Emperors in succession, Marcus Aure ntonines] Lucius Verus, Commodus, and Severus A D 169 Marcus Aurelius and Lucius Verus indeed mmoned the 38 year-old physician from his native gamon to come to them at Aquileia when after a ccessful campaign on the Danube plague had attacked ir armies. An apoplexy however, disposed of Verus l the plague drove Marcus Aurelius and Galen back Rome

Vhen the Emperor was ready to go campaigning in he bade Galen join him, but Galen like his father ld dream to good purpose. He persuaded Marcus relius that Æsculapius, to whom both the Emperor l Galen owed so much had warned him not to leave me But having thus escaped the rigours of another mpaign Galen was charged with the physical care of Emperor s 9 year-old son and later with his more neral supervision

Here Galen matched Aristotle as the mentor of a young nce but his protégé, the evil and ill favoured Com dus, was never an Alexander In the years which lowed it is improbable that Marcus Aurelius and len—now well established in his secondary rôle of losopher and rhetorician—ever crossed dialectical ords Their outlook on life their modes of thought re too different for anything but the ordinary relation p of physician and patient The great administrative ievements which Marcus Aurelius brought about at cost of enormous personal devotion and sacrifice d no interest for the busy, popular and superficial en For Marcus Aurelius and his successors he was apothecary of genius and no more

Court Physicians

ife for the court physician of antiquity and the dle Ages was rarely easy and only occasionally opportunities arise to influence what Plato calls the yal mind.' It was for the physician to deal with the tal sicknesses and accidents of his master studying temperament and constitution like a good general titioner and administering the plaster the purge placebo as the occasion might require From time to as a hanger-on about the court he might like mbald Henry I's physician witness official papers so obtain a form of documentary immortality etimes in our own Treasury accounts we can note cost of his pharmaceutical activities assess his ibilities as a prescriber and even his skill in prognosis. ter Nicholas, while in attendance on Edward I, example included in his indent of drugs for the reign s betterment spices for insertion into the 's body after his death With this somewhat slender rd of achievement before us, we can marvel the more he foresight of Thomas Linacre It is difficult to pe from the conclusion that his was the influence h determined that first medical Act of 1511 which rated out the cunning physician from the unning practitioner of sorcery and witchcraft t better prelude could there be to our Charter of and the confirmatory Act of 1523 ?

ntless Linacre lectures have bewailed their lack of ledge regarding their benefactor but the sources adly meagre. A few references in the State papers, dd note about the payment of his annual salary some records of Italian hospices and the Uni ty of Padua the correspondence of Erasmus, the of his middle-aged ecclesiastical preferments, the series of Translations of Galen and their dedications ly on these can we build with any certainty Here there one is given an insight into the mind of this man and medieval physician There is, for example, letter which he sent to the eminent French classical lar Budæus together with a present of 18 rings of r and 1 of gold, all consecrated by Henry VIII as a n against the spasms. It is an interesting commentary on the faiths and therapeutics of the time In and about the royal palaces for nearly 20 years, grammarian translator tutor physician, and friend, his outstanding and unforgettable contribution to medicine in this country, remains the foundation of this college

Harvey s association with the courts of James I and Charles I though intimate and long lasting had its curious features. In so far as the care of the royal healths was concerned, Harvey played a subsidiary rôle to that fabulous person, the Archiater, Theodore Turquettus de Mayerne But he seems to have had ready access to Charles I, to have earned his implicit trust, and to have excited that Stuart interest in the strange and the scientific which was even more marked in his son Whenever there was anything to be done which required a cool mind, sound judgment a quiet domestic form of diplomacy and personal devotion Harvey seems to have been Charles's first choice. When it was a question of journeying about the country, Harvey too was preferred to the mountainous Mayerne, who perhaps did not travel long distances lightly and whom we can certainly never imagine as a visitor to the Bass Rock Yet in all those most friendly relations there is hardly an indication that the royal mind was open to Harvey or that he was anything more than a household witness of high constitutional drama With all his multiplicity of continuous and exacting contacts with the royal family and their circle much the same can be said of Mayerne, who had lived in his own words more than

four lustres in the Courts of Princes '

No other physician has ever appeared with greater frequency in the Domestic Series of State Papers than Mayerne From 1611, when he was first appointed as chief physician to James I until his death in 1655 we can follow him in his applications and petitions to the King and the officers of State, and note some of his correspondence with the noble families he attended.

He became a fellow of this college by invitation in 1616 and almost at once was called upon to write the Epistle Dedicatory for the first *Pharmacopœia Londinensis* He was further honoured when in 1627 the college proposed to make him an elect—an honour he declined Though never active in college affairs he was always willing to use his good offices in its service From the moment of his first arrival in this country Mayerne seems to have moved with a shrewdness as to his own interests which in later years enabled Aubrey to describe him as one of the great cashs ' of the era

According to the State papers he addressed his first inquiry to the clerk of the council on June 6 1611 asking what ceremonial there was on taking the oath and hoping that no expense was involved his patent having cost him enough already Less than a fortnight later he received from the royal purse the sum of £200 to cover the cost of removing his family from France

Soon he was engrossed in supervising the health of that wayward and sceptical patient James I and of his queen as well, the latter accepting his ministrations with better grace Within a few years his reputation was so great that a foreign visitor could describe him as the only physician in England worth anything ' but he encountered criticism on his handling of the fatal illness of Prince Henry and one of the gossips of the day gave as his opinion that Mayerne was generally unfortunate with his patients ' But for the great majority of them, the painstaking curatio the diurnal study of symptoms the alterations of treatment designed to alleviate and fortify all served to convince them that they were receiving the undivided attention of a physician of genius. Nor was his interest limited to the major disorders the minor weaknesses and ailments of the flesh were given equal attention The blemishes of the skin which the physician could not remove from within, he could at any rate hide with cosmetics prescribed "ad feminam" On one occasion he revealed the range of his experience and capacity by sending to Lord Conway a letter which included "advice touching treatment for the gravel, and for a sick horse, together with a recipe for red ink"

In 1624, on the eve of his knighthood, he received his greatest official dispensation It was announced that he could be absent from attendance on the royal person of James I, "notwithstanding his oath of service and that he be likewise granted exemption from all taxes and subsidies granted or to be granted by Parliament" That exemption was renewed nearly thirty years later by Cromwell's Council of State, in order "to express their esteem of his qualities and abilities and to manifest how acceptable his residence here had been to them" But Mayerne's notable excursions into the world of business and finance remain to be mentioned In November, 1630, he petitioned Charles I in these *terms*

> "Abuse to the Oyster trade has been caused by foreigners buying up the best, and leaving the refuse The petitioner begs a patent for 31 years to lay oyster beds for which he will pay 40 marks per annum to the Exchequer"

Even in those days Government departments were invited to express their views, and their Lordships of the Admiralty bluntly said

> "If the beds are open freely to fishermen, it is a good charity, but if there be property in them, the grant would wrong either the lords and owners of the creeks, or the fishermen."

The petition failed But some years later he was successful in a greater undertaking On March 24, 1635–36, the King made a grant of privilege to Sir Theodore Mayerne, and Dr Cadyman (the Queen's physician) for 14 years *for the sole exercise of a new way of distilling strong waters*, and making vinegar out of cider, perry, and buck, whereof they are the inventors, under a rent of £10 to His Majesty

Two years later the same petitioners, together with the distillers of spirits, aqua vitæ, strong waters, vin egar and beer egar were granted a charter of incorporation as the Distillers' Company We shall meet them again

If the picture roughly sketched suggests a strange mixture of clinical skill and financial adroitness let us look for a moment at Mayerne, the sage observer of human affairs Towards the end of his life in a letter to Lord Conway he writes

> "I have seen the prescription you sent me for curing fat people, it is not bad and can be taken without danger, rather than salt, cummin and vinegar, but I shall never use it, having long recognised that a wicked soul never or rarely dwells in a fat body"

Mayerne, with all his gifts, graces, and privileges, his many "lustres" in the Courts of France and England, his political sagacity "keeping the mouth shut and the ears long and wide," his many contacts at home and abroad, his intimate and friendly relationships with Charles I and Henrietta Maria, never came into the inner councils, never influenced in any way the inevitable termination of that disastrous reign He remained the companion of princes, called upon frequently to advise on the diseases and disabilities of his patrons, summoned very rarely into consultation on the "cautions necessary to impede the progress of the plague, and the steps to be taken when it is afire", brought in to assess the claims of some quack or mountebank—and beyond these tasks and charges, how little was there worthy a man of intelligence, vigour, and wordly wisdom

So much for these few examples of men, great and famous in their profession of the medial arts and sciences, holding high and courtly offices, who were nevertheless of little account in the affairs of the body politic, even when they concerned the health of the communit Their relative ineffectiveness is in marked contras to the history of this college in the evolution of i functions, the assumption of responsibilities, and th acquisition of prestige

Early Activities of the College

Within the *ambit of the Act of 1511*, the Charter of 1518, and the confirmatory Act of 1523, the college early began to shape for itself a purpose and a mission The ignorance of the multitude was already known The need to protect it from the avarice of quacks and empirics, and the desirability of setting up some reput able standards of practice were quickly recognised. Th acceptance of these responsibilities by the college becam during the next one hundred and fifty years, an out standing example of the potentialities of what has called the Roman Contrivance of Collegation.

In four brief chapters, dealing very cursorily with the beginnings of professional organisation and discip the genesis of the pharmacopœia, and the contribut made by the college towards the control of the li trade and in the field of epidemiology, I will attemp show how its earliest corporate labours bore abun fruit

Touching the practice of medicine the college conc itself primarily with the qualifications of those who seeking its licence, and also with those who were pur ing irregularly to be treating the sick, sometimes with favourable and formidable recommendation of g lords But the college did not restrict its interests closely In the advice given to unsuccessful candid that they should take a four-year course of Galen, the set *books all carefully* prescribed, one can discern the vestiges of a curriculum The stand of practice of individual fellows were liable to be rev if complaint reached the college. Dr Thomas Ra for example, who subsequent to his attendance on L Chief Justice Popham had been accused of poisoning patient, was advised for his own *safety* to bring into consultation, when it was a matter of being ch with the care of the great in their serious disorders.

"Great quarrels and extraordinary *discords*" bet fellows were resolved by conciliation within the corporate The fires were put out before they had ti grow

Our Annals during the first hundred years pr many examples of the confidence and claims of note quacks and empirics Almost invariably *these* imp of both sexes were heard in person Sometimes examination was recorded in extenso

> For example, a certain John Lambe had been sent to college for an opinion as to his fitness to practice, by other arbiter in matters medical, the Bishop of L Lambe was questioned as to his beginnings in physick, he had attained this knowledge, and asked to read a lit a Latin Galen He replied that in fact he had never t that study, but he was skilled in *making* gentlemen He had no understanding of Latin The examination cont By what signs did he recognise a disease? He knew no but only as he was told by the party And for cure he himself to the use of a few outward applications, and times a little "pulvis sanctus," which he had learnt a purge Being questioned on astrology, as to what "ho of the Zodiac he looked into, he replied that he looked the sick house Finally pressed as to how he knew an apople and what were his remedies, he answered simply, " oils and unguents but only *for satisfaction* and not for The opinion of the college, which was scarcely favourabl duly communicated to the Lord Bishop

These inquisitions were an essential mechanism for protection of the community from the impudent i ance of the uncunning practitioners of medicine

Pressure by the great, often *direct and* blatant, to call out the reserves of courage and diplomacy e college. That Honoratus Vir Francis Walsingham nting on behalf of Mistress Margaret Kennix, had eceived an unfavourable though courteous reply e assumed the imperative mood

> "I shall therefore desire you forthwith to take order mongst yourselves for the readmitting of her into the quiet xercise of her small talent and craft lest by the renewing of er complaint to Her Majesty you procure further inconvenience thereby to yourselves than perhaps you would be illing should fall out.

Dr Gifford the president gave on behalf of the ollege the only answer compatible with its dignity nd duty: 'and professing ourselves to be most willing d content to abyde any inconvenience whatsoever hat ensue rather than be brought to allowe of so dis derly an attempt other in her or her like' Walsingham ithdrew

In the Charter of 1518 the college is given a some-hat vague responsibility for the quality of medicine aching His Majesty's lieges Like so much in that first harter it was a charge without powers to bind Only hen the later Act of 1540 gave the four censors rights entry into the premises of apothecaries and 'calling them the Warden of the Mystery of apothecaries, e power to ensure that noxious and imperfect articles ould be brent or otherwise destroyed" was the college operly enabled in this matter

From that time forward the grocers and apothecaries re brought under a form of inspection and were n 'enjoined to display their ingredients in the dows of their shops, so that physicians passing by ght judge of their goodness But the college helped well as harried for when the grocers requested a scription for a uniform and usual 'triacle' to be down and allowed by the college it commended the ster and Company for their charitable motion and d down a receipt for such a triacle

t was in June 1585 that the idea of a pharmacopœia first mooted but since the project appeared laborious was postponed with all good intentions to the next itia Not until four years later was it decided to ceed with the work, and in order that it should be pleted by the Christmas comitia of that year, the ole man power of the college was mobilised Under various sections syrups and decoctions distilled ters, liniments and ointments the task was divided amongst the two dozen or so members of the college— even the president and the Royal physicians were tted their stints of work To begin with it looked as eal and enthusiasm would make up for lack of urces, for when the Christmas comitia came it was r that much work had been done and six fellows were inated to bring the writings to a final and more ant form Thereafter great trouble Dr Taylor h whom had been associated Dr Smith of Oxford the review of the distilled waters had apparently their collected notes He paid no attention at all the summons of the president to produce them but ly and with some insolence announced that he did not sufficient free time either to consider college affairs to come to the president This wrangle lasted nearly years during which Dr Taylor was fined expelled later having made his humble submission readmitted such an atmosphere the projected pharmacopœia ed and the whole question lapsed for twenty years revived at the instance of President Atkins On occasion the college was both brisk and business . Within two years it was announced that the proudly itled *Pharmacopœia Londinensis* was nearly ready erne provided the epistle dedicatory to His Majesty es I President Atkins and his group of editorial supplied a preface and the Royal Proclamation manded all apothecaries to compound their medicines r its directions So the *Pharmacopœia* appeared almost one hundred years after the foundation of the college

The mysteries of the *Pharmacopœia* have often been unveiled

> Its materia medica comprised 1028 articles the preparation and compounds derived therefrom numbered 932 Taking their place in the materia were 138 roots, 271 herbs, 138 seeds 116 animals both terrestrial and marine and their products, 213 waters, simple or compound 90 syrups, and 62 conserves were amongst the preparations The great antidotes against poison and the pest were present in all their antiquity

By our standards the *Pharmacopœia* has little claim to be anything but a window into the medieval mind and its dependance upon Galen But its preparation represented an attempt at orderly presentation of subject matter heterogeneous in the extreme it called for research and inquiry its completion involved much systematic labour Finally it provided a framework within which the therapeutic fervour of physicians, and the imaginative proclivities of the apothecaries could be to some extent contained. It was in brief an exercise of the corporate mind and will of the college, which no single fellow not even the encyclopædic Mayerne could have carried out with the same ultimate authority

College and People

The most famous intervention of the college in public affairs was the representation it offered to the House of Commons in January 1725–26, against the pernicious use of strong spirituous liquors. Nearly 90 years had passed since two of its fellows, Mayerne and Cadyman, had obtained their patent for a new way of distilling, and had subsequently founded the Distillers Company If their shades were troubled by this action of the college, no doubt they would have pleaded that aquavitæ had been known even in the 15th century and that their new way ' and the organisation of the Distillers of London were only directed to obtain ardent spirits of greater purity and to enlarge the art of the distiller How fanciful that art might become can be seen from our Mayerne manuscript which contains prescriptions for various composite spirits—the Aqua Mirabilis or Precious Water the Aqua ad crapulas or Surfeit Water, and even the Usquebach itself Of all these distillations geneva or gin became the most notorious It was a universal provider of profit for the landowner the distiller the customs and excise, and the retailer Because of these vested interests it became an article of political importance also On the more individual level geneva became the solace of the henpecked husband the kind companion of the neglected wife, the infuser of courage into the army the support of pawnbrokers.

In the days of William and Mary such restrictions as had been previously placed on the manufacture of spirits were virtually withdrawn and the supervisory functions of the Distillers Company which had served to preserve some standards of quality, were overridden. The duty as initially levied was no more than 2*d* a gallon so that for the Government it was a trivial source of revenue yielding in 1690 less than £15 000 per annum

As early as 1701 Davenant had noted gin drinking as a growing vice amongst the common people— like opium with the Turks —but not until the third decade of the century did its full effects become manifest They were remarked by such observers as Defoe, who wrote of the retailers of gin they carry on their trade as if they were always drunk—they are a collection of sinners against the people' By 1721 there was statistical evidence from two quarters to confirm the views of the Defoes and the doctors. The amount of spirits on which duty was paid had risen from 43,000 gallons in 1690 to 2 800 000 in 1721 and burials were exceeding baptisms in the ratio of 3 to 2 To the evidence of the Bills of Mortality was added the experience of the hospitals with their increased turnover of patients, reflected in dropsies and the like—the pathological outcome of it all

How long the knowledge of these evil trends had been present in the mind of the college is not clear from the Annals but in the week before Christmas, 1725, it was decided to set up a committee to review a representation to be offered to the House of Commons

The petition, humble though it might be, asserted that it was the duty of the college "appointed by the laws of the Kingdom to take care of the health of His Majesty's subjects in London and within 7 mile circuit" The college had "observed with concern for some years the fatal effects of several sorts of distilled spirits upon great numbers of both sexes, rendering them diseased, not fit for business, poor —and too often the cause of weak, feeble and distempered children, who must be instead of an advantage and strength, a charge to the Country"

Offering no further advice, but emphasising the growing increase of the evil, the college on the 19th day of January, 1725–26, caused its common seal to be affixed to the representation, which was then transmitted to the House of Commons In these opinions the college was joined by the County Sessions of Magistrates, who gave witness to the destitution and crimes for which the gin trade was responsible—a trade now established in every tenth house in some parishes, and in one of the largest parishes in every fifth, "but this did not complete the tally for the workhouses were beginning to give an opening to the traffic" Yet the Government was slow to take action, and although in 1730 an Act was passed which doubled the duty and required retailers to take out an excise licence costing £20, that tentative piece of legislation was repealed three years later on a complaint by the farmers By 1741 the spirit paying duty amounted to $7\frac{1}{2}$ million gallons, and the accruing revenue was £172,000 But in 1751 the clamour of Henry Fielding in his "Enquiry into the causes of the late increase in robbers," the grim and savage satire of Hogarth, and the repeated reminders of the Bills of Mortality were at last successful in bringing this fearful epoch to an end To the outcome of this thirty years of campaigning the college's intervention, early in time, and disinterested in purpose, had been a major contribution

A variety of other matters affecting the public health came the way of the college for its corporate opinion In December, 1619, for what purpose we know not, the college provided a certificate that tobacco grown in England and Ireland was much more unwholesome than that imported from countries where it grows naturally

On July 23, 1627, "a complaint was brought full cry to the Privy Council against the farmers of the Alum Works on account of the loathsome vapour from these works to the great annoyance of the inhabitants within a mile compass, tainting the pasture and poisoning the very fish in the Thames" It was referred to the college, which promptly replied that works starting in that place must necessarily breed great annoyance to the nearer inhabitants and endanger their healths

But exceeding everything in importance were the infectious diseases, and one above all others—the pest It is to the assiduous pen of John Caius—begetter of our first book of Annals—that we owe much of our knowledge of the epidemic constitutions of the middle decades of the 16th century Creighton, the erudite and eremitical author of the *History of Epidemics in Britain*, had no great enthusiasm either for Linacre or Caius The former was included by him as amongst the physicians who sustained the credit of their profession by the liberal scale of their fees—a thriving practitioner who did not write clinical treatises on current diseases, but "busied himself with editions of certain writings of Galen" Caius's writings on the Sweat, both in English and Latin, Creighton regarded as too much occupied with pedantry and lugubrious rhetoric to be of much service for historical purposes. Yet it is difficult to read the short passages in our Annals, now so clearly and helpfully translated into plain English at the hands of the college archivists, without feeling that here was a man with the gift of generalisation and lucent presentation One of his first entries, apart from the tables of officers, relates to the year 1531 "On the 25th October the Comitia met but was further adjourned because there were many suffering from the plague" Caius's own contributions to epidemiology centred round the English Sweat of 1551 There is no reference to that disease in the Annals though many in the State papers, and Caius's first long narrative account of epidemiological events is to be found under the date of Oct 3, 1558—the 4th year of his presidency His election had been deferred from the day after Michaelmas because all the fellows were in various parts of the City giving help to the people suffering from tertian fever, which had increased among the inhabitants during the months of August and September "During these months there were hardly any healthy people to look after the sick and hardly any reapers who could bring in the harvest" This tertian fever was one of a number of catarrhal orders bearing a suspiciously close resemblance influenza Four years later he records that in Novem and December there was an outbreak of colds and catarr —accompanied by fever and pleurisy or quinsy to an extent that many died That year was also not in London for the fact that "in the first twelve days December the sun hardly ever appeared or shone one continuous hour, and the dense and foetid g took possession of everything"

In 1563 the plague appeared preceded by swarms woodlice

> "It began on the first of June in the street popularly Shoe Lane and did not cease until the following spring whole household of a certain citizen perished from the p and even three dogs in this household also died from it was therefore decreed that all dogs and cats should be kil that they could not spread the infection from place to p

The plague was of course an international dise Its visitations are referred to frequently in diplom papers, and often influenced military operatio usually by way of restraint It was also a disease w worried the Court, and every possible effort was m to keep it away from the royal presence Here the State papers give evidence of the orders made the Secretary of State for controlling the disease Mayor of London was also active in issuing rules search, the shutting and marking of houses, the bu of bedding, and "the provision of necessaries for the poor at the charge of the wealthier sort"

In May, 1583, comitia considered certain quest relating to safety precautions against the plague w had been sent to it by the Lord Mayor His Lord asked "firstly how many physicians would be nece to carry out these precautions, secondly, of all physicians, who were the most capable, and fi what annual stipend consistent with their dignity status, should be offered"

By way of reply, the comitia indicated that less four physicians would not be sufficient, that all members of the college were capable, and that it was possible to suggest any annual stipend, and that point of fact it would be becoming to deal with th gentlemen generously and liberally

Harvey's first appearance before the censors in 1603, six weeks *after* the death of Queen Eliza coincided with one of London's most memorable v tions of the plague It was the occasion of the s what extravagant outburst of the dramatist Dek against the profession of medicine

“Never let any man’ he says ask me what became of our phisitions in this massacre. They hid their synodical heads —and I cannot blame them for their phlebotomies, losinges and electuaries—had not so much strength to hold life and soul together as a pot of Pinder s Ale and a nutmeg

It may be that this diatribe relates rather to the herapeutic impotence of the physicians than to their hysical absence, for comitia continued to meet until midsummer though with a long hiatus in the second alf of the year One of our fellows, the poet Lodge rote an eloquent and adequate treatise on the disease s he saw it in 1603 and another, Peter Turner pub shed in the same year his ‘Opinion on amulets or plague akes, whereof perhaps some hold too much and some o little’

Apart from minor recrudescences London was virtually ee of the pest for nearly 20 years but in April 1625 he Lord Mayor again invoked the assistance of the ollege and four of its fellows, Harvey amongst them ere selected to undertake either the prevention or eatment of the disease within the City s limits It as an impossible assignment for in that year more than 5,000 died of the plague in London

Again in 1630 and 1637 the college was brought into nsultation by their Lordships of the Privy Council n 1630 it was a matter of commenting on a voluminous emorandum prepared by Mayerne and the Royal phy ians. In 1637 the college submitted to their Lordships long and detailed summary of the annoyances likely increase the sickness in this populous city It covered any of the known sanitary defects of the Metropolis—overcrowding its squalor, its innumerable slaughter uses, its habit of burying even infected corpses in urches and churchyards in the city It touched on the ls of brewers and butchers and ended on a note of ministrative suggestion—the setting up of a Com ssion or Office of Health

There we will leave the college in its epidemiological ase realising that in the years to come not only plague, t scurvy influenza cholera and leprosy were amongst e diseases upon which its corporate opinion was vited by government.

* * *

Here then are four examples of the achievements of our llege during the first century and a half of its history ch of them illustrates the emergence of an authoritative luence, directed in no way to the aggrandisement of rrow and private interests, but to the benefit and lfare of the body politic Together they serve as a tness to the strength of that Roman Contrivance of llegiation to whose invocation by Linacre we owe at we are here today and whose maintenance and rpetuation we hold in trust for our successors. There a Roman legend which claims that in Romulus and mus (or at any rate in Romulus and the Sabine llus) we have the original and primitive College—e exemplars of all subsequent and perpetual colleges iversities and corporations, these bodies which by e magic of Roman jurisprudence were endowed with e duties, powers, virtues failings and wisdom of the n and women of which lacking their mortality, they re and are composed It is a legend born no doubt give some reasonable basis for that great conception the Roman mind but it is one which in spirit we can mbly accept in gratitude for its later manifestation this our society

Through the mouth of his orator William Harvey mmunicates annually his message to the fellows and embers of this college enjoining upon them the com moration of all benefactors, the pursuit of knowledge, d the fostering of mutual love and affection—an a *triplex* of commendation

All these desirable things are within the compass our collegiation all are of the essential needs of our age and calling all in the words of Harvey are as a string tying us to Eternity

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CLINICAL AND METABOLIC EFFECTS OF PREDNISONE

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PREDNISONE (metacortandracin) and prednisolone (metacortandrolone) are produced by the dehydrogenation at the 1 position of cortisone and hydrocortisone Preliminary reports suggest that their glucocorticoid and eosinopenic activities are three to four times those of the parent compounds (Herzog et al 1955, Perlman and Tolksdorf 1955) Balance studies on patients with rheumatoid arthritis (Bunim et al 1955a Demartini et al 1955) and on a normal subject and an addisonian patient (Pechet 1955 Pechet and Bartter 1955) showed that they caused little sodium retention but that in some cases there was an increase in the urinary potassium and nitrogen excretion In normal subjects these steroids suppress the adrenal cortex with reduction of 17 ketosteroid excretion (Bunim et al. 1955a and b, Dordick and Gluck 1955 Pechet 1955, Pechet and Bartter 1955, Orr et al 1955) and of hydrocortisone turnover (Peterson and Wyngaarden 1955) Prednisone also reduces the urinary 17 ketosteroids in patients with the adrenogenital syndrome (Kupperman et al 1955)

Reports on the value of prednisone and prednisolone in rheumatoid arthritis (Bunim et al. 1955b Dordick and Gluck 1955 Margolis et al. 1955, Boland 1955) and in skin diseases (Robinson 1955) and asthma (Arbesman and Ehrenreich 1955 Barach et al 1955) confirm that they have three to five times the anti inflammatory action of cortisone and hydrocortisone, but they cause comparatively little sodium retention or œdema. Transient dyspepsia was however not uncommon and in 3 of a series of 17 patients a symptomless duodenal ulcer was demonstrated radiologically (*Bollet et al* 1955) Mental changes and impairment of glucose tolerance have also been observed (Bunim et al 1955a Demartini et al. 1955)

Prednisone seems to be a potent glucocorticoid with relatively little sodium retaining activity and to be valuable when high-dosage steroid therapy is required This is often the case in patients with leukæmia, malignant lymphoma purpura or hæmolytic anæmia

This report deals with the substitution of prednisone for cortisone in the treatment of 7 patients with these conditions and the effect of giving prednisone initially in an 8th case In addition prednisone (30 mg daily) was given to a normal subject during a balance study and varying amounts have been given to 2 adrenalectomised women to study the effect on steroid excretion

The Patients

Case 1—A man of 30 was admitted in March, 1955, with acute lymphatic leukæmia He had had symptoms for two months and his Hb on admission was 37% The response to blood transfusions was poor and cortisone (100 mg daily) was started His clinical condition improved dramatically and the Hb was maintained at 80% without further transfusion In June œdema of the ankles and widespread skin deposits were noted He was changed to prednisone (30 mg daily), the skin deposits cleared, the œdema disappeared and the clinical and hæmatological condition remain satisfactory Rounding of the face which developed while he was taking cortisone has become more striking on prednisone

Case 2—Aleukæmic leukæmia was diagnosed in a woman of 68 in January, 1955 Her symptoms were due to anæmia and were only relieved for a short time by blood transfusions Cortisone (150 mg daily) was started in April with subjective improvement but little alteration in the need for transfusion She was changed to prednisone (40 mg daily) on Aug 8 For four weeks she remained well but then again became grossly anæmic and developed diabetes She had a severe urinary infection and died on Sept 13

Case 3—A woman of 67 was found to have aleukæmic leukæmia in February, 1955, her Hb then was 55% She was started on cortisone (100 mg daily) and the dose was increased to 150 mg in May Rigid salt restriction was necessary to prevent œdema Steroid diabetes developed in July and she was admitted in August for metabolic study and transfer to prednisone The general condition and Hb level improved on cortisone and there has been a further increase in the Hb since transfer to prednisone

Case 4—A man of 65 was found to have chronic lymphatic leukæmia in 1948 By January, 1954, he had become anæmic and required blood transfusion Cortisone (100 mg daily) was started with subjective improvement, but the dose was reduced because of œdema and he became more anæmic despite further transfusions By August, 1954, his Hb was 30%, and a further transfusion was attempted but abandoned because of severe pulmonary œdema Mersalyl was given, the salt intake restricted, and the cortisone increased to 150 mg daily By December the Hb was 80% and the cortisone was continued despite the presence of œdema which could only be controlled by the twice weekly injection of mersalyl Early in 1955 he complained of backache, and X-ray examination showed osteoporosis and collapsed vertebræ Reduction of the cortisone was followed by a fall in the Hb to 52%, and the dose was increased again to 150 mg daily In June, 1955, he developed severe dyspepsia of duodenal ulcer type Prednisone (40 g daily) was started shortly afterwards The backache and dyspepsia have improved and the hæmatological condition remains satisfactory (Hb 68%), but in August he was found to have diabetes, requiring small doses of insulin.

Case 5—A lymphocytic lymphoma was diagnosed by gland biopsy in a man aged 55 in 1953 The enlarged glands responded satisfactorily to irradiation on several occasions but by May, 1955, he had gross hepatosplenomegaly, a large mass in the lower abdomen, and chylous ascites He was given nitrogen mustard (total 40 mg) and irradiation to the abdominal mass but the response was disappointing Cortisone (150 mg daily) was started on Aug 4 There was considerable subjective improvement, the abdominal mass disappeared, the enlargement of the liver and spleen lessened, and ascites ceased to be troublesome In September he was changed to prednisone (30 mg daily), and restriction of his salt intake was stopped He is back at work and his condition is satisfactory

Case 6—Subacute lymphatic leukæmia was diagnosed in a man of 51 in March, 1955 He had had symptoms of anæmia for six months, the Hb was 40%, and the direct Coombs test positive Transfusions only raised the Hb for a few days and hydrocortisone (80 mg daily) was started on April 15 Cortisone (150 mg) was substituted on April 22 and increased to 200 mg daily on May 2 Further transfusions gave a sustained rise in Hb, the white blood count fell, and the cortisone was reduced to 150 mg daily in June He was changed to prednisone (30 mg daily) on Sept 19 when the Hb was 98% The clinical and hæmatological conditio remain very satisfactory

Case 7—Mesenteric occlusion was diagnosed at an eme gency laparotomy on June 20, 1955, in a man of 71 who h severe abdominal pain. The gut appeared viable and th abdomen was closed Purpuric spots were noted on the sk four days later On July 8 the abdominal pain recurred an further laparotomy left no doubt that it was due to intesti purpura He remained well until July 21 when the pa recurred and cortisone was started (200 mg daily fro July 23 to 26 and then reduced to 150 mg daily). Th symptoms were controlled but after two weeks he becam euphoric and confused When the sodium intake was mo than 50 m eq daily œdema appeared On transfer to predn sone (30 mg daily) the œdema cleared rapidly but the ment symptoms continued until the dose was reduced to 10 m He was subsequently maintained symptom free on 15 m daily for three weeks when he was readmitted with bleedi from both kidneys The dose was increased to 30 mg. dai and within three weeks he had marked Cushing facies a impaired glucose tolerance, although there was no glycos

Case 8—A man of 50 complaining of lassitude was fou to have a generalised lymphadenopathy and enlargement the liver and spleen Gland biopsy showed Hodgkin's dise The Hb was 51%, reticulocyte count 19%, and the di Coombs test negative Prednisone (30 mg daily) was sta on Sept 10, 1955, with definite subjective improvement a by Oct 25, without other treatment, the Hb was 97%.

Case 9—*A woman of 28 underwent* bilateral adrenalecto in April, 1955, for metastatic carcinoma of the breast. S was readmitted for steroid excretion studies and was giv 9 α fluorohydrocortisone (0 5 mg daily), hydrocortis (20, 40, 60, 80, 100, and 120 mg daily), cortisone (50 a 100 mg daily), and prednisone (20, 40, and 60 mg dail Each dose level was maintained for three days

Case 10—A woman of 25 underwent total adrenalect for very severe Cushing's syndrome in December, 1954. I July, 1955, she was readmitted for a study similar to that case 9 in which she was given 9 α fluorohydrocortisone (0·5 daily), cortisone acetate (25, 50, 75, 100, and 150 mg da and prednisone (20 and 40 mg daily)

The studies performed on the normal subject (male aged were of the metabolic effects and alterations in ste excretion produced by hydrocortisone (free alcohol) (50 daily for five days), 9 α fluorohydrocortisone (3 mg daily five days), prednisone (30 mg daily for five days), cortisone acetate (150 mg daily for three days) The ba study lasted thirty three days allowing for an initial eq bration period and intervals between the different ster

Methods

In case 3 and the normal subject complete balance st were performed Identical meals were taken each day duplicate diets were analysed on at least two occa Urine was collected daily and fæces over suitable perio from four to seven days

The effect of prednisone on urinary electrolyte, nitro and creatinine excretion was studied in cases 1, 2, 7, an Cases 2 and 7 were on the standard hospital low sodium (40–50 m eq daily) To assess their tolerance for so

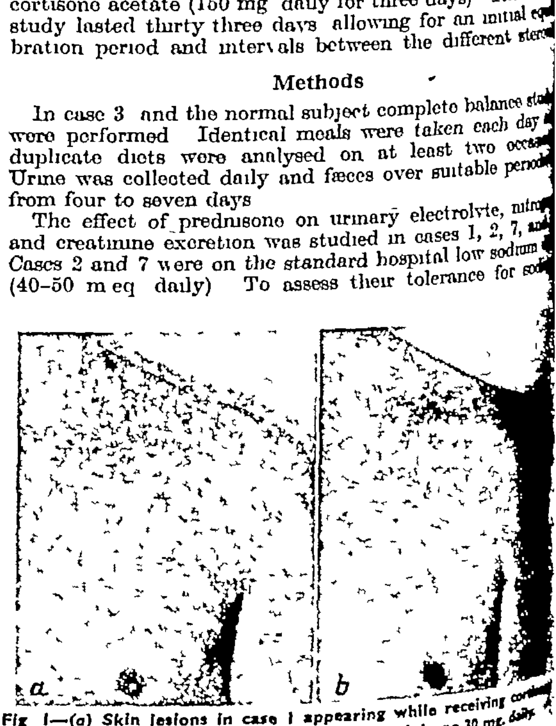
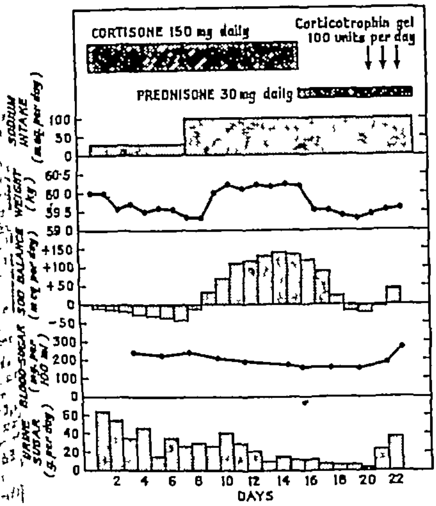


Fig 1—(*a*) Skin lesions in case 1 appearing while receiving cor 100 mg daily ; (*b*) after four weeks on prednisone 30 mg. daily



1—Changes in case 3 resulting from increasing sodium intake while on cortisone 150 mg daily and then changing to prednisone.

oride, cases 3 and 7 were given 4 g extra salt daily (68 m.eq lium) for part of the study period. Insulin tolerance was essed in case 6 by the standard intravenous insulin rance test.

The two adrenalectomised patients (cases 9 and 10) were an ordinary ward diet supplemented in case 9 by an ra 3 g a day of salt Daily urine collections were made l frequent absolute eosinophil counts and estimations of ing blood-sugar blood urea, and plasma electrolytes were formed. The ability to excrete a water load was studied by suring the urine volume in the four hours after the estion of 20 ml. of water per kg body weight

ll patients were weighed and had their blood pressures orded at a fixed time each day

Results

ical Effects

ortisone had produced a dramatic improvement in general condition and well being of cases 1–6 and h the exception of case 2 there was comparable rovement of the Hb and reduction in size of the phomatous masses When prednisone was substituted cortisone the improvement was maintained One ent developed skin deposits while receiving cortisone 0 mg daily) and these cleared when prednisone (30 mg ly) was substituted (case 1 fig 1) The corresponding es of the steroids were

Cortisone	Prednisone	Cases
100 mg.	30 mg	1
150 mg	30 mg	3 5 6 7
150 mg.	40 mg	2 4

e 8, in which steroid therapy was initiated with dnisone (30 mg daily) showed an excellent response treatment

e-effects

ases 1–7 had been receiving cortisone in large doses up to twelve months and a number of troublesome e-effects had developed 4 had had œdema and in 2 persisted despite a low-sodium diet 1 had severe pepsia and osteoporosis with vertebral collapse had steroid diabetes 1 was euphoric and 1 had eloped a moon face

Transfer to prednisone abolished the œdema and proved salt tolerance but was without effect on the other complications 2 patients developed diabetes whilst on prednisone

Sodium Excretion

Cases 1 and 2 showed little change in urine sodium excretion when prednisone was substituted for cortisone At the time the former was taking about 100 m eq sodium daily and the latter about 50 m eq Case 1 subsequently lost the œdema that had developed while on cortisone and the second patient said that her limbs felt less bloated and heavy The effect of prednisone on sodium excretion was studied in more detail in cases 3 and 7 (figs. 2 and 3) When these patients were taking 150 mg daily of cortisone they were in sodium balance provided the intake was strictly limited, when additional salt was given sodium retention and, in 1 case, œdema developed When prednisone (30 mg daily) was substituted for the cortisone, sodium retention and œdema quickly disappeared although the additional salt was continued Case 4 was œdematous whilst on cortisone despite a low-sodium diet and twice weekly injections of mersalyl. He continued to restrict his sodium intake when on prednisone but no longer needed the diuretic injections The patient treated initially with prednisone (case 8) had some œdema before treatment, but this cleared and his urinary sodium excretion increased when prednisone was given The effect of prednisone at different dose levels on weight and sodium excretion in adrenalectomised subjects on an ordinary ward diet is shown in tables I and II It is apparent that the sodium

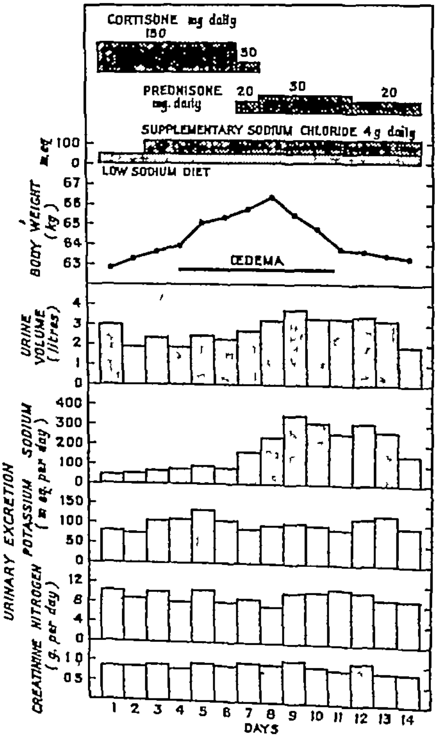


Fig 3—Metabolic changes in case 7 resulting from substitution of prednisone for cortisone.

TABLE I—EFFECT OF 9 α-FLUOROHYDROCORTISONE, CORTISONE, HYDROCORTISONE, AND PREDNISONE IN AN ADRENALECTOMISED PATIENT (CASE 9)

—	Hydrocortisone (mg per day)						Cortisone acetate (mg per day)		Prednisone (mg per day)			9 α fluorohydrocortisone (0·5 mg per day)
	20	40	60	80	100	120	50	100	20	40	60	
Order of administration	7	2	6	3	5	4	9	8	10*	11*	12*	1
Mean urinary sodium output (m.eq per day)	276	221	230	160	160	155	209	172	200	107	222	87
Weight change (kg per day)	-0 18	+0 04	+0 02	+0 14	+0 13	+0 43	+0 10	+0 09	-0 06	-0 03	+0 16	+0 19
Mean urinary nitrogen (g per day)	7 2	6 8	8 6	10 0	10 8	12 1	11 7	14 2	9 5	10 1	12·0	8·4
Fasting blood sugar (mg per 100 ml)	98	104	112	94	115	120		89	91	96	108	85
Mean absolute eosinophil-count per c mm	37	11	14	4	5	3	13	13	3	6	2	
Percentage excretion of a water load	165	86	138	109	122	142	151	135	129	178	124	104

* Preceded by one day on 0 5 mg 9 α fluorohydrocortisone

TABLE II—EFFECT OF 9 α-FLUOROHYDROCORTISONE, CORTISONE, AND PREDNISONE IN AN ADRENALECTOMISED PATIENT (CASE 10)

—	Cortisone acetate (mg per day)					Prednisone (mg per day)		9 α fluorohydrocortisone (0 5 mg per day)
	25	50	75	100	150	20	40	
Order of administration	4	1	3	5 *	7	6	8	2
Mean urinary sodium output (m eq per day)	220	182	189	208	213	279	262	72
Weight change (kg per day)	-0 36	-0 17	0	+0 08	+0 15	-0 33	-0 07	+0·11
Mean urinary nitrogen output (g per day)	7 8	8 7	8 9	8 1	9 8	9 5	10 7	8 4
Fasting blood sugar (mg per 100 ml)	86	82	80	85	78	84	74	80
Mean absolute eosinophil count per c mm	270	150	137	90	66	105	120	
Percentage excretion of a water load	124	83	116	132	122	80	118	88
Mean urinary creatinine output (g per day)	0 95	0 93	0 89	0 88	0 88	1·03	0 86	

conserving action of prednisone is relatively weak Little sodium retention was demonstrated in the normal subject (fig 4)

Potassium Excretion

Adrenal cortical steroids cause an immediate transient potassium diuresis and in some instances with continued administration there is a later more prolonged increase in excretion An initial potassium diuresis was seen on the first day of the administration of prednisone to th normal subject (negative balance 28 m eq) It exce that produced by 50 mg hydrocortisone (negat balance 9 m eq) but was less than that with 3 m 9 α-fluorohydrocortisone and 150 mg cortisone (negat balances of 56 and 42 m eq respectively) The eff was transient, however, and the subject was in potass equilibrium during the five day period of predn administration (fig 4) Case 10 (an adrenalectom patient) was given prednisone immediately after a co parable dose of cortisone and no initial potassium diu was seen Case 9 had 0 5 mg 9 α fluorohydrocortiso the day before prednisone, on each occasion that it w given Her potassium excretion increased considera for one day at each dose level, but the amount bore r relation to the dose Only 1 of the patients transferr from cortisone to prednisone showed an initial potass diuresis This was case 1 in which the prednisone do was relatively greater than that of the cortisone case 8 treatment was started with prednisone and initial potassium diuresis was observed In this ca urinary electrolyte excretion was followed for th weeks, but no sustained potassium diuresis was noted

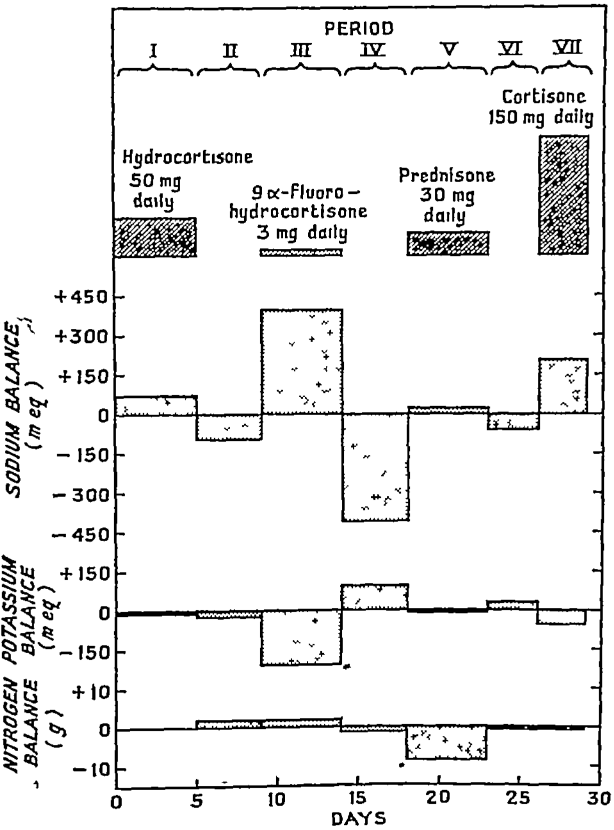


Fig 4—Metabolic effects of various steroid compounds in a normal male (period balance data)

Nitrogen Excretion

There was no change in nitrogen excretion in cases 3, or 7 Case 8, treated with prednisone without preced cortisone, showed a definite increase in urinary nitrog excretion (mean of three control days 15 3 g dail mean of first seven days on prednisone 21 1 g daily Nitrogen excretion by the adrenalectomised patients shown in tables I and II, although intake was not fix there appears to be some correspondence betw steroid dose and urinary nitrogen and the effect prednisone is similar to that of biologically equival amounts of unmodified steroid The normal subject, a fixed nitrogen intake went into negative balance whi on prednisone (fig 4)

Carbohydrate Metabolism

The alteration of fasting blood sugar and urinary sugar when case 3 was transferred to prednisone is shown in fig 2 The improvement of glucose tolerance w probably due to strict dietary control in hospital transfer to prednisone certainly did not aggravate th diabetes The immediate change produced by corti

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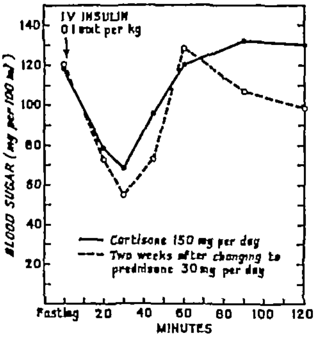


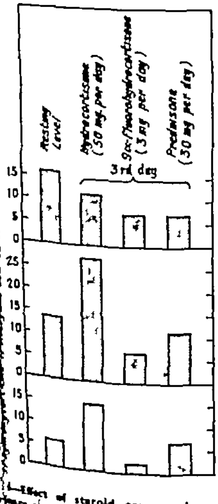
Fig 5—Insulin-tolerance test in case 6 on cortisone 150 mg daily and two weeks after substitution of prednisone 30 mg daily

solute Eosinophil counts

These were studied in the adrenalectomised and
mal subjects In case 9 the counts were unusually
, and little significance could be attached to them
se of case 10 were variable but suggested that
40 mg prednisone had eosinopenic activity equivalent
that of 50–100 mg cortisone In the normal subject
dnisone (30 mg daily) depressed the eosinophil count
e than hydrocortisone (50 mg daily), 9 α fluoro
rocortisone (3 mg daily) or cortisone (150 mg
ly)

ter Excretion

n the adrenalectomised subjects the proportion of a
er load excreted in four hours was within the normal
ge with all forms of treatment (tables I and II) If the speed of excretion is taken into account there was evidence of a rather slower response with 9 α fluorohydrocortisone than with the other steroids but no quantitative comparison between prednisone and hydrocortisone or cortisone is possible



—Effect of steroid compounds on
ary steroid excretion in a normal

Creatinine Excretion

The creatinine output was estimated in cases 2 3 7 8 and 10 and in the normal subject It was unaffected by prednisone (fig 3 and table II)

Steroid Excretion

Urinary 17 ketogenic steroids (Norymberski et al 1953) and 17 hydroxycorticoids (Reddy et al 1952) were estimated by modifications of the original methods (Moxham and Nabarro 1955) In the adrenalectomised subjects, the urinary 17 ketogenic steroids were approximately 25% and the 17 hydroxycorticoids 20% of the daily dose of prednisone

The effect of prednisone in causing adrenal suppression in the normal subject is shown in fig 6 If allowance is made for the contribution of administered steroid to the urinary excretion the levels suggest that 30 mg daily of prednisone had a slightly greater suppressive action than 3 mg daily of 9 α fluorohydrocortisone.

The effect of corticotrophin gel in case 3 after six months of steroid therapy initially with cortisone and at the time of the test with prednisone is shown in fig 7 The level of steroid excretion on the two preliminary days is much lower than it would have been on a comparable dose of cortisone and this makes it easier to recognise the increase produced by the corticotrophin

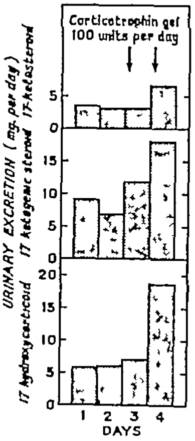


Fig 7—Effect of corticotrophin gel on urinary steroid excretion in case 3. Steroid therapy had been given for the previous six months and prednisone 30 mg daily was continued during the period of the test.

Discussion

Preliminary observations on cases of malignant lymphoma suggest that prednisone is about five times more active than cortisone in maintaining the hæmoglobin level and reducing the size of lymphomatous deposits The therapeutic ratio is similar to that observed in rheumatoid arthritis (Bunim et al 1955b) and asthma (Barach et al 1955)

Attempts to study the glucocorticoid activity of prednisone in adrenalectomised humans and to compare it on a roughly quantitative basis with cortisone and hydrocortisone present certain difficulties. The effect on the fasting blood sugar did not suggest a 5 1 ratio for glucocorticoid activity The increase of eosinopenic activity also seemed to be less This is in contrast with the findings of Pechet (1955) who reported that the eosinopenic activity of prednisone is 5–10 times that of hydrocortisone Pechet and Bartter (1955) have reported an increase in the creatinine excretion in a patient with Addison s disease. We have been unable to demonstrate any consistent increase in an adrenalectomised patient Published reports on the effect of prednisone on nitrogen excretion are conflicting Bunim et al (1955a and b) found no increase in nitrogen excretion when 30 mg daily was given but a definite increase after ten days treatment with 50 mg daily Pechet obtained a progressive negative nitrogen balance with 30 mg daily comparable to that following 150 mg cortisone. Our results in adrenalectomised subjects showed an increased nitrogen loss and in the normal individual this was very striking

There seems little doubt that the sodium retaining activity of prednisone is not increased in parallel with the therapeutic activity Dordick and Gluck (1955) were able to give one litre of physiological saline solution intravenously to a patient receiving therapeutic doses of prednisone without sodium retention Our observations in cases 3 and 8 indicate that prednisone can be given with a reasonable sodium intake without the development of œdema and in case 7 that œdema resulting from cortisone therapy may clear on transfer to prednisone

The effect on potassium excretion is less definite Pechet (1955) has reported that prednisolone is five times as potent as hydrocortisone in producing potassium diuresis, whereas Bunim et al (1955b) found little effect with 30–40 mg prednisolone

Prednisone causes adrenal suppression, therefore, patients receiving long-term treatment will be in a state of adrenal deficiency if the steroid is abruptly withdrawn Furthermore if any stress, such as an intercurrent illness, develops during or shortly after treatment the normal adrenal response will be absent or delayed It has been suggested that the adrenal cortex of patients receiving long-term steroid therapy should be stimulated from time to time by corticotrophin injections When these injections are given it is important to obtain evidence of an adrenal cortical response and this is best done by measurement of the urinary steroid excretion If large doses of cortisone or hydrocortisone are being given it may be difficult to detect the small increase of steroid excretion that results from successful stimulation It would be unwise to stop treatment completely while the corticotrophin is being given, in an attempt to facilitate the recognition of the increased steroid output Goldfien et al (1955) have suggested giving 9 α-fluoro hydrocortisone during the period of stimulation but this often causes troublesome fluid retention When patients are being treated with prednisone, the steroid output is much smaller than on therapeutically equivalent doses of cortisone and the increase following corticotrophin is easily recognised

It is becoming increasingly obvious that long continued treatment with large doses of cortisone is dangerous, although in conditions such as subacute lymphatic leukæmia it may be the only effective treatment available The most serious complications are steroid diabetes, fulminating pneumonia, or miliary tuberculosis, osteoporosis with vertebral collapse, peptic ulceration with perforation or hæmorrhage, and the precipitation of psychoses Sodium retention with œdema is much less serious but it does induce the physician to keep the dose as low as possible The introduction of prednisone and prednisolone removes only the last and least serious of the complications The fact that these new steroids can be given without restriction of salt intake, and that there is little risk of œdema developing, may well encourage prolonged administration in high dosage There seems little doubt that the other and more serious complications of steroid therapy are just as easily produced by these new compounds, and when they are being given it is essential to keep the dose as low as possible

Summary

The clinical effects of prednisone (30–40 mg daily) have been observed in 5 cases of lymphatic leukæmia, 2 cases of lymphoma, and 1 case of the Henoch-Schonlein syndrome Metabolic studies were made on 5 of these patients and in 1 normal and 2 adrenalectomised subjects

The therapeutic activity of prednisone is about five times that of cortisone

Studies of glucocorticoid activity in adrenalectomised subjects showed increase nitrogen excretion but little effect on blood-sugar 2 patients developed steroid diabetes during prednisone treatment

The sodium-retaining activity of prednisone is not increased in the same way as the therapeutic and glucocorticoid activities Most patients are able to take prednisone (30–40 mg daily) with a normal sodium intake

Prednisone is active in causing suppression of the adrenal cortex

We wish to thank the clinical research committee of the Middlesex Hospital for laboratory facilities in the Institute of Clinical Research and a personal research grant (to J D N N) We are very grateful to the Courtauld Institute of Biochemistry for plasma estimations performed on many of the patients, to the ward sisters and nursing staffs for their help, to of the dietetics department for the provision of special di and to Miss Audrey Moxham for the steroid estimations. The prednisone used in these studies was supplied by Laboratories Ltd

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PREDNISONE AND PREDNISOLONE I THE TREATMENT OF RHEUMATOID ARTHRITIS

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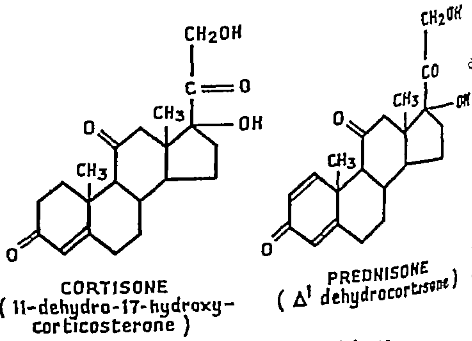
SINCE Bunim et al (1955b) first described the suc treatment of 7 cases of rheumatoid arthritis prednisone (Δ^1 dehydrocortisone, 'Metacortandr 'Meticorten') (see fig 1) and prednisolone (Δ^1 deh hydrocortisone, 'Metacortandralone,' 'Meticorte there have been many other reports of the e of these two substances in this disorder (Dordick Gluck 1955a, Margolis et al 1955, Demartini 1955, Robecchi et al. 1955, Bickel 1955, Gra Merrick 1955, Black et al 1955, and others)

The general consensus of opinion is that the substances are identical as regards antirheumatic and that both have a potency some three to five that of cortisone and of hydrocortisone acetate



CORTISONE
(11-dehydro-17-hydroxy-corticosterone)

PREDNISONE
(Δ^1 dehydrocortisone)

Fig 1—Cortisone and prednisone

COMPARISON OF TREATMENTS

ro o	Age (yr)	Length of history	Subjective pain and stiffness on		Joint tenderness on Δ	Grip on Δ	Walking time (sec) on		E.S.R. on		Finger swelling on Δ	Over-all improvement (Δ > C)	Rebound
			C	Δ			C	Δ	C	Δ			
1	50	10 yr	50%	0%	+ 5	Unchanged	Unchanged		38	13	+ 12	Yes	Yes
2	6*	35 yr	100%	60%	+ 7	+ *0	50	20	15	13	+ *1	Yes	Yes
3	46	2 yr	40% Unchanged	40%	Unchanged	Unchanged	Unchanged		Always normal		Unchanged	No	No
4	57	11 yr	75%	50%	+ 14	Equal	29	18	35	28	+ 8	Yes	Yes
5	66	2 yr	78%	62%	Unchanged	Equal	Equal		*3	13	Unchanged	Yes	No
6	76	3 mos	35% Unchanged	35%	Unchanged	Unchanged	Unchanged		65†	80†	Not assessed	No	No
7	60	18 mos.	67%	58	+ 6	Unchanged	Not done		40	32	+ 3	Yes	Yes
8	54	6 yr	20% Unchanged	20%	Unchanged	+ 5	Unchanged		30	20	Equal	Slight	No
9	53	10 yr	60% Unchanged	60%	+ 4	+ 3	Unchanged		31	28	Equal	Slight	No
0	42	3 yr	50%	15%	+ 10	Equal	Not done		80†	58†	+ 3	Yes	No
1	44	13 yr	70%	40%	+ 7	Not done	Not done		Unchanged		+ 7	Yes	Yes
2	61	13 yr	70%	40%	+ 4	Not done	Not done		20	15	+ 4	Yes	Yes
3	67	18 mos.	70%	55%	+ 6	Unchanged	Unchanged		Unchanged		Equal	Yes	Yes
4	55	1½ yr	100%	70%	+ 19	+ 15	90 +	35	30	8	+ 8	Yes	Yes

gures given are average of all estimations Pain and stiffness recorded daily by patient as percentage of symptoms present on admission

C cortisone Δ either prednisone or prednisolone
Improvement on either prednisone or prednisolone compared with assessments while on cortisone
† By Westergren method (other readings by Wintrobe's method)

mouth All workers also agree that in effective tapeutic doses these substances have less sodium ining effect than have cortisone and hydrocortisone nim et al 1955b Margolis et al 1955 Slocumb et al 5, Demartini et al 1955)

echet (1955) using prednisolone in the large dose 0 mg daily, noted sodium loss compared with sodium ntion on hydrocortisone 150 mg daily He found a slight transient potassium diuresis on starting nisone and prednisolone and slight retention on ping them. In all other respects these substances ared very similar to cortisone and hydrocortisone gave much the same range of toxic side-effects ic ulceration, often asymptomatic (Bunim et al a, Margolis et al 1955 Demartini et al 1955) ase of precordial oppression and palpitations (Gray Merrick 1955), mental upset (Black et al. 1955 tt et al 1955)

hwartz (1955) noted that glycosuria was less and in requirements were lower in one diabetic patient on prednisone than when on cortisone or hydro sone

seems that all the features of Cushing's syndrome on treatment with cortisone may also be seen prednisone and on prednisolone therapy—acne, face, hirsutism &c —but it is impossible to say published reports, whether the incidence of toxic effects is greater or less Nevertheless the smaller needed and the diminished salt retaining effect uivalent dosage suggested that here was an effective inflammatory agent which had certain advantages cortisone and hydrocortisone

vourable results have been reported from the treat- of asthma (Arbesman and Ehrenreich 1955 artz 1955 Skaggs et al 1955 Bickel 1955) oph ble conditions (King and Weimer 1955) disseminated erythematosus (Dordick and Gluck 1955b) adreno al syndrome (Kupperman et al 1955) and chronic hatic leukæmia (Isch Wall and Metreau 1955) ffect on circulating eosinophils and in suppressing ocortical output of 17 ketosteroids is similar to of cortisone

is clear that we have a potent weapon in these two substances We set out to answer only two tions:

Is it as effective as, or better than cortisone acetate in atoid arthritis when given in a quarter or a fifth of sage?

In this dosage are toxic effects more or less common th cortisone?

Scheme of Trial

10 rheumatoid patients were transferred from cortisone to either prednisone or prednisolone and back to cortisone, 4 from prednisolone direct to cortisone Assessment was by the patients own estimation of pain and stiffness (100–0%), finger swelling measured with jewellers rings, tenderness over proximal interphalangeal and meta carpophalangeal joints, erythrocyte-sedimentation rate (E.S.R.) simple function tests, and power of grip

Improvement and deterioration on changing from one drug to the other and on changing back were noted but the patients sisters, and nurses were unaware of the transfer to a new form of treatment Cortisone tablets from different makers are provided in different sizes so no surprise was expressed at changes in the size and in most cases the number of tablets given daily was the same

Only short term studies lasting from two weeks to three months, are reported here Since the two substances appeared identical in action Prednisone" should be taken as meaning prednisone and/or prednisolone' The length of treatment with prednisone varied from four days to ten weeks.

Results

The results are shown in the accompanying table

The patient's own assessment of *pain and stiffness* improved in 10 of the 14 cases transferred from cortisone to prednisone and remained unchanged in 4 In no case was there deterioration on transferring to prednisone. *Joint tenderness* improved in 10 cases and remained unchanged in 4 on transferring from cortisone no case deteriorated in this respect on changing to prednisone *Power of grip* improved in 4 cases, remained unchanged in 8 and was not tested in 2 *Walking time* improved in 3 was unchanged in 7, and was not tested in 4 The E.S.R. improved significantly in 6 cases very slightly or not at all in 7 and deteriorated in none on changing from cortisone to prednisone in 1 active case it was always normal on both drugs *Swelling of proximal inter phalangeal joints* of the hands improved in 8 cases remained unchanged in 5 and was not measured in 1

Over-all improvement all factors being considered, was estimated as having taken place in 10 cases on transferring from cortisone to prednisone 4 others remaining more or less unchanged

In no individual particular nor on total analysis did any of these 14 cases deteriorate on prednisone whereas 8 did so on being restored to cortisone. This return of symptoms or rebound, was striking in many cases, arthritic symptoms rapidly returning In 6 cases there was no such rebound At the completion of the complete trial, when all 14 patients were asked whether they preferred the big or the little tablets, 9 stated that they preferred the small (prednisone), 5 were indifferent, and none stated a preference for the large (cortisone)

Illustrative Case-reports

RHEUMATOID ARTHRITIS

Case 2 —A spinster, aged 52, with thirty five years' history of rheumatoid arthritis, had temporarily improved under treatment with gold and calcium injections For three years she had been treated with phenylbutazone, but initial subjective improvement was followed by a relapse

Treatment and Progress —On admission phenylbutazone 400 mg daily was continued, and then dummy tablets were substituted No change occurred until prednisone 40 mg daily was started There was overnight improvement in symptoms and this was accompanied by considerable reduction of joint swelling, walking time, and E S.R After seven days the dose was reduced to 30 mg , with continued all round improvement After twenty two days' treatment cortisone 125 mg daily was substituted, and twenty four hours later a complete relapse set in The patient said that she was as *bad as she was on admission. On a salt restricted diet* œdema developed with slight hypertension, and her weight increased by 1 st A moderate remission then resulted from changing treatment to corticotrophin gel 50 mg daily, but œdema continued to increase and dyspepsia began to be troublesome When prednisolone 25 mg was given, remission again occurred, with improvement in œdema and dyspepsia

Prednisone was much more effective in controlling this patient's arthritis than four times the dose of cortisone, and œdema and hypertension came on when cortisone was given Treatment with prednisolone produced a satisfactory remission

Case 14 —A married woman, aged 55, with eighteen months' history of progressive rheumatoid arthritis, had responded well to cortisone for six months, but relapse then set in and progressed in the six months before admission, when she was worse than at any time since onset

Treatment and Progress —For cortisone 100 mg daily was substituted prednisone 30 mg daily The patient noticed sudden improvement on waking eighteen hours later There were steady reduction of joint swelling and improvement in walking, power of grip, and E S R Joint tenderness and her own assessment showed a slower improvement, which was maintained on 25 mg daily After twenty days' treatment cortisone 100 mg was substituted On the same afternoon a complete relapse set in A further remission was later induced with prednisolone 25 mg daily and maintained with intramuscular corticotrophin gel 60 mg daily for twenty one days, when the corticotrophin had to be discontinued because of hypertension, severe œdema, moon face, and a return of arthritic symptoms The patient then assessed her condition as much the same as on admission Transferred to prednisolone 20 mg daily she has again improved considerably though her blood pressure remains 180/100 mm Hg Œdema and moon face have disappeared

In this case both prednisone and prednisolone produced a greater and a more rapid remission than did cortisone in four times the dose (fig 2) On corticotrophin gel 60 mg daily the rheumatoid symptoms worsened after ten days and side effects developed When prednisolone was given again, another remission occurred and this ha been maintained for a month

Case 1 —A man, aged 58, with ten years' history of rheumatoid arthritis, had had moderate symptomatic rel from phenylbutazone, but no improvement followed the addition of 75 mg of cortisone daily, which was continued for *three months*

Treatment and Progress —On admission phenylbutazone 400 mg daily was continued, the cortisone was reduced to 37 5 mg daily, and dummy tablets were added The patient's condition remained stationary until prednisone 50 mg daily was substituted for the dummy tablets, and within a few hours there was rapid improvement, which persisted unchanged when both the phenylbutazone and the cortisone were discontinued The prednisone was reduced to 25 mg The patient returned to work, after which he said he was quite The prednisone course lasted nine weeks and was followed by cortisone 125 mg daily, five days later a partial rel developed After fourteen days treatment was begun w prednisolone 20 mg daily, producing satisfactory remission.

This patient returned to full work symptom free prednisone 25 mg daily, relapse occurred on change to 125 mg cortisone daily A further remission induced by prednisolone 20 mg daily

Case 8 —A spinster, aged 54, with eight years' history rheumatoid arthritis, was admitted in relapse There only slight radiological change but there was consider swelling of soft tissues, especially in the fingers.

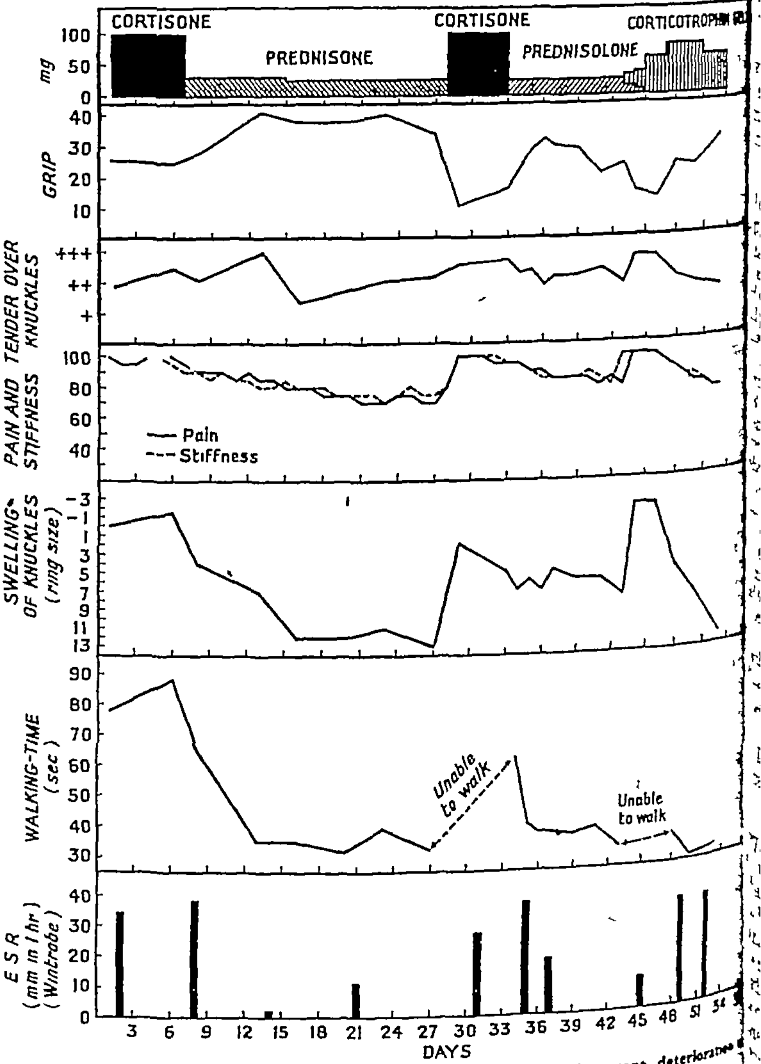


Fig 2—Case 2 showing improvement on prednisolone and subsequent deterioration cortisone

Treatment and Progress—In the initial control period re was moderate improvement in walking time and power grip Subjective assessment of stiffness improved Joint derness and the E.S.R. were unchanged but there was some iction of joint swelling The patient was given cortisone 5 mg daily for seven days with considerable improvement her own assessment of pain and stiffness but all objective essments were unchanged Prednisolone 15 mg daily then given for seventeen days. There was further consider e improvement both in the subjective assessments and joint swelling and the E.S.R. Joint tenderness and grip e not significantly affected On return to treatment with isone 62 5 mg daily this improvement was maintained hout relapse

ANKYLOSING SPONDYLITIS

rednisolone has been used in two young male patients

ase 15.—A man, aged 22 had eighteen months history of pical ankylosing spondylitis, which presented with painful s. Prednisolone was no more effective than cortisone ed by subjective pain and stiffness bony tenderness e of spinal movement and chest expansion The E.S.R normal at all times Neither cortisone nor prednisone any appreciable effect in doses as large as 102 5 mg 40 0 mg respectively

ase 16 —A man aged 21 with three years' history of losing spondylitis which presented with knee involve complained chiefly of stiffness and pain in the right Pain and stiffness on subjective assessment, range of ement chest expansion and distance from floor on full ion gave no better figures on prednisolone 5 mg four daily than on cortisone 25 mg thrice daily

se 15 had as his presenting and outstanding complaint er heels These improved slightly on phenylbutazone not at all on cortisone and on prednisone Case 16 a severely affected right hip, which was the cause of t of his pain He gave the same negative response to drugs. Neither of these two patients had typical dylitis and no conclusions can legitimately be drawn

SCLERODERMA

ly 1 case of this disorder was treated

se 17 —A spinster aged 56 was admitted with three hs history of pains and deadness of fingers swelling kles and tiredness.

ysical examination showed sclerodermatous changes in s and persistent râles at both lung bases. For ten days admission her own assessment of pain and stiffness ined steady at 100% finger swelling and joint tenderness also constant

tment and Progress—Treatment with corticotrophin then begun, starting with 50 mg daily which dosage was ed over a period of two weeks to 20 mg daily This a reduction in the patient s own assessment of pain and very considerable improvement in joint tenderness welling the improvement persisting despite the smaller of corticotrophin. Cortisone 25 mg thrice daily was then tuted this produced no change in the joints and after days intolerable indigestion and colicky abdominal it had to be discontinued Prednisolone 5 mg thrice was then substituted and the indigestion improved erably The subjective and objective tests during ment with prednisolone 5 mg t d.s were as with one 25 mg. t.d.s.

this case of scleroderma prednisolone proved as ive in controlling symptoms as five times the dose tisone. Dyspepsia, the result of cortisone therapy ded on treatment with prednisolone

Discussion

this very short small scale trial it might be argued the improvement noted on prednisone was purely tter of dosage Long term trials will perhaps answer question but it seems that in short term trials isone is more effective than cortisone in four or five the dose in relieving the symptoms and signs of atoid arthritis In the 1 case of scleroderma 17) toxic symptoms induced by cortisone improved prednisone was substituted and in 2 cases of matoid arthritis (cases 1 and 2) the oedema and tion induced by corticotrophin diminished on the substitution of prednisone without lessening the clinical control In none of these cases on prednisone have we experienced to date any toxic reactions In 3 cases a brisk diuresis occurred when prednisone was substituted for cortisone Prednisone appeared to us to take effect more quickly than cortisone improvement occurring commonly within the first twelve hours, and this might be a factor in the ' rebound " seen on returning to cortisone therapy for this reason in 2 cases the treatments were overlapped slightly Relapse though perhaps less severe still occurred on changing back to cortisone

No typical case of ankylosing spondylitis was treated In 2 atypical cases no improvement occurred in the painful heels in one or in the advanced arthritic hip in the other Neither case could be considered entirely suitable for steroid therapy but we did hope for some improvement in both

The answers to our two questions, therefore appear to be as follows

(1) Prednisone and prednisolone are more effective agents than cortisone in four or five times the dose in relieving symptoms and signs of rheumatoid arthritis over periods from four days to ten weeks In no single detail in any of the 14 cases of rheumatoid arthritis did cortisone give a better assessment figure than did prednisone

(2) No toxic effects of the new products were observed They are known to occur not infrequently later long term studies may answer this question. No radiography of the stomach and duodenum were taken; so we cannot state how many silent ulcers we caused but no patients on prednisone complained of indigestion.

It seems that in these new substances we have two useful drugs in the short-term suppressive treatment of rheumatoid arthritis.

Summary

In a short term study prednisone and prednisolone proved in $^1/_4$–$^1/_5$ the dose more effective than cortisone in relieving the symptoms and reducing the signs of rheumatoid arthritis

Of 14 patients 9 preferred either prednisone or prednisolone to cortisone 5 were indifferent and none favoured cortisone

In each detailed assessment prednisone appeared as good as or better than cortisone and in no single respect did cortisone prove superior

Over all improvement took place in 10 of the 14 cases on transferring from cortisone to prednisone whereas 8 deteriorated somewhat on returning to cortisone

Our thanks are due to Miss J Pirkis for fig 2 to Messrs. Merck-Sharpe & Dohme for generously supplying the prednisone and prednisolone for this trial and to Dr E V B Morton of Boots Pure Drug Company for the prednisolone used in cases 11 and 12

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THE PHYSIQUE OF DIABETICS

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IN a previous communication (Lister et al 1951) the results of insulin sensitivity tests on diabetics attending the Royal Free Hospital diabetic clinic were reported, together with a clinical impression of their physical appearance Although these patients could not be divided into two clear groups—insulin-sensitive and insulin insensitive—by Himsworth's test they appeared to be divisible into two constitutional groups on the basis of physique one with no very remarkable features, but the other with characteristic features, including a roundness of the body contour, a tendency to obesity, a smooth skin with fine hair, and short tapering limbs with small hands and feet The patients of this second group were significantly less insulin sensitive than those of the first group

To verify or disprove this clinical impression a full anthropometric and photogrammetric study, including the assigning of Sheldon somatotypes, was made of 155 diabetics

Sheldon's system for classifying physique (Sheldon 1940, 1954) has now been in use for fifteen years and is well known Physique is described as a mixture of three interrelated components called endomorphy, mesomorphy, and ectomorphy Each component is exhibited in greater or lesser degree in all people The amount present is rated on a scale of 1–7, the somatotype being expressed as a set of three ratings—e g, 3, 4, 3 The components are most simply described by reference to individuals extreme in one of them and minimal in the other two The characteristic features of the extremes are shown in the accompanying figure which illustrates patients included in the present survey

The extreme in endomorphy approaches the spherical as near as is humanly possible, he has a round head, a large fat abdomen protruding beyond his thorax, and weak penguin-like arms and legs, with a great deal of fat in the upper arm and thigh but slender wrists and ankles. Relative to his general size he has a large liver and spleen and gut, large lungs, and a heart distinguishable in shape from the hearts of the other extremes When young the endomorph of rating 4 or even 5 might not be called frankly obese by the clinician, but, as he grows older, his tendency to put on fat may bring him into this category

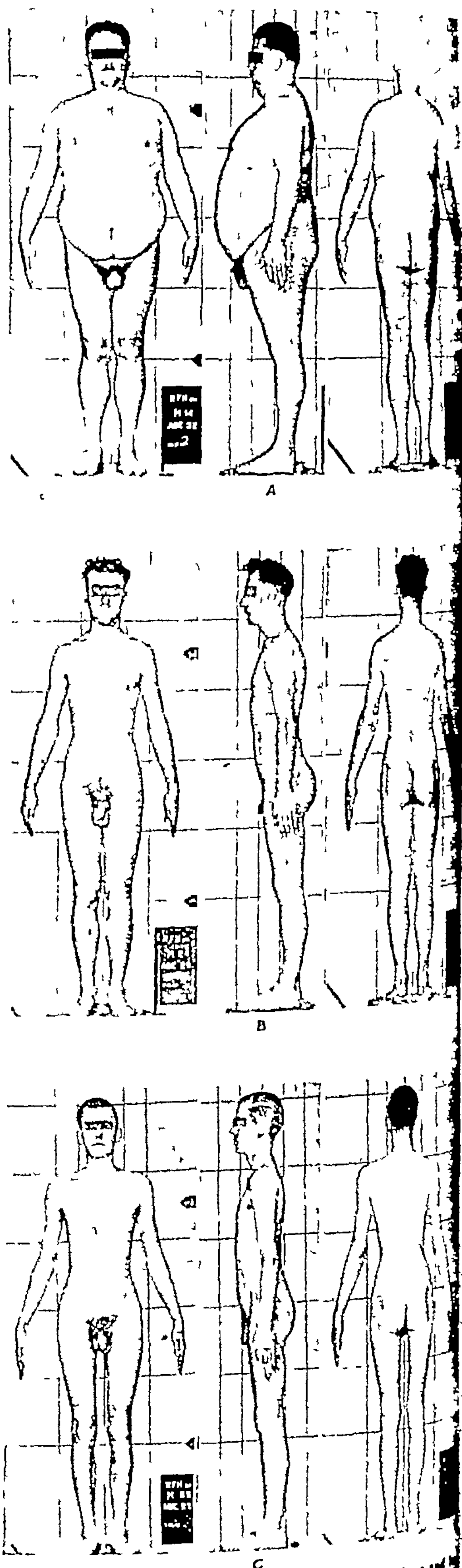
The extreme in mesomorphy is the classical Hercules, in him bone and muscle predominate He has a cubical massive head, broad shoulders and chest, and heavily muscled arms and legs, with the distal segments strong in relation to the proximal He has a minimal amount of subcutaneous fat and small anteroposterior diameters of the body

The extreme in ectomorphy is linear, he has a thin peaked face with a receding chin and high forehead, a thin, narrow chest and abdomen, a narrow heart, and spindly arms and legs He has neither much muscle nor much subcutaneous fat, but relative to his size he has a large skin area and a large nervous system

Material and Methods

40 male and 115 female diabetics were included in the study So far as possible they were patients whose insulin sensitivity had previously been tested, but no further selection other than the patient's willingness to cooperate was applied The age range of the men was 28–71 and of the women 16–76

We had hoped to compare the somatotypes of insulin-sensitive diabetics with those of insulin-insensitive diabetics, but we found the insulin sensitivity test too



Individuals high in one Sheldon component of physique and
In the other two : *A*, somatotype $6^1/_2$, $3^1/_2$, 2 , *B*, somato
2, 5, 4 , *C*, somatotype 3, 2, 6

ble to use as a method of division Instead we
ed the patients into two clinical groups' those with
cute onset and those with a non acute onset of
tes. The cases in which the patients reported that
had experienced thirst polyuria and loss of weight
not more than three months before diabetes was
nosed were classified as acute and all others as
acute.

e patients were measured and photographed according
standard technique (Dupertuis and Tanner 1950 Tanner
and somatotyped by inspection of the photographs and
e of Sheldon s tables of height/$^3\sqrt{\text{weight}}$ (Sheldon 1954)
was done in collaboration with Dr Barbara Honeyman
h and Dr W H. Sheldon for whose help and advice we
xtremely grateful. Material such as this is technically
ult to somatotype since it covers all ages and includes
nts whose weights substantially differ from their pre
tic weights or from their expected weights if they had
een diabetic This material has been used previously in
t of the reliability of somatotyping (Tanner 1954) and
atings given were at best found to be very consistent for
ne rater tested. In any case all the photographs were
l without knowledge of the clinical group to which they
nged (the clinical grouping being done entirely separately
L.) hence no bias from this source need be anticipated
ur measurements of skinfold thickness were taken:
way down the front of the arm over the biceps half way
the back of the arm over the triceps under the angle
e left scapula; and above the left iliac crest in the
ior axillary line. The measurements were taken with
zen type callipers exerting at the jaw face a pressure
h rose from 2 g per sq mm. at an opening of 3 mm. to
per sq mm. at an opening of 40 mm. Unfortunately the
accurate Harpenden skinfold callipers (Edwards et al
were not then available The readings at each of the
sites were transformed to a logarithmic scale by the
ion Transform = $\log_{10}$ (reading in mm −3) The sum of
ur transformed readings for each individual was used as a
ure of his amount of body fat, under the heading total
taneous fat

Results

bles I and II show the mean values (with their
dard errors) for insulin sensitivity age at diagnosis,

TABLE I—COMPARISON OF MALE DIABETICS

of patients	Acute onset	Non-acute onset	Difference (acute minus non acute)	Significance of difference (t)
	16	24		
sensitiv	0 874 ±0 135	0 741 ±0·087	0 133	0 9
diagnosis	31 4 ±3 7	53·0 ±2 4	−18 6	4 4*
morphy ing 1-7)	[illegible] 66 ±0 13	3 73 ±0 33	−1 07	3 3*
morphy ing 1-7)	4·03 ±0 28	4 50 ±0 15	−0 47	1 6
morphy ing 1-7)	3 91 ±0 30	2 67 ±0 15	1 24	4·0
subcutane- fat (Trans- m)	309 ±23 0	417 ±19 0	−108	3 0
t (lb.)	143 ±7 1	168 ±6 8	−25	2 4†
t (in)	68 0 ±1 1	66 2 ±0 73	1 8	1 4

* Significant at 1% level † Significant at 5% level

otype components, height weight and subcutane-
at in the two groups of patients

would be expected in both sexes the patients who
n acute onset were significantly younger than those
had a more gradual onset Those with an acute
t were also rather more insulin sensitive than those
a gradual onset but the difference was not statis
y significant

th men and women with gradual onset were signi
tly more endomorphic and less ectomorphic than
e with acute onset they had more subcutaneous
and weighed more despite being less tall The two
ps did not differ significantly in mesomorphy, the
ponent of muscularity

TABLE II—COMPARISON OF FEMALE DIABETICS

No of patients	Acute onset	Non-acute onset	Difference (acute minus non acute)	Significance of difference (t)
	35	80		
Insulin sensitivity	0 856 ±0 078	0 798 ±0·006	0 058	0 5
Age at diagnosis (yr)	30 4 ±2 2	47 7 ±1 5	−8 3	3 1
Endomorphy (rating 1–7)	4 75 ±0 16	5 25 ±0 10	−0 50	2 7*
Mesomorphy (rating 1–7)	3·43 ±0 08	3 49 ±0·08	−0·06	0 5
Ectomorphy (rating 1–7)	2 79 ±0 15	2 34 ±0·09	0 45	2 7*
Total subcutaneous fat (Transform	508 ±15 0	537 ±7·0	−29·0	2 0†
Weight (lb)	136 ±4 0	147 ±3 3	−11 0	2 1†
Height (in.)	62·0 ±0 48	61 4 ±0 [illegible]9	0 6	1 1

Significant at 1 % level † Significant at 5% level.

Discussion

The chief finding of this study is that patients whose diabetes has come on insidiously are more endomorphic than those who appear usually at an earlier age, as acute cases. This agrees closely with the results of Draper et al. (1944), who found they could divide their diabetics into two clear morphological groups—linear and rounded The linear patients usually had severe diabetes of acute onset and had become ketosed with poor control and the rounded ones had less severe diabetes, of insidious onset and with little tendency to ketosis or to hypoglycæmia These are of course the two clinical groups of patients so well recognised by all interested in diabetes, the former being the group whom Himsworth (1949) found insulin sensitive and the latter insulin insensitive Lawrence (1951) has emphasised that the first group are clinically insulin deficient and the second group which he describes as lipoplethoric are clinically not deficient in insulin Estimations of plasma insulin by Bornstein's technique tend to confirm these observations (Bornstein and Lawrence 1951)

To say that the patients with diabetes of insidious onset are more endomorphic than the others is not quite the same thing as to say they are more fat or more obese Persons high in endomorphy can be recognised by other characteristics apart from their subcutaneous layer of fat; their skeleton differs in shape from that of the high mesomorph or ectomorph—e.g in roundness of the head higher relative thoracic and pelvic anteroposterior diameters and shorter fingers—and so do their hearts.

The somatotype by definition, does not change with age, but the body contour does and more in endomorphs than in others The amount of fat a person puts on as he gets older depends on his degree of endomorphy (see the standard age-weight curves for various somatotypes in Sheldon 1954), and it has been very tentatively suggested that the reason for this may be that the endomorph has more fat-cells than have the others, just as the mesomorph has more muscle-cells (Tanner 1955) Thus persons high in endomorphy run various special risks as they grow older, some by virtue of the tendency of their fat-cells to fill up One of these risks seems to be that of developing non acute extrapancreatic lipoplethoric diabetes

It is not yet clear whether the genetical predisposition to each of the two clinically and constitutionally different types of diabetes is lodged in the same or different genes or sets of genes In either case the degree of expression of the gene(s) controlling lipoplethoric diabetes seems to be affected by the amount of endomorphy inherited The interaction is physiological because if the person concerned controls by diet and exercise his tendency to become fat expression of the gene is lessened What special endocrine and metabolic characteristics of persons high in endomorphy facilitate the expression of this diabetes-producing gene is quite unknown and would seem a useful subject for study, especially since this approach to genetical disorders is a hopeful one from the therapeutic point of view

Summary

Anthropometric measurements and somatotype photographs have been made of 40 male and 115 female diabetics The patients were divided into two groups by the clinical criterion of acute or non-acute onset of diabetes

The average somatotypes of the two groups were significantly different, both for males and females In each sex the patients with non-acute onset were higher in endomorphy and lower in ectomorphy than those with acute onset

This group high in endomorphy corresponds to the group of patients found to be insulin insensitive by Himsworth (1949), termed lipoplethoric by Lawrence (1951), and studied physically by Draper et al (1944) with results very similar to those described here

We suggest that the inherited endomorphy affects the expression of the gene(s) for diabetes of insidious onset, the interaction being physiological If a person has this gene, the higher his endomorphy the more likely is he to get clinical diabetes, but, by limiting as much as possible the increase of fat associated with his degree of endomorphy, he may reduce his chances of manifesting the disease

This work was made possible through a generous grant from the Royal Free Hospital Endowment Fund for which we are most grateful We also wish to thank Dr Una Ledingham for placing the facilities of the diabetic department of the Royal Free Hospital at our disposal, the clinicians who assisted us, the patients who coöperated, and Mr R H Whitehouse and Mr D H Vobes for anthropometric and computational assistance

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HUMORAL EFFECTS OF METASTASISING CARCINOID TUMOURS

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Biörck, Axén, and Thorson (1952) and Thorson et al (1954) drew attention to a curious syndrome found in some patients with malignant carcinoid tumour The most constant feature is a peculiar type of flushing, but diarrhœa and right sided valvular lesions of the heart may also be present It has been suggested (Thorson et al 1954) that the cause of the symptoms may be of 5 hydroxytryptamine (serotonin) by the tumour, biochemical observations are scanty In this paper present the clinical, pharmacological, and bio findings in three cases observed at the Manchester Ro Infirmary

Case-records

PATIENT 1

At the age of 61, 9 months before his death, this pat first noticed unpleasant flushing of his face a few minutes af a drink of beer When he next took beer, 6 weeks later, single mouthful had the same effect, and 10 weeks after t original episode he began to have spontaneous attacks flushing about twice a day 5 months before his death, he a gradually deepening permanent flush which grew de during periodic attacks, and these were associated with urgent desire to defæcate Some 4 months before his d watery diarrhœa had become troublesome and his weight h fallen by one stone

Investigations

When he was admitted, the skin of his face and neck deep red and coarse, and his lips were cyanosed The h appeared normal The liver was hard, irregular, and enl to the umbilicus Chest radiography, barium meal, b enema, full blood count, electrocardiography, liver fu tests, and tests for occult blood in the stools showed no abnormal A clinical diagnosis of malignant carcinoid made, and this was supported by the finding of raised l of 5 hydroxytryptamine (5 H T) in the blood, and 5-hydr indole acetic acid (5 H.I.A.A) in the urine

As little as 10 ml of 10% alcohol, by mouth, or int ously, caused an intense flush, which spread over the body within 5 min *An attack of flushing* was accomp by a rise in blood pressure from 130/70 to 150/70 mm tachycardia, and an uncomfortable sensation in the abd

Progress of Illness

During the 5 months the patient was under observatio flushing rapidly became more intense until 1–2 months b his death From that time, with increasing cachexia attacks faded, but the diarrhœa continued, and œdema appeared and increased despite the use of mer diuretics Finally the patient developed a respiratory inf and died At no time were any cardiac murmurs h Consent for even a limited post-mortem examination refused

PATIENT 2

In a woman of 58, the illness began with watery diar which continued until her death 2 years later A month lethargy and weight loss were noticed, and after a furt months she developed progressive dyspnœa on exerti months before death she suddenly experienced a sensati pressure in the epigastric region followed by unconscio lasting for 10 hours This episode was repeated twelve t nine of them occurring after admission 2 months before d The attacks usually began with slight flushing of the fac hands, within a few minutes the patient became too w move She complained of nausea, a sense of suffocatio a feeling of severe epigastric pressure The face and extr became intensely cyanosed, while the rest of the skin wa cold, and moist, no peripheral pulsation could be felt ev the carotid arteries, but the heart sounds were normal rate being 100–120 per min Despite this circulatory col consciousness was retained, except in the first attack retinal vessels showed no abnormality apart from cya The respiratory rate was only slightly increased, examin of the lungs revealed no cause for the feeling of suffoc After several hours the patient gradually recovered, but felt weak for a day or two Occasionally the attacks followed by œdema of the lips and hands During one at in which an indwelling catheter was inserted, no urine secreted for four hours

From about the time of the first of these episodes, patient also began to experience slight flushing of the and hands up to three or four times a day This flushing usually but not always related to meals, and the only tressing feature was a forcible heart action. Often there no change in her appearance, apart from the flushing, transient blotches of cyanosis and pallor were observed Between attacks of flushing the patient felt moderately except for her persistent diarrhœa.

igations

liver was firm and enlarged a breadth below the costal mar The blood pressure was 130/90 Hg, and a soft systolic murmur udible at the base of the heart ocardiograms (taken during etween episodes of collapse) radiography barium meal, m enema, a full blood-count iver function tests showed no mality; a benzidine-test for -blood was positive The of alcohol did not reproduce mptoms A clinical diagnosis lignant carcinoid was made was subsequently confirmed ropsy

tion

iew of the unimpressive results of medical treatment e improvement observed by Thorson et al (1954) after moval of a large mass of extrahepatic tumour tissue tomy was undertaken (Mr H T Simmons) The liver und to be full of secondary deposits, some solid and cystic, but no primary tumour could be found With uction of anæsthesia the patient became flushed and ation, which was being artificially assisted, offered erably increased resistance suggesting the presence of ospasm, although there was no evidence of this on tation. The blood pressure rapidly became unrecordable e extremities cyanosed When the abdomen was the aorta was found to be pulsating poorly and could ily compressed. The abdominal contents were not ed. The patient regained consciousness after operation blood pressure remained low and after a few hours she into a deep coma and became pulseless, cyanosed and Artificial respiration was carried out for several but she died 24 hours after operation.

rtem Findings

ecropsy (Prof. A C. P Campbell) a smooth, grey tumour 1 cm. in diameter was found in a Meckel's ulum. The liver was enlarged (4 kg) and full of ary deposits, some pale grey and nodular others cystic aining bloodstained fluid. The only other secondary were in two lymph nodes in the mesentery and lesser m, and two small emboli of tumour cells in pulmonary es.

logically all tumour tissue was of a typical carcinoid e No mitoses were seen. The Masson Fontana silver showed brown argentaffin granules in the cytoplasm, ly in the cells at the peripheries of the masses. These also gave a positive reaction with the alkaline-diazo (Pearse 1953) These reactions in the tumour cells ntical with those given by argentaffin cells in control of normal duodenum and appendix thus confirming our as an argentaffinoma.

lmonary stenosis was present but the posterior cusp pulmonary valve was slightly puckered by irregular thickening and there was a smooth plaque of thickened in the pulmonary artery just above the anterior ure

PATIENT 3

n aged 43 had had attacks of flushing for 20 years. ended to be brought on by heavy meals, or even ally by a drink of water and by emotion. They were brought on by taking alcohol in any form. Neither the r nor the intensity of the flushing had changed over 2 years before admission he began to suffer from of nausea and vomiting lasting 2 or 3 weeks and g about every 3 months. Examination a year before n had revealed a hard nodular liver extending a eadth below the costal margin suggesting the e of secondary deposits A barium meal showed no ality and at no time had there been any diarrhœa

n admission the patient looked well Weight loss over the g 3 years was only 10 lb Apart from the enlarged which had not changed since the year before there was ical abnormality All investigations, including full t liver function tests, cholecystography and meal, were normal. It was found that flushing regularly began 4 minutes after taking 10 ml of 10% alcohol, and lasted 15–20 min The flush was accompanied by a rise in pulse rate from 64 to 90 per min. and a rise in blood pressure from 120/70 to 130/70 mm Hg There was no subjective sensation. A slightly more intense flush developed after the same dose of alcohol given intravenously During an attack the conjunctivæ became suffused and patches of erythema appeared over the chest arms, and abdomen patches of cyanosis appeared with the erythematous areas, and areas which had previously been pale became flushed as the attack subsided (fig 1)

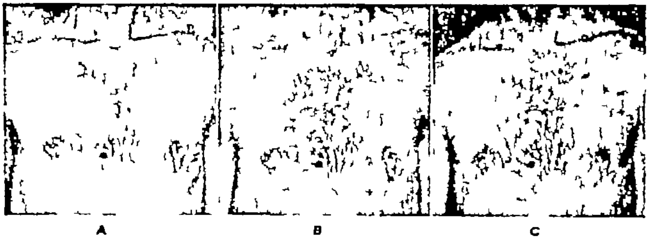

Fig 1—Flushing after alcohol (patient 3)
A Before alcohol B Height of flush. C Flush fading

A clinical diagnosis of malignant carcinoid was made and was supported by the finding of increased excretion of 5 H.I.A.A. in the urine

Operation

Mr Simmons performed a laparotomy in the hope of being able to resect the bulk of tumour tissue The liver contained numerous large white secondary deposits. A mass of glands was present along the lesser-curve of the stomach and a small white submucous primary tumour 1·3 cm. in diameter was found on the anterior wall of the stomach Since the glands accounted for only a small proportion of the tumour mass, it was not thought worth while attempting to resect them, but the primary tumour one gland and a secondary deposit in the liver were removed for histological examination An incidental finding which was thought to explain the attacks of nausea and vomiting was the presence of an active duodenal ulcer

The patient made an uneventful recovery and was sent home on a dietary régime The flushing was at first unaffected by the operation, but when the patient was reviewed 4 months later he stated that his flushings were less frequent and less severe and two observers noted that the liver was softer and only extended two finger breadths below the costal margin.

Histological Findings

Examination of the tumour and secondary deposits (Professor Campbell) showed solid alveolar masses of small epithelial cells with small round nuclei and pale eosinophilic cytoplasm deeply invading the muscle-coat of the stomach The appearance was that of a carcinoid tumour but there was more variation in the nuclear size and more tubular formation than is usual. No granules were demonstrated in the cells by using either the Masson Fontana silver or the alkaline diazo methods.

Pharmacological and Biochemical Investigations

In 1953 Lembeck found a high content of 5-H T in carcinoid tumour tissue and Thorson et al (1954) suggested that this substance might be responsible for the syndrome Up to the present however the only observations on this point have been limited to isolated serum 5 H T estimations on two patients exhibiting this syndrome (Pernow and Waldenström 1954), and estimates of 5-H I A A (a urinary excretion product of 5-H T) in three patients with *malignant* carcinoid only one of whom was known to flush (Page et al 1955) The evidence that 5 H T is responsible for the symptoms is therefore based on meagre evidence

5 Hydroxytryptamine

In health virtually all circulating 5 hydroxytryptamine is contained in the platelets but less than half is found in the serum after the blood has clotted (Hardisty and Stacey 1955a) When 5-H T. is present in abnormal amounts this proportion may be different and serum estimates are not, therefore, a satisfactory index of whole blood 5 H T values More reliable information can be obtained by estimates on platelet rich and platelet poor plasma, this will also show whether or not the 5-H T free in the plasma is at its normal low value

Acetone extracts of tissue, plasma, serum, urine, and cerebrospinal fluid were assayed on the atropinised rat uterus against a standard solution of 5 hydroxytryptamine creatinine-sulphate by the method described by Hardisty and Stacey (1955b), and the 5 H T concentration in whole blood calculated as described by them. This method of extraction and assay prevents interference by certain other smooth muscle contracting substances Further evidence as to the nature of the active substances present was obtained by the use of lysergic acid diethylamide (L S D) which in concentrations of 50 µg per ml is a specific antagonist on the rat uterus to tryptamine and its derivatives (Gaddum 1953) This method would not differentiate between 5 H T and its *N* methyl derivatives found in normal human urine by Bumpus and Page (1955) 5-H.I.A A , excreted in large amounts by our patients, does not cause contraction of the rat uterus and 5 hydroxytryptophane, probably the immediate precursor of 5 H T , has only about 10^{-5} the activity of 5 H T Errors due to the presence of these substances are, therefore, ruled out

TABLE I—5 HYDROXYTRYPTAMINE

(Results expressed as 5 H T base)

—	Case 1	Case 2	Case 3	Normal
Serum (µg per ml)	0 4	0 8–1 65	0 18–0 22	0 07 ±0 02 (25 subjects)
Blood (µg per ml)	0 5	1 15	0 45	0 16 ±0 06 (35 subjects)
Platelet poor plasma (µg per ml)	0 05	0 3	0 16	Less than 0 02 (35 subjects)
Platelets (µg per 10^{9})	0 22	0 34	0 08	0 06 ±0 02 (35 subjects)
Urine (µg per ml)	0 65	0 4–20	11–12	Trace only
C.S F (µg per ml)		0 5		Less than 0 006 (5 subjects)
Tumour (µg per g) primary			0 32	
Secondary		580 200 (necropsy)	0 08	

As table I shows, the active substance in all these extracts was completely antagonised by L S D , with the exception of that from the plasma and tumour tissue of patient 3

Serum, blood, plasma, and platelets—Only one estimation of the 5 H T in blood, plasma, and platelets was done in each case, those in patient 1 being obtained when he was moribund. One estimation on the serum was done on patient 1, three on patient 2, and four on patient 3 In all three patients, all fractions of blood 5 H T were raised, except the platelets in patient 3 The changes were greatest in patient 2, in whom the symptoms were most severe, and least in patient 3, in whom they were trivial. In patient 2 the 5 H T concentration in the serum in a random specimen was 0 8 µg per ml , but towards the end of an episode of collapse it had risen to 1 65 µg per ml In patient 3, however, no significant change occurred in the serum 5 H T when a flush was provoked by alcohol (table III) Although these levels are considerably raised, they are much lower than the 12–15 µg per ml (5 2–6 5 µg per ml expressed as base) of 5 H T in serum reported by Pernow and Waldenstrom (1954)

Urine—All three patients had considerable amounts of 5 H.T in the urine—especially patient 3 whose estimates before, and 2 months after, operation did not differ significantly The substance estimated was completely antagonised by L S D , although that found in the plasma and tumour tissue of the same patient was not

TABLE II—5 HYDROXYINDOLE ACETIC-ACID

—	Case 1	Case 2	Case 3	[illegible]
No of observations	7	23	10	44
5 H I A.A µg per ml	73–394	95–2020	6 8–41	11–3
5 H I.A A mg per g creatinine	97–900	148–1230	22–46	14

Tumour tissue—A high concentration of 5 H.T (abou quarter of Lembeck's figure) was found in the secon deposits removed at biopsy from patient 2, the pr tumour was too small to permit assay as well as histol examination. The amount found in the primary grow patient 3 was much smaller, and the secondary d contained even less In both specimens from this case of the activity was not due to 5 H T

Cerebrospinal fluid—Only one estimate was made, this was on fluid obtained from patient 2 at necropsy fluid was heavily infected when extracted 9 days after and it is likely that considerable loss had occurred. Ho large amounts of 5 H T were found

5 Hydroxyindole acetic acid

As an alternative to the technically difficult ser assay, it has been suggested that estimation of 5-H.I (a known urinary excretion product of 5 H T) mig a more convenient means of detecting excessive secretion (*Lancet* 1954, Page et al 1955)

Urinary 5 H I A A was estimated according to method of Udenfriend et al (1954) The range of obtained for 5 H I.A A in the three cases, expressed in µg per ml and mg per g of creatinine are sho table II

All three patients had abnormally high 5-H excretion, the output corresponding with the severity of the disease and the blood 5 H T levels 5 H I A A levels are similar to those found by Page (1955) The concentration reached 2 g per litre in 2 on one occasion In patient 3, in whom there was day to day change in symptoms, there was only variation in output of 5-H I A.A , whereas in pati and 2, both of whom had periodic exacerbation excretion fluctuated widely Variation in the out patient 2 of 5 H I A A is shown in fig 2 , a severe was immediately followed by a considerable incr 5-H I A A excretion A small rise in 5 H I A A ex could also be detected in patient 3 after an induced flush (table III)

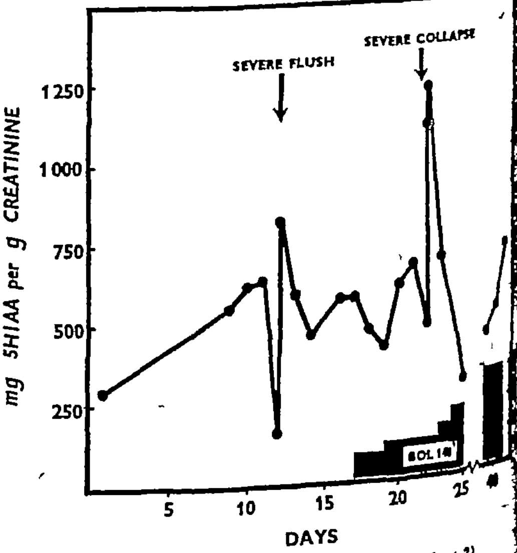

Fig 2—Daily 5-H I.A.A. excretion (patient 2).

romatography

Chromatography was used to confirm and extend the antitative estimates of 5 H.T. and 5 H.I.A.A.

Ascending chromatograms were run for 12 hours at room operature Two solvents were used: (1) *n* butanol acetic d water (4:1:5) for 5-H.I.A.A. and indole conjugates and n butanol-ethanol 2 N.ammonia (4:1:4) for 5 H.T. and thylated derivatives. After drying the papers were ayed with Ehrlich's solution (2% dimethyl amino benzal lyde in 5% HCl) and heated to 60 C for 10–15 minutes to ke them more sensitive than papers allowed to stand at m temperature after spraying Semi-quantitative estima- s could be made by comparison of the intensity and area spots with those caused by known amounts of the two stances (accuracy ±30%)

Tumour.—Chromatograms in the second patient 4) indicated the presence of 0·4 mg of 5 H.T. per g umour tissue, which compares well with the pharma ogical estimate of 0·58 mg per g No 5 H.I.A.A. could found in the biopsy specimen, there was approximately 5 mg per g in the necropsy specimen corresponding a fall in 5-H.T. concentration from 0·58 mg per g ore death to 0·20 mg per g after death (table I) No ble compounds could be demonstrated in concentrated our extracts from patient 3

rine.—5 H.T. was present in the urine of patients 1 3 the latter containing approximately 15 µg per which corresponds to the pharmacological estimate I.A.A. was present in the urine of all three patients 3) together with from 1 to 4 other indole spots, the intense of which was identified as 5 H.I.A.A. sulphate

LE III—INCREASED 5-H.I.A.A. EXCRETION AFTER FLUSHING (Patient 3)

—	Before alcohol		After alcohol (100 ml.) 30 min.	100 min.	180 min.
A. mg per g creatinine	24	27	10	30	30
n 5 H.T. µg. per ml		0·21	0·22	0·18	

e spots had a low R_F in butanol acetic acid and did not give colour reaction with diazotised sulphanilic acid suggesting they were 5 hydroxy indoles conjugated at the 5 position major unknown indole, isolated by a method to be published here, had an R_F of 0·27 in butanol acetic acid and 0·30 in ol-ethanol-ammonia The ultraviolet absorption spectrum NaOH was very similar to that of 5 H.I.A.A. On treatment a limpet sulphatase preparation (Dodgson and Spencer 1953) a broken down to 5 H.I.A.A. which was identified by chromato y in both the above solvents and by colour reactions with h and Pauli reagents. This indole thus appeared to be I.A. sulphate ester On paper electrophoresis (3 hr , 0·05 mA, pH 7·8 barbitone buffer) it moved rds the anode about twice as fast as 5 H.I.A.A. This sonable for the anion of a 5 H.I.A.A. derivative g two negative charges. Urines of rats given 10 mg intraperitoneally or 10 mg 5 H.I.A.A. by mouth ined an indole with identical chromatographic and rophoretic properties

herto the only conjugated 5 hydroxy indole n to occur naturally is bufothionine (dehydro tenine sulphate ester) in the skin of some hibia (Erspamer and Vialli 1952, Jensen 1935 nd and Vocke 1930)

amine

rnow and Waldenstrom (1954) have rted "large amounts of histamine" in the of a patient with carcinomatosis from an own primary who had attacks of flushing Feldberg and Smith (1953) have shown that T is a histamine liberator We therefore ied the histamine content of blood and in our cases Assays were kindly done for y Mr C R Beresford and Mr P Sheard of s Ltd. Specimens of blood from all cases r flushing and urine from patients 1 and 3

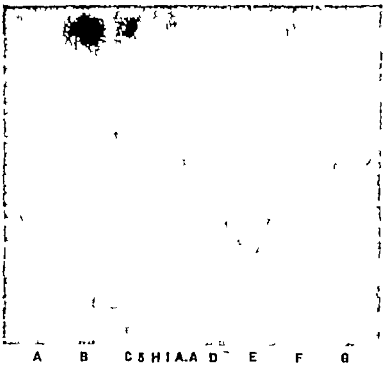

Fig 3—Chromatograms of patients' urine compared with normal controls.

A Patient 3 B Patient 2 (after collapse) C Patient 1 D–G Normal controls, Marker 5 H.I.A.A. (5 µl 0·01 M) (Solvent butanol acetic acid 40 µl. urine in each case)

were taken by the method of Code (1937) and assayed on isolated atropinised guineapig ileum No increase of histamine was found in any of the specimens

Effects of Treatment

In view of the possible rôle of 5-H.T. in the pathogenesis of the syndrome the effects of various serotonin antagonists were tried.

Ergotamine tartrate.—Two doses of 0·25 and 0·5 mg were given intravenously to the first patient, but without effect on the flush The second patient received 0·25 mg subcutaneously on two occasions before a meal but the flush was not prevented

Lysergic acid diethylamide.—This was given to the first patient on two successive days, in doses of 5 and 10 µg This dosage caused an unpleasant throbbing noise in the head for several days which precluded further increase in dosage no effect was noted on the flushing or diarrhœa

Bol 148.—This is a brominated derivative of L.S.D. (2 brom *D* lysergic acid diethylamide bitartrate) and is said by the makers to be about as potent as L.S.D. as an antagonist to 5 H.T. but without psychic side effects It was given to the second patient in a dose of 0·5 mg daily working up to 7·5 mg daily over a period of three weeks There was no reduction in the number of flushes

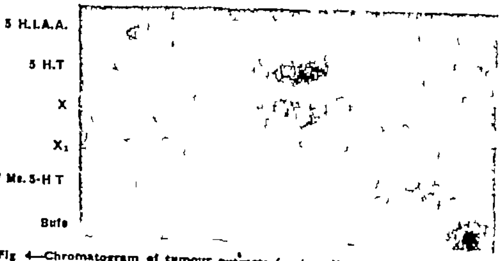

Fig 4—Chromatogram of tumour extracts (patient 2) obtained post mortem, showing presence of 5-H.T and 5-H.I.A.A. and absence of *n*-methyl 5-H T and bufotenine.

X 100 µl acid acetone extract of tumour (2 g in 20 ml)
X_1 Acid ether extract of X.
(Solvent butanol-ethanol-ammonia. Standard spots 5 µl 0·005 M solution.)

but the patient thought that they were less severe During treatment one severe attack occurred, which was indistinguishable from the previous ones The daily excretion of 5 H I A A was unaltered (fig 2) Patient 3 was given 0 5 mg of Bol 148 every 2 hours for four doses, after which 10 ml of 10% alcohol was given, causing a flush which was as intense and prolonged as previously

Anti histamines were tried empirically The first patient was given an intravenous injection of 50 mg of mepyramine, followed by 50 mg intramuscularly 6 hourly for 6 days, without effect on the symptoms The second patient was given 50 mg of promethazine intramuscularly during each of the first three major attacks in hospital, but without improvement 100 mg of mepyramine orally three times daily for a week was also ineffective The third patient was given 100 mg of mepyramine by mouth hourly for 3 hours, followed by 10 ml of 10% alcohol, which failed to cause the usual flush, but a further 30 ml of 10% alcohol caused an intense flush, beginning after 5$^1/_2$ minutes (1$^1/_2$ minutes later than usual) He also took three doses of 100 mg of mepyramine during one day a week after his discharge from hospital, but he reported that this made no difference to his flushing

We concluded that the 5 H T antagonists and antihistamines given in these doses were without benefit

Surgery —Thorson et al (1954) were able to remove a large bulk of tumour tissue from one of their patients with subsequent relief of symptoms, presumably by removing a source of 5 H T In neither of our two patients who came to laparotomy was a large scale resection possible Resection of the primary tumour in patient 3 was not followed by any immediate change in the flushing, but the liver became smaller

Discussion

Clinical Aspects

A notable feature of the cases collected by Thorson et al (1954) was the variations in the duration of symptoms, ranging from a few months to 19 years, and Fraser (1955) has described a patient in whom symptoms began 36 years before death A similar variation was present in our patients, one of whom died 9 months after the onset, and another is still alive despite having symptoms for 20 years Some of these neoplasms are highly malignant and others are very slow growing, but in all cases of the syndrome so far described hepatic secondaries have been present In our third patient, the small primary tumour contained very little active material, and the absence of any immediate change in the flushing after its removal suggests that the secondary deposits were mainly responsible for the symptoms This poses the question whether or not metastases had been present for the whole 20 years during which flushing had occurred

A second feature of our cases was the wide variation in the severity of the symptoms, ranging from simple flushing in patient 3 to complete collapse in patient 2 So far as we are aware, no such attacks as those occurring in the latter patient have previously been described in this syndrome, and the circulatory dynamics are not understood Only patient 3 showed the geographical flushing described by Thorson and his colleagues, and even in this case patches of cyanosis as well as erythema were seldom seen In the first patient, flushing was never patchy and apparently resembled that of the patient described by Branwood and Bain (1954) The patchy flushing, pallor, and cyanosis stressed by Thorson does not, therefore, appear to be constant

Although the provocation of flushing by meals was mentioned by Thorson and his colleagues, extreme sensitivity to alcohol, as shown by patients 1 and 3, has not previously been described, and the mechanism is unknown Acetic acid was without effect Higher alcohols were not given

The mental state of our patients was normal, desp the suggested rôle of 5 H T in mental processes (Wool and Shaw 1954)

Pathogenesis of the Syndrome

There can be little doubt that some malignant carc oids secrete 5-H T, and it is reasonable to consider h far the symptoms found in our patients may be explaine by the presence of large amounts of this substance their blood In comparing the symptoms with the reported pharmacological actions of 5 H T, certain points should be borne in mind

The 5 H T in the blood comprises two fractions, th bound in the platelets and that free in the plasma Th latter fraction is very small in health as platelets abs 5 H T with avidity (Hardisty and Stacey 1955a) and fr 5 H T is removed by the tissues (Erspamer 1954, Gadd et al 1953) The presence of large amounts free in t plasma as in patient 2 suggests that the eliminati mechanism was overloaded It might be expected th free 5-H T would be more liable to cause symptoms th that bound in the platelets, and it would have be interesting to follow the changes in this fraction durin flush, had it been possible Experience with isol organs and with intravenous injections in animals h shown that tolerance is rapidly developed (Gaddum Hameed 1954, Ginzel and Kottegoda 1954), and patient who has had a high blood concentration of 5-H for months or years may have very different signs symptoms from a patient whose disease is of re onset

The effects of 5 H T in man have recently been stu (Spies and Stone 1952, Page and McCubbin 1953, P et al 1955) Instantaneous intravenous injection 1 8 mg, or intravenous infusions of 5 mg over 5 min or 31 mg. over 60 minutes, caused unpleasant symp such as nausea, sensations of gasping for breath, tight across the chest, desire to defæcate or micturate, sometimes blushing and tingling These symptoms re to a minor degree those experienced by our pati during an episode of circulatory collapse The chara istic flushing has not, however, been recorded experimental injections

Although 5 H T is a vasoconstrictor, its actions on circulation are complex in animal experiments h tensive, hypotensive, or mixed responses are seen. P et al (1955) found only a small rise in mean art pressure (11–18 mm Hg) in two normal human subj in whom 5 H T was infused at a rate sufficient to c unpleasant symptoms The slight rise in blood pres during flushing in patients 1 and 3 and the episode circulatory collapse in patient 2 are not, therefore, in sistent with the known actions of 5 H T The circul effects of 5 H T are not easily antagonised (Spies Stone 1952, Woolley and Shaw 1955) and the fa of ergotamine tartrate, L S D, and Bol 148 is surprising

An unidentified active substance was found in tumour tissue of patient 3, and, as there were differe between some clinical features of the syndrome and effects of 5 H T given experimentally, it seemed pos that some substance other than 5 H T might be pa responsible for symptoms It is known that 5 hydro tryptophane is a precursor of 5 H T (Udenfriend et 1953, Clark et al 1954) and that very small amounts methylated serotonins are excreted in normal hu urine (Bumpus and Page 1955) Chromatograms tumour extracts and urine from our cases, however not reveal any of these substances

In summary, large amounts of 5 H T were present these three patients and there was a general relation between the severity of the symptoms and the amount 5 H T in the blood We cannot at present exclude presence of an active substance apart from 5-H T these cases *iagnosis*

The only constant clinical features of the syndrome hich have so far been observed are flushing and patomegaly, and these findings alone may suggest the agnosis. The addition of diarrhœa and valvular lesions the right side of the heart confirm the diagnosis

An increased excretion of 5 H I A.A has been reported Page et al (1955) in a case of malignant carcinoid not owing these features and by Clerc Bory et al (1954) patients with other alimentary neoplasms A small les of histologically or radiologically proved cases of cinoma of the alimentary tract with hepatic secondaries died by us showed a slightly raised 5-H I A A excretion 1±1 9 mg per g of creatinine) but these levels were ich lower than those found in cases of malignant cinoid with metastases Blaschko and Hope (1955) e recently suggested that all urinary 5 H I A A may be derived from 5 H T and that an increased excre n of 5 H I A.A should be accepted as evidence of reased 5 H.T metabolism with caution Nevertheless daily output of 5 H I A.A is probably at present the st valuable laboratory investigation in the diagnosis malignant carcinoid

t will not be possible to assess the value of 5 H T mations in whole blood and blood fractions until we e more experience of the amount of free and platelet nd 5-H T which may be found in these cases

Summary

ltee patients with flushing associated with abdominal nomatosis and liver metastases are described

the two cases from which material for histological mination was obtained the tumours proved to be lgnant carcinoids.

ll three cases had abnormally high concentrations of droxytryptamine in the blood and 5 hydroxyindole ic acid in the urine

he clinical features of the syndrome and their patho is are discussed

e wish to thank Prof Robert Platt and Dr H. T Howat ermission to study their patients, and for their advice in reparation of this paper One of us (G C) wishes to thank Medical Research Council for a grant and Dr J N ings for laboratory facilities. We also wish to thank lox Products Ltd for supplies of Bol 148 and L.S.D Upjohn Company for samples of 5 H.I A.A and 5 H T otts Laboratories Ltd. and Dr J Harley Mason for les of 5-H.T ; Dr A. Cohen of Roche Products Ltd. for mple of 5-hydroxytryptophane ; and Dr A E Kollie he limpet sulphatase

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PAPER CHROMATOGRAPHY OF URINARY INDOLES

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THE diagnosis of certain clinical and genetic conditions by paper chromatography of urinary amino acids is now a commonplace A similar development can safely be predicted for the investigation of urinary indole derivatives Already the greatly increased excretion of 5-hydroxy indolyl acetic acid (5 H I.A.A) in cases of metastasising carcinoid (Snow et al 1955 Goble et al 1955 and references cited therein) and of indolyl lactic acid (I L.A) in phenylketonuria (Armstrong and Robinson 1954) shown by paper chromatography is regarded as characteristic of these respective conditions

Previous methods for the chromatographic identification of urinary indoles require initial extraction procedures of varying degrees of complexity either by solvent extraction (Armstrong and Robinson 1954 Erspamer 1955) or selective adsorption (Dalgliesh 1955) The method described here can be applied directly to urine without any preliminaries and requires the minimum of apparatus, time and precautions It has been used during the past three years in this and other laboratories to study cases of carcinoid (Goble et al. 1955) phenyl ketonuria, mental and nervous disorders and Hartnup disease * and is suitable for the routine screening of urine

General Method

The urine applied at an origin on a 10 in square paper on a frame is submitted to two way chromatography firstly in an ascending basic solvent and secondly in the right angle direction in an acidic solvent Indoles are revealed on the dried paper by dipping it through a modified Ehrlich reagent (*p*-dimethylamino benzaldehyde in hydrochloric acid acetone) (Jepson and Smith 1953) The position of the resulting spots their rate of appearance and fading and their differing colours serve to identify the indoles present and give, with experience, a rough guide to the amount of each

Ehrlich reagent used in this way is a very sensitive location agent reacting specifically with indoles of every kind yet with so wide a variation in colour and rate as will help the identification of the compounds concerned It can detect as little as 0 3 µg of 5 H I.A.A and 1 µg of I.A A on a chromatogram (the corresponding figures using the ' NNCD diazo reagent (Erspamer 1955) are 2 µg and 10 µg) Other location agents of higher specificity can be applied to a parallel chromatogram to confirm the identity of particular indoles

Experimental Procedure

Apparatus

A metal frame modified in size from that described by Datta et al (1950) and carrying 10 *in* square chromatography papers (Whatman no 1) is used The solvent runs are conducted in a glass tank, 12 in. cube, closed by a glass plate with the frame and edge of the papers resting in solvent contained in a tray on the bottom (The frame and tank are obtainable from Aimer Products N W 1)

Solvents

Isopropanol ammonia (I.Pr.Am.) — isopropanol 200 ml + water 20 ml. + ammonia 10 ml (sp gr 0 880)

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* A new obscure condition involving inborn renal amino aciduria, formerly referred to as Hart syndrome but now with the consent of the family concerned called Hartnup disease Studies are proceeding at the Middlesex Hospital (Dr E W Hart and collaborators) and at University College Hospital (Dr C E Dent and collaborators) (Dent 1954)

Butanol-acetic acid (Bu.A) = n-butanol 120 ml + water 50 ml + glacial acetic acid 30 ml

Both these mixtures are homogeneous

Chromatography

An origin is marked on each paper 3 cm from the edges in the lower right-hand corner, and the frame is assembled The papers are not handled further The filtered urine is applied to the marked origin in 5 µl portions, preferably from a micrometer syringe, the spot being dried in a cold air current between each application A total volume of 30–100 µl per paper is usually suitable Five papers can be accommodated on one frame, and in each run one paper should carry a standard mixture of reference compounds—one drop of an aqueous solution containing urea, potassium indoxyl sulphate, tryptamine hydrochloride, serotonin creatinine sulphate, and tryptophan (2 mg per ml of each) is adequate

The first solvent (I Pr Am 230 ml) is poured into the bottom tray of the tank, the frame is stood in it, the lid is replaced, and the run is allowed to proceed overnight for sixteen hours, by which time the solvent has reached the top of the paper The frame is removed and the solvent blown off by a fan for fifteen minutes The dried papers are then run in the right angle direction in the second solvent (Bu A 200 ml), in a fresh or washed tank for six hours, giving a solvent run of about 6 in from the origin The papers are dried in the fan for 30–60 minutes and removed from the frame ready for the application of location reagents No equilibration of solvents is required, and the total time for preparation and chromatography is less than twenty-four hours

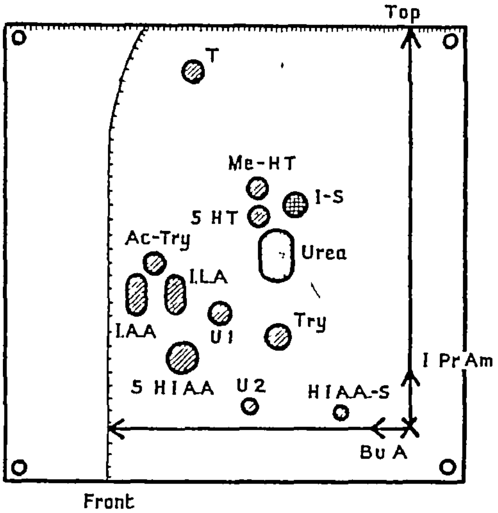

Fig I—Chromatogram obtained by procedures described and located with Ehrlich reagent. (For key to abbreviations see table)

Location by Ehrlich Dip

The bulk reagent is a 10% w/v solution of p dimethylaminobenzaldehyde in concentrated hydrochloric acid Immediately before use 10 ml of this solution is mixed with acetone 40 ml This gives sufficient for treating five papers The acetone mixture is poured into a suitably shaped glass or polyethylene tray, and the papers are dipped by rapidly drawing them through the liquid A dipped paper is held flat while the acetone dries, then placed on white paper for observation (in good daylight if possible) As the spots develop they should be outlined with lead pencil, a note made of their colour and order of appeara The chromatograms should be inspected at intervals the first hour, and again next day

EHRLICH REACTING SUBSTANCES

Compound	Approx R_f (× 100)		Ehrlich colours		Occur-rence
	I Pr Am	Bu.A	Initially	Later	
Urea	45	50	Immediate yellow	Yellow	a
Tryptophan (Try)	25	50	Slow purple	Fades	b, e
Acetyl tryptophan (Ac-Try)	45	88	Slow purple	Fades	
Tryptamine (T)	85	72	Rapid red purple	Brown	
Serotonin (5 hydroxy tryptamine) (5 H T)	47	57	Rapid blue purple	Blue-grey	c
N methyl serotonin (Me H T)	55	57	Rapid blue purple	Fades	b
Indolyl acetic acid (I.A A)	40	90	Slow red purple	Fades	b, d, e
Indolyl lactic acid (I.L A)	40	80	Slow pink purple	Brown	d
5 Hydroxy indolyl acetic acid (5 H I A A)	20	77	Rapid blue	Blue	b, c
5-Hydroxy indolyl acetic acid sulphate (H I A A S)	5	25	Purple	Blue	c f
Indoxyl sulphate (I S)	53	45	Rapid orange brown	Brown	a e f
Unknown (U 1)	30	70	Rapid purple	Blue	e
Unknown (U 2)	8	60	Blue purple	Fades	e

a, found in normal urine by this procedure
b, occasional traces found in normal urine by this procedure
c urine level high in carcinoid
d, urine level high in phenylketonuria
e, urine level high in Hartnup disease
f, not found in electrolytically desalted urine

Identification

Fig 1 shows the chromatographic "map" obta from a mixture of natural indolic compounds by above described procedure The relative posit of these indoles are remarkably constant, and the pat is not appreciably affected by other urinary compon Absolute R_f values are less constant, but approxi values are given in the accompanying table, which lists the Ehrlich colours and reaction characteri (see also Dalgliesh 1955) This table is in no way com hensive, and traces of other unidentified indoles and t conjugates are found in normal and pathological ur Urea is not an indole but is always present its br yellow Ehrlich spot serving as a useful reference p on the chromatogram

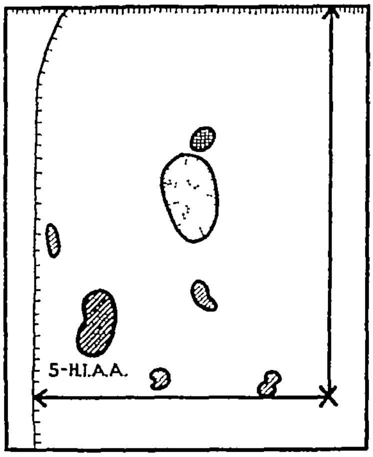

Fig 2—Chromatogram in a case of metastasising carcinoid (urine 100 µl from 1000 ml excreted in twenty-four hours)

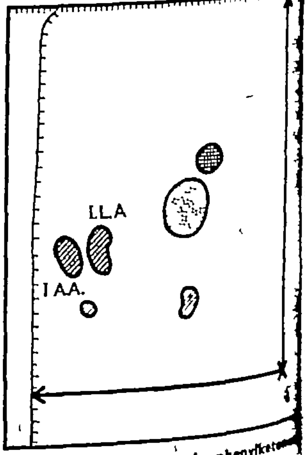

Fig 3—Chromatogram in phenylke (urine 100 µl from bulked urine)

nfirmation

In most cases complete chemical identification of a arated material is unnecessary, and adequate con mation can be obtained by applying different location gents to chromatograms run in parallel

1) 5 H.I.A.A. gives a purple brown (limit of detection = g) with a diazotised *p*-anisidine dip (Jepson and Smith 3).

2) Serotonin (5-hydroxy tryptamine 5 H T) can be dis guished from *N* methyl and *N*:*N*-dimethyl-serotonin mpus and Page 1955) by a highly specific fluorescence test pson and Stevens 1953 Goble et al. 1955)

3) I.A.A gives a pink red (urorosein), I L.A gives a slow ish red, and indoxyl sulphate (indican) gives a rapid blue ligo) on oxidation with the dangerously corrosive Salkowski gent (Stowe and Thimann 1954) or with an innocuous dip gent made from a drop of potassium persulphate solution a mixture of concentrated hydrochloric acid 1 vol. and tone 4 vol.

xactly similar chromatography can be applied to ntify indoles in plasma or tissue but then initial roteinisation and extraction are required (Goble al. 1955)

Discussion

he amount of urine needed to obtain an adequate omatogram or assay must be found by trial, but the hod is such that 100 µl of normal urine will show y little in the way of Ehrlich reacting substances ept urea and indican, with traces of I A A and an sional fugitive blue or purple spot This volume urine from a case of metastasising carcinoid will w an immense reaction for 5 H I.A A a slight reaction its sulphate ester (Snow et al 1955) and traces of er unidentified indoles (fig 2) similarly urine from henylketonuric will react strongly for I A.A. and (fig 3)

aromatic amino derivatives are present in the urine patients on sulpha drug therapy, immediate orange ellow spots appear when the paper is treated with lich reagent but do not usually interfere with the way separation

easonably accurate assay of an identified indolic ponent is possible by visual comparison of the size nsity and speed of development of the spot with that h a known amount of authentic material run simul eously (Goble et al. 1955) One-way chromatography ither solvent with standards run side by side with easured volume of the urine, is the most convenient edure, provided that two way chromatography has n the absence of other Ehrlich reactors of similar n the chosen solvent

he urine needs no preliminary treatment before matography in this solvent pair, and should not submitted to electrolytic desalting, because this oves sulphate conjugate anions such as indoxyl hate and H I A A sulphate (Smith et al 1955) ich location reagent can be applied to chromato ms after a ninhydrin reagent for amino acids has n used (Jepson and Smith 1953) thus routine amino l chromatograms can also be examined for indoles wance being made for desalting losses

Summary

simple chromatographic method is described for the tification and assay of urinary indoles Its applica to clinical studies including the diagnosis of tastasising carcinoid and phenylketonuria is discussed

hanks are due to Dr N M. Bleehen Prof H. Bickel R. J Boscott, Dr G Curzon Dr C E Dent Dr E W t, Dr W G D Murray and Dr M. Sandler for access to cal material, and to Sir Charles Dodds for his encourage- t.

References at foot of next column

HYPERGLOBULINÆMIA IN HEPATITIS

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IN the course of testing the therapeutic value of other fractionated albumin (Martin 1954a) a number of patients with liver damage were studied. They were grouped into those with and those without clinically demonstrable œdema or ascites Because the supplies of albumin were limited, a rough estimate was made where possible of the immediate requirements of each patient—based on a calculation of the total circulating albumin and making allowance for the immediate extravascular deviations of albumin administered intravenously (Martin 1954b) The limitations of such an approach need no elaboration, but it appeared to be a practical way of distinguishing those patients most likely to benefit from albumin therapy Therapeutic benefit was variable and largely unpredictable

During this work the total amount of circulating globulin was calculated The findings are reported here

Investigation

Clinical Material

Of the 13 patients in this series, 3 had typical attacks of acute infective hepatitis They were investigated within a week of developing clinically demonstrable jaundice In each the disease ran an uneventful course.

In 10 of the 13 the diagnosis of chronic liver damage was established by biopsy in 6 of these it was confirmed post mortem All had been followed for not less than a year In none was there any evidence of disease other than that due to primary liver damage. At the time of investigation all 10 were free from ascites.

Methods

Plasma volumes were estimated by the Evans blue tech nique described by Reeve (Barnes et al 1949 Grant and Reeve 1951) All the patients and controls were investigated at rest in bed after a twelve-hour fast

Protein was estimated by the standard micro Kjeldahl technique using a nitrogen conversion factor of 6·25

The albumin globulin ratio was found by precipitation of the globulin with a 26·0% solution of sodium sulphate (Martin and Morris 1949) The results were checked by electrophoresis.

The electrophoretic analyses were made in phosphate buffer 0·2 ionic strength, at pH 8 0 and a protein concentra tion of 2 g per 100 ml. in the classical apparatus described by Tiselius (1930)

Results

The results obtained in 5 normal persons are shown in table I and those in the 13 patients with liver disease in table II The total amounts of protein albumin and

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TABLE I—PROTEIN LEVELS IN HEALTHY PERSONS

Person no	Age (yr)	Weight (kg)	Total protein (g per kg)	Total albumin (g per kg)	Total globulin (g per kg)	Total circulating globulin (g)
1	24	51 5	3 70	2 10	1 60	87 0
2	27	66 5	3 35	1 90	1 45	96 0
3	48	73 0	3 20	1 70	1 50	109 0
4	36	76 5	3 30	1 95	1 35	103 0
5	28	66 5	3 10	1 70	1 40	93 0

globulin are calculated by multiplying the estimated plasma volume by the respective concentrations of the proteins calculated as g per 100 ml and dividing the result by the weight

Table III shows the total circulating protein, total circulating albumin, and total circulating globulin in 3 patients with chronic hepatitis immediately before and twenty four hours after a single transfusion with albumin

The accompanying figure shows two typical electrophoretic analyses of the serum-proteins from patients 4 and 5 of the series with chronic hepatitis The analyses show the gross increase in γ globulin described by Luetscher (1940), Gray and Barron (1943), Thorn et al (1946), and Martin (1949)

Discussion

The group of patients with acute hepatitis (table II) is small and permits no more than the tentative suggestion that in this phase of the disease there is a definite, but not striking, increase in total amount of circulating globulin There is little alteration in the total amount of intravascular albumin, and the figures suggest that decreases in the acute phase which have been reported (Martin 1946, Sherlock 1955) may be explained in part by alterations in plasma volume in the acute phase It is a common observation that recovery from an acute attack is often heralded by a brisk diuresis

TABLE II—PROTEIN LEVELS IN PATIENTS WITH HEPATITIS

Patient no	Age (yr)	Weight (kg)	Total intra vascular protein (g per kg of body weight)	Total intra vascular albumin (g per kg of body weight)	Total intra vascular globulin (g per kg)	Total intra vascular globulin (g)
Acute hepatitis						
1	22	70 5	3 75	2 00	1 75	123 0
2	30	65 0	3 60	1 65	1 95	127 0
3	27	72 0	3 50	1 70	1 80	130 0
Chronic hepatitis						
1	43	47 5	6 20	2 00	4 20	188 3
2	54	49 0	2 80	0 80	2 00	97 0
3	47	68 0	2 90	1 50	1 40	96 0
4	52	74 0	3 50	1 70	1 80	129 0
5	23	75 0	4 80	1 60	3 20	241 0
6	35	77 0	4 70	1 50	3 20	241 0
7	54	67 0	3 10	0 90	2 20	147 0
8	61	47 0	5 50	1 10	4 40	202 0
9	40	60 5	3 80	1 30	2 50	152 0
10	47	62 5	4 20	0 70	3 50	242 0

There is a gross increase in intravascular globulin in most of the patients with chronic progressive hepatitis (table II) The increase is present but smaller in patients in the acute phase (table II) Of the 10 patients investigated only 2 had total amounts of circulating globulins within normal limits, and both of these had a definite diminution in the total amount of circulating protein The remaining 8 all had well-marked hyperglobulinæmia ranging to more than double the normal amount As the electrophoretic analysis indicates in the figure, the principal increase is in the γ-globulin

It has from time to time been claimed that the increase in globulin, particularly in γ globulin, is a compensatory mechanism correcting the osmotic disturbance created by the failure to form albumin Gutman (1948) has pointed out that this idea is too naïve In our short series the levels for the globulins compared with those for albumin do not suggest any close correlation between the absolute amounts of the two groups of protein circulating

This seems to be further emphasised by the effect of transfusion of known amounts of albumin on the total amount of circulating globulin Thorn et al. (1946) found little if any effect Our figures (table III) confirm their findings, showing that the infusion of albumin leaves the immediate amount of globulin virtually unaffected This is also true when the raised level of albumin had been maintained for several weeks

TABLE III—EFFECTS OF TRANSFUSIONS OF ALBUMIN ON AMOUNT OF CIRCULATING GLOBULIN

Patient	Total circulating protein (g)		Total circulating albumin (g)		Total circulating globulin (g)	
	Before trans fusion	24 hr after trans fusion	Before trans fusion	24 hr after trans fusion	Before trans fusion	24 hr after trans fusion
No 7 50 g given	208	236	60	83	147	[illegible]
No 5 75 g given	337	367	118	148	219	[illegible]
No 9 100 g given	225	283	74	125	151	157

We feel there are grounds for investigating the hype globulinæmia and the associated reticulo endothe hyperplasia which occurs in chronic hepatic dama independently of, or at least not directly linked with, diminution in circulating albumin Moreover, benefits of replacement therapy with albumin have b so unconvincing that on these grounds a study of hyperglobulinæmic element seems worthwhile

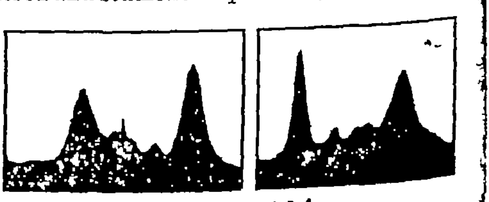
Summary

In 10 consecutive patients with established chr liver damage the total amount of circulating glob was estimated

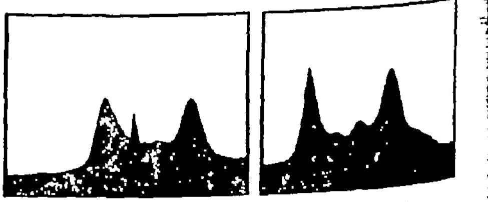
In 8 of these there was well defined hyperglobulinæm

In 3 in whom there was adequate information on t effect of a single albumin transfusion there was evidence that this procedure altered the level of circulat globulin

It is suggested that in chronic hepatitis hyp globulinæmia is a finding in its own right and should considered and studied independently of albumin levels



PATIENT Nº4



PATIENT Nº5

Electrophoretic analysis of two patients with chronic hepatitis ascend- ing pattern on the right ; descending pattern on the left. Direction of migration in each picture is to centre The γ-globulin in each picture is the large peak on the outer side of the pattern

We acknowledge our appreciation for the help received m the staff and the support we have received from the arch funds, of St George's Hospital We are grateful to H. M. Murray for the photographs of our electrophoretic lysis.

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THE EXCRETION OF RADIOACTIVE IODINE IN HUMAN MILK

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HE amount of iodine excreted in human breast milk been estimated at 15–150 μg per kg (Hercus and erts 1927, Hercus et al 1931 Eyckerman 1933) le increasing use of ¹³¹I as a test of thyroid function apts us to report the following information about the ction of this isotope in human milk, especially since tests may be left largely in the hands of technicians cannot necessarily be expected to appreciate the gical risks involved

Case-report

woman, aged 28 was referred as an outpatient for ¹³¹I d function studies as a suspected case of thyrotoxicosis. as given 29·5 μc of ¹³¹I on Aug 20 1955. In the medical w a few minutes after the drink was given it was ered that she was breast-feeding her son aged 4 months. as told to discontinue breast-feeding and the breast-milk extracted and its radioactivity measured.

sults of Test—The uptake of ¹³¹I by the thyroid gland 33% at 4 hr 52% at 24 hr and 61% at 48 hr The activity of the total plasma at 48 hr was 0·008% of the d dose per litre. Protein bound ¹³¹I was negligible. The activity of the milk was measured first as total activity later the proteins were precipitated in alkaline solution inc sulphate. Both the supernatant fluid (containing) and the protein precipitate (redissolved in hydrochloric were measured (see table) It thus appears that at least nine tenths of the activity was in the iodide fraction and the observed small amount attached to the precipitate may have been due to contamination not removed by washing

RADIOACTIVITY OF MILK

	Volume (ml.)	Total activity		Iodide fraction (μc per litre)	Precipitate fraction (μc per litre)
		Concentration (% of ingested dose per litre)	Activity of whole sample (% of ingested dose)		
	102	21 5	2 50	20 8	1 10
	35	17 9	0 49	10 9	1 70
	70	11 2	0 79		
	52	6 5	0 53		
	40	[illegible] 4	0 1[illegible]	–	
	26	1 8	0 0	1 6	0 10

Discussion

Two points of interest and importance emerge from these data

(1) It is seen that the concentration of ¹³¹I activity in the breast milk is considerably greater than that of the plasma at about the same time. Indeed the activity per litre of the milk is much greater than the activity that might be expected at any time in the plasma of this patient. This selective concentration of ¹³¹I in breast-milk relative to the plasma is of the same degree as that found in saliva and gastric juice by Myant et al (1950)

(2) The risk to the infant is not negligible Had the child ingested the breast milk in this case he would have taken about 1 3 μc of ¹³¹I in the forty-eight hours following the giving of the drink to the mother The average weight of the thyroid gland in a baby aged 4 months is 2 87 g with a range of 1–6 g (J L. Emery personal communication) If the thyroid gland weighed 2 87 g and its uptake of ¹³¹I in forty eight hours was 60% the dose delivered would have been 20–30 röntgen equivalent physical (r e p) according to the biological elimination rate of the ¹³¹I from the infant s thyroid gland. If on the other hand the thyroid gland weighed only 1 g the dose delivered would have been about 50 r e.p It is uncertain whether these doses of radiation would have had a significant suppressive effect on the thyroid gland, but Werner et al. (1952) found that as little as 160 r e p to the thyroid gland induced complete remission in some thyrotoxic patients, none of whom was aged less than 7 years. It is clear then that nursing mothers should not be given ¹³¹I even in doses as small as 25 μc. This risk must be guarded against by directly questioning all women of childbearing age referred for radioactive-iodine study If the isotope has been given, breast feeding should be discontinued at once

Summary

¹³¹I is concentrated in human milk to such a degree that a drink of 25 μc given to the mother may have an adverse effect upon the infant s thyroid gland

Radioactive iodine should not be given to a nursing mother

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THE MODIFICATION OF POLIOVIRUS ANTIGENS BY HEAT AND ULTRAVIOLET LIGHT

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HEAT and ultraviolet light change the polioviruses both as complement fixing and as immunising antigens This report describes some of the changes observed in studies of the possible diagnostic uses of the complement fixing reaction in suspected poliovirus infections

Tissue-culture antigens suitable for poliovirus complement fixing tests were first made at Harvard by Svedmyr et al (1953) who concentrated the liquid from cultures of infected human embryonic lung and heated it to reduce its anticomplementary activity Using these antigens they found that most poliomyelitis patients possessed antibodies against two or all three types of poliovirus and that these were already at a high level early in the illness Black and Melnick (1954), at Yale, demonstrated a greater proportion of monotypic responses and rising titres by using unconcentrated antigens made from cultures of monkey kidney and HeLa cells, and a special quantitative method estimating the complement fixing activity of a serum Their antigens were mostly used unheated

When heated concentrated antigens of the Harvard variety became available in this laboratory, differences were noted between earlier results given by a type 2 (MEF-1) baby-mouse brain antigen (Casals et al 1952, Le Bouvier 1953) and those obtained when the same sera were retested with a type-2 (Y SK) antigen made from cultures of human embryonic lung The advent of high-titred non-anticomplementary complement fixing antigens prepared from monkey-kidney cultures made possible an examination of the part played by various factors in producing these discrepant results It was soon apparent that any effects attributable to differences in the tissues or in the strains of virus used were relatively minor Heating of the antigens at 60°C for 20 minutes, on the other hand, was enough to account for most, or all, of the observed discrepancies

Ultraviolet light was later found to alter poliovirus complement-fixing antigens in a comparable manner The term Yale, or Y, antigen is used here to denote unheated antigens and those resembling them in their complement-fixing properties, the term Harvard, or H, antigen, denotes antigens heated at 60°C for 20 minutes and those of like behaviour The antibodies fixing complement with these antigens are correspondingly referred to as Y and H antibodies

Methods

Antigens consisted of the liquid medium from infected cultures of trypsinised monkey kidney (mixture 199) (Morgan et al 1950) or of HeLa cells (mixture 199 with 5% of heated horse serum free from poliovirus neutralising or complement fixing antibody) The virus strains used were Mahoney and Brunhilde (type 1), Y-SK (type 2), and Saukett (type 3) In addition, uninfected control antigens containing ground-up normal tissue and infected control antigens (Coxsackie type B3) were used

The effect of heat and ultraviolet light on these antigens was studied principally in complement fixation tests with monkey hyperimmune and human sera using the plate technique (Fulton and Dumbell 1949) The reactions given by Y and H antigens of each virus type with a "standard" homotypic monkey hyperimmune serum were taken as the criteria for the antigenic change *

Y and H antigens of each of the four virus strains (grown in monkey kidney) were used to immunise selected monkeys found to be without detectable poliovirus neutralising or complement fixing antibodies Two intramuscular injections of antigen in adjuvant were given six weeks apart Sera taken from two to six weeks after the second injection were tested for neutralising antibody (100 TCD_{50} of virus being used) and for their content of Y and H complement fixing antibodies They are called here test antisera

Infectivity titrations were done with Mahoney antigens to determine the relationship of virus inactivation to the Y-H antigenic change

Results

Experiments with Heat and Ultraviolet Light

When Y and H antigens were tested with their standard homotypic antisera prepared by immunisation of monkeys with unheated active virus in adjuvant, t degree of fixation obtained with the H antigen w regularly less than that with the Y antigen In "ch board" titrations the ratios of the serum titres give the two antigens varied from 1 2 to 1 8, the differen being greatest with type 2 and smallest with ty reagents (Likewise with human sera the most stri differences between Y and H antibody patterns w seen with the type 2 (Y-SK) antigen) The result o typical chessboard titration with type 2 antigen standard antiserum is shown in fig 1 The antigens, usual, were slightly procomplementary with refere to the complement titre determined in diluent (barbiturate-buffered saline solution)

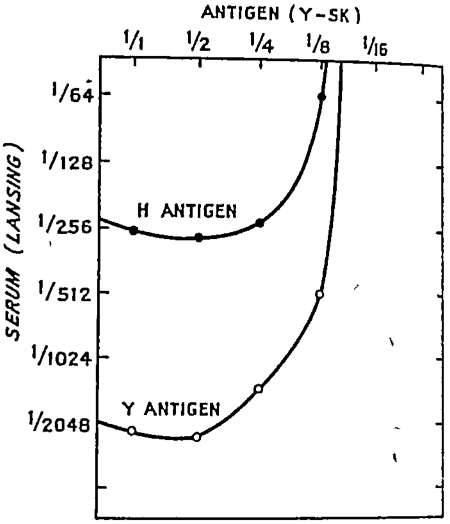

Fig 1—Chessboard titration of type-2 Y and H antigens with homot hyperimmune monkey serum Curves show 50% lysis Dose of comp ment was $2^1/_2$-3 HD_{50}

Monkeys immunised with unheated antigens prod large amounts of homotypic neutralising antibody more Y than H homotypic complement fixing antib Those immunised with the identical antigens heated 60°C for 20 minutes did exactly the reverse The antib content of the two kinds of test antisera might represented by the formulæ N>Y>H (Y antisera) N<Y<H (H antisera) The homotypic titres of from monkeys immunised with Brunhilde Y and antigens are shown in table I

The figures in table I are the complement fi antibody titres determined in line tests The differen were confirmed in two dimensional tests with vari complement and serum The Brunhilde Y antise had a neutralising titre of 2 against type 2 virus but not neutralise type 3 virus This slight cross neutra tion between types 1 and 2 accords with the repor Melnick (1955) and Black and Melnick (1955) S degrees of cross reaction with heterotypic complem fixing antigens were shown by some of the test ant

TABLE I—NEUTRALISING AND COMPLEMENT FIXING ANTI TITRES OF MONKEYS IMMUNISED WITH UNHEATED HEATED ANTIGENS

Monkey immunised with Brunhilde antigen	Type 1 antibody titres		
	N	Y	H
Unheated (= Y antigen)	8192	512	[illegible]
Heated (= H antigen)	2	128	[illegible]

N, neutralising antibody titre (reciprocal of final dilution
Y complement fixing antibody titre with unheated antigen } (reciprocal of initial serum dil
H, Complement-fixing antibody titre with antigen heated at 60°C for 20 min }

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* The "standard" Mahoney, Lansing, and Leon monkey sera were kindly supplied by Dr W Wood (Glaxo Laboratories), Dr D G ff Edward (Wellcome Research Laboratories), and Dr A P Goffe (of this laboratory) respectively

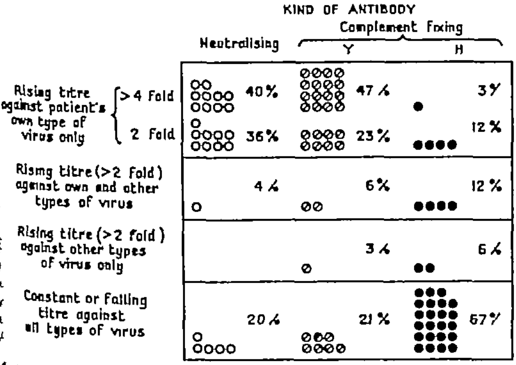
very low dilution (1/1 to 1/8), and there was evidence greater cross fixation with heated than with unheated terotypic antigens

The degree of heat needed to complete the conversion the Y form through intermediate stages to the H m varied with antigens of the three types Differences the rapidity of action of ultraviolet light were also nd. Paradoxically, the type 3 antigen appeared to the most susceptible to heat but the least sensitive ultraviolet light in this respect

Above 60°C there was a diminution in the complement ing activity of the poliovirus antigens over different ges of temperature, the type 3 virus ceasing to ct with its "standard" monkey antiserum after 20 nutes at 70°C the type-2 at 80 C, and the type 1 90°C

lts of Human Sera with Y and H Antigens

omparative tests of Y and H antibodies were made the sera of 34 patients with paralytic poliomyelitis sera were usually collected in the first and fourth ks of illness. They were usually examined in line using optimal concentrations of antigen and $2^1/_2$–3 hæmolytic doses of complement With some sera



2—Poliovirus antibody trends in patients with paralytic poliomyelitis from whose ch one or other type of poliovirus was isolated Each circle represents a patient. acute specimen was usually taken in the 1st week and the convalescent usually in 4th week of poliomyelitis.

results were confirmed by two dimensional comple- t fixation tests. Neutralising antibody was estimated e sera of 25 patients in this group The trends of the ous antibodies in different patients during the first ks of poliomyelitis are shown in fig 2

table II the complement-fixing antibody findings of same 34 patients have been classified as either tive or as falling into one (or both) of two positive gories

) *Fourfold or greater rises in titres* between the first and th weeks of illness (interpreted as indicating current tion with the corresponding type of poliovirus)

) *Titres of 32 or higher* in one or both specimens of serum st one or more types of virus (interpreted as indicating st infection with poliovirus, probably within the past).

he interpretation of this second positive category sed upon two observations (1) complement fixing body titres, especially those determined with H gens (Svedmyr et al 1953) have usually fallen to low ndetectable levels from one to three years after the e stage of the poliomyelitis; and (2) titres of 32 are in the general population

TABLE II—RESULTS OF LINE COMPLEMENT FIXATION TESTS ON PAIRED SERA OF PATIENTS WITH PARALYTIC POLIOMYELITIS

Interpretation of results	No of patients tested with	
	Y antigens	H antigens
Negative	5	0
Positive (1) Fourfold rise in titre	18	1
(2) Titres > 32	*11	24

* Not included in this figure are 10 patients who were positive in both categories and who are included in category (1)

By the criteria given above 6 patients judged to be negative in tests with H antigens were positive in those with Y and 2 patients with negative Y titres were positive with H When both kinds of antigen were used, 31 of 34 patients had positive complement fixing antibody reactions In the remaining 3 there were twofold rises in Y antibody against the infecting type, but all the titres, with either kind of antigen were low It remains to be seen, in further applications of the test, whether criteria will need qualification

Comments

Suitable degrees of heat and ultraviolet light produce a qualitative alteration in poliovirus antigens of the three types This Y H change is accompanied by little or no reduction in the total effective amount of antigen but more intense heating causes a progressive loss of reactivity Modification of the antigenic surface with or without loss of antigenic substance enables the H antigen to fix complement with antibodies different from those which react with the unmodified Y form The results obtained with monkey hyperimmune sera and human sera, including preliminary results of antibody absorption tests, make it possible to think of the antibody, or range of antibodies reacting with Y antigens as intermediate in character and behaviour between neutralising and H antibodies and as 'overlapping' with both I suggest that a variable proportion of the neutralising antibody population may fix complement with the homotypic Y antigen while reacting only slightly, if at all with the corresponding H antigen In keeping with this view are the greater type-specificity of Y antibodies and the fact that they may be increasing in the first weeks after infection when H antibodies have already reached their peak and may even have begun to decline

Powell and Culbertson (1955) have reported that the ability of poliovirus antigens to evoke neutralising anti bodies is much impaired by heat the present results confirm this finding Infectivity titrations of heated and ultraviolet irradiated virus showed that with heat the inactivating and antigen modifying effects proceeded roughly in parallel whereas with ultraviolet light they were dissociated inactivation (*presumably* through genetic disturbance) taking place before any 'external' Y H change could be detected This raises the question whether the capacity of a poliovirus antigen to evoke neutralising antibodies might not be related at least in part to the preservation of its integrity *as a Y antigen* That this may be so is suggested by the retention of this capacity in some measure by Mahoney virus after treatment with formaldehyde or with ultraviolet light sufficient to destroy its infectivity while leaving its reactivity as a Y antigen apparently unimpaired

As regards the practical application of these observations to problems of serological diagnosis, it should be emphasised that the complement fixing antibody findings recorded in fig 2 and table II relate to a small series of cases of clinically undoubted paralytic poliomyelitis It is likely that similar tests on a group of cases diagnosed as non paralytic poliomyelitis would yield a smaller proportion of positive results Nevertheless, in at least some doubtful cases, tests for both kinds of complement-fixing antibody may provide suggestive information In adequately spaced specimens of serum, tests with Y antigens offer the best chance of detecting a fourfold rise in antibody titre, but tests with H antigens are also useful, since they may give further support to a positive Y-antibody finding Moreover H antibodies are as likely to be present in high titre in the first as in later specimens of serum, and they may therefore prove to be of help, as Godenne and Riordan (1955) have pointed out, in giving a provisional indication of the antibody response at a relatively early stage in poliomyelitis

Conclusion

Poliovirus antigens may be modified by heat and by ultraviolet light, a process here called the Y-H change Positive reactions given by human sera with modified, or H, antigens of the three types tend to resemble eac other more closely than do the reactions obtained wit the corresponding unmodified, or Y, antigens. Type specific qualities are more prominent in Y antig but are overshadowed in H antigens by character common to the whole group of polioviruses. Tes for antibodies against both kinds of antigen may have their place in the serological investigation of poliovir infections

I wish to thank Mrs K Russell and Mr D H J Titmuss for the results of neutralising antibody tests of the patients sera, Miss B M Pitts for the corresponding data on the monkey sera, and Mr Titmuss for his assistance in the oth phases of this work

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Preliminary Communication

5-HYDROXYTRYPTAMINE METABOLISM IN ACQUIRED HEART-DISEASE ASSOCIATED WITH ARGENTAFFIN CARCINOMA

THE syndrome of intestinal argentaffin carcinoma (malignant carcinoid tumour) associated with cutaneous flushing, asthma, diarrhœa, and pulmonary stenosis has, since its first recognition,[1] been described with increasing frequency

Most of the clinical features can be accounted for by the known pharmacological actions of 5 hydroxytryptamine (5-H T)[2–4] which has been demonstrated in high concentration in a post mortem specimen of "benign carcinoid tumour"[5 6] and in the serum and urine of patients with argentaffin carcinoma[7] 5 H T is broken down to 5 hydroxyindoleacetic acid (5 H I A A)[8] by the action of mono-amine oxidase,[9] and an enormous increase in 5-H I A A excretion in urine has been described in patients with argentaffin carcinoma[10 11]

It has been difficult to correlate the predominantly right sided heart disease with the humoral action of 5 H T We have recently performed detailed cardiac catheterisation on a 33 year old housewife, with the primary aim of attempting to elucidate this problem She presented with all the clinical, histological, and biochemical features of the syndrome

METHODS AND RESULTS

25 ml blood samples were taken in dry sterilised syringes, lubricated with silicone oil MS 200, from the superior and inferior vena cavæ in quick succession and then simultaneo from the pulmonary and brachial arteries 10 ml. from ea was placed in a dry vial and serum separated after one ho 10 ml was also placed in a cooled, siliconed centrifuge t and a platelet button and platelet free plasma were prep at 4°C,[12] platelet counts having been performed on the mediate platelet rich plasma so that the approximate num of platelets in each button was known Platelets w washed twice with 0 85% saline solution, recentrifu and resuspended in 1 ml distilled water, which was fr to −10°C and thawed three times, to liberate platelet-bo 5 H T[13]

Serum, plasma, and platelet suspensions were treated w 3 5 vols cold acetone for forty eight hours, filtered, and, a small amount of silicone antifoam was added, evapor to dryness in vacuo at 40°C Residues, taken up in 1 distilled water, were subjected to 25,000 *g* in an MS Major centrifuge for 30 min to break up the emulsion ca by lipoid material, and clear supernatant was extra twice with 0 5 ml petroleum ether (boiling point 60°-80° 5 H T standards, treated in the same manner, gave an appro mately 90% recovery

5 HYDROXYTRYPTAMINE CONTENT OF BLOOD OBTAINED DU CARDIAC CATHETERISATION

—	Site				
	Superior vena cava	Inferior vena cava	Pulmonary artery	Brachial artery	Controls (ven blood)
Serum (μg per ml)	2 5	2 25	5 6	1 0	Level depends platelet concentra tion
Plasma (μg per ml)	1 3	2 5	6 2	2 2	Negligible
Platelets (μg per 10^{9})	1 2	0 5	0 7	0 7	0 25

Qualitative identification was achieved by 2 dimensio chromatography,[14] and quantitative assay by a dimensional fluorescence chromatographic method[15]

The liver parenchyma, at later laparotomy, was larg replaced by metastases of varying size Saline homogen of this tumour tissue, macerated in an A.H T tissue grin showed a 5 H T concentration of 360 μg per g wet ti

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timated colorimetrically [16] A solitary small primary tumour the terminal ileum contained only 61 µg per g of wet mour tissue, and there was no change in clinical or ochemical findings following its resection It would thus m that the high level of 5 H T in right sided heart blood is mostly derived from the hepatic vein. Blood from the ferior vena cava taken distal to the hepatic vein contained H T in much lower concentration

DISCUSSION

It has been known for many years that a powerful rum vasoconstrictor, appearing spontaneously in tted blood, disappeared when the defibrinated blood *perfused through the lung* [17] This serum vasocon ictor, later called serotonin was found to be identical th 5 H T.,[18] and the enzyme in the pulmonary vascular d which inactivates it was shown to be mono amine idase [8] Its action provides an explanation for the mparatively low concentration of 5 H T in left sided art blood

In several reported cases systolic murmurs developed ilst under observation, and signs of tricuspid stenosis peared in our patient while she was in hospital ve lesions are therefore acquired; the mechanism is certain, but it may be that endothelial change con uent on increased cell permeability [19, 20] may be ducive to platelet deposition on the valve cusps. e platelets themselves showed no increased adhesive [21] in our patient nor did added 5 H T increase adhesiveness of a heparinised control platelet pension

Whatever the mechanism local action of free plasma T will be predominantly right sided (platelet bound T is presumably inactive) Its concentration may rise iodically to much higher values than are indicated e, as evidenced indirectly by the apparent increase nd in peripheral venous blood during periods of hing—3 3 µg per ml. compared with a resting value 2 µg per ml estimated colorimetrically [16]

Neither clinical nor biochemical improvement followed administration of ergotamine tartrate [22] phentola e [23] or dibenylene, which have some actions as 5-H T metabolites under experimental conditions Strik though temporary, clinical improvement however followed intravenous administration of 80 millicuries of colloidal radioactive gold ^{198}Au, which is largely concentrated in the liver [24] Paroxysmal flushing and bronchospasm, severe before ^{198}Au treatment, disappeared after five days became once more apparent after twenty four days and returned to their original severity after thirty three days A severe, but temporary granulopenia resulted also The remission was accompanied by a decrease in circulating 5 H T, colorimetric assay [16] showing a serum level of 1 8 µg per ml before gold dropping to 0 65 µg per ml. fourteen days after gold and rising to 1 1 µg per ml thirty three days after gold A pre treatment urinary excretion of 1 65 mg 5 H T per twenty four hours fell to 0 77 mg per twenty four hours after fourteen days and rose to 1 97 mg per twenty four hours after thirty three days

Urinary excretion of 5-H I A A however estimated colorimetrically [25] which was 346 mg per twenty four hours before gold treatment stayed approximately constant—301 mg at fourteen days and 345 mg at thirty three days after treatment It is tentatively suggested that ^{198}Au may cause improvement by temporarily inactivating a naturally occurring mono amine oxidase inhibitor This might explain the anomalous 5 H I A A excretion

Fuller details of this case and its investigation will be published later

We wish to thank Dr Paul Wood for permission to publish this case and for his helpful advice Sir Russell Brock for the operative findings Prof R A Webb for his interest and for providing facilities and Dr D N Baron for his constructive criticism We should also like to thank Dr J B Jepson for a gift of 5 hydroxyindoleacetic acid and for access to his method before publication and Dr H. Payling Wright for loan of equipment We are indebted to Mr L C West and Mr J Kirby for technical assistance with the colorimetric *methods*, to which Dr S Udenfriend kindly allowed us access before publication.

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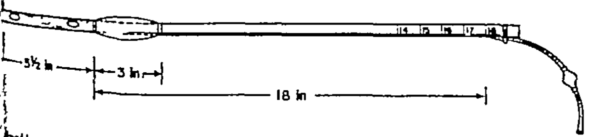
New Inventions

A CUFFED ŒSOPHAGEAL TUBE

CUFFED œsophageal tube has been designed in an mpt to provide an additional safeguard against ration of stomach contents during the induction of esthesia in emergencies. The tube is of 41 F G and has a ber of perforations at its lower end to minimise the risk becoming blocked Regurgitation around the tube is vented by a broad inflatable cuff, which is positioned is just above the lower end of the œsophagus, the injection of 20 c cm of air provides an adequate seal without overstretching



The tube with its solid rounded end, flat cuff and very smooth polished finish, is very easy to insert and does not interfere with endotracheal intubation if kept to the left side of the mouth It is essential to apply continuous suction while the tube is being withdrawn, because otherwise its contents may empty into the pharynx through the perforations.

Other cuffed œsophageal tubes have been described; but not, so far as I have been able to ascertain of this type and intended for this specific purpose. However, no originality is claimed

I am indebted to my colleague Dr P W Spencer Gray for his advice and to Mr G R Raby Wood L.I.B.S.T., of Alexander & Fowler Ltd who make the tube for his help

Chase Farm Hospital
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David Zuck
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Reviews of Books

Topley and Wilson's Principles of Bacteriology and Immunity

4th ed Revised by G S WILSON, F R C P, D P H, director of Public Health Laboratory Service, England and Wales, A A MILES, C B E, F R C P, professor of experimental pathology, University of London, and director of the Lister Institute of Preventive Medicine, London London Edward Arnold 1955 Vols I and II Pp 2331 160s the set

IN the world of bacteriology a new edition of "Topley and Wilson" is of international interest Like the third edition, which appeared in 1946 and was twice reprinted, the fourth edition is in two volumes and is edited by Dr G S Wilson and Prof A. A Miles The third edition was longer than the editors wished, for the paradoxical reason, as they explained, that they had not time to make it shorter A well-considered process of selection has now been applied, the new edition is 277 pages longer than the last, but the subject has grown enormously in the past nine years and the modesty of the increase in length reflects a stern effort to keep the book within reasonable bounds

The arrangement of the text follows generally on the same lines as that in the third edition Chapter 9 marks a new and important development in that it now deals not only with bacterial variation but also with the unfolding mysteries of bacterial inheritance Among other new developments the editors emphasise chemotherapeutic drugs and antibiotic agents, cellular morphology, bacterial metabolism, and virus reproduction Some topics are either mentioned for the first time or are given more extended treatment than previously—for example, sarcoidosis, cat-scratch fever, infective hepatitis, and pinta The editors wisely say that parts of their text now have too much detail for the undergraduate medical student They have accepted this position, and have indeed deliberately added further references in order to ensure that the book has greater value for those who will use it most postgraduate students, university teachers, and research-workers

The book is not perfect Specialists in certain subjects may here and there experience mild surprise at the acceptance or at the rejection or disregard of particular opinions and conclusions, but this is hardly to be wondered at, for the book retains the qualities of a personal text Topley and Wilson is unique among textbooks of bacteriology in that it remains able to stimulate, enlighten, provoke, and admonish at the same time as it draws a vast picture of all knowledge and offers a fairly precise measurement of the proportions of each component thereof The only unfavourable comparison between the editions of 1946 and of 1955 concerns the increase of price from £3 to £8 This is no more than an index of the currency inflation, for no price can properly repay the prodigious labour that has gone into this magnificent opus To any professional bacteriologist, life is unthinkable without a copy of Topley and Wilson

Bone and Joint X-Ray Diagnosis

MAX RITVO, M.D, assistant clinical professor of radiology, Harvard Medical School London Henry Kimpton. 1955 Pp 735 145s

IN this book Dr Ritvo has attempted the impossible—to write for student and consultant radiologist, for general clinicians and orthopædic surgeons Consequently his book lacks balance, for in aiming at comprehensiveness he has fully described some rare (and surely rather unimportant) cases and skimped on many more important, though less interesting, conditions

He writes in detail of congenital, developmental, endocrine, and metabolic disorders—even reports of single cases are mentioned—but the section on fractures is inadequate For instance, no attempt is made to simplify by classification such really tricky fractures as those involving the calcaneus or the carpus, and fractures of the ankle-joint are dismissed in ten lines Despite the pressure on space some of the subjects are well outside the title definition, and a great deal of space is taken up with clinical and pathological accounts which are often longer than the description of the radiographic appearances The illustrations are, on the whole, disappointing, and many are too small.

The book is certainly up to date and comprehensive, and the index is good.

Personality Changes following Frontal Leucotomy

A clinical and experimental study of the frontal lobes in man P MACDONALD TOW, M B, PH.D, sometime research psychiatrist, Nuffield department of surgery, University of Oxford London Oxford University Press 1955 Pp 262 35s

THE study of frontal-lobe function continues to excite interest, though the centre has shifted from psychological or neurological to psychiatric inquiry The title of Dr Macdonald Tow's study speaks of personality changes, but he is more concerned with cognitive than with emotional or conative factors He attempts to assess changes quantitatively where possible and then amplifies them by verbal description

The book is based on 36 of his own cases, many of whom he has followed up for several years His general conclusion is that some intellectual changes undoubtedly occur The difficulty of drawing such a conclusion from psychiatric material lies in the preoperative mental abnormality, even when as in Tow's series, the cases have been carefully selected to avoid this difficulty Besides describing his cases Dr Tow also briefly reviews earlier experimental and clinical work on frontal lobe function

The book is a useful summary of the kind of psychological tests that can be applied to patients with frontal lobe lesions and of the changes likely to be found in the It does not add anything new to our knowledge of frontal lobe function, but that is hardly to be expected in a field which has been intensively worked in the p decade It can be recommended as an introduction to the subject, especially for psychology students with medical experience

Atlas zur spurenkunde der elektrizität

Prof STEFAN JELLINEK Vienna Springer 19 Pp 78 + 94 plates £6 3s

MANY research-workers at Oxford will remember Professor Jellinek's work there on problems in electric injury to the body This remarkable atlas worth reflects his extensive experience

It consists of an annotated collection of drawings, paint and photographs of high tension electrical and thermal lesions together with the histological phenomena wh original description we owe to him The production is ext ordinarily good Equally remarkable are the parallel illustrations of many objects damaged at the same time by electr discharge, heat, or blast, for these reflect the curiously err and prankish behaviour of lightning in particular Med legal experts who profess to recognise blunt stabs, lacerat or contact firearm wounds at sight will be disturbed to the injuries which freak electrical discharges cause in clothing, skin, and underlying tissues

Jellinek's atlas is likely to remain the sole atlas of kind—a remarkable reference book for the industrial medicolegal expert

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Forensic Medicine (10th ed London J & A Church 1955 Pp 644 40s)—Sir Sydney Smith has for some y been an international figure in forensic medicine An author when his first edition was translated into Spanish and Ar in 1925, he has acquired stature as his book has run throu ten editions The latest, in which he has again had the h of Dr F S Fiddes, bears from page to page the imprint of masterly grasp of essentials, an eye for significant detail and an engaging love of forensic drama Copiously illustra with figures that add to the text, the book is a remark encyclopædia in a smallish compass, a guide to the tyro, and companion to the expert, reasonable and readable This m of brief comprehensiveness covers the entire subject includes a manual of diagnostic laboratory toxicology the bibliography is open to criticism It has no uniform and may even fail to give a date, a publisher, or an author's initials Sir Sydney Smith's library amanuensis must ma the text next time

THE LANCET

LONDON SATURDAY NOV 12, 1955

Cortisone and After

THE Health Departments announce that from ec 5 cortisone and hydrocortisone may be freely escribed by doctors in the United Kingdom We pe to review next week the uses and limitations these substances Meanwhile on earlier pages of e present issue two groups of workers describe work two new steroid hormones—prednisone and ednisolone—derived from cortisone and hydro rtisone respectively by dehydrogenation at the position. These substances may already be had patients in hospital and it is necessary to tablish their worth as quickly as possible

Of the two substances, prednisolone may be very ghtly more potent than prednisone Like other estigators[1] Dr DUDLEY HART and his colleagues 998) have found that most patients with rheuma d arthritis show subjective and objective improve nt when their treatment is altered from cortisone to dose of prednisolone four to five times smaller t this greater potency weight for weight, would not itself be a material advantage unless accompanied a decreased liability to induce undesirable effects— unless control could be long maintained without dose having to be progressively raised With tisone an initial good response can often not be intained, because the dose required has to be ed to a dangerously high level BICKEL[2] suggests it this may apply also to prednisone As regards desirable effects prednisone and prednisolone are ually free (within the normal range of therapeutic es) from any tendency to produce sodium retention œdema, without however impairing ability to con ve sodium when the intake of this is restricted us these two substances are free from an important itation of treatment with cortisone In common h others DUDLEY HART et al noticed that sub ution of prednisone for cortisone is often followed by appearance of œdema and a fall of blood pressure s difference in effect on sodium balance might ow prednisone to be used in acute rheumatic itis in which cortisone would be liable to increase gestive failure On the other hand Dr NABARRO d his colleagues (p 993) suggest that because of absence of a tendency to produce œdema danger ly high doses may be used for long periods No al comparison between cortisone and prednisone respect of their liability to cause other undesirable ects will be possible until many more cases have en treated for much longer periods It seems obable that most of the features of Cushing's drome—rounding of the face, acne hirsutism—are produced as readily by prednisone as by cortisone NABARRO et al found that replacement of cortisone by prednisone did not aggravate the condition of a diabetic patient, and in another, non-diabetic, patient did not affect insulin tolerance DORDICK and GLUCK[3] found no difference between the effect of cortisone and of prednisone (in therapeutically comparable doses) on the insulin requirement of 7 diabetics, and SCHWARTZ[4] noted that in a diabetic patient glycosuria and insulin requirements were less on prednisone than on cortisone or hydro cortisone The discovery by BUNIM et al[5] of symptomless duodenal ulcers in several patients during treatment with prednisone or prednisolone was disquieting MARGOLIS et al[1] noted dyspepsia in 5 out of 20 patients treated (2 were found to have duodenal ulcers) and BICKEL[2] agreed that prednisone was particularly liable to bring about the appearance of peptic ulcers or at least to reactivate pre-existing ulcers On the other hand in 2 patients treated by DUDLEY HART et al. dyspepsia improved when prednisone was substituted for cortisone Some patients under treatment with prednisone have complained of a burning sensation in the mouth and pharynx[3]

Of the other serious side-effects of cortisone therapy the most important are psychosis dissemination of infection (sometimes resulting in miliary tuberculosis or fulminating pneumonia) suppression of adreno cortical function and osteoporosis with collapse of vertebræ It may take some time to determine how liable prednisone and prednisolone are to produce these effects But occasional psychotic episodes have already been reported several investigators have confirmed that prednisone and prednisolone depress the normal secretions of the adrenal cortex NABARRO et al found that in a healthy person prednisone produced a definite negative nitrogen balance which suggests that osteoporosis is a real risk

Experience with cortisone in the treatment of rheumatoid arthritis will make clinicians wary in the use of prednisone and prednisolone Unless a useful proportion of the dramatic immediate effect is sustained and unless the risks prove slight, these new steroids may like cortisone, more appropriately be reserved for disorders that are in general more dangerous to life In diseases such as systemic lupus erythematosus, polyarteritis nodosa pemphigus, and nephrosis[5 6] they are likely to be administered with less hesitation. The immediate effects observed by NABARRO et al in lymphatic leukæmia (confirming those reported by ISCH WALL and METREAU[7]) and in lymphoma were striking, but it is unlikely that more than temporary palliation will be achieved Favourable results have been reported in asthma,[8–10] where the new steroids may be useful in cases refractory to other forms of treatment Prednisone has been judged better than cortisone in the treatment of the adrenogenital syndrome[11]

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[1] Margolis H M., Barr J H Jun. Stolzer B L. Eisenbeis C H., Martz, F W J Amer med Ass 1955 158 454
[2] Bickel, G Schweiz. med Wschr 1955 85 859

[3] Dordick J R Gluck E J J Amer med Ass 1955 158 166
[4] Schwartz I J Allergy 1955 26 206
[5] Bunim, J J Black R L Bollet A J Pechet M M Ann N Y Acad Sci 1955 61, 358
[6] Demartini F Boots R H, Snyder A I Sandson J Ragan, C J Amer med Ass 1955 158, 1565
[7] Isch Wall, P Metreau J Pr med. 1955, 63 1110
[8] Arbesman C E Ehrenreich R J J Allergy 1955 26 189
[9] Skaggs J T Bernstein, J Cooke R A Ibid p 201
[10] Schwartz E Ibid p 200
[11] Kupperman H S Blatt M H G Vesell M, Gagliani J Weisbader H Vosburgh L J clin Endocrin. 1955 15 911

Influenza Vaccine

THE merit of influenza vaccines is still undecided In an American trial in 1944 they proved clearly of value,[1] but American and British trials in 1947 showed no protective effect [2, 3] This disappointing result is usually attributed to the fact that, whereas the viruses used in the vaccine of the 1944 trial were closely related antigenically to the epidemic virus, in 1947 the viruses in the vaccine were only distantly related to the epidemic virus, since there had been a sudden antigenic shift in influenza viruses throughout the world early that year Many workers infer from this finding that, to achieve maximum protection, the antigenic composition of the vaccine should approximate as closely as possible to that of the epidemic virus , and accordingly the World Health Organisation's influenza programme includes a study of the antigenic characters of influenza viruses isolated from all over the world so that any sudden antigenic shifts can be detected early [4]

Influenza vaccines have two main deficiencies their action is rather short-lived, and their antigenic composition needs changing from time to time The Medical Research Council's committee on clinical trials of influenza vaccine has tackled both these problems, and a brief report of the present position in the trials in this country appears on a later page The short duration of the antibody response to the normal saline type of vaccine suggests (although it does not prove) that the protective action of saline vaccines would not last long Interest has therefore been aroused by the possibility that vaccines which produce more sustained antibody response may also have a longer protective action Reports from the United States have shown that oil-adjuvant vaccines, as distinct from saline vaccines, give a greater and longer antigenic response,[5] and the findings have been confirmed by a trial carried out in this country by the M R C committee in December, 1953 [6] Following the encouraging results of this small-scale serological trial, a large number of volunteers were inoculated last winter with oil-adjuvant vaccine containing a recent influenza-A virus , but influenza-A virus kept quiet and there was no opportunity to test the protective effect of the vaccine Nevertheless there may possibly be an influenza epidemic due to virus A this coming winter, and the volunteers will be observed again to see whether the vaccine protects after an interval of just over a year.

Is it in fact important that the vaccine strains should be closely related antigenically to the epidemic virus ? This is the second point under investigation In the M R C trial in the 1952–53 winter the vaccine strains were not closely related antigenically to the epidemic strains,[7] and the 40% reduction in clinical influenza in the experimental group compared with the controls [8] was not striking in comparison with the results of previous trials Some workers believe, however, that the degree of antigenic up-to-dateness of the virus in the vaccine is not critical. This view is based largely on the results of antigenic analyses of influenza viruses by JENSEN and FRANCIS [9], but their hypothesis of multiple antigens, with considerable overlap among virus strains from different years, has not gone uncontested [10] Whatever the nature of the antigenic make-up of these viruses, the simplest way of finding out how important it is to be up to the minute with the antigens is to hold a clinical trial The M R C committee's new trial (described on p 1033), which will be carried out this winter, sets out to answer this question by comparing the protective power of a recently isolated influenza virus, which should be representative of current influenza A viruses, with that of a mixture of different virus-A strains which are not so up to date Unfortunately this trial will not yield a satisfactory answer unless there is a fairly large epidemic of influenza A in the coming months

Argentaffinoma as Endocrine Tumour

ARGENTAFFINOMAS (or carcinoids) secrete 5 hydroxytryptamine (or serotonin), and when eno tumour tissue is present this hormone causes a cur syndrome of which flushing, diarrhœa, and pulmon stenosis are the main features [11] As we anticipated this syndrome has excited a great deal of inter and further cases have been reported from seve centres [13–18] Today we publish three papers on t subject a detailed study of three cases, an essen technique, and a preliminary communication on t destruction of serotonin in the lungs which clears one of the mysteries of the syndrome

The clinical picture described originally by Scan navian workers has been little altered by more rec work The spectacular transient macular cyan alternating with local flushing, which first attrac attention to the syndrome, has not often been s in full (BEAN et al [16] saw it once) a simple flush without cyanosis and with relatively uniform di bution, is more usual In most cases it is intermitt but may become constant later Dr SNOW and colleagues (p 1004) noted a very close relation alcohol intake in two of their three cases Pulmon stenosis is not always present, but at necropsy pulmonary valve is rarely normal the right s distribution of endocardial lesions is striking D rhœa, little emphasised in the original descript is nearly always present No other tumour gives r to the syndrome, which develops only when ther a large bulk of tumour tissue (large liver metast have been present in all cases reported so far)

Our suggestion that estimates of the urinary ex tion of 5-hydroxy-indole acetic acid (5 H I.A.A) wo result in a useful diagnostic method have b justified [18] Dr JEPSON describes on p 1009 a relativ

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1 U S.A Army Commission on Influenza J Amer med Ass 1944, 124, 982
2 Francis, T jun , Salk, J E , Quilligan, J J jun Amer J publ Hlth, 1947, 37, 1013
3 Mellanby, H , Dudgeon, J A , Andrewes, C H , Mackay, D G Lancet 1948, i, 978
4 Payne, A M M Bull World Hlth Org 1953, 8, 755
5 Salk, J E , Bailey, M. L , Laurent, A M Amer J Hyg 1952, 55, 430
6 M R C Committee on Influenza Vaccine Trials Brit med J (in the press)
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9 Jensen, K E , Francis, T jun J exp Med 1953 98, 619,
10 Takátsy, Gy Fürész, J Acta microbiol hung 1954, 2, 16
11 Thorson A , Biörk, G , Björkman G , Waldenström, J A Heart J 1954, 47, 795 Pernow, B , Waldenström, J La 1954, ii, 951
12 Lancet, 1954, ii 372 958
13 Branwood A W , Bain, A D Ibid p 1259
14 Jenkins J S , Butcher, P J A Ibid 1955 i, 331
15 Fraser I Ibid, July 23, 1955, p 174
16 Bean, W B , Olch D , Weinberg, H B Circulation 1 12, 1
17 Hedinger, C , Gloor R Schweiz med Wschr 1954 84, 9
18 Page, I H , Corcoran, A C , Udenfriend, S , Sjoerdsm Weissbach, A Lancet, 1955, i 198

mple paper chromatography procedure by which H.I.A.A. can be identified with great accuracy and timated sufficiently well for most purposes A wide nge of other indoles can be identified at the same me, and the method clearly has uses in the study metabolism in the whole tryptophane indole group, well as for detecting argentaffinomas All the idence available indicates that for diagnostic rposes estimation of 5 H I.A.A is completely liable, but time will no doubt reveal difficulties he new colorimetric method of **Udenfriend** et al ,[19] entioned by Dr **Goble** and his colleagues in their eliminary communication on p 1016, is based on the der Gerngross reaction with 1 nitroso 2 naphthol, d may prove simpler if less specific At the moment is said to be easier to devise a method for the assay 5-H.I.A.A than to acquire a supply of the pure bstance to serve as a standard , and the amounts 5-H.I.A.A. secreted by these patients are so enormous a gramme or more daily—that it should not be tside the bounds of possibility to devise a qualitative ethod suitable for use in the clinical side room So t, of course, estimation of urinary 5 H I.A.A has t been of any direct clinical value , the cases in hich the urinary content has been estimated have been diagnosed before this test was done But th vigilance and a little luck someone should soon able to report a case in which the biochemical gnosis was the first to be relied on, preceding and rhaps even preventing laparotomy Perhaps we ll even see preoperative diagnosis of appendicular rcinoids by this method But its greatest value y be in the early detection of postoperative recur nce, after the fashion of gonadotrophin estimates chorionepithelioma

Today's preliminary communication by **Goble** et al kes a valuable new point Pharmacologists have old trick when they wish to perfuse an organ h blood of first running the blood through a lung remove its vasospastic property This property is own now to be due to serotonin and the effect of lung (other organs show it to a lesser degree) is e to its content of an amino oxidase, which converts -CH₂NH₂ group to COOH, producing 5 H I.A A. BEL et al , by collecting blood simultaneously from lmonary artery and brachial artery in a patient h the fully developed syndrome have shown that o-thirds of the free serotonin in the blood (free in sense of not bound by the platelets) is removed passage through the lungs The maximum content this highly active material is therefore present in blood only during its brief passage from the liver ough the right side of the heart to the lungs, m which it emerges as the pharmacologically ctive 5 H I.A A Probably the figures given by BLE et al represent an extreme overload on the s enzyme system it is easy to imagine that at earlier stage of the disease little if any serotonin apes into the general circulation This finding is portant in two ways First, it explains the unrelia ity of estimations of blood serotonin in patients ose urinary 5-H I.A A indicates an enormously high e of production of serotonin. Secondly, it suggests possible reason for the localisation of lesions of the locardium to the right side of the heart It is difficult to suggest the actual mechanism platelet damage is an obvious possibility, though **Goble** et al were unable to demonstrate any direct effect of serotonin on platelets and the figures in their table do not suggest any difference between platelets on the right and left side of the heart Changes in endocardial permeability, or even direct damage, are also possible , for the levels of serotonin present are altogether beyond physiological limits Any local damage would be accentuated by pulmonary hypertension, though this of course could not in itself produce valvular lesions **Goble** et al do not mention the pressures in the pulmonary arteries found during catheterisation but, though the vascular reactions to serotonin are extremely variable under different conditions and in different species,[20] pulmonary hypertension seems to be one of the most nearly constant findings (**Smith** and **Smith**,[21] in studies of the rôle of serotonin released from platelets in the clot in pulmonary embolism, found some suggestion of acute damage to the pulmonary valve produced by serotonin alone)

Among the many points raised by **Snow** et al. one of the most obvious is the total failure to influence flushing of several serotonin antagonists, including lysergic acid diethylamide, whose activity has been the basis of some very interesting speculations on the actions of serotonin on the nervous system Perhaps the flushing is due partly to secondary liberation of histamine[22] , but anti histamines were equally ineffective Yet it is premature to assume that the syndrome is not due to serotonin. The whole subject of the pharmacology of serotonin bristles with the most formidable difficulties, and a great deal of work still has to be done on it[20 23] It is certainly odd that this group of argentaffin cells, limited with few exceptions to the gut or its immediate derivatives, and present in so many diverse sorts of animal, should secrete a hormone with such general effects on the circulatory system **Erspamer**[23] considers in turn the three main hypotheses so far presented of the biological significance of serotonin

1 *Hæmostatic*, in which it is supposed that serotonin liberated from platelets deposited at the site of injury produces vasoconstriction and so stops bleeding

2 *Hypertensive* or *hypotensive* concerned with the maintenance (or depression) of normal arteriolar tone It is possible to find arguments for both actions, so perverse is the pharmacological record of this drug

3 *Nervous*, concerned with the maintenance of normal mental activity

All these **Erspamer** rejects for what seem good reasons, and he suggests on his own account that the antidiuretic effect of serotonin produced by virtue of its action in contracting the renal arteries, is its *raison d'être*. **Jacobson**'s view, once attractive that the argentaffin cells secrete a hæmopoietic factor, he does not consider but even **Jacobson**, though entering some caveats against the current hypotheses, seems[24] to have abandoned his original view The body s means of removing serotonin from the circulating plasma are so efficient, and the doses needed for so many of its recorded effects so high, that some may be tempted to wonder whether its normal effects are exerted only on the gut itself (whose muscle is really its most sensitive target) whether it may be largely concerned in normal peristalsis, and whether all the generalised effects that are being studied so keenly are non-physiological

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[19] Udenfriend, S., Titus E. O Weissbach, H J biol Chem. [illegible]

[20] Page, I H Physiol. Rev 1954 34 563

[21] Smith, G., Smith, A. N Surg Gynec Obstet (in the press)

[22] Feldberg W Smith A N Brit J Pharmacol. 1953 8 406

[23] Erspamer V Pharmacol Rev 1954 6 425

[24] Jacobson, W J Physiol 1954 125 22P

Casting a net wider even than ERSPAMER's, one is reminded that a crucial stage in the discovery of the growth-hormones of plants was the recognition of a growth stimulating material in human urine which was found to be indole acetic acid The selective weed-killers so welcome to the gardener, whose discovery arose from this source, are mostly substituted indole acetic acids Perhaps, after all, the argentaffin cells of the intestine secrete a selective weed-killer (or antibiotic, for what else is an antibiotic?) to control the intestinal flora? At least we know that the tryptophane indole group of compounds have an extraordinarily wide range of biological actions the remarkable syndrome which is for the present our major interest in this field is a mere footnote to a chapter of biological chemistry of the widest significance

Annotations

NOBEL PRIZE IN CHEMISTRY

THE award of the Nobel prize in chemistry to Prof Vincent du Vigneaud is a timely recognition of the outstanding contributions to medical science of the biochemistry department of Cornell University Medical College Throughout his career Professor du Vigneaud has worked on biochemical problems of direct medical interest A member of one of the teams cooperating in the investigation of the structure of penicillin, he was responsible for one of the early syntheses of penicillamine and for the formal synthesis of small amounts of benzyl penicillin—a synthesis which, although not an economic process, was important in establishing the correctness of the assigned structure Lately Professor du Vigneaud has established the structure of oxytocin and pitressin These are ring-form nonapeptides which structurally are very alike

MINOR TRANSFUSION REACTIONS

FIFTEEN years ago we were quite satisfied if we could obtain blood for a patient in extremis and thereby save a life Nowadays blood is used to prevent a patient becoming in extremis, and naturally the physician wants neither to injure nor to alarm his patient

The discovery of the rhesus factor by Landsteiner and Wiener in 1940, and its incrimination as a cause of intragroup incompatible transfusions and of hæmolytic disease of the newborn, has led to an enormous increase in our knowledge of blood antigens, which in turn has been used to reduce the frequency of incompatible transfusions It seems improbable that any large further reduction in hæmolytic reactions is to be expected, they arise less frequently than once in a thousand transfusions, and most are due to human error at periods of stress (which can never be entirely avoided) or to unpreventable causes, such as the anti S antibody which caused a transfusion reaction 13 days after the transfusion There remain the minor reactions The foremost of these is thrombophlebitis[1]; but febrile and allergic reactions cause alarm and discomfort to many, and much thought is being given to their elimination To this end the new anti histamine drugs are used extensively, but there is no agreement on their worth[2] Mainzer[3] has now reported from Egypt a case in which the patient received over a dozen transfusions without incident, but thereafter developed febrile shivering attacks when blood was administered, even if the quantity was no more than 80 ml , but while he was being treated with cortisone or with corticotrophin he tolerated transfusions well.

This use of cortisone or corticotrophin has a rational basis These substances prevent symptoms due to allergy, and reduce antibody production Further, it is a matter of common observation that when a severely injured or exsanguinated recipient is transfused, febrile shivering attacks are unusual, in such patients an "alarm" reaction has led to the liberation of corticotrophin, which in turn has released large quantities of adrenal cortical hormones It would be foolish to administer cortisone or corticotrophin routinely before transfusion, but it would be wise to remember the possible value in the treatment of a patient who for no apparent reason has a rigor during every transfusion, even though no irregular antibodies can be demonstrated by the anti-globulin technique using recipient's fresh serum to detect anti Lewis antibodies, and though doses of an anti-histamine substance have be administered

There is evidence that many febrile reactions are to faults in the giving sets, and not to undue sensiti in the patient Shapiro, in Johannesburg, has chan over from rubber giving sets, which were cleaned re-used, to disposable plastic sets, and finds that pyrog reactions have almost disappeared It may reason be deduced that many febrile reactions are due to t of blood-protein left in the tubing even after the careful cleansing Disposable plastic giving sets sho be introduced here as soon as possible

SCHOOL FURNITURE TO FIT

ONE does not have to be very old—in some parts the country no older than ten years—to remember spectacle of rows of little girls and boys sitting benches, hunched, crouched, or stretched over a communal desk whose top was punctuated by ink far beyond the reach of all but the tallest or simian child, and filled with an improbable mixt of water, precipitate, blotting paper, and pencil shav The child who was small wrote with his head on paper and his lens round as a football, and if he tall, with his back curled up like a jack in the-box costs little more in time and money to design and individual desks of the right height for children different ages and sizes, but this required quite revolution—a revolution, now well advanced, which perhaps epitomised in Wiener's phrase "the hu use of human beings" Now we try to make the furn fit the convenience and comfort and biological req ments of the man or the child, and even—the next st —recognise that not all men or all children are the s and that they may have among themselves diffe biological requirements

For some time the British Standards Institution, collaboration with the Medical Research Council, Ministries of Health and Education, and other bo has been sponsoring anthropometric surveys of child using measurements that will be useful in furnit design (just as in the United States and in Holl extensive surveys have been made to establish the efficient system of sizes in ready made clothing) Th efforts have borne fruit in a most welcome Brit Standard[1] dealing with the size and construction tables and chairs for dining rooms and class rooms. Fi sizes of chairs and tables are specified, to cover the sch age range 5–16, and a guide is given to help sch authorities choose the right proportions of each size their requirements For example, for a class of olds with an average height of 50 in, the stand gests a mixture of three sizes in the proportion 15%, % and 10% This represents a great advance over older more haphazard systems, and no doubt fresh veys and standards will be made every five or ten rs to keep pace with the changing growth rates of ldren and the changing techniques of applied physical hropology whose usefulness is all too tardily being ognised in this country

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[1] See *Lancet*, Sept 10 1955 p 541

[2] See *Ibid*, July 23 1955, p 180

[3] Mainzer, F *Dtsch med Wschr* 1955, 80 1051

[1] British Standard 2639 1955 School Dining Tables and Ch British Standards Institu Copies obtainable from the 2 Park Street, London, W 1 4s

THE ANTI PROTON

he discovery of the anti proton announced to the s from the University of California, has brought some confirmation to the theoretical physicist that basic postulates are correct

s is well known all matter is composed of three types articles—the electron the proton, and the neutron 1928 Prof P A. M Dirac of Cambridge University succeeded in deriving an equation which described motion of an electron[1] When he proceeded to solve equation Dirac discovered that it not only described particles for which it was designed but also described ticles with a negative energy content The behaviour a particle of negative energy would involve, for mple, rising instead of falling under the influence of ity and this, and similar properties had not been untered in practice

o explain the unwanted solutions of his equation he made an ingenious suggestion He proposed that normal state of the Universe was one where the uum was full of these electrons of negative energy times, a hole would develop in this sea of tive energy particles, this ' hole " signifying absence negative energy It would therefore represent a icle of positive energy The ' hole " connotes absence gative charge and therefore the presence of a particle ositive charge This hole was called the ' anti icle ' It would have the same mass as an electron be of opposite, or positive, charge It would be a ectly normal type of particle although at that time ad not been detected Dirac was thus postulating a positron ' should exist When a positron and electron met the event was pictured in Dirac s ry, as the filling up of the hole in the sea of negative gy with the result that both the electron which had n into the hole and the hole itself would disappear 932 a particle with all the expected properties of a tron was discovered[2]; and as predicted by Dirac lectron and a positron were found to annihilate each giving up their energy in the form of gamma ation

ow Dirac s equation could be applied equally well to ons and to neutrons. Indeed, it was shown that s equation was the only possible equation which d describe these particles so it inevitably followed just as an ' anti electron (or positron) exists so " anti proton and the anti neutron ' must Furthermore when an anti proton met a proton would annihilate each other their energy being up as π mesons and sometimes in the form of ma rays In the opposite process to annihilation— creation—the particle and the anti particle particle and the ' hole) would always be created her in pairs.

ce there is no possible substitute for Dirac s theory y drastic change in the basic concepts of physics have been needed if the anti proton had never found The proton and anti proton pair could be ed only at very high energies of the order of 4000 00 Mev but these and much higher energies had reached in cosmic ray physics Consequently the tical physicist was somewhat disturbed that the anti proton had never been identified in cosmic ray photographs But the reason for this was clear The properties expected of the anti proton were unspectacular It would slow down when passing through matter and eventually annihilate a proton with the formation of two or more π mesons

At Berkeley California, the particle was created by allowing a beam of 6200 Mev protons to strike a carbon target A magnetic field selected negatively charged particles of a certain momentum this sample containing negative mesons as well as anti protons The mixed particles were passed through slabs of matter to slow them down Since the anti protons were slowed down more efficiently than the mesons a further application of a magnetic field isolated the anti protons completely These were then allowed to fall on hydrogenous matter The resulting annihilation process was detected by searching for the π mesons produced Thus the physical evidence shows that the new particle has a negative charge has exactly the same mass as a proton and annihilates a proton with the liberation of π mesons —exactly as predicted by Dirac

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[1] rac I A M Principles of Quantum Mechanics London

[2] rson, C D Science 1932 76 238 Phys Rev 1933 32 10

HYPERTENSIVE RESPONSE TO INJURY

HYPERTENSION is a recognised but rather uncommon response to injury This reaction is generally ascribed to severe peripheral vasoconstriction exceeding that necessary to compensate for the volume of blood or plasma lost Patients exhibiting such a reaction usually have pale cold skin with a blood pressure above 140/100 mm. Hg but the pulse-rate may not be raised The response is commoner in children and young adults than in older patients; and while it is most often associated with small injuries and slight loss of blood occasionally (especially in children) it accompanies extensive burns or other severe injuries

In the 1914–18 war Fraser and Cowell[1] found that in many of the hypertensive patients they observed in the front line the blood pressure fell after resting and transfer to a casualty clearing station They also noted that the hypertensive response was commonly associated with head injuries and that circulatory collapse might follow craniotomy under ether anaesthesia and could be avoided either by delaying operative treatment or by using local analgesia and narcosis with morphine and scopolamine During the late war Grant and Reeve[2] observed 23 patients with this disturbance and found that in the majority transfusion was unnecessary the blood pressure fell to within normal limits and pallor disappeared under the influence of rest, warmth and morphine They concluded that the response is the result of emotional and sensory disturbance associated with the injury rather than of blood loss

Howard et al[3] have reported their observations on 52 patients in Korea who had sustained systolic blood pressures above 140 mm. Hg The clinical picture in these patients was very similar to that described by Grant and Reeve, in that the wounds were usually not severe and mostly involved the limbs no patient died and only 2 required transfusion (after blood loss at operation) Howard et al found that the hypertensive response subsided in all their patients after the induction of general or spinal analgesia Administration of thiopentone was followed by a profound fall in blood pressure the hypertension was also ended by sympathetic or autonomic blocking agents They agree with Grant and Reeve that the response is due to emotional and sensory stimulation but the exact mechanism remains obscure Howard et al conclude that the reaction indicates a good natural response to injury and that it betokens a very favourable prognosis

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[1] Fraser J Cowell E. M. *Spec Rep Ser med Res Comm* 191 no 25

[2] Grant, R. T Reeve F B *Spec Rep Ser med Res Coun Lond* 1951, no [illegible]1,

[3] Howard J M. Artz C P Stahl, R R *Ann Surg* 1955 141 327

The evidence from their patients and those of Grant and Reeve seems to justify such a conclusion in the case of young adults who have suffered minor injuries to the limbs But in severely injured young children this reaction may be suddenly succeeded by a profound fall in blood pressure, and in such patients the hypertensive response should be viewed against the background of the severity of the injury and should give rise to a cautious attitude and repeated observation to ensure early recognition of the subsequent fall in blood-pressure The hypotension which Howard et al observed after administration of thiopentone emphasises the serious potential risk associated with the use of this agent in severely injured patients Abolition of peripheral vasoconstriction in this way is especially evident in the hypertensive patient, but occurs also in patients whose apparently good circulatory condition is due partly to vasoconstriction and partly to the incomplete replacement of lost blood or plasma by transfusion, the abolition of the vasoconstrictive element by induction of anæsthesia may be followed by deterioration in the patient's condition

NEW TYPES OF PENICILLIN

WE have lately referred to the use of a new antibiotic, synnematin B, for the treatment of typhoid fever [1] Work on the microbiology and chemistry of this and related antibiotics has been proceeding for several years at the Sir William Dunn School of Pathology, Oxford, and in America in the laboratories of the Michigan Department of Health and the firms of Abbott and Parke, Davis The story, which has been told by Sir Howard Florey,[2] begins in 1945, when Prof G Brotzu, of Cagliari, isolated a species of cephalosporium from a sewage outflow in Sardinia [3] He grew the fungus on a liquid medium, from which he made a crude but active extract which he claimed inhibited the growth of a number of gram-positive and gram negative organisms, and was effective in the treatment of typhoid fever and brucellosis A culture of the organism was sent to England in 1948 and studied in Oxford, and later by workers at the Antibiotics Research Station of the Medical Research Council In the following year Gotteshall and others in the U S A reported that certain members of the genus cephalosporium produced a water soluble antibiotic, which they named synnematin [4] and subjected to chemical and biological examination [5] In 1953 Olson, of Michigan, and his co-workers [6] obtained a crude preparation of this antibiotic which they called synnematin B

The work begun at Oxford in 1948 bore fruit, and in 1951 the production of a family of antibiotics, cephalosporin P 1–5, from the Sardinian cephalosporium was announced [7], these were soluble in common organic solvents In addition another antibiotic, soluble in water and with quite different properties, was described, this was called cephalosporin N A further antibiotic closely related to this, named cephalosporin C, was discovered this year by Newton and Abraham, of Oxford,[8] in cultures of the cephalosporium They purified cephalosporin N and found that it is related chemically to penicillin, with a side chain derived from D α aminoadipic acid [9], and because of this relationship it has been suggested that it be called aminocarboxybutylpenicillin or penicillin N Following an exchange of the Oxford cephalosporin N and the American synnematin B, the two antibiot been compared side by side by teams at Oxford and America, and it is now almost certain that synnematin is identical with cephalosporin N [10] The evidence their identity is as follows the two substances show same relative antibacterial spectrum and are inac by penicillinase, they are indistinguishable with respect to antibacterial activity when run on paper chromatograms in a variety of solvent systems, and after acid hydrolysis both show spots on paper chromatogram corresponding to penicillamine and D α aminoadipic acid

Is cephalosporin N likely to be of any clinical value It differs strikingly from the common penicillins in antibacterial activity as well as in its solubility, and the are indications that it may be useful in the treatment typhoid and salmonella infections, and that it ma produce fewer allergic reactions in patients sensitive penicillin G Cephalosporin C also appears to be rel chemically to penicillin, but Newton and Abraham ha found that it is not destroyed by penicillinase and th it inhibits the action of the enzyme Against ma organisms its action is weak compared with that of oth antibiotics in use, but this may be offset by its extrem low toxicity Evidence that cephalosporin C may be value in medicine was obtained by finding that infected with *Streptococcus pyogenes* could be comp protected by the repeated subcutaneous injection of of the drug According to Sir Howard Florey it m be of value in the treatment of staphylococcal infec resistant to penicillin G and other antibiotics It w probably have to be administered by continuous in venous infusion, so its use would be restricted to seriously ill Because it is not readily absorbed the gut it might be valuable in treating enteritis ca by staphylococci or other sensitive organisms. It m also have a place in the local treatment of infect Cephalosporin P, though inferior to several other biotics, might be useful in the treatment of staphyloc infections, but it has not yet been tested in man

When Brotzu went fishing in the Mediterranean years ago he certainly caught a most versatile fung

LARGER THAN LIFE

THE electron microscope is past its teething trou As long as we remember that what is photographe not the object in a state of nature but something logous to an animal stuffed by a skilled taxidermi can accept the interpretations of those experienc this method It has told us much about the shap virus particles and rather less about the structur bacteria Swain [11] and Czekalowski and Eaves [12] des the minute structure of spirochætes revealed by fi and selective enzymic digestion In general they co what had been surmised by others using older meth The "backbone" of these organisms consists of o more fibrils or axistyles, apparently held in tension causing the spiral shape which is often lost at d Round these is coiled, rather in the manner of tw electric "flex," the cytoplasmic body in a cell memb There are no flagella, but it is possible that the a axistyle is responsible for locomotion The chief int of these observations lies in the comparison of the ge Borrelia, Leptospira, and Treponema, each of w appears to have a distinct structure

The naming and classification of bacteria are subject of debate and despair among microbiologists the systematist function and habit, both labile chara are a poor substitute for form, but, within the li groups, he has no others to guide him These pa give hope of classification on a more solid basis.

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[5] Gotteshall, R. Y, Roberts, J M., Portwood L M. *Proc Soc exp Biol, N Y* 1951, 76, 307
[6] Olson, B H Jennings, J C, Junek, A J *Science*, 1953 117 76
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In the Mental Hospital *

OCCUPATIONAL TREATMENT OF CHRONIC PSYCHOTICS

BSERVATIONS IN HOLLAND, BELGIUM, AND FRANCE

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ARLY in 1955 we made a study tour whose aim to examine current practice in the rehabilitation of onic psychotics in a number of European centres the belief that we should thereby derive most benefit our own projects we concentrated at each place ted, on three aspects of rehabilitation—(a) the eral and psychological setting, (b) the types of work e, and (c) the principles on which work therapy was lised. In singling out some particular features for ment, we must make it clear that our visits were ainly too short to do full justice to the manifold apeutic activities of the various institutions. Hence e is no question of our appraising these activities as a le.

Holland

hrough the good offices of the Dutch National eration for Mental Health, our itinerary included e mental hospitals an institution for mental defec s, and three occupational centres Each was selected eing advanced in its practice of work therapy

INFLUENCE OF SIMON OF GÜTERSLOH

almost all these institutions the staff said that they elled their practice upon the teachings of the late Hermann Simon, of Gütersloh, who was a pioneer lore Active Treatment for mental hospital patients on 1927 1929) His work was based on the convic that inactivity and frequent exposure to the acle of degraded behaviour—in his view the two t features of life on mental hospital wards—are ally and socially demoralising agents. He tried to dy this 'mentally unhygienic' situation by ding at least 90% of his patients productive work by civilising the conditions of their daily life In writings, a warm humanitarianism contends with a ly authoritarian point of view Discipline backed punishment the inculcation of sound habits, and als to the patient s basic responsibility to his com ity are the substance of his psychotherapy As will een, his principles have been adopted with varying hases in different parts of Holland

HOSPITALS

Dolder Mental Hospital Utrecht

his mental hospital of 1000 beds adopted Simon s e Active Treatment shortly before the late war At time spacious workshops of attractive modern design were built, providing work for 160 men and women patients Tasks included mat making, carpentry, hand and machine knitting and assembly of radio-valve components using machines and materials provided by the Philips works Many other patients were employed on hospital services and agricultural work Patients were given rewards of up to 5s per week If they showed unwillingness to work, their pocket money was stopped and they might be confined to bed

In this hospital the medical staff appeared to have lost their former enthusiasm for work therapy They regarded it as helpful in preventing disturbances in behaviour among patients in hospital rather than as contributing to their social recovery On the other hand, the 'Hof bruder' or chief male nurse who supervised the occupational programme of 700 working patients (of whom 565 work an eight-hour day), showed abundant zeal and initiative in his task The conduct of this hospital was frankly disciplinarian Only 50 of the 1000 patients were granted full ground parole

Wolfheze Mental Hospital, Arnhem

This hospital is one of several run by a Protestant social welfare organisation with a Calvinist inspiration It was built in the 1920s, but its seventeen widely spaced pavilions were badly damaged during and after the Arnhem battle Rebuilding began immediately after the war, but until 1950 the standard of psychiatric practice was not abreast with current ideas the prevailing policy was one of heavy sedation curtailment of liberty, confinement to bed for all 'difficult' patients, and a routine by which all patients went to bed at 7 P.M

Since the appointment of a young director Dr Van der Drift in 1950 there has been an emphasis on Simon's methods. Most patients work for a seven and a half hour day six days a week, and there is a recreational programme for their leisure Patients are explicitly told that it is their duty to work, so as to contribute towards the cost of their keep Minor rewards and punishments are used to reinforce this admonition.

We saw the patients in their workshops which are in premises separate from their eating sleeping and day-room accommodation Most of their activities were those traditionally associated with occupational therapy—knitting book binding clay modelling mat making carpentry and so on Two crude industrial tasks were performed by severely handicapped schizophrenic and senile patients—namely, unravelling masses of tangled string and sorting non ferrous metal scrap for salvage Work was supervised by 7 male therapists (most of whom were carpenters) and 34 young women, many of whom had trained as kindergarten teachers. This helped to relieve the shortage of qualified nurses, a pressing problem in Dutch mental hospitals as it is in this country

Franeker Mental Hospital, Friesland

This provincial hospital differed in several respects from the two described above One difference was apparent from the very start of our visit We were met at the door by four young doctors who vied with each other in their eagerness to discuss and to demonstrate their therapeutic programme Only gradually did it become apparent which was the medical superintendent Dr Van den Burgh. This spirit of friendly coöperation was in contrast to the somewhat formal relationships among staff members at every other hospital and it was reflected in these psychiatrists approach to their staff and patients At Franeker patients were introduced to us by name instead of being pointed out (as so often happens in this country as well as elsewhere) as: 'That hebephrenic over in the corner '

Franeker is perhaps unique in that its main buildings form part of the market square of a small country town

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roup of articles chiefly concerned with the value of tive occupation and work for mental patients and the means whereby it is best provided.

The windows of some of the "refractory wards" overlook a main road We were informed that disturbed patients sometimes break panes of glass, but they always break windows on the side of the inner courtyard, not those which overlook the street Apparently even the most disordered patients remain sensitive to the opinions of people in the world outside For those who are less ill, the situation of this hospital provides a sense of continuing contact with the life of the community, which we think cannot fail to be beneficial

Simon's principles had been adopted here only in recent years The hospital was overcrowded, and in order to put them into practice, workshops have had to be constructed in disused lofts We saw mat making, salvaging of cotton waste from factories, cardboard-box making, book-binding and printing, finishing and painting of wooden clogs (on which some very regressed schizophrenics were usefully employed), carpentry, weaving, knitting, and sewing Some of the work was on sale in a small shop run by the hospital, part was kept for use Two examples of industrial subcontracted work were the assembly of webbing equipment for NATO armed forces and the sewing of mattress covers and other cotton goods by electric sewing machines We were struck by the confidence with which tools and potentially dangerous machines were entrusted to experienced patients The gross earnings of these workshops in 1953 was £10,000, giving a net profit to the hospital of about £4000

Here, as in other hospitals, patients were told that it was their duty to work Their rewards were nominal Disorderly behaviour was firmly discouraged, and if it persisted the patient was secluded in a bare room for a short time This punishment was symbolic rather than severe, that it proved effective indicated an acceptance by the patients, as well as by the staff, of the demands of "duty" and "social responsibility" The same mutual acceptance was evident in the benignly authoritarian attitude towards the patients, who were not accorded much liberty of action, nor encouraged to take an active part in the conduct of the hospital's occupational and recreational programme

The Meister Dr Willem van den Bergh Stichting, Noordwijk-Binnen

This is an institution for 500 idiots, 500 imbeciles, and 200 feeble minded patients of both sexes, with an age-range of 2 to 65 years Its numerous small pavilions were attractively furnished and showed many ingenious architectural features—such as workshop floors mounted on rails so that they could be moved into the open air in warm weather, bright and airy dormitories, with beds suspended from the ceiling for easy cleaning of the floors, child-propelled roundabouts to help spastics to learn to walk We saw 50 patients at work on indoor tasks 3 mongol women were making lace It was said to take them six months to complete an intricate lace mat which sells at 25*s* In one workroom, 16 boys were packaging soap, in another, 19 boys were stripping waste electric-wire to salvage copper Other patients worked in the grounds or helped with domestic tasks

Patients received rewards of from 8*d* to 3*s* per week according to their diligence Their rate of work appeared to be sustained by the encouragement and active participation of the nurses in charge rather than by any personal incentive A libertarian attitude was adopted towards the male feeble minded inmates, some of whom largely look after themselves in eight small houses, with 5 patients in each Many are free to cycle to neighbouring villages in their leisure hours Feeble-minded women, on the other hand, were regarded as very erotic and were kept under strict supervision

OCCUPATIONAL CENTRES

A G O Workshop, Amsterdam

This centre catered for 115 male mental defe (60% imbecile, 40% feeble minded) who attended Here, as in every other institution we visited in H one of the chief activities was making coir mats by crude and time consuming hand process Mat is virtually a monopoly of hospitals the assured helps to perpetuate this traditional but unnec technique Most of the other tasks seen in this ce were those familiar to any occupational therapy dep ment—weaving, pottery, brushmaking, carpentry, a so forth An exception was one room in which l electric switches and plugs were being assembled, on contract from a local manufacturer Clearly the co ditions existed in this centre for real work training, b the institution was content with a very modest lev achievement on the part of its workers There wa evidence of incentives being systematically employed improve performance

Sheltered Employment Factory, Dordrecht

This Remploy-type factory, subsidised by the mu pality of Dordrecht, employs 250 workers (includin women), three quarters of whom are handicapped physical disease or injury The rest include me defectives and patients recovering from schizoph manic depressive, or neurotic illness The factory modern and well equipped with electrically-ope machinery We saw piece-work being carried out o contracts from local industry Tasks included arma winding, switch box assembly, stamping and as of electric motor parts, spot welding, assembly of b and construction of spring mattresses

The large factory floor was full of noise and acti Employees "clocked in" *at* 7 30 A M every day wo a forty-eight hour week They had one week's h a year on double pay, and six occasional days on n pay—the standard Dutch industrial practice This like a busy modern factory, in every respect save the tempo of work was much slower Productivity employee is only 40–45% of that in normal ind The management told us that the productivity of *mentally* handicapped patients is on the average 20% of normal This finding is at variance with ex ence in England (Tizard 1954, O'Connor 1954), and the question whether instruction and incentives employed to the best advantage All workers recei a subsidised wage of £5 to £5 10*s* per week, so earnings had little relation to the amount of work In short, the directors of this factory were content it should provide useful occupation for convale patients, rather than an active course of rehabilit

The Dr Schroeder Van der Kolk Stichting, The Ha

This institution was founded by a psychiatrist in to provide therapeutic occupation for mental def and psychotic patients It is now subsidised by State and the municipality of the Hague, and em 270 workers of both sexes in two large disused buildings in the slum quarter of the city The pr and the equipment were decidedly inferior to those o other centres, but these handicaps were more compensated by the intelligently applied energy enthusiasm of the director, Mr Meuselaar He sh great ingenuity in improvising simple machinery to work on each task as efficient as possible In instances he had persuaded manufacturers to adapt t work to suit the competence of his patients

At this centre we saw in progress tasks incl electrical assembly, finishing of plastic ball pens, c board-box making, wire stripping, and cork top Here, more than in any other place, there was a gency and drive The incentive was not financial, though Mr Meuselaar believes in the stimulus of rate rewards he had only lately persuaded his ning board to authorise the paying of wages ad of pocket-money to his workers during the ng financial year The brisk rate of work was no t largely due to the director s personal zeal but y also to his success in overcoming technical obstacles enabling the patients to enjoy a new satisfaction eir work achieve a higher level of production and themselves in a position to earn normal wages—though some of them were imbeciles

Belgium

is village in Brabant is known to all psychiatrists as place where a tradition of home care for mentally led patients has been maintained since the early le Ages Today a small mental hospital of 175 acts as the centre for supervision of over 2500 al-defective and psychotic patients who live in the holds of the surrounding countryside The great ity of the foster parents' are peasant farmers are shopkeepers or artisans. They receive 35s to 5d. per week towards the upkeep of State-aided its the amount varying with the potential helpful f the patient to his host Some of these patients learly very useful additions to the man power of a farm We saw them ploughing loading carts and g with the cattle Women patients share in the tic work The patients receive a nominal pocket of 6s per month from the hospital but their hosts supplement this if they work well.

importance of Gheel is that it has demonstrated h the years the practicability of housing mentally apped people in normal surroundings For the e psychotic or mental defective patient who needs stive care over a long period Gheel offers an ace more humane and less demoralising (in Simon s than any hospital could provide In this tolerant some patients spontaneously recover sufficiently rn to their homes but it cannot be said that their ry is hastened by any deliberate occupational y Patients work if at all in imitation of their and to win their approbation The foster parents be actuated by practical as well as by ethical s in accepting these charges but there is no that they are encouraged to do so by a strong as tradition. This tradition has one defect the ls are treated with kindness but tend to be regarded recipients of charity—as pitiful but inferior beings in attitude seems likely to perpetuate feelings of lency rather than to encourage patients to t their social independence

France

de traitement et de réadaptation sociale Ville Evrard

psychiatric rehabilitation unit has been created h the initiative of Dr Paul Sivadon His aim is to strate the therapeutic advantages of vigorous ds of treatment for patients in mental hospital. ay cost more his unit of 250 beds has twice as ctors and three times as many nurses and social s as the rest of the 850 bed regional mental l of which it is a part Dr Sivadon claims to hown that this expenditure is more than offset savings effected through the higher discharge- nd shorter stay of patients treated under his t

l and occupational therapy are an important part treatment programme. Patients are encouraged ts in the community life of the unit, which is d on democratic lines. Work therapy is carried on assiduously Dr Sivadon holds that mental breakdown always involves regression to a relatively primitive level of personality integration, and he maintains that the character of the raw materials used in occupational tasks the degree of complexity of the tasks, and the quality of the social interactions demanded in their performance should each be adjusted to the patient s level of regression (Sivadon 1954) Only then he believes, will the task become meaningful to the patient As the patient advances to more complex tasks he acquires an increasing sense of responsibility towards his materials and towards his fellows In this way work therapy helps him to a more mature personality integration

Examples of work at the most regressed level are crushing waste rubble to pulp crude clay modelling doodle-drawing—each task carried out with minimal social contact with staff or other patients Basket making and carpentry under the guidance of craftsmen are comparatively high in the hierarchy of tasks The fashioning by hand (*tordu à froid*) of artistic wrought-iron work comes next, and work in the unit s printing shop counts highest.

Without experimental evidence it is impossible to say whether this theory is sound or not. We were impressed by the spirit of camaraderie and enthusiasm shown by staff of all ranks and by many of the patients. Dr Sivadon's therapeutic successes are undeniable but they may owe more to the stimulating social environment and the high morale of his well staffed unit, than to his esoteric theory of occupational levels

La Maison Blanche Neuilly sur Marne

This hospital is the counterpart for women patients of Ville-Evrard It is larger, housing 3000 patients—30% more than its intended maximum The chef de-service who showed us over his wards candidly admitted the inadequacy of the accommodation and staff He approved of Dr Sivadon's attempt to prove that conditions such as these which he described as not untypical of French regional mental hospitals, were uneconomic as well as inhumane for the treatment of the mentally ill. He outlined plans for occupying some of the 600 psychotic women in his care upon productive work, but confessed that hitherto he has been so preoccupied with the acutely ill patients urgent need for physical treatment that he had been forced to neglect the chronic wards A single occupational therapist working in a room of moderate size was able to offer such distractions as knitting basket making and embroidery to a few of these unfortunate patients the remainder unkempt in appearance and dressed in faded blue hospital smocks, congregated together under conditions comparable to those which impelled Simon upon his mission of reform some fifty years ago

Discussion

Twenty five years ago the organisation of occupational programmes was a topic of importance in psychiatry, and contemporary practice in Holland and Germany was studied with interest (Evans 1929 1933 Board of Control 1933) This aspect of therapy then suffered relative neglect because preoccupation with new physical methods of treatment tended to focus attention upon the early case

The recent revival of interest in the management of chronic psychotics is perhaps the result of a more sober assessment of the limitations of physical treatment Even in favourable cases psychotherapy and social work are needed if a patient is to benefit fully from his treatment Critics of leucotomy and insulin treatment have maintained that patients receive more lasting help from these supportive measures than from the physical treatment itself. At the same time some of the latest drugs, such as chlorpromazine and reserpine, have made even the most difficult patients accessible to social measures of rehabilitation Many mental hospitals are now basing their occupational programme on the premise that most, if not all, chronic patients will respond to changes in their social environment

SOCIAL FACTORS

Two features of mental hospital life are especially *important in determining the nature of the environment* in which patients live—the social structure of the hospital and the attitudes of the key members of the staff Both of these reflect the social history and the current climate of opinion of the country in which the institution is found

The social structure of most mental hospitals in Britain, Holland, and France is similar Each is a sub-system isolated from the rest of the community In each the hospital staff is an aggregate of separate hierarchies—occupational groups composed of doctors, nurses, administrators, technicians, and artisans—each of which tends to be organised upon firmly authoritarian lines Mobility from one occupational group to another is virtually impossible, while within each of them consciousness of status is acute In this rank conscious community the humblest status of all is that ascribed to the patient it is always the *occasion* for acute *embarrassment* and apology if a new staff member is mistaken for a patient

For generations, regional mental hospitals in Britain and France have been linked with State charity, although in this country the National Health Service has already gone a long way towards removing the poor house association In Holland, on the other hand, mental care, like many other social services, has largely been the responsibility of religious organisations which are supported by private and public subsidies Christian charity assumes responsibility for the services of the Welfare State

French medicine, however, is strictly secular There, social security is highly developed, but social medicine very little As a consequence, Dr Sivadon's pioneer mental-treatment unit derives its financial support from the *ministry* of social security—which fits in well with his concept of the rôle of the mental hospital (Sivadon 1952)

Religious, and more specifically Calvinist, traditions were conspicuous in all the Dutch hospitals and centres visited This was evident in the *prominence given to* the concepts of *responsibility* and *duty* Each patient was believed to retain a measure of his normal sense of responsibility even during mental illness, and it was continually impressed upon him that it was his duty to accept his social responsibilities This concept was expressed by Dr Simon's teaching, but it has been given particular emphasis in the Dutch application of his teachings

It is perhaps necessary to recall that Simon cannot claim priority for the ideas which he so ably demonstrated in practice They are at least as old as Galen, who wrote in A D 172 "Employment is nature's best physician, and is essential to human happiness" In Britain Tuke and Connolly and Browne put forward similar principles more than a hundred years ago In the present century they were enunciated, with his customary precision, by Jaspers (1913) Nor does the Dutch example exhaust the alternative emphases which have been imparted to More Active Treatment In the hands of Karl Schneider at Munich it led to a penitential régime, savouring more of a slave camp than of a hospital, whereas in the Scandinavian countries full occupation has been combined with a libertarian policy to such good effect that in the Dikemark Hospital, Oslo, and the State Mental Hospital in Kleppur, Iceland, for example, sedative drugs are very little for chronic patients, and E C T not at all

We were impressed by the thoroughness with Dr Simon's principles were being applied. Ward day rooms were almost empty, while workshops full of patients busily employed The amount of shop space was considerably greater than in any E hospital In accordance with Simon's teaching the on which patients were employed were very varied, all were productive of useful articles

With the emphasis on responsibility went a readin use punishment as a means of re educating disord patients Though the punishments were symbolic ra than severe, this rationale was reminiscent of th aberrations of the "moral treatment" of the m which Walk (1954) has described In both cent however, it would be quite wrong to condemn cedures carried out in good faith simply because offend our personal susceptibilities The crit must rather be whether any given treatment is dem trably more effective than others in promoting patients' recovery, and it is by this criterion that Scandinavian modification of Simon's régime mu judged to be the better one

In the Dutch hospitals we visited, the drive for mo hygienic conditions in the ward did not include encouragement of patients' initiative in the social recreational life of the hospitals A conservative st was taken towards "open doors" With the exception of Franeker, staff relationships were s authoritarian, and contact between staff and p was attenuated by a gulf of social distance

The attempt to keep patients in touch with community has been a prominent feature of psychiatry since the first world war (Querido This aim was evident in the three occupational which we visited Here, there was an impressive of practical work, much of it subcontracted from industry It was noticeable, however, that the eff ness of these centres, as agents of social rehabilit varied with the attitude of the staffs to the p The contrast of two different approaches was sho those at the Hague and at Dordrecht

At Dordrecht, where there was a modern w equipped with a large number of up to date machin staff regarded all the employees—and especially the atrically disabled—as necessarily inferior workmen whom a normal day's work could not possibly be exp Their expectations were fulfilled by the patients' re ably low productivity

On the other hand, the workshops in the Hague only rudimentary equipment, were directed by who believed that his patients could be trained to the output of unskilled workmen and his expe evoked a positive response from the patients un charge

The enduring contribution of Gheel is to have that the presence of numbers of psychotic and m defective people in a community need not be disrupting The visitor cannot fail to be impressed complete lack of segregation of mentally defective psychotic patients from the rest of the peasant munity One meets them at every turn, in the and lanes of the village, or at work in the fields a farmyards The local inhabitants are so accustom their presence that they accept them without awk ness In the Middle Ages, Gheel established its fam pilgrimage centre for the mentally ill this pilg can still be rewarding to all who are intere contemporary developments in social psychiatry

Treatment in Dr Sivadon's unit is dominated his belief that the care of mental illness shou ed on whenever possible in or near the patient's , on an outpatient basis. Admission to hospital he ds as a temporary measure and he takes steps to e that inpatients are encouraged to consider them s not as helpless sick people but as citizens whose al activities have been interrupted New arrivals e unit are welcomed individually and are introduced he hospital community, in which they find that they an active part to play Each of the six wards—ling the closed refractory and physical treatment s—elects a representative to the patient-staff ittee which meets weekly to discuss the running unit At the weekly conference of doctors, social rs and head nurses, discussion is completely

Sivadon s aim is to keep alive the patient s pride mself as an individual citizen—a lively enough in most Parisians—and to insist on his partici n in the life of the hospital community He has that this can be accomplished only when the staff ir turn take pride in their work and know that they an have a say in deciding matters of policy To s who are accustomed to the formal, disciplinarian nships prevailing in most mental hospitals there is k of surprise in attending these unit meetings where doctors nurses and social workers express their ns with uninhibited freedom but there is no on about the enthusiasm with which the staff goes its work nor can one fail to be impressed by the and confident good relations which prevail between and patients The ' social treatment side of ivadon s experiment is an unqualified success, ver qualifications one may reserve against his s of work therapy His principles have not been red by all his colleagues but those who have to d with the pressing problems of the mental al service seem readiest to accept bold measures rm.

RATIONALE OF OCCUPATIONAL THERAPY

eviewing the principles of work therapy as seen various centres in Holland Simon s influence is Useful employment is used as a therapeutic l habit training and as a preventive against the e harm caused by idleness Consequently work rded primarily as treatment and only secondarily ductive activity Accordingly, the tasks under are not necessarily related to the needs of the community as distinct from the mental hospital there any integration of rewards for patients with the normal incentives prevailing in the ty or agriculture of the Netherlands

on however also believed that occupation should d as a means of rehabilitation The reason and e of all our institutional therapy he writes is e the patient capable of and ready for life outside spital although we may not reach that objective many He had in mind a training scheme e of helping patients to acquire a high degree of even if their initial level of performance was iate

habilitation through work rather than the mere tion of idleness, is to be the aim of occupational then the type of work done in patients work the standards of productivity, the conditions k, and the incentives offered must all approximate ly as possible to those prevailing in the normal unity The social industrial and economic con s of the community must be taken into account h a programme is to be carried out to the best tage

the centres we visited that at the Hague came t to achieving this ideal But everywhere in Holland industrial expansion and labour shortage were having promising repercussions in occupational therapy practice Because the demand is there institutional tasks though not as yet the incentives or the levels of production are approaching those performed in normal employment At Franeker where piece work contracts from the army and from local traders formed a considerable proportion of the work done by patients, the tempo of work was already faster than that of patients engaged on traditional occupational therapy tasks

The need for patients work to be demonstrably useful was stressed by Simon It was recently re-emphasised in Bickford's trenchant article (Bickford 1954) A strong argument in favour of productive industrial work is that the products, because they can be sold are seen to meet a need A worker s feeling that his labour is socially valued is enhanced when it earns him a just reward Motivation is of prime importance in the rehabilitation of patients as it is in the mental hygiene of normal workmen : its neglect has been responsible for the lack of an adequate theory of occupational therapy

This we felt to be a weakness of Dr Sivadon s admirable unit There social relationships are used therapeutically and always in a way which encourages the patient to keep in touch with his community but in his workshops this realistic social contact is abandoned (at least partly) in favour of a conjectural affinity between the patient's mental and emotional state and certain characteristics of his task It is however an exceptional achievement to have developed a systematic theory on which to base his occupational therapy practice The onus is upon Sivadon s critics to disprove his theory, or to improve upon it

Conclusions

It was with a mixture of relief and disappointment that we discovered, at the end of the tour, that the countries visited were not as we had been led to expect, ahead of Great Britain in psychiatric rehabilitation Instead, they are like ourselves, on the brink of new developments

We were impressed by the power of ideas The adoption of Simon s basic concepts seems to have transformed some Dutch mental hospitals in a comparatively short time those we saw could set an example to most British hospitals, in their virtual abolition of idleness and apathy in the wards for chronic patients.

We also recognised a new concept which may transform mental hospital practice no less profoundly in the next few years It is becoming widely accepted that mentally handicapped people often need not and should not be shut away from the life of their community ' As a result, new methods of social rehabilitation of the chronic patients are being tried The examples we have given are inevitably influenced by the *ethos* of Protestant Holland Catholic Brabant and free thinking Paris, and by the contemporary industrial and economic conditions of each of these countries The British tradition of individuality and spontaneous social organisation will no doubt influence developments in this country —developments for which the present combination of Welfare State and full employment offer a propitious opportunity The new aim is to make the hospital a school for social learning where the psychotic discarded by society as a whole may gradually re acquire social skills and techniques sufficient to allow him to emerge again or to live at as high a level as possible within the therapeutic community Here it is still possible for the British mental health service to lead the way

We wish to express our appreciation of the hospitality and cooperation given to us by the staffs of every centre visited and to thank particularly Mr H Nieuwenhuize secretary of the Netherlands National Federation for Mental Health, for his valuable assistance and Mr K. J Johnson, house-

governor of the Maudsley Hospital, for advice based on his own visits to some of these centres Thanks are due also to the Medical Research Council and to the East Anglian Regional Hospital Board for their financial support, and to Prof A J Lewis for his helpful suggestions and criticisms in the preparation of this paper

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Special Articles

FELLOWSHIP FOR FREEDOM IN MEDICINE

THE annual general meeting of the Fellowship was held on Nov 5 Many tributes were paid to the memory of its founder and former leader, Lord Horder Mr **Norman Lake** spoke of Lord Horder as "this complete doctor, this great man an adjective which could be applied only to a few men in a century", and Sir **Henry Dale**, O M, F R S, added some thoughts and memories to the moving address he gave at the memorial service The present Lord **Horder** mentioned two facets of his father's character—"perseverance and preparedness"—which he believed had been bequeathed to the Fellowship The meeting passed the following resolution "This Fellowship places on record its deep sense of personal loss in the death of Lord Horder, and expresses its determination to pursue with unabated energy the objects of the Fellowship which he led so brilliantly"

The following resolutions were passed unanimously

Believing that heroin is of the greatest value in the treatment of some medical conditions and that the ban on its manufacture would serve no useful purpose in this country or elsewhere, this meeting strongly urges the Home Secretary to reverse his decision prohibiting its manufacture for medical purposes (Moved by Dr A H **Douthwaite**)

This *meeting emphatically condemns once* more the discrimination against those members of the public who choose to receive their treatment privately, in that they are denied drugs on the same terms as N.H S patients, and urges the Minister to remedy this injustice without further delay (Moved by Dr D **Silver**)

This meeting notes that there has been established a Government inquiry into the number of doctors required in the future and in the event of any recommendation being made which would restrict the freedom of any man or woman to enter the field of medical study, instructs the executive committee of the Fellowship to take appropriate action (Moved by Dr S F **Logan Dahne**)

The new chairman, Dr R **Hale White**, said that the Fellowship was the only non political medical body which had the courage and knowledge to criticise the defects in the National Health Service To remain aloof from discussions on the medicopolitical aspects of the practice of medicine in this country was a disservice to one's colleagues The Fellowship did not do this work for the sake of something to do but because, so far as he could see, it was the only body willing to try. So long as that state continued the Fellowship's work would remain essential

Medicine and the Law

Proper and Necessary Treatment

A MIDDLE AGED woman, a National Health patient, who suffered from acromegaly, went to doctor on Christmas Day, 1952, suffering, from a weak heart, severe lumbago, and hyper migraine The doctor refused to see her He called police and had her forcibly ejected from his The patient alleged that her sufferings in mind body were increased by the doctor's actions and she was afterwards helpless and confined to bed. claimed damages from the doctor on the ground he had been negligent in not attempting to do any for her in compliance with the oaths he took on qual The doctor, in his written defence, admitted that plaintiff was his patient and said that when she on Christmas Day he had told her that there was wrong with her and that if she was not should get another doctor As she had refused he had warned her that he would call the police he did He denied that he was negligent or any breach of duty as a medical practitioner action was heard by a jury, and at the end of the given by the plaintiff, which concluded her jury told the Judge that they were unanimously that on the plaintiff's evidence the doctor had to answer

Mr Justice Barry, addressing the jury, said would tell them what the doctor admitted to be his and then ask them whether their opinion remained same The doctor's counsel had admitted that case of a real and acute emergency a doctor in National Health Service was obliged to treat any who was acutely ill—e g, a person injured in accident The doctor's obligation to a registered was to render all proper and necessary treatment patient To ascertain what treatment was prop doctor had to exercise reasonable skill in diagnosis in chronic illness, such as that of the plaintiff, wh doctor had seen frequently for nearly a year, the giving all proper and necessary treatment did not that the doctor was required to make a full examination every time the patient requested jury had to ask themselves whether there was in the plaintiff's evidence to show that the doc not used the reasonable skill required

The jury said that their verdict was still un and accordingly, judgment was entered for the with costs

Barnes *v* Crabtree—*Queen's Bench Division* Barry, J jury Nov 1, 1955 Counsel and Solicitors (F P Treasure, Toddington), J R Cumming Bruce Barr (Hempsons)

C J E
Barrister

Doctor's Name Removed from List

On Sept 28 the National Health Service T considered complaints made against a doctor medical list of the complainant, the London E Council

It was alleged that Dr Alan Gray, 75, Alpha London, E 14, had on numerous occasions in No 1954, and January, 1955, improperly and without failed to attend during his surgery hours, and no arrangements had been made for the treatment of his p He had also, according to the complainant, failed to proper or sufficient accommodation at his surgery and room, and in particular failed to provide any heat February, 1955, and (so far as the waiting room was con in January, 1955 Other complaints referred to his to visit patients on his list who were in urgent need of ment, and it was said that on one occasion he arrived t a home in such an intoxicated condition that the t and her daughter were obliged to refuse him entry house He had also failed to coöperate adequately or with the executive council in investigating his practice gements and the complaints. Dr Gray did not appear was not represented at the inquiry at which seven sses gave evidence in support of the allegations.

e tribunal found that substantially all the allega were established They directed that Dr Gray's be removed from the council's list and that it d not be included in the list of any other council ray was ordered to pay the costs of the inquiry

Parliament

Clean Air Bill

the House of Commons on Nov 3 Mr W F es, parliamentary *secretary to the Ministry of* ing and Local Government, moved the second ng of the Clean Air Bill *It outlined he said* cal steps which the Government believed would within a short term of years, our towns and cleaner and healthier As some 80% of our popula were urban, the Bill[1] bore upon the health of at three-quarters of our people It covered not only , grit, and dust in industry, but also smoke from stic and commercial premises The Government d that within the next 15 years enough smokeless would be produced *to replace house coal They* ised that sulphur gases were one of the most ul forms of pollution but this form of pollution not be prevented with our present technical know The provisions for industrial smoke would come peration in the early part of 1958 The interval not be a respite but a time of active preparation provisions for domestic smoke would come into tion as soon as practicable after the Bill became He realised that some held that the Bill was not rehensive enough but if we were to get a move on ust be sure that the best was not *made* the *enemy* good.

Edith Summerskill *pointed out that though* became incensed by the spectacle of food being ed in unhygienic surroundings they seemed to t the inhalation of dirty air with fatalistic indiffer- She agreed that smoke pollution did not cause s, as did polluted water but it was an important butory factor in diseases such as bronchitis and monia. The incidence of cancer of the lung was btedly higher in areas where air pollution was t. The Bill *adopted* the principal recommenda of the Beaver Committee, but it had been hedged many savers and waivers *as to render it abortive* the greatest vigilance was exercised in its adminis n. She was anxious to see it strengthened

Gerald Nabarro too thought that the Bill ide escape routes. The hand of the Federation ttish Industries was writ large between the lines, he seven year dispensation period was far too long

Somerville Hastings said that it was unfortunate while smoke could be easily seen the much more tant oxides of sulphur were invisible In a dry phere they did not cause much hurt, but in a atmosphere the sulphur dioxide combined with to produce sulphuric acid A significant correlation been shown between the *sulphur dioxide* in the nd the incidence of bronchitis. Yet the word phur was not mentioned in the Bill. He agreed it was a difficult and costly problem. But if we to make our towns healthy again we must clear sulphur *from* the air A committee was needed power to institute research even if it cost money ohn Cockroft had been reported as saying that in nearly half Britain's electricity would be generated tomic power saving 40 million tons of coal and ment pollution of the air by sulphur oxides Hastings suggested that such a development would do more to improve health than a dozen Bills like the one which the House was discussing

Mr O R **Hobson** pointed out that another danger omitted from the Bill was the emission of carbon monoxide from the exhausts of cars and lorries. He was amazed at the lip service given to smokeless zones. In his view a smokeless zone got something far more deadly than smoke from household fires, for a smokeless grate did not mean that the atmosphere was not being polluted Where coke, or any form of fuel other than coal, was burnt, *sulphur gas was still emitted* In fact, where there was no black smoke the atmosphere was far more polluted and dangerous than where there was. But Mr **Ronald Bell** held that if we got rid of smoke we should have taken an important step towards getting rid of poisonous gases We were concerned with poisonous fumes polluting the atmosphere in its lowest 100 feet. The great fogs were caused by the cooling of the earth during the night. They persisted because the smoke did not allow the sun's rays to penetrate and warm the earth.

Dr **Barnett Stross** reminded the House that according to the Beaver report smoke costs us some £300 million a year *This did not express* the degradation and squalor, *the pain and disease* associated with it. *Some remedy must be found and it would have to be against sulphur and sulphuric acid rather than against smoke* But in the meantime we could go on to get rid of smoke. He hoped that research would be initiated on how to extract sulphur from fuels and on radioactive pollution from *carbonaceous matter*

Mr **Duncan Sandys**, Minister of Housing and Local Government, replying to the debate, said that it remained the Government's intention to make the Bill as effective, *tight,* and strong as possible consistent with what was practicable A great deal had been said about the seven year *period during which existing* furnaces might be temporarily exempted from the prohibition on dark smoke Some period must be allowed *for industry to* modify its equipment. The Government recognised the serious effects on health of sulphur and other fumes, but unhappily there was as yet no complete answer to this problem. There was no known method or present prospect of eliminating the greater part of the sulphur *discharged* from industrial and domestic chimneys Research into the problem was being *energetically pursued*

The Bill was read a second time

Dentists Bill

In introducing *this Bill* in the House of Commons on Nov 4, Mr **Iain Macleod** Minister of Health, said that it had *a very long history* The part of it which related to the granting of self government to the dental profession went back to 1878 The more *controversial part dealing* with ancillaries dated from the Government mission sent in 1950 to New Zealand It was natural that *in a Bill* which claimed a large measure of agreement discussion should centre round the controversial clauses, but in *his* view we should be wrong if we did not realise that by far the most important thing in the Bill was the granting *of self government to the dental* profession

The earlier clauses provided for the formation of a *General Dental Council Its composition* followed the lines of the General Medical Council but it was rather smaller Of its 35 members 31 were to be registered dentists 19 of these would be put forward by the licensing dental authorities In addition there would be 6 members from the General Medical Council who would have particular responsibilities in education and exami nation He was *sure* that we *should* be wise to preserve this link.

The Bill also provided *for the admission* of foreign dentists to the list by enabling the General Dental Council to invite a dentist *whose diploma* was not recognised to take an examination He was told that this would probably only *affect 50–60* dentists. An examination of this kind would not entitle a dentist to an English qualification but *only* to admission to the foreign list *of the* Dental Register Further clauses, Mr Macleod continued *restricted* the practice of the business of dentistry by *unregistered* persons.

This brought him *to* the controversial clauses dealing with ancillaries In considering the proposal we must he *suggested, have a few cold stark facts in mind* The ratio of dentists in the population was 1 to 3400 men, women, and children The number of those engaged in the priority services had been climbing steadily since the introduction of charges and was now about 1000, still *not more than half, and perhaps not more than a third* of the number needed to give a thoroughly efficient service The annual intake of recruits was 450, or half what the Teviot Committee had recommended In face of these facts the Government suggested that the employment of ancillary workers must be considered and two proposals were contained in the Bill The first was that oral hygienists should be able to work in private practice under the personal supervision of a registered dentist, and the second proposed that, as an experiment for a limited number of school-children a dental ancillary should be able to extract milk teeth and to carry out fillings under the direction of a registered dentist, and that the regulations for this class would be made by the General Dental Council He had no intention of bringing dental technicians within the scope of ancillary workers He had also appointed a committee to look after this experiment which the Government regarded as worth while They had, however, no intention of prejudging it He added that the British Dental Association remained opposed to the introduction of ancillaries and did not think that the experiment would work

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[1] *See Lancet* Aug 6 1955 p. 293

Dr SUMMERSKILL welcomed the introduction of ancillaries as a new form of preventive medicine, though she *recognised that the dentists feared that it* would dilute the profession and lead to a general lowering of standards The idea was to give girls careful and thorough training in very localised work which they were to do under qualified supervision But if they were not allowed to do so, in a few years children would be completely deprived of dental treatment

Sir HUGH LINSTEAD thought that the major problem behind the whole state of the dental profession was man-power The Bill attempted to meet the difficulty, but he did not think that it would provide enough man-power to satisfy the needs of the country The man-power was not there unless we were prepared to lower our standards, and the Minister might find the same difficulty in recruiting his ancillaries There was a great demand for teachers, shorthand typists, and office workers from the very group of women on which the Minister hoped to draw A great act of statesmanship was required within the profession which must think out afresh their professional organisation and methods of work. The dentist must see himself as the leader of a team of different types of auxiliary workers

Mr HASTINGS feared that under the provisions of the Bill the dental profession might cut itself off *too much* from the medical profession Each needed the help of the other There should be more representatives of the medical profession on the Dental Council and some representatives of the dental profession on the General Medical Council

Mr JOHN BAIRD *pointed out that the dental profession* was an ageing profession and in a few more years we should be in serious difficulties unless something was done He welcomed the experiment with ancillaries, but he did not believe that it would solve the problem of man-power There were *other ways of tackling the shortage* before rushing into the danger of general dilution The profession had had bad publicity, it was more varied and interesting than some branches of medicine He hoped that one of the first tasks of the new council would be a *campaign to educate* young men and women in the interest and value of the profession There should be a national scheme providing adequate grants for young men and women to come into the profession He was satisfied that with efficient organisation in the teaching hospitals *the course could be cut by six months*—without reducing standards

MISS PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, discussing the shortage of dentists, said that it had been suggested that the level of pay was a *deterrent But as a result of the recent* restoration of the 10% cut the average dentist received about £2000 a year compared with the general practitioner's £2200 In view of these figures she did not think it just to suggest that the profession was badly
paid But it was true that many who applied to
the profession failed in their examinations.
650 places were available in the dental schools
applications were successful in 1954–55 Against
unhappy picture of a small number of entrants and
failure-rate we must consider the present d
Before the health service was started the Tev
mittee suggested that 20,000 *dentists* would b
At present 12,000 dentists were in active practice.
current evidence every child at the age of five
school had five teeth missing, decayed, or filled. R
two-thirds of all children up to the age of f
any one year did not go near a dentist In face
facts the Ministry felt that it was necessary to tr
experiment to see if they could find some ancillar
for dentists The problem was not whether a
should be treated by a dentist or by a dental a
but whether vast numbers of children should ge
treatment at all

Pre-nursing Training

In the House of Commons on Nov 1, Mr JULIA
said that according to the latest official informati
were 17,043 hospital beds unoccupied because of
of nurses *Put in another way* the number of
needed to work all the hospital beds in England and
was 31,000—21,000 for general nursing duties and
for mental nursing Recruitment could be en
by modernising training in school or by nursin
schemes In his view there was a strong case for
further encouragement to school courses by
the maintenance grants offered by local auth
Girls under the cadet scheme should also be fr
attend local education classes on more than one
week without having their pay reduced.

Miss HORNSBY-SMITH, parliamentary secretar
the Ministry of Health, pointed out that recrui
had improved The number of full time g
nurses had risen from 28,000 in 1949 to 30,000 in
student nurses from 40,000 to 44,000, full time m
staff from 93,000 to 110,000, and part-time from 1
to 20,000 She admitted that the figures for
nurses were not so favourable The average
intake was at the moment about 18,000, and w
increasing demands from other professions for
we could not hope for much increase Cutting
wastage offered the best opportunity for increas
total complement of nurses Men and women were
up nursing at a later age and these recruits often b
first-class nurses Cadet schemes were a success in
hospitals but not so successful in small hospitals.
tinuation of education until a boy or girl was 1
still the best preparation for nursing It could be
pre-nursing course at school or at a further educ
establishment. A girl who took one of these courses
sit for part I of the preliminary examination befo
started training in hospital It was true that ther
no special financial arrangements for the pre-
courses, but where were we to draw the line, she
if we started paying however small a wage to b
girls doing educational courses ?

QUESTION TIME

Industrial Injuries

Replying to a question, Mr ERNEST MARPLES, joint p
mentary secretary to the Ministry of Pensions and N
Insurance, said that the majority report of the Depart
Committee appointed to review the diseases provisions
Industrial Injuries Act recommended the continuan
present system, under which benefit was paid only for
by accident and for diseases which were prescribed in r
tions, and endorsed the provisions which governed
prescription The Minister had decided to accept these r
mendations The committee's recommendations on the
work of the Industrial Injuries Advisory Council and
organisation of occupational health research were
considered in consultation with the council and the Min
colleagues

Industrial Health Service

Replying to a question, Mr HAROLD WATKINSON p
mentary secretary to the Ministry of Labour, and th

gs had been held of the committee appointed by the r to advise him on measures to further the development strial health services in work places covered by the ies Acts. Priorities for action recommended by the ttee included the stimulation of voluntary medical ion in a number of industries with serious health s the substitution by industry of harmless or less il materials for those that were harmful; the protection kers from ionising radiations a campaign against titis; and the intensification of investigation and h into industrial health problems On the advice of the ittee a pilot local industrial health survey was being l out at Halifax[1] and a second pilot health survey was eing planned

X ray Examination of Pregnant Women

Barnett Stross asked the parliamentary secretary to inistry of Works, as representing the Lord President of ouncil whether the Medical Research Council would er the possible danger that might result from X ray nation of pregnant women and the desirability of ing the greatest possible protection in these and other against long term ill effects—Mr J R Bevins said s an important subject which is being reviewed by the al Research Council, but there is at present no evidence diagnostic radiology as practised in Great Britain pro harmful effects either in the mother or in the developing fo Information on the possible long term effects of exposure to nuclear radiation from various sources will be reviewed in the report which is being prepared by the council for publication as a white paper It is appreciated by the medical profession that pregnant women should not be unnecessarily subjected to any form of ionising radiation.

New Process for Freezing Milk

Replying to a question, Mr Heathcoat Amory, Minister of Agriculture said that a method had been devised at the National Institute for Research in Dairying of freezing milk so that it could be maintained frozen for a considerable period during storage or transport and eventually thawed for use without separation of the fat occurring A patent had been applied for The patent rights were being assigned to the National Research Development Corporation which was already considering how best to secure the commercial exploitation of the invention Meanwhile experimental lots of milk had been frozen for transport for long distances by sea to test the efficiency of the process and the palatability of the products on thawing Results so far were most promising

Purchase-tax on Crash helmets

Replying to a question asking the Chancellor of the Exchequer whether he was aware of the *nature of accidents* arising from the use of motor-cycles and in order to minimise the injuries sustained by encouraging the use of crash helmets, whether he would now remove the purchase tax from them Mr R A Butler replied that the present Budget resolutions provided for the reduction of the rate of tax on headgear, including crash helmets from 25 to 10%

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[1] See *Lancet* Sept 17 1955 p 610

Public Health

INFLUENZA-VACCINE TRIALS

Statement by M.R.C. Committee

s the result of consultations between the Ministry alth and the Medical Research Council a Committee linical Trials of Influenza Vaccine was formed by ouncil in 1951 to carry out and coördinate further nes. Previous investigations had met with varying ss partly owing to difficulties in ensuring that the ne was suited to the particular strain causing the mic

ological trials in the winter of 1951–52 resulted in mmittee being able to stage in 1952–53 a large scale trial of a vaccine containing equal proportions of (a virus A strain originally recovered in 1947 in U.S.A.) and the Liverpool strain, of the type which been partly responsible for the epidemic in early A bacterial "anti influenza" vaccine was used as trol Some 13 000 volunteers were involved in the trial in centres scattered throughout the United dom

e extent of influenza A in the winter of the trial was ed, but it was clear that there was a 40% reduction nical influenza in the trial group as compared with ontrol[1] The results being encouraging the com e decided to go forward in the search for still more nt vaccines

view of the favourable reports received from the A of the increased antigenic value of the oil adjuvant tinct from the saline type of vaccine a comparative ogical trial was commenced in December 1953 in ps of volunteer students in certain London hospitals in Manchester and Sheffield This trial demon ed the greater and more prolonged antibody produc of the oil adjuvant as compared with the saline nes[2]

the result of this a further large-scale field trial in e 15,000 volunteers was staged last winter in various nteer centres in the United Kingdom

ree vaccines were under comparative trial one of the e and two of the oil adjuvant type—all from the England A strain of virus, with a fourth virus B vaccine as a control. While virus B influenza was prevalent for much of the winter virus A influenza occurred only to a limited extent and did not cause any extensive outbreak. Observation was stopped at the end of May and all record cards were withdrawn for analysis of the results of the virus B vaccine in the prevention of virus B influenza. In view of the possibility of an outbreak of virus-A influenza making its appearance this winter the record cards will be sent back to the volunteer centres concerned and the observation of volunteers recommenced and continued as long as is necessary

In addition, a new comparative trial in some 12 000 volunteers is due to begin shortly It is designed to evaluate two saline vaccines, one containing a virus-A strain isolated last winter in Carmarthen and the other a mixture of virus A strains of different types A virus-B vaccine will again be used as a control. Volunteer centres will be in industry and the Royal Air Force and are distributed throughout the British Isles Inoculations will be carried out between Nov 21 and Dec. 1 Volunteers in each centre will be divided as before into equal groups, one group receiving one of the virus A vaccines another group the second of these vaccines and a third group the virus B vaccine Volunteers will be observed for four months, records being maintained of illnesses from which they suffer in the period. At the end of the trial the results will be analysed to ascertain the incidence of influenza in the three groups.

Under the arrangements made, it will be known to any general practitioner who is asked to attend a volunteer during the observation period that the patient is in fact a volunteer and to which centre he belongs It is hoped that all general practitioners seeing such volunteers will coöperate in the investigations by filling in the simple record form with which they will be provided and will bear in mind the great importance of as accurate a differentiation as possible between true influenza and other respiratory infections with a winter prevalence

The medical officers of health in the areas in which the trials are being carried out will be able to help in various ways and will in particular be able to keep those concerned in the volunteer centres informed as to the occurrence of influenza and the progress of any outbreak which attacks the area For this purpose medical officers of health in whose areas there are volunteer centres will be given the details of these

Special arrangements will be made as was the case last winter in the main trial areas, to detect the presence of influenza In each of these areas some practitioners are being asked to take specimens for laboratory examination from suspected cases of influenza every week throughout the trial In this way it is hoped to determine the probable date of appearance and disappearance of influenza in the areas in which the volunteers live and to learn whether any outbreak is due to virus A or virus B

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[1] *Brit med J* 1953 ii 1173
[2] *Ibid* 1955 (in the press)

These trials can succeed only if there is the fullest cooperation between all concerned, and the committee have every hope that this will be forthcoming More detailed information may be had from the secretary of the Medical Research Council Committee on Clinical Trials of Influenza Vaccine at the Ministry of Health, 23, Savile Row, London, W 1 (telephone, Regent 8411, ext 91)

Poliomyelitis

Uncorrected notifications of poliomyelitis in England and Wales in the week ended Oct 20 (43rd week) showed a continuation of the gradual seasonal decline The figures were (42nd week in parentheses) paralytic 189 (210), non-paralytic 140 (137), total 329 (347) The total uncorrected notifications in the 43rd week during the past six years were (percentage of paralytic cases in parentheses) 1950, 253 (71 9%), 1951, 96 (64 6%), 1952, 101 (74 3%), 1953, 121 (72 7%), 1954, 69 (57 9%), 1955, 329 (57 4%) So far this year the proportion of non-paralytic cases in England and Wales has been approximately 45 7% of the total The figures for the whole of the preceding four years were 1951, 41 5%, 1952, 29 8%, 1953, 34 6%, 1954, 32 8%

Smallpox Vaccination

In his report for 1954, Dr W S Parker, medical officer of health for Brighton, says "The figures for smallpox vaccination are alarmingly low Five years are not yet gone since the Brighton outbreak when, under the stimulus of immediate danger, half the population, 80,000 people, sought vaccination in a month It is truly remarkable that the ghastly lesson of the lives unnecessarily and hideously destroyed in Brighton in 1951 has not yet been learned"

Second Quarter in Scotland

In the quarter ended June 30[1] this year, the birth-rate in Scotland was 18 7 per 1000 population—0 2 below the corresponding figure for 1954 The number of stillbirths was equivalent to a rate of 23 per 1000 total births The death-rate of 11 7 per 1000 population was 0 2 more than in the second quarter last year The infant-mortality rate was 29 per 1000 registered live births —1 below the same quarter of 1954 The death-rate from all forms of tuberculosis was 20 per 100,000 population (respiratory tuberculosis 17) the rates from all forms and from respiratory disease were respectively 14 and 12 below the average for the past years

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[1] Quarterly Return of the Registrar General Scotland Births, Deaths and Marriages registered in the quarter ended 30th June, 1955 H.M Stationery Office Pp 32 2s 6d

Infectious Diseases in England and Wales

Disease	Week ended October				
	1	8	15	22	29*
Diphtheria	10	6	8	13	11
Dysentery	427	475	577	523	474
Encephalitis					
Infective	4	3	6	6	5
Postinfectious	2	2	3	1	3
Food poisoning	325	294	356	302	288
Measles excluding rubella	1229	1415	1750	2147	2301
Meningococcal infection	22	23	18	20	23
Ophthalmia neonatorum	30	36	25	44	26
Paratyphoid fever	45	41	26	17	12
Pneumonia primary or influenzal	228	237	310	304	329
Poliomyelitis					
Paralytic	207	186	189	210	189
Non paralytic	180	164	177	137	140
Puerperal pyrexia	241	229	278	252	237
Scarlet fever	551	667	720	767	888
Smallpox					
Tuberculosis					
Respiratory	710	642	663	624	633
Meninges and C N S	15	12	7	12	11
Other	86	88	65	74	68
Typhoid fever	5	5	3	2	
Whooping cough	995	803	817	819	833

* Not including late returns

In England Now

A Running Commentary by Peripatetic Corr

A CLINICAL friend of ours has for some time pa dabbling in Science on a part-time basis—three a month, we think it is He has often told us that experience is proving mildly discouraging He about his lab, and every now and then he writes some results, but it never seems to come to an When he embodies his findings in a paper it en nation-wide apathy If only he could Discover som he says, like all those F R S chaps

When we met our friend the other day we saw that something had happened, and we pressed him tell us all about it. It appears that our friend's kit has recently become invaded by ants. His normal rea to ants is rather colourless, and he was not orig committed to an emotional viewpoint At the behest of his wife he absently sprayed the premis intervals with D D T, without observing any diminution in the marching and counter marching floor One evening, however, as our friend was negl toying with a slice of cherry cake, his teeth met cluster of ants, torpid with strawberry jam. stroke his sensibilities became engaged, and he the resources of a part-time Scientist into the He devised traps, he stood the furniture in he built ramparts of strange proprietary powders he had wrought in this fashion for several da volume of ants had increased slightly and the bis had fallen to the invaders The honour of Science stake Now mark what follows very closely

It seems that on the shelf of our friend's kitchen stands a round cardboard box which originally cont Tab sulphadiazine 0 5 g For some time, however, box had been the repository of an indeterminate of Tab ephedrine, gr $^{1}/_{2}$, with which our friend to solace his asthmatic dependents Last year, his anxiety neurosis was bad, our friend had po some Tab phenobarb gr $^{1}/_{2}$, and recently his wife to keeping her 'Veganins' in the same place The also some oval pink things of whose nature our fr uncertain, and a partly decomposed amorphous which he identifies as of antihistaminic origin.

Last week his wife was away from home, and our had to cook his own breakfasts One morning waited for the frying-pan to come to the boil he up the box in the hope of finding a jujube which temporarily stay his hunger Judge of his emotion he found the box filled with a pile of small black ca every one stone dead

Our friend is calmly confident, it only rema identify the pink things and the rest will follow He us that he has already inquired about the pro at the Nobel prize-giving, and he loftily awa obsequious approach of the Third Programme

* * *

The Northern Line has greatly helped my education I tend to read *The Lancet* slowly obsessionally, and without my daily journey to hospital I would never get through it. With practice it is not difficult to read while standing solid mass of urban humanity, bulging elastically to the doors at each stop But there are snags. leaving in the morning I fold my *Lancet* so that the article is outermost—I am not going to make thi easy for the peripatetic occupation-spotter

Page 1 is a solid mass of small print and as there pictures and no conversations my neighbours remain in their papers Page 2 is still a mass of print, but on there is an article on "Four Cases of Virilism in the Female" It is well illustrated and I quickly turn the Still virilism—cases 3 and 4 look more advanced with illustrations The breathing down my neck has mo to gale force Knowing the endocrinologists' penchan close ups I take no chances and now turn over two pa once Here I am safe No pictures except a photomicro which even to a histologist looks like an enlarged porridge I try to continue reading, but as I have courage to turn to the beginning of the article I cannot stand a word and wonder if I dare turn over again. I recollection that when I received the journal there was here in it Anencephaly with Survival for Four Days photograph on each day

m writing a paper for your next educational number Good Illustration as an Obstacle to Medical ning”

* * *

modern student's illiteracy is seen at its best clinical notes These are usually a tissue of initials abbreviations— Pat admitted for I O U Parents w One brother D U One sister P A. 2 chil one S B nil Chest N A D Abd. T & F in R I F Now if ard clerks and dressers had been taught a little and Greek, his record of his conversation with a admission' might run as follows

h, suffering Soul who dwelleth in Gloom
l me thy story from Ages past,
l we will bend our Power and Aid
ough Zeus (who visits twice a week)
heal, to mend and snatch thee from the Tomb

h thou son of Æsculapius,
u noble heir of Earth and Time,
ken to this Tale of Woe:
panting Sisyphus I find
t when I roll the daily Stone
uman Labour up the Hill
breath! the very Air is short
a the Naiad blush of rosy Hue
my Lips for Cyan Blue

ourse ward rounds might take a little longer

* * *

d only been working at the chest clinic for a few s Sister was on holiday and we had borrowed a from the hospital, so the fact that neither of us sed the patient meant nothing According to tes he had been in sanatorium twice and for some had been attending the clinic at intervals. Though three appointments six months ago, he had failed p any of them

came into the consulting room wearing his cap overcoat, gave me a cheerful Good morning' down He answered all the questions as to his satisfactorily and then, as requested, began to to the waist. For the information of those ted in etiquette, the correct order of deshabille- appears to be: remove overcoat, jacket and oat; undo braces buttons and pull up shirt-tails st; remove collar and tie, remove cap take off nd vest replace cap and present chest for exam . During this process I asked him about his failure nd six months ago He replied that this was his sit. I pointed out that according to his thick he had attended many times. To this he replied ing: That's me brother, John Oi'm Jim He's Oireland now and Oi'm over here in his ould digs your letter came Oi thought Oi'd bitter come because Oi didn't want you to be disappointed

* * *

acquaintance of ours, a hard bitten irascible ist who is reputed to eat ignorant first year s for breakfast recently had occasion to change ngent. When the bill came it was addressed to the Department of Humane Anatomy Since this he has not been the same man Our spies report sterday when someone was not attending in the y class he threw a humerus at the offender the femur was ready to his hand and this morning a student through his viva on the infratemporal rst shot.

* * *

ught such a nice friendly healthy, and inexpensive from one of our larger stores recently Three ter he died. I contacted the pets department and tem of my sad loss In view of the sudden demise lly claimed another bird I wrapped him tenderly turned him. A few days later he came back stuffed ed was a bill for £12 10s

Letters to the Editor

THE FORGOTTEN PATIENT

SIR,—You do well to publish the provocative and stimulating articles by Dr Bickford Unfortunately Dr Bickford's vigorous and trenchant language when quoted out of context is apt to be misleading It is sad therefore to see sections of his paper reproduced in a newspaper under such appalling headings as "Pigs treated better than patients His remark that the patient and his relatives are unjustified in putting their faith in the psychiatrist was also given prominence

When Dr Bickford accuses psychiatrists of failing to cure and discharge their patients, he is I think being unfair It is true of course that those of us working in mental hospitals have inherited a legacy of so-called chronic patients, most of whom represent various psychoses in an arrested or incompletely remitted stage However, it is arguable that even if insulin comas convulsion therapy and other physical methods of treatment had been in use before the thirties, such patients would have been capable of remaining permanently outside hospital. It seems clear that with the advent of the physical methods of treatment and in the changed and changing climate of opinion towards mental illness many recent admissions, with treatment can sustain remissions adequate enough to permit months or years of life in the general community

The comment that doctors have little incentive to discharge patients must not pass unanswered. In the last two mental hospitals I have worked in, practically the very first feature to be impressed on one was an active and aggressive discharging policy Patients were "tried outside again and again. What is so relevant in whether the patient stays in hospital or not is the social group from which he comes, his family's attitudes and to some extent the economic situation,[1] not the alleged lack of incentive of the doctor to discharge him I should have thought that lack of time to apply his initiative was much more to the point and will continue to be a serious drawback, so long as one medical officer is expected to deal with three or four hundred chronic' patients

I am sorry that in his first article Dr Bickford makes no mention of the National Association for Mental Health one of whose stated objects is to provide and promote community care for persons handicapped by mental and nervous disorder including epilepsy or by mental subnormality or defect I am also sorry that he concludes that psychiatric research is carried out independently from work in spite of the substantial number of clinical papers appearing in every number of the *Journal of Mental Science*

On nurses, Dr Bickford says that adequate recruitment of the right people depends very much on reasonable pay and all will agree that every effort must be made to raise the nurse's professional standards This depends very much upon the attitude of the psychiatrist to his nursing staff and how effectively he can educate them Recently, we have been given new ideas on how this may be done[2] and Dr Bickford's second article emphasises what progress can be made in encouraging and supporting therapeutically valuable attitudes of the nursing staff towards chronic patients

Although Dr Bickford has like Dr Johnson tossed and gored a number of persons he can easily be forgiven this, for he has pointed the way to a new and significant orientation towards the chronic and forgotten patient

St Augustine's Hospital
Chartham Down
near Canterbury

F B CHARATAN

SIR,—There are many points in Dr Bickford's interesting article (Oct 20) which are not only controversial but actually misleading I would like to comment on some of these, in order of their appearance

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[1] Hollingshead A B Redlich F C *Amer J Psychiat* 1954 110 695

[2] Stanton A H Schwartz M S The Mental Hospital New York 1954

(1) I have known many patients who have improved as a result of working on hospital farms, and a few who have been cured in this way Farmers and farm labourers benefit by gradually returning to their normal occupations while still in hospital Two ex patient farmers called recently to tell me how much better they felt after working on the hospital farm, both dating their improvement from the time they began that work

(2) It is a statutory requirement in mental hospitals that at least 2 members of the hospital management committee shall together visit all parts of the hospital at least once in every two months With a normal complement of 15 members, and the usual rota system in operation, unless committee members are shirking their duty, it is impossible for years to elapse between visits

(3) Any psychiatrist who informs a layman that nothing can be done for chronic patients is unworthy of the title, and should look for employment elsewhere Modern treatment, particularly habit training, has completely altered the outlook for these patients

(4) In this hospital we have 36 Polish patients We also have 9 Polish nurses and 2 Polish doctors Every Polish patient has daily opportunities of speaking to members of the staff in his own language To say that "It is impossible that there should be a nurse who speaks their language" is, therefore, untrue Two newspapers, one Polish, one Ukrainian, arrive each week, and circulate freely in the hospital, and a Polish welfare officer visits frequently

(5) I must challenge the statement that one can work and live for most of the time quite adequately with even a severe neurotic illness, but the slightest psychotic illness brings life to a standstill Does Dr Bickford not know of chronic hysterics, and chronic anxiety neurotics who are quite unable to work, and of depressives and hypomanics who carry on despite their disabilities ?

(6) The statement that every psychiatrist would rather work anywhere else than in a mental hospital is ludicrous. I know many, and am proud to be one of them, who would not change their mental hospital work for any other

As one who has worked in this field for nearly twenty years, I feel strongly that the cause of the chronic patients will not be assisted by exaggerated and distorted descriptions of their way of life, and I hope Dr Bickford will accept this criticism in that spirit of magnanimity which he and I both know are essential in our work

W A S FALLA

Bracebridge Heath Hospital,
near Lincoln

Medical Superintendent
and Consultant Psychiatrist

SIR,—Please record my protest at the grossly misleading picture of the mental hospital drawn by Dr Bickford Any suggestion that the conditions he describes prevail generally in mental hospitals, or in particular the mental hospitals of the Metropolitan regions, should be treated with the greatest reserve

Severalls Hospital
Colchester

A G DUNCAN

SIR,—It is good to know of the attitude of Dr Bickford and others towards the so called forgotten patient in the mental hospital I have now been engaged in mental nursing for just a year, part of the time in a mental hospital and part in the psychiatric unit of a general hospital, and consequently I no longer believe that we live in an "enlightened age"

Every patient should surely have, or have kept for him, a comb, a face flannel, and a towel for individual use In the sick and senile wards the patient who is able to sit out of bed should have a dressing gown which may be considered his own—at least until it has been sent to the laundry The ambulant patient should always be allowed to dress, and if possible to take a pride in his appearance When clothes are rolled into bundles at night, there is little incentive for a patient to trouble over his attire The patient should certainly have facilities for washing his hands after he has used the lavatory

A patient is a human being, and has the right addressed as such Even should it seem advisable mand a patient there is no excuse for rudeness, a (I regret to say) swearing Nearly every patient is of feeling, and personal remarks about him should made within his hearing

I am interested in Dr Bickford's organisation of into small groups, always having the same nurses group I would suggest that some of the success to deep insulin coma therapy is really due to the experienced by the patient in belonging to a small people who share the belief that a tremendous being made to restore them to health In order to a patient must desire recovery, and to do this he must an interest in life What better interest can he have in the well being of his fellow men ? The mutual help by patients sometimes appears incredible, even to the who spends twelve hours a day with them When to a small group of people the patient is more likely to confidence in himself

When a nurse is made responsible for the well be a group of patients, he becomes very interested *own* patients and his standards of nursing general Not only is this to the advantage of the patien also to that of the nurse, for it makes his work than "just a job" The medical and nursing staff discuss together the patients' condition, and the atrists should explain to the nurses the reason lying the treatment chosen for each patient On can mental nursing be made sufficiently interes attract and retain enough nurses whose standard of satisfactory And then perhaps old and helpless would not be left in wet beds for two or more at a stretch "because there are not enough nurses"

MARY RES

Southsea, Hants

DANGERS OF INTRAVENOUS PYELOGRA

SIR,—Pendergrass et al[1] have lately stud findings of 3,831,850 intravenous injections fo investigation They found that 31 deaths had —one a child of 2 years, another a healthy young of 24, the others at varying ages up to 70, and the over 50 These fatal reactions were "bolts fr blue" the sudden onset was alarming and available remedy, including opening the chest it is urged should be done within 3 minutes of failure), failed

This investigation proved that there is no test which can indicate sensitivity Those who some reaction to the small trial doses failed t with the standard dose, while some of those wh no reaction to the test died with the standard In other words there are no precautions which taken, apart of course from inquiring for iodine tivity or proneness to allergy The tests as now are merely for medicolegal purposes and are of value

It seems therefore that the essential precaut limit the number of examinations to those wh vital to the patient Only in such cases as fail a relatively clear indication of the diagnosis af most scrutinising clinical examination, and in the result of the test will be the deciding factor, the patient be exposed to the risk Physicia surgeons who perform this examination or as radiologist to perform it, should be made acqu with the grave responsibility they are taking

In spite of the warnings which the more able cl of the past have given, doctors, particularly in h are using X rays (and other ancillary services), no aid to clinical medicine, but as a cover for bad work It is much easier to put initials on a requ expensive investigation by someone else, than to time themselves in studying the patient Though is a most valuable aid to clinical medicine when the r is missing as it so often is, radiology can be damn misleading and disastrous for the patient

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[1] Pendergrass, E P, Hodes, P J, Tondreau R L Burdich E D *Amer J Roentgenol* 1955 74 26

th this progressive increase in the number and ty of injections merely for radiographic demonstra of various anatomical structures, there has been an sing number of deaths. Maybe the responsibility t so apparent to consultants working in hospital he possibility of a disaster in one s own private ice where there is no chance to shift the responsi is a salutary discipline which is rather frightening y conscientious doctor

ingham JAMES F BRAILSFORD

CHEST PHYSICIANS

—Last week Dr Hendry and Dr Tattersall gave account of the concern of many highly qualified and keen chest physicians but it is not solely ing of injustice. It is part of a wider problem facing pecialty The day of the 'tuberculosis officer sed and this is not fully realised A generation of physicians has arisen who are trained to a high ard in general medicine and thereafter in chest me Although they will ensure that the rapid l of tuberculosis continues these younger men pable of more Many have studied non tuberculous atory diseases in detail and give a valuable opinion m as well

outstanding questions are:

Should these chest physicians be encouraged to widen ope within the present framework of the specialty ?

Should suitably qualified chest physicians be incor d within the sphere of general medicine chest medicine g only part of their work ?

answer to these questions is urgently needed are the scope of such chest physicians should be d on one or other of these lines, and then they l be given consultant status

ries and Galloway Sanatorium B R HILLIS

GENERAL PRACTICE

—I would like to record my appreciation of Dr s stimulating paper on general practice in your f Oct 1

omes at a critical time, as the Government are ering what new charges may be made upon those the National Health Service We may deplore but nevertheless we must be prepared for our ts to demand a better standard of service if they pay more for it

much better it would be if the necessary improve could come from within the profession rather than result of pressure from outside.

answer must surely lie in encouraging doctors to full responsibility for their patients This must in the first place a smaller maximum list with justed capitation fee so that there is no financial o the doctor This immediately gives the doctor time to deal with each patient and this combined open access to pathology and X ray departments d doctors (which must constantly be pressed for) ad to considerable reduction in the demands made nsultative outpatient departments.

ere would then be no need for what Dr Mackarness 5) refers to as a little kindly discipline which gested might be exercised by consultants and their rars Nor would we have to wait so long for the sed capitation fee which with an improved ard of service, we would be justified in claiming hermore there would be more room for those doctors sent finding difficulty in entering general practice

N W.1. PHILIP HOPKINS

INFECTION ACQUIRED IN HOSPITAL

SIR,—Dr Colebrook (Oct. 29) again points out the cross infection risk from woollen blankets This problem should worry everyone in charge of hospital wards but the answer must ultimately be something other than the frequent washing and sterilising of *woollen* blankets The ward sisters objections to repeated laundering are very reasonable since matted blankets are not efficient blankets Is not the answer that wool is not suitable for this purpose ? An efficient, easily sterilised substitute is clearly very difficult to devise but it should not be beyond the ingenuity of an age progressive enough to invent the hydrogen bomb

Aberdeen. C D NEEDHAM

SIR,—It is salutary to read the warning by Dr Colebrook of the prevalence which still exists of cross infection in infectious-diseases and other hospitals and of infection in clean surgery ' The true state of affairs has been largely obscured by the increasing use of prophylactic antibiotics, and for this we will surely pay the penalty of producing increasing numbers of resistant strains of pathogenic organisms

The provision of clean conditioned air on tap in the modern hospital is an obvious need but one which is expensive in capital outlay in running costs, and in the otherwise valuable space taken up by the plant Even the use of pressurised filtered air is not the whole answer to the problem since as Dr Colebrook points out the source of much dangerous infection is the patients themselves and the staff nursing and medical. How many surgeons refrain from operating or doing ward rounds when they feel a cold or sore throat coming on ? Also pathogenic organisms, when air borne in dust particles of 1μ or less, because of their physical properties remain in the air indefinitely and may even travel against a gentle air-stream.

What is required in my opinion is a more positive method of continuous air sterilisation This can be provided simply and cheaply by the use of heat-evolved aerosols of chemicals such as hexylresorcinol, a technique which has so far not received the attention which I believe it merits Such aerosols have been demonstrated in the laboratory to have remarkable sterilising powers in minute dosage over a wide range of bacteria. Hexylresorcinol when evaporated at 126°C comes off in a rapidly dispersing mist of particles averaging 0·75μ in size These particles remain air borne until they finally evaporate the vapour depositing on walls, ceilings furniture bed clothes &c which then automatically become self sterilising

A good deal of evidence is accumulating to demonstrate that hexylresorcinol when disseminated in this way in offices workrooms, and the like may assist in the control of the common respiratory infections and I would repeat a statement which I have previously made[1] ' Even should chemical air hygiene prove ineffective in the control of common ailments there may be a place for it in some specialised branches of medical practice Places that immediately come to mind are operating theatres the wards of infectious diseases hospitals and sanatoria bacteriological laboratories, and practitioners waiting rooms during epidemic times. '

Salisbury IAN MACKAY

HYDROCORTISONE IN PAINFUL SHOULDER

SIR,—We are grateful to Dr Newton (Oct 22) for his congratulations and observations. We have noted Dr Crisp s credo in the treatment of the painful shoulder (Oct 29) We are unabashed either by Dr Barbor's disappointment or by Dr Cyriax s charge of disservice to orthopædic medicine (Oct 29)

Our patients came to us complaining of pain and stiffness in the shoulder It seemed therefore not unreasonable to test the effects of hydrocortisone and of lignocaine upon these symptoms If we have erred in discrimination, examination, diagnosis, detailed method, ancillary treatment, and classification, of individual cases, such errors are likely to be equal in the hydrocortisone group and the lignocaine group

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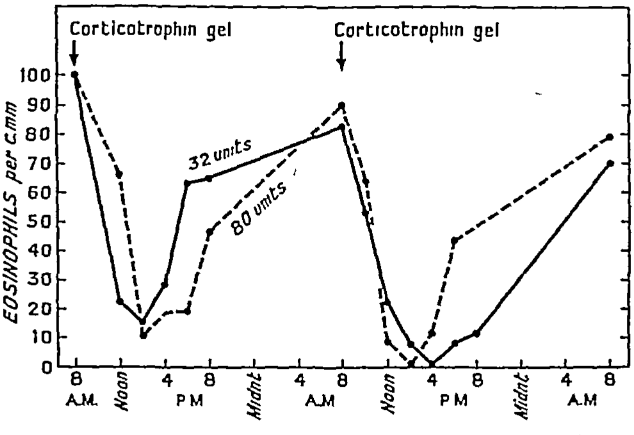
[1] MacKay I *J Hyg Camb* 1952 50 82

We fail to find in your correspondents' letters any facts which might modify our conclusion that "it seems doubtful whether hydrocortisone has any specific action in this condition" We await with interest the publication of other controlled trials

Edinburgh G F Murnaghan
Donald McIntosh

CORTICOTROPHIN GEL AS A TEST OF ADRENAL CORTICAL FUNCTION

Sir,—Dr Nabarro[1] has proposed a test of adrenal cortical function with 120 units of corticotrophin gel for 3 consecutive days In this test the main index of adrenal response is the fall of circulating eosinophils below 10 per c mm on any day after the injection (22 hours later)



Effect on eosinophil-count of administration of corticotrophin gel, 32 units and 80 units, two doses of each at an interval of 24 hours

In addition, the 17-ketosteroids excretion and the urine Na/K ratio were studied

On the same date we presented, to the Third Pan-american Congress of Endocrinology,[2] a corticotrophin gel test with 80 units on 2 consecutive days, and drew the following conclusions

The eosinopenic effect of a single corticotrophin gel injection is greatest between 6 and 8 hours after administration Later a gradual recuperation to the basal level is observed A similar effect, although often greater, is obtained after the second injection, on day 2 This is a very constant effect and can be obtained to an equal extent even with smaller doses (see accompanying figure) On the other hand, the 17 keto steroids in the urine are increased to higher levels with 80 units than with smaller doses (see accompanying table)

80 units of corticotrophin gel has been regarded by several workers[3] [4] as giving maximum stimulation to the adrenals, and it seems unnecessary to use larger doses in a diagnostic test provided the eosinophil counts are performed not later than 8 hours from the time of injection

In normal controls we have obtained an eosinophil fall of 80% or more in 27 out of 29 tests In the other 2 there were decreases of only 65% and 68% The average increase in the urinary 17 ketosteroids was 5 3 mg (range 2 7–8 4) in 24 hours 15 tests in patients with Addison's disease show a decrease in eosinophils of from 0 to 31% and an increased excretion of 17 ketosteroids of from 0 to 1 7 mg in 24 hours Results are comparable to those of th intravenous test, which we regard as the normal resp

COMPARATIVE RESPONSE TO DIFFERENT DOSES OF TROPHIN GEL IN 3 HEALTHY PEOPLE

Subject no	Dose (units)	Eosinophils (decrease %)	17-ketoster max. increa (mg per 24 h
1	32	100	[illegible]
	80	100	[illegible]
2	32	93	[illegible]
	80	68	[illegible]
3	32	99	[illegible]
	80	96	[illegible]

The 80-unit corticotrophin gel test has been st ised in the following way

Day before —8 A M to 8 A M day 1 24 hour urine col for basal 17 ketosteroid determination

Day 1 —8 A M absolute eosinophil-count (basal immediately afterwards 80 units corticotrophin gel musculariy, and start the 1st day 24-hour urine co until 8 A M the next day for 17 ketosteroid dosage

4 P M absolute eosinophil count

Day 2 —8 A.M 80 units corticotrophin gel intramus and start the 2nd day 24-hour urine collection until the next day for 17 ketosteroid determination.

4 P M absolute eosinophil count

Day 3 —8 A M a 24 hour urine collection for k steroid determination is continued until 8 A.M next d

This test has been done in both inpatients and patients Its main advantage is that it can be a to outpatients We have not introduced the d of the 80 units of corticotrophin gel into two fr of 40 units each, every 12 hours, as recently prop Jenkins et al[5]

This work was done with 'Corticotrophin Gel Wils

Department of Endocrinology
Medical School, University of Chile
Hospital San Juan de Dios,
Santiago de Chile
Alfredo Jadres

MYASTHENIA GRAVIS

Sir,—The investigations by Dr Ferguson a colleagues (Sept 24) on a comparatively large nu patients with myasthenia gravis deserve wide att But I think some points stressed in their valuable need comment

From the fact that 60 out of 85 patients su 42 of them in full work, they draw the conclusion the adjective gravis is not applicable to all c myasthenia" I think "gravis" does not class disease as a grave or severe one, but denotes degree of "asthenia" of muscles—i e, an ab fatigability or exhaustion relieved by rest (and specifically acting drugs) There is an apparent p following contractions or repeated electrical stim of the muscles involved

We can find the clue to my explanation in the histor disease According to Wechsler,[6] the original descr the disease was attributed to Thomas Willis in 1685, bu died in 1675 Actually it was first described by Wilkes then by Erb in 1878 Finally Goldflam establish symptom complex in 1893 These authors called the "myasthenia" and added the adjective "gravis" to the serious degree of "asthenia" as compared wi complained of by neurotic patients

Nowadays some textbooks of psychiatry and ne still warn against confounding myasthenia gravis with p genic symptoms or even malingering[7] [8] The denom of the disease usually found in the medical literat English (as well as that given in the *Manual of th* al Statistical Classification of Diseases* and in the rd Nomenclature of Diseases and Operations of the can Medical Association) is "myasthenia gravis" French literature the disease is referred to as "myas" without the adjective "gravis. In the German are however the disease is called "myasthenie" en more frequently "myasthenia gravis pseudo tica. The latter denomination seems to give another my explanation since "gravis" is interposed between sthenia" and "pseudoparalytica" thus denoting ere degree of "asthenia" not necessarily of the disease h

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[1] Nabarro, J D N *Lancet*, 1954 ii 1101

[2] Jadresic, V A Donoso, F, Rodriguez V Herreros M Proceedings of the Third Panamerican Congress of Endocrinology, Santiago de Chile 1954 (In the press)

[3] Thorn G W, Jenkins, D Laidlaw, J C Goetz F C Dingman, J F Arons W L, Streeten D H P McCracken, B H *New Engl J Med* 1953, 248 588

[4] Orr R., Di Raimondo, V Rinfret, A Island D Forsham, P H *J clin Endocrin* 1951 14, 806

[5] Jenkins D, Forsham P H Laidlaw J C, Redd Thorn, G W *Amer J Med* 1955 18, 3

[6] Wechsler J Textbook of Clinical Neurology Phil and London 1944

[7] Baruk H *Précis de psychiatrie* Paris 1950

[8] Weygandt Gruhle Lehrbuch der nerven und geisteskrank Halle a S

authors mention remissions of up to 15 years. However who quotes a spontaneous remission of 18 years, maintains e prognosis is serious in spite of spontaneous remissions fective treatment As to the relations of the disease thymus, Peters[11] writes that hyperplasia of this gland en found in about 50% of cases. According to Peters the reason for the effect of radiotherapy in many cases.

to thymectomy I fully agree that the diagnosis not be regarded as an automatic indication for tion especially since it is impossible to predict patient will benefit by it or by irradiation Finally r assessment of the results of medical management disease, Dr Ferguson and his colleagues did not their opinion on the controversial treatment by otrophin This hormone has been used in order duce thymic atrophy following stimulation of al corticoid output In my experience it has not beneficial, although I have not seen any of the rary aggravations reported by others

n regard to further research I would like to mention orden's observation[12] of typical post-mortem gs of epidemic encephalitis in a case which had the clinical picture of myasthenia gravis.

Hospital for Mental Diseases
Brandon Manitoba

MILO TYNDEL

THENIA GRAVIS AND HYPERTHYROIDISM

—The ætiology of myasthenia gravis is still uncer three mechanisms[13] have been suggested to explain muscular weakness an increase in cholinesterase diminished synthesis of acetylcholine and tion of a curare-like agent at the neuromuscular on These mechanisms imply a relative deficiency e depolarising agents as the cause of the symptoms en hyperthyroidism coexists with myasthenia there is no muscular weakness[14] Maclean[15] has ated that hyperthyroidism lowers the raised cholin e level of myasthenia gravis, but several other ations are possible In our investigations thy [16] and triiodothyronine[17] increased the coenzyme A of various tissues Since acetylcholine synthesis is dent on coenzyme A[18] hyperthyroidism could e the synthesis of acetylcholine Another mechan n be inferred from the work of Tapley[19] who reported triiodothyronine administered to patients with lema produced a negative magnesium balance It own that magnesium causes curare like block by g acetylcholine[20] Consequently elimination of esium in hyperthyroidism might facilitate acetyl e release. Therefore, it is postulated that myas gravis is caused by a relative deficiency of a depolarising agent) and hyperthyroidism produces a relative overabundance of a depolarising agent.

If the hypothesis that hyperthyroidism produces a relative excess of some depolarising agent were true, hyperthyroid animals would be sensitive to depolarising agents such as decamethonium and relatively insensitive to competitive agents such as *d* tubocurarine chloride When mice were given thyroxine, they became sensitive to the effects of decamethonium but showed no alteration in response to *d* tubocurarine chloride when compared with normal controls.[21] Hyperthyroid rabbits were also sensitive to decamethonium but variable in their response to *d* tubocurarine chloride

Thus if our animal work can be applied to man the beneficial effects of hyperthyroidism in existing myasthenia gravis may be a reflection of a compensatory increase in some depolarising substance

We do not wish to imply that hyperthyroidism and myasthenia gravis produce dysfunction only at the neuromuscular junction, but rather to emphasise that events at this site can be of importance

Baxter Laboratories, Inc.
Morton Grove Illinois.*

IRVING I A. TABACHNICK.

THE LUNGS IN MITRAL STENOSIS

SIR,—Dr Matthews (Nov 5) has somewhat misinterpreted my letter I never implied that the horizontal lines which are often seen in mitral heart disease with pulmonary hypertension are due to pulmonary hypertension and only seen in these patients What I did say was that they are often seen in patients with mitral heart-disease, but also occur in other types of heart disease with pulmonary hypertension

I can assure Dr Matthews that I have been able to observe these lines in patients with atrial septal defects, and in patients with a persistent patent ductus arteriosus, and frequently in patients with cor pulmonale

To answer his specific question Do these lines appear in primary pulmonary hypertension without fluid retention? I have not observed them nor did I ever claim that they did

I am quite aware of the fact that these horizontal lines are probably due to lymph stasis, whether due to inadequate lymph drainage such as we sometimes see in malignant disease or in silicosis or whether due to some pulmonary œdema associated with pulmonary hypertension and heart disease But I had no intention of discussing this issue in my original letter, nor did I attempt to assess their ætiology

Hammersmith Hospital
London W 12

R E STEINER.

STAFFING THE LABORATORIES

SIR,—We have read with interest the recent discussion about the shortage of medical laboratory technologists in hospitals and blood transfusion laboratories

Most of us agree that all the difficulties experienced are due to (1) the low status of the technologist, and (2) low salaries all along the scale

In obtaining better salaries and status for the technician a great deal of trouble is caused because many people still look upon the technologist as a laboratory "help" An associate of the Institute of Medical Laboratory Technology receives approximately the same salary as a bus conductor window cleaner, hospital porter and similar grades of worker Even many of the technologist's colleagues (doctors nurses pharmacists, &c) will not accept that he is as highly skilled and necessary in his branch of medicine as they are in theirs A century ago the medical laboratory technologist was unheard of but today he is an essential member of the medical team

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* Present address Schering Corporation Bloomfield New Jersey U.S.A

If the pathological services of Great Britain are to maintain their high standard, then the technologist must be given his rightful place, proper training must be provided in each laboratory, and he must be given a salary commensurate with the service he performs and a status that will encourage suitable new entrants to the profession

A new salary structure has recently been published for biochemists employed in medical laboratories which illustrates the fallacies that exist in the pathological service today We agree that biochemists are experts and deserve their salaries, but the ridiculous position may arise in which a biochemist in charge of one department in a large establishment will get double or more the salary of the chief technician in charge of all departments

D W PLAMPIN
A L C HUNT
E LENNON
P CAHILL

Salisbury
Southern Rhodesia

SMOKING AND THE HEART

SIR,—The patient with coronary disease should be strictly forbidden smoking There are two diseases in which prohibition should be absolute—gastric ulcer and coronary heart disease Every compromise would be a failure

Düsseldorf   TH OLBERT

THE PALLIATION OF BRONCHIAL CARCINOMA BY RADIOTHERAPY

SIR,—I have read Dr Blanshard's article (Oct 29) with great interest It is a pity, however, that no accurate assessment of the palliative value of radiotherapy can be made from his results Although he lists the percentage of improvement in each symptom he does not record either the degree of improvement or how long it lasted It is also unfortunate that his survey includes only 35 cases—information of statistical value cannot be obtained from such a small series

The accompanying table shows the results in 175 cases treated at this hospital The only criteria for their selection were (*a*) that the X-ray dosage was such as would be likely to effect palliation only, and (*b*) that only one course of treatment was given In 124 cases (71%) histological confirmation of the diagnosis was obtained, the histological types being as follows squamous cell 32%, columnar cell 7%, undifferentiate 53%, pleomorphic 7%

CARCINOMA OF BRONCHUS ANALYSIS OF 175 CASES TREATED BY PALLIATIVE RADIOTHERAPY

Symptoms	Cases with symptoms	Complete relief		Improved +		Improved		No relief
		Cases	Average duration (months)	Cases	Average duration (months)	Cases	Average duration (months)	
Cough	167 (*95%*)	11 (*7%*)	3 4	18 (*11%*)	3 5	29 (*17%*)	2 7	109 (*65%*)
Chest pain (visceral)	84 (*48%*)	29 (*35%*)	3 9	10 (*12%*)	1 5	7 (*8%*)	1 6	38 (*45%*)
Chest pain (mediastinal)	27 (*15%*)	12 (*44%*)	4 1			1 (*4%*)	2 0	14 (*52%*)
Chest pain (invasive)	6 (*3%*)	1 (*17%*)	1 7	1 (*17%*)	1 0	3 (*50%*)	0 9	1 (*17%*)
Hæmoptyses	72 (*41%*)	44 (*61%*)	3 9	1 (*1%*)	2 0	1 (*1%*)	1 5	26 (*36%*)
pnœa	138 (*79%*)	10 (*7%*)	4 1	13 (*9%*)	3 4	27 (*20%*)	2 6	88 (*64%*)
nagia	23 (*13%*)	6 (*26%*)	3 0	1 (*4%*)	0 3	2 (*9%*)	1 4	14 (*61%*)
perior mediastinal obstruction	43 (*25%*)	22 (*51%*)	3 3	9 (*21%*)	1 6	3 (*7%*)	1 9	9 (*21%*)

The average survival-times were from appearance first symptom 11 5 months, from completion of trea ment 4 25 months

Although the overall results are extremely disappoint ing, I do not think that we are justified in concludin that palliative irradiation in bronchial carcinoma not worth while The response of individual patients very variable, and it often happens that when tw apparently similar cases are treated in the same wa one obtains good symptomatic relief for many month while the other gets no relief at all Also loc symptomatic improvement may be masked by a gener deterioration due to metastases

Radiotherapy Department,
St Thomas's Hospital,
London, S E 1   I CHURCHILL DAVIDSON

WAS LUCAS-CHAMPIONNIÈRE RIGHT?

SIR,—Last week (p 959) you reported some remarks mine at the British Orthopædic Association's meeting Liverpool, but you have considerably altered the sens of my remarks in one respect, which I should be gratef if you would allow me to correct

You report me as saying that "the principles reduction, maintenance of reduction, and restoratio of function [in the treatment of fractures] were out proportion" In fact, I consider these principles absolut What I said was that we had come to confuse mai tenance of reduction with immobilisation If reducti can be maintained (as it often can) without immobilis tion, the fracture may well unite more readily

Canterbury   F G ST CLAIR STRANGE

ENURESIS

SIR,—In your leader early this year,[1] you dr attention to an article by Bostock,[2] who reported rel in 8 out of 12 cases of enuresis treated by means of machine designed by Crosby to wake the patient w the bladder empties The original article by Crosb reported cure of 28 out of 29 children with essent enuresis This letter is written to draw attention Crosby's paper and to give my experiences in treatment of an occasional case of enuresis

The machine has been used for some 12 patients, mo young women, of whom 4 were engaged to be marr Medical and urinary examination was negative in all. 'Drinite' apparatus was demonstrated and the working of explained in detail, the mothers being included in the instr tion of the younger patients Of these patients, all bu have been cured 2 required two and three courses of tr ment respectively to effect a cure 2 patients were relieved, 1 of them, a delinquent girl of 14, relapsed falling into the hands of the police and treatment abandoned, the other was inadequately instructed in the of the machine, and discontinued its use after one n declining further treatment The usual type of respons illustrated by the following case history

A stenographer of 15 had wet the bed every night of life No treatment had been any help She was given apparatus for one month She was awakened by the mach on each of the first 5 nights. Its use was stopped for next 3 days during menstruation (This was unnecess a thin pad or an internal tampon permits the efficient us the machine during menstruation) On the 9th and 1 nights she remained dry On the 11th night and subsequent she drank a pint of water on retiring On the 11th she was awakened once and on the 12th night three t by the machine Each subsequent night till the 20th was awakened by the desire to empty her bladder, and got out of bed and did so On the 20th night she awakened by the machine for the last time On the 21st n she was awakened by the full bladder, but thereafter

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1 *Lancet* 1955, i 391
2 Bostock, J *Med J Aust* 1954 ii, 141
3 Crosby, N D *Ibid*, 1950, ii 533

ept throughout the night   Use of the machine was stopped n the 25th night and she has remained free of enuresis, in pite of drinking a pint of water in the evenings.

This case demonstrates that the more frequent the nuresis, the more rapid the cure

It seems unlikely that any method of treatment will mprove on Crosby's figures yet the machine has not een widely used except in Australia The apparatus s simple and can be used by any intelligent person he relief rate is so high that it is doubtful whether edical examination is necessary before treatment eurological examination urological studies and psychiatric assessment could well be reserved for the few atients who fail to respond The machine is simple ompact and needs little maintenance It costs about 50 and one machine should cure 6 to 8 cases a year

* The makers are Watson Victor Limited 9–13, Bligh Street ydney The manufacturers state that a Drinite apparatus available for inspection at Messrs T H. Spicer & Son, Willoughby Road, Hornsey London, N 8

Adelaide
South Australia

MARK BONNIN

EPSOM COLLEGE

SIR,—About a year ago you commended to your readers he Centenary Appeal sponsored by the council of the oyal Medical Foundation of Epsom College for funds carry out a carefully considered programme of new uildings and rebuilding necessary to maintain the high epute enjoyed by the college

In reporting now the result of the first year's work of e appeal subcommittee we should like to remind the ofession that at the very least £100 000 is required to able the council to do what must be done and that a rther £50 000 is really necessary to complete the work wards this sum about £20,000 is now in hand and ven year covenants have been entrusted to us the tal value of which may reach a further £24 000 Only % of those to whom the appeal was issued (i e the edical profession) have sent donations It will be seen at the council have not quite reached half way to their st target and they do most earnestly beseech their ofessional colleagues who have not yet subscribed for enerous help

Notwithstanding the goodwill and assistance readily ven by the medical press there seems to be still wide read ignorance amongst the profession of the benefits hich Epsom College provides in the free education of edical orphans and in a first-class school at reasonable st for the children of practising doctors. The Founda n needs many more honorary local secretaries through t the Kingdom to help in dispelling this lack of com ehension and volunteers for this admittedly arduous k would be gladly welcomed by the council

Meanwhile we do urgently plead both for more annual scribers, and at this moment especially for donations wards our Centenary Appeal We have reached a stage ere we cannot go back and find it embarrassing to mmit ourselves to building operations unless we have ared financial support To all those who have already ped most grateful thanks are tendered May we ask se who have not done so to send a donation now to Secretary Epsom College Surrey

WEBB-JOHNSON
President.
RONALD W RAVEN
Chairman.
HENRY ROBINSON
Treasurer
HENRY FRANKLIN
Headmaster
LAWRENCE PENDRED
President Old Epsomian Club.

A NEW DESIGN OF SYRINGE

Messrs S & R J Everett & Co Ltd write:

We were most interested to read Dr Kibel's comment (Nov 5) on the use of the syringe described by Dr Camber (Oct 15) for delivering intravenous fluid under positive pressure The unusual design will no doubt single out this syringe for use in a number of new fields. As manufacturers of this syringe, we would like to mention that the particular modification suggested by Dr Kibel is, in fact, described in the patent application, and illustrated in fig 2 of Dr Camber's paper

Obituary

BRIAN DONNELLY

M.A. Camb., M.R.C.S., D M R.

Dr Brian Donnelly, consultant radiologist to the United Cambridge Hospitals and the East Anglian Regional Hospital Board, died on Oct. 8 at the age of 42

He was educated at Worksop College and the University of Manchester After qualifying in 1938 he held an appointment as house-surgeon at St. Mary's Hospital, Manchester Later he became assistant medical officer at the Royal Manchester Children's Hospital. He spent nine months in general practice in industrial Lancashire before he took up his first radiological appointment at Edinburgh Royal Infirmary Here he took the D M.R. in 1941, before joining the R.A.F

His five years service began at the Princess Mary's Hospital at Halton, and the R.A.F general hospitals at Ely, St Athan and Cosford After two years as radiological specialist to the R.A.F general hospital at Evesham he was posted to No 10 R.A.F Hospital, Karachi, where he planned the new radiological department Before demobilisation, with the rank of squadron leader, he was adviser in radiology to Base Air Forces, South-east Asia

In 1946 he came to Addenbrooke's Hospital Cambridge, as assistant radiologist and he was appointed consultant radiologist two years later His work also included diagnostic radiology at the Huntingdon County Hospital under the East Anglian Regional Hospital Board Last year the degree of M.A. was conferred on him by the University of Cambridge, where he held the appointment of associate lecturer in radiology

His main interests were radiodiagnosis in diseases of children, in lesions of the oesophagus, and in cardiac abnormalities In 1952 the British Institute of Radiology awarded him the Barclay prize for an essay on gastro-oesophageal regurgitation and oesophageal hiatus hernia, and he gave a paper on achalasia of the oesophagus to the 7th International Congress of Radiologists at Copenhagen

C P writes: "Brian Donnelly's family life was the sure foundation on which his attitude to his colleagues and his patients was based However busy the department he was never taken out of his stride, and his even temperament made him accessible to his colleagues at any time That indefinable quality known as charm was one which he had in full measure and radiated to all with whom he came in contact. He was not content to accept unreservedly the writings of others on subjects in which he was interested, and he strove always to prove to his own satisfaction the correctness or otherwise of their beliefs His voluntary work on many committees was freely given, and as secretary to the consultant staff committee at Addenbrooke's Hospital he set an example which will always be remembered

In 1933 Dr Donnelly married Miss Betty Brotherton, and she survives him with their son

GERALD KISSICK BOWES

M.A., D.M Oxfd, M R C P

Dr G K Bowes, medical officer of health for Bedford died on Oct 20 at the age of 61

He was educated at Epsom College, Christ Church, Oxford and St Bartholomew's Hospital At all three he won scholarships, and he took his B.A with first-class honours in 1913 Two years later he qualified and after holding house-appointments at Barts he served as a dresser at the Duchess of Westminster's hospital at Le Touquet till in 1916 he became medical officer to the 1st London General Hospital

On his return to civilian life he held resident posts in London at the Brompton Hospital and at the Western Hospital for Infectious Diseases In 1919 he took the D P H, and in 1921 he became assistant medical officer for Wiltshire In 1924 he was appointed assistant M O H for Birmingham, and four years later he was appointed M O H for Bedford

W C V B writes

"By some Dr Bowes was thought to live too much in the past, but those who thought so deceived themselves He had an acute insight into what was happening in the modern State, and what appeared to him psychologically unsound, merely politically expedient, or a departure from the eternal verities, he disliked, and in his gentle inimitable manner remarked upon in his annual report Sometimes he seemed to feel himself "wandering between two worlds—one dead, the other powerless to be born" A characteristic observation on a social service proposal which seemed to him to be unsound was 'Nec tali auxilio nec defensoribus istis tempus eget' To solve problems of medical administration in his company was a pleasant exercise, but in philosophy and literature, old and new, he was irresistible His life was simple and his material wants few It is in keeping with this that one should find the following lines marked in his copy of *Faust*, which he loved to read and re read

So sind am härtsten wir gequält
Im Reichtum fühlend, was uns fehlt

It is a melancholy thought that we can no longer look forward to his coming amongst us with his humanity, learning, and intellectual honesty There is a feeling of sadness and of loss To quote again from his much loved *Faust*

Aus dem Palast ins enge Haus
So dumm läuft es am Ende doch hinaus"

WILLIAM JAMES GRIFFITHS

M B Lpool

Dr Griffiths, a general practitioner in Chester for 28 years, and visiting anæsthetist to the Chester Royal Infirmary and Chester City Hospital, died on Oct. 31 at the age of 59

He was born in Bridgend, Glamorganshire, but was educated at Hawarden Grammar School as the family moved to Chester in 1906 In the first world war he served with the Royal Marines and the Northamptonshire Regiment into which he was commissioned On demobilisation he began his medical studies at Liverpool University, where he graduated M B in 1924 After acting as casualty officer at the Royal Southern Hospital, Liverpool, and as an assistant in general practice in Gillingham and Bedfordshire, he returned to Chester in 1926 where he took over a single-handed practice The following year he was appointed honorary anæsthetist to the Chester Royal Infirmary and in 1938 visiting anæsthetist to the Chester City Hospital He built up a large general practice in the Hoole and Newton districts of Chester, and after the war he took a first and then a second partner into the practice He was a divisional medical officer of the Chester division of the British Red Cross Society He served on the Chester city council from 1947 to 1953, and he was a member of the Chester and district and Barrowmore hospital management committees and of the Chester executive council In 1953 he was president of the Chester and North Wales Medical Society

A colleague writes "As a result of his sympathetic approach to his patients, his kindness and geniality, Dr Griffiths became a very popular and much loved general practitioner His Welsh Nonconformist upbringing moved him to take a firm stand on moral principles, to assist his less fortunate fellow citizens in distress, and to righteous indignation at social wrongs and injustices He took great pride in his city of adoption and was well versed in its history and traditions, but of all its institutions he was most proud of the Royal Infirmary His [illegible]y friends in so many different circles and walks of [illegible]ll miss his spontaneous humour and unobtrusive [illegible]osity"

[illegible] Griffiths is survived by his widow and a young [illegible]

Notes and News

CORTISONE AND HYDROCORTISONE

THE Ministry of Health and the Department of Health f Scotland have made arrangements with United Kingd manufacturers of cortisone and hydrocortisone which w enable preparations of these substances for oral, parenter and topical use to be freely prescribed by doctors from Dec. These arrangements do not apply to corticotrophin (A.C.T.H or to certain steroid substances such as prednisone a prednisolone, which for the time being will continue to supplied only through hospitals

VISIT OF RUSSIAN DOCTORS

LAST Saturday six Russian doctors returned to their coun after a busy three weeks as the guests of the British Medi Association The visitors were Prof S A Sarkisov, Pr V V Kovanov, Prof G F Gause, Prof L F Laric Prof M N Foteeva, and Dr L G Bogomolova Speak at a press conference on the eve of their departure, Profes Sarkisov declared "We have not only become acquaint with the work of our British colleagues but have also t them of the researches we are carrying out in our laborator The interest shown by our British colleagues testifies to t importance of exchanging medical information. We are co fident that the reaction to these measures should me great deal of progress to medical science and the succes solution of many urgent problems of medicine" Profe Sarkisov named cancer, mental disease, and tuberculosi fields in which the need for coöperation was especially great.

In the evening the visitors and others were entertained dinner by the council of the British Medical Associat Mr Iain Macleod, the Minister of Health, and Profe Sarkisov responded to the toast of The Guests propos Dr E A Gregg, chairman of the council Dr Gregg remar that, although the association received some twenty- medical journals from Russia, he had no doubt that we w ignorant of much important work in that country, and t the medical professions of the two countries could learn m from each other He hoped that the present visit m presage an era of friendly coöperation between the professional groups These two groups had something common besides vocational interest "Are we not citizens of the world sharing the common responsibility doing what we can in our own sphere to remedy the m of what has been in recent times a sick and unhappy world

CINERADIOGRAPHY IN UROLOGY

A DEMONSTRATION of cineradiography of the urinary t organised by the Institute of Urology, was held in Lo on Oct 26 Introducing a striking programme of coördin research, the director of the institute, Mr J D Fergu paid tribute to the work of the radiologist, Dr J J Stev and members of the staffs of St Peter's, St Paul's, St Philip's Hospitals, with whose assistance the recor had been made Dr Stevenson explained how the movem of the urinary tract in health and disease had been st by cineradiography, aided by the X ray image inten and he showed a number of films Finally a closed-c television demonstration enabled an audience of 200 to the physiological movements of various organs on the s The functions of organs are notably difficult to describe word or drawing, and the demonstration amply ind the value of cineradiography in this way As well as its ob importance in teaching and research, the method has pra applications in diagnosis and treatment An instru recording of the physiology of the normal urinary tract followed by films illustrating the investigation of p logical conditions by urography and arteriography Part larly impressive were the contractions of the renal pe and calyces, and the cystographic appearances du micturition and ureteric reflux The effect of vesical ca in limiting bladder motility was noteworthy as a mea determining the degree of spread of bladder tumours.

A further application of the use of the X ray image inten was shown in a coloured film demonstrating the introduc of radioactive material into the pituitary gland for control of advanced prostatic cancer It was possible to fo the entire technique from beginning to end, for each succ step was radiologically guided with great accuracy T film emphasised the potentialities of simultaneous rad gical and surgical approach and it may well stimulate nterest in combined operations elsewhere.

The demonstration took place at the Royal College of urgeons, where the late Sir Arthur Keith once told of his nability to isolate a node in the upper ureter responsible r the initiation of ureteric contraction. After this demonstration of the activity not only of the ureter but of the urinary ract as a whole, many people would be inclined to suggest a further search for a node, but perhaps at a still higher level.

REGIONAL HOSPITAL BOARD HEADQUARTERS STAFF

THE Ministry of Health[1] has approved new scales for headquarters medical staff of regional hospital boards, which will e retrospective to April 1, 1955 The salaries of senior dministrative officers will now range according to region, fom £2900–3600 to £2150–2600 of deputy S.A.M.O.s from 1900–2400 to £1800–2300; of assistant S.M.O.s from £1080–100 to £1680–2000 and of regional psychiatrists from 2400–2975 to £2200–2775 The salaries of medical officers ll regions) at age 33 or over will be on the scale £1415–1080

ELIZABETH CASSON MEMORIAL FUND

A FUND has been opened to commemorate the work of r. Casson, founder of the Dorset House School of Occupational therapy It was a matter of regret to Dr Casson that no section of her work remained incomplete—the establishment of a successor to the Allendale Curative Workshop hich she started in Bristol in 1939 and which was closed ing to the war The opportunity may shortly arise to have curative workshop in Oxford as part of a sheltered workshops heme sponsored by the health committee of the city council. he workshop would bear the name of Dr Casson, and it is oposed to raise funds to provide the initial equipment bscriptions may be sent to the Elizabeth Casson Memorial und, c/o the secretary the Casson Trust, Harberton House adington, Oxford

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iversity of Oxford

On Oct 29 the following degrees were conferred:

D.M —B C. Morson.
B.M —R. H Hussey

iversity of Cambridge

On Oct. 29 the following degrees were conferred:

M.D —Elizabeth M. Kingsley Pillers A. D Thomson.
M.B —P D Crockatt A Haworth J L. Struthers
By proxy

iversity of Manchester

The degree of M.D has been awarded with commendation P J D Snow

iversity of Glasgow

On Nov 5 the degree of M.D with honours was conferred Marion C Smith.

iversity of Edinburgh

Sir James Learmonth has tendered his resignation from the ius chair of clinical surgery and from the chair of surgery h effect from Sept 30 1956

yal College of Physicians of Edinburgh

On Nov 1 Dr W N Pickles was admitted to the honorary wship of the college, and was awarded the first James nzie medal. This medal is awarded to the physician ged in family practice who has made the greatest ribution to medical science

The following were elected to the fellowship:

nley Alstead, E J Wayne B G Maegraith H W Fullerton hav Krishna Kelavkar R. J Lajoie A. Ritchie Bhalchandra ll Dikshit, O. A. Scott, W K Myers Mohammed Abdul Hai, am Macdonald, I. M. Richardson, A D Gillanders J D P am, C. H. Davidson Hamidali Mahbuball Khan, R. J G lt W A. Boyd Campbell R D Rowe John Gillies J B or C W A. Dick, T K Maclachlan

The following were elected to the membership:

Haddad, M. V. Krishnamurthi A. K Chakraverti, D A Smith, Murphy H P Lyon, A. Fahmy S N Pathak, H V Pophale Frith G N Rao, D C I Amerasekera A. B Murray Mehta, D H. H. Robertson, A R Ahmad J R. L. Kelly Hendricks S A. Talib, J H Brown, A Rao P S Triplett, Hurwitz J Apthorp, S Axelrod G J R. Soutter A G W B Wright Poh Lam Wong B J Lake G J Stott, Nanda, N Azam, D A. Shaw, N J Walloopillai, M. Kamal Moldowney J I Laidlaw I P C. Murray G S M. Kellaway Fowle J B Tucker

Royal College of Physicians of Ireland

The following officers have been appointed for 1955–56:

President Dr F J O'Donnell, vice-president Dr D M. Mitchell censors Dr D M. Mitchell Dr J B Fleming Dr B Mayne and Dr M. D. Hickey

Royal Australasian College of Physicians

The following were admitted to the membership of the college during October:

John Ellard J F Farrar J M. Greenaway, J D Harley, W J Hensley George Michell, J R. Read, C A Rigg J, H E. Voss (New South Wales) W M Barrett, C P Brew Brian Clerehan, I C Goy W M. Maxwell, W G Miller J F Niall, A H Penington, J N Santamaria Eric Stock (Victoria) A W Steinbeck (Queensland) Michael Drew E R. Russell (South Australia) E S Bean, Marie Sadka (Western Australia)

Royal Society of Health

The meeting of this society on the design of health buildings on Nov 16 at 11 A.M is now to be held at Denison House, 296, Vauxhall Bridge Road, London S W 1

North of England Otolaryngological Society

The prize (50 guineas) offered by this society for original work in otolaryngology has been awarded to Mr R W Baillie (Paisley) for his paper on Lermoyez s syndrome

Faculty of Radiologists

The *Faculty of Radiologists* is holding a postgraduate weekend course from Nov 19 to 20 Further particulars may be obtained from the secretary of the faculty 45, Lincoln's Inn Fields, London, W C.2.

David Anderson-Berry Prize

This prize (£100) will be awarded in 1956 by the Royal *Society of Edinburgh for* recent work on the therapeutic effect of X rays on human diseases. Applications must reach the general secretary of the society 22 George Street, Edinburgh, 2 not later than March 31, 1956

International Congress on Diseases of the Chest

An international congress on diseases of the chest, sponsored by the council on international affairs of the American College of Chest Physicians, will be held in Cologne from Aug 19 to 23 1956 under the presidency of Dr Gerhard Domagk. Further information may be had from the executive offices of the college, 112 East Chestnut Street Chicago 11 Illinois.

International Congress of Radiology

The Treasury will allocate some Mexican currency to a limited number of applicants who wish to attend this congress in Mexico City in July 1956 The British delegation has been asked to submit the names of those interested to the Bank of England before individual applications for currency are sent in. Those who wish to attend are asked to send their names to the secretary of the Faculty of Radiologists, 45, Lincoln s Inn Fields, London, W C.2 as soon as possible

Chiropody for Old People

The National Corporation for the Care of Old People have allocated £60 000 to be spent over the next three years, in helping voluntary committees to provide a chiropody service for old people. The *Society of Chiropodists* and the Joint Council of Chiropodists, by advising their members to work at minimum fees, are making a considerable contribution to the scheme. The money will so far as is possible, be made available in different parts of the country and voluntary bodies should apply to the secretary of the corporation Nuffield Lodge Regent's Park, London, N W 1

Posthumous Award

The *Albert medal* for gallantry has been awarded to the late Surgeon Lieutenant C. E Rhodes, M.B R.N.V.R. The official citation was as follows

An explosion occurred in H.M Submarine *Sidon* in Portland Harbour on June 16 1955 which later caused the submarine to sink. Surgeon Lieutenant Rhodes was among the first to enter the *Sidon* after the explosion and, in spite of the total darkness and dense smoke he brought out an injured man to safety He then put on a Davis submarine-escape apparatus and re-entered the submarine with morphia to give further help to the injured In doing so he greatly prejudiced his chance of escape He was not a submarine officer and was not familiar with the use of the breathing apparatus or the lay-out inside a submarine In spite of these handicaps and the pitch darkness his only thoughts were for those within the submarine, he had no hesitation in the *Sidon* and he succeeded in helping two more men to escape the submarine sank Surgeon Lieutenant Rhodes selfless act in helping to save the lives of his

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[1] H.M.(55)104

R A F Appointments

The Air Ministry have announced the following Royal Air Force medical appointments

Air Commodore P B L Potter to be principal medical officer Middle East Air Force, with the acting rank of air vice marshal, Air Commodore A F Cook to be principal medical officer, Bomber Command, and Group Captain J Magner to be principal medical officer Flying Training Command, with the acting rank of air commodore

Fulbright Travel Grants

The United States Educational Commission in the United Kingdom is offering travel grants to graduates, professors, lecturers, and senior research workers of the United Kingdom and Colonies to go to America for an academic or educational purpose between June 1, 1956, and April 1, 1957 Further particulars may be had from the commission, 55, Upper Brook Street, London, W 1

The London Medical Orchestra

This orchestra is giving a concert in aid of the Infantile Paralysis Fellowship at B M.A House, Tavistock Square, W C 1, with Mr Alan Loveday as soloist, at 8 P M on Saturday, Dec 10 Tickets may be had at the door

Dr Elspeth Warwick deputy medical officer of health for Nottingham has been given leave of absence to undertake an assignment for the World Health Organisation to advise on the setting up of maternal and child health services in parts of Nigeria

Diary of the Week

NOV 13 TO 19

Monday, 14th

UNIVERSITY COLLEGE, Gower Street, W C 1
5 30 P M Dr W S Feldberg, F R.S Recent Experiments on the Pharmacology of the Periventricular Grey Matter of the Brain
SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E C 4
4 30 P M Mr Samuel Oram Valvular Disease of the Heart
5 45 P.M Sir Russell Brock Surgery of Valvular Disease of the Heart

Tuesday, 15th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S W 1
5 P M Dr Wilfrid Sheldon Cœliac Disease (Charles West lecture)
ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W C 2
3 45 P M Dr F Stansfield Anatomy of the Visual Pathway
BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Medicine, Keppel Street, W C 1) Prof R E Tunbridge Structure of Connective tissue Fibres
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1
8 P M. *Pathology* Dr J V Dacie Dr W R Pitney Dr R M Hardisty, Dr P Wolf Laboratory Aspects of Blood Coagulation
ST MARY'S HOSPITAL MEDICAL SCHOOL Paddington, W 2
5 P M Mr John Peel Diabetes and Pregnancy
INSTITUTE OF NEUROLOGY
5 30 P.M (National Hospital Queen Square, W C 1) Dr P Sandifer Pain in the Neck and Upper Limbs
INSTITUTE OF DERMATOLOGY Lisle Street, W C 2
5 30 P M Dr J A. Dudgeon Viral Diseases of the Skin
SOCIETY FOR THE STUDY OF ADDICTION
8 P M (11 Chandos Street W 1) Dr Horace Joules Sir Adolphe Abrahams Mr Kenneth Mullard Prof Sidney Russ, D.SC Smoking and Cancer
ROYAL ARMY MEDICAL COLLEGE Millbank S W 1
5 P.M Sir Owen Wansbrough Jones, PH D The Medical Services and New Weapons
MANCHESTER MEDICAL SOCIETY
4 30 P.M (The University Manchester, 13) Dr D A K Black Patients and Doctors in Classical Times

Wednesday, 16th

SOCIETY OF APOTHECARIES OF LONDON
5 30 P M Sir Zachary Cope The Society of Apothecaries and Medical Education (First Gideon De Laune lecture)
POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road W 12
2 P.M Dr G Popjak Fat Metabolism
ROYAL SOCIETY OF MEDICINE
8 15 P M *General Practice* Dr E Crosbie Walsh Sir Russell Brain Mr Murray Falconer, Dr John Hunt Dr A S Playfair Cerebrovascular Disease
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray s Inn Road W C 1
5 30 P M Prof F C Ormerod Plastic Surgery of the Middle Ear
INSTITUTE OF DISEASES OF THE CHEST Brompton Hospital S W 3
5 P M. Dr Clifford Hoyle Sarcoidosis
INSTITUTE OF DERMATOLOGY
5 30 P M Dr Dudgeon Viral Diseases of the Skin
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE 28 Portland Place, W 1
3.30 P M Dr P A Tyser Public Awareness of Public Health
ST MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GUIDANCE, 91, Dean Street W 1
[illegible] P M Dr Colman Kenton Techniques of Contemporary Physical Treatments
EUGENICS SOCIETY
5 30 P M (Burlington House, Piccadilly, W 1) Dr H C. Maur Williams Problem Families in Southampton.
RESEARCH DEFENCE SOCIETY
5 30 P M (University College, Gower Street W C 1) Sir Hen Dale, O M, F R.S Humanity's Rising Debt to Med Research (Stephen Paget lecture)
NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY, 64, St Jam Street, Nottingham
8 30 P M Dr Clifford Kennedy Incoördinate Action of t Pregnant and Non pregnant Uterus
UNIVERSITY OF LIVERPOOL
5 15 P M (Surgery Theatre) Prof R I Harris (Toronto) Hypermobile and Rigid Flat Feet (Lady Jones lectur
ROYAL FACULTY OF PHYSICIANS AND SURGEONS 242, St. Vinc Street, Glasgow, C 2
5 P M Prof J N Davidson Biochemical Approach to Ce Structure in Health and Disease

Thursday, 17th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Medicine Prof N H Martin Protein Diseases
ROYAL SOCIETY OF MEDICINE
8 30 P M *Proctology* Mr Harold Dodd The Charter of Pro tology (Presidential address)
INSTITUTE OF NEUROLOGY
5 P M Dr Margaret Kennard (Canada) Electro-encephalograph Frequency Patterns as Related to Behaviour
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE
5 30 P M Mr Harold Edwards Contribution of War to t Advancement of Surgery (Blackham lecture)
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant 3
8 P M Mr Hedley Atkins Carcinoma of the Breast.
MANCHESTER MEDICAL SOCIETY
8 P M *Anæsthetics.* Dr F W Oliver Carbon dioxide Con trations in Anæsthetic Apparatus Dr E G Rees Jo The Anæsthetist in Obstetrics
UNIVERSITY OF EDINBURGH, University New Buildings Te Place
5 P M Prof G M Bull Diagnosis and Treatment of Disturba of Water and Electrolytes
UNIVERSITY OF ST ANDREWS Queen's College, Small's Wy Dundee
5 P.M Prof W Malcolm Millar Differential Diagnosis of Or and Functional Disorders

Friday, 18th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P M Mr F W Holdsworth Traumatic Paraplegia
4 P M Dr Douglas Gairdner Anaphylactoid Purpura (Sch lein Henoch Syndrome)
FACULTY OF RADIOLOGISTS
5 P M (Royal College of Surgeons) Sir Russell Brain Neuro of the Cervical Spine (First Crookshank lecture)
INSTITUTE OF LARYNGOLOGY AND OTOLOGY
3 30 P M Mr J C Hogg Epistaxis
INSTITUTE OF DERMATOLOGY
5 30 P M Dr M S Thomson Lichen Planus
BRITISH INSTITUTE OF RADIOLOGY, 32 Welbeck Street W 1
6 30 P M Dr E. E Pochin, Dr H Miller Discussion of R Iodine Measurements in Clinical Practice
MANCHESTER ROYAL INFIRMARY
5 15 P M (University of Manchester) Lady Violet Bo Carter, D B E Of Human Greatness (Lloyd R lecture)

Appointments

ALWYN SMITH, PETER M.B Lond whole time deputy senior Welsh Regional Hospital Board
ARDLEY, JOHN, M B Durh, D I H deputy M O H, Coventry
BENNETT, GEORGE, M B Manc, D O M S asst ophthalm (S H.M O) Sunderland and Hartlepools H M C.S
CORMAC C D, B M Oxfd D P H M O H, Lincolnshire (Linds
DIXON, W M, M B Lond, M R C.P whole time asst. chest phys Hammersmith chest clinic London
GRANT, F G, M B Belf, M R C O G consultant obstetrician gynæcologist, North Down and Downpatrick H.M.C.
LEWIS MARY P H, M B Aberd asst M O H, Warrington.

Birmingham Regional Hospital Board
KASABIAN, A H, M R C.S F F A R C.S part time consu anæsthetist, Lichfield, Sutton Coldfield and Tam group
MANFORD, MARGARET L, M B Lond, F F A R.C.S part consultant anæsthetist Wolverhampton group
WOOD, S R M B Birm part time consultant dermatol Lichfield, Sutton Coldfield and Tamworth group

East Anglian Regional Hospital Board
DUNN J F M B Glasg senior registrar in psychiatry, Hell Hospital, Norwich
KIRKLAND ANNE K M B Glasg, D.P.M senior registrar mental deficiency and child psychiatry, Little Plumst group of hospitals
ROWE, L F, M B Edin. senior registrar in psychiatry, Andrew's Hospital, Norwich

The Hospital for Sick Children Great Ormond Street, London
ISAACS SUSANNA M B Lond M R C.P, D C H part time re to the department of psychological medicine
McCREDIE D A, M B Melb house physician

Manchester Regional Hospital Board
NICHOLSON R S M R C S tuberculosis physician (S.H.M Preston and Chorley Hospitals
ROSS, D N, M D Glasg, F R F P S consultant physician (w time) in geriatrics, Ashton Hyde, and Glossop Hospitals
WINSTON, R M, M.D Manc asst pathologist (S.H.M.O), W Manchester Hospital Centre

TESTS OF ADENOHYPOPHYSEAL FUNCTION *

A C Crooke
M.D Camb

CLINICAL ENDOCRINOLOGIST THE UNITED BIRMINGHAM HOSPITALS

The study of diseases of the adenohypophysis has erally followed a *common pattern* The first descrip n of the clinical picture is often confused and confined a few examples Later a number of such descriptions gathered together and a common pattern is recognised is is followed by an account of the morbid anatomy ally the biochemical changes including the hormonal ance are worked out This sequence of events is mplified in the study of basophilism

n 1932 Cushing described the clinical appearance of patients who presented the picture which subse ntly became known by his name To these he added umber of others previously *reported and he claimed* t the disease was caused by an adenoma of basophil s in the anterior lobe of the pituitary gland Twenty rs ago I showed that the constant pathological finding he adenohypophysis is a hyaline change in its basophil and that adenomata are not constant and when ent are not necessarily composed of basophil-cells mpts to elucidate these pathological findings by cal investigations and by experiments on animals led rolonged arguments but no conclusions Even the e recent histochemical studies have failed to provide isfactory solution

t an early stage my interest shifted from the morbid omy of the pituitary gland to the biological and ical properties of its hormones as it became apparent a fuller understanding of its pathology rested on the surement of its functional capacity I next developed st for adrenocorticotrophic hormone using hypo ectomised rats, and this enabled Cortis-Jones work with me at the London Hospital, to demonstrate that nocorticotrophic hormone is ultrafiltrable *Later* were joined by Morris, but subsequent stages in the cation were delayed by the war and it was not ble to publish this work until afterwards (Cortis s, Crooke Henly, Morris and Morris 1950) ugh *this* was interesting fundamental research it ght us little nearer to our goal of estimating pituitary tion in man *Since opening* the Department of al Endocrinology in Birmingham however our ipal interest has been in pituitary function tests. I ose, therefore to review the methods which are able and to attempt to assess their usefulness, and y *to* describe briefly some of our own work on this rt

ts *of* adenohypophyseal function may be divided hly into four groups. In the first group a measure is made of some indirect *effect of a gland* which is influenced by the pituitary gland Among such are the measurement of the basal metabolic rate sulin sensitivity test Kepler's test of water load he excretion of certain breakdown products such ketosteroids, pregnanediol and the oestrogens. In econd group a measurement is made of the synthesis, tion, or excretion *of a* hormone produced by a gland h is itself influenced by the pituitary gland Among tests may be included the uptake of *radioactive* e by the thyroid gland the level of circulating in bound iodine and the excretion of certain corti s and perhaps of specific 17 ketosteroids and oestro . In these two groups it is presumed that when a er of tests indicate poor function of several glands there is some degree of pituitary insufficiency, but these tests give no indication of increased pituitary function Obviously such indirect measures give a poor estimation of pituitary activity, and I do not propose to discuss them more fully

The third group of tests is a modification of the first two in which the same functions are measured but the measurements are repeated after treatment of the patient with specific pituitary trophic hormones The hormones which lend themselves to such *investigations* are the adrenocorticotrophic, thyrotrophic and gonadotrophic These tests are more *specific than those in the previous* groups because they demonstrate the ability of a gland to respond to pituitary stimulation thus distinguishing between primary and secondary failure of the gland They cannot demonstrate increased pituitary secretion but they seem to be a considerable advance on older methods and are likely to become more widely used, and I propose to discuss them more fully

The fourth group of tests entail the direct measurement *of specific pituitary* hormones in blood or urine Such tests are urgently needed in order to recognise specific *types of adenohypophyseal failure and to distinguish* these from failure of an end-organ to respond to pituitary stimulation and finally to diagnose specific *types* of excessive pituitary stimulation I propose to describe what has been attempted so far in this group of tests although only the measurement of gonadotrophic hormones can be regarded as practicable for limited studies in well-equipped departments.

Tests depending on Measurement of Effect of Treatment with Specific Pituitary Trophic Hormones

CORTICOTROPHIN

In recent years several tests have been proposed in which *is measured* some indirect effect of adrenocortical secretion in response to stimulation with corticotrophin (A C T H) Examples are Thorn's *test* in *which* the fall in the relative number of circulating eosinophil-cells is estimated and the excretion of breakdown *products* such as 17 ketosteroids Such tests offer poor comparison with the direct measurement of adrenocortical hormones in circulation or their excretion in urine after stimulation with corticotrophin

The development of a method for determining the level of 17 hydroxycorticosteroids (principally 17 hydroxy corticosterone or *compound* F) in blood by Nelson and Samuels in 1952 has opened new fields for investigation Using this technique Bliss et al. *(1954) and Eik* Nes et al. (1954) compared the effect of rapid intravenous injections of corticotrophin with infusions *given over* longer periods of time and concluded that 25 I U of corticotrophin given as an intravenous infusion over *a period of six* hours was the most suitable for testing adrenocortical response The response of different individuals in the *control series* varied considerably but the characteristic response of each was unaltered in successive tests using different doses *of corticotrophin.* The test has been applied principally to the detection of primary adrenocortical failure, but it has been *shown to* be sufficiently sensitive to detect less severe failure in patients dying of pulmonary tuberculosis whose adrenal glands *were found* at necropsy to be unaffected by tuberculosis These patients had *normal* blood levels of 17 hydroxycorticosteroids *during* the control period but failed to respond to stimulation with corticotrophin—a condition described as low adrenal *reserve* Some patients with mild Addison's disease also showed low adrenal reserve in contrast with the usual finding in patients with severe disease who have low levels of 17 hydroxy corticosteroids initially

The *methods for determining* 17 hydroxycorticosteroids in blood are rather complicated and are unsuitable for

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* dential address to the Section of Endocrinology of the Royal Society of Medicine Oct 20 1955

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2 cases, it was impossible to establish the nature of the lesion before laminectomy In these cases, biopsy established that the growths were of prostatic and renal origin In the prostatic case the first symptom was a deep, boring pain between the shoulder-blades, and in the renal case it was non segmental pain on the left side of the body, with weakness of the legs

Root pain is commonly the first symptom of a neoplasm arising in the posterior abdominal or thoracic wall The growth tends to enter the spinal canal through the intervertebral foramina and wrap itself round the spinal theca, not only crushing the cord, but also strangling its foraminal blood-supply Ischæmia as much as constriction of the cord accounts for the neural changes, and this explains why decompression and removal of the growth so rarely relieves the symptoms The purpose of operation is usually to relieve pain

Discussion

In malignant constriction of the spinal cord by a silent primary neoplasm the neurological signs are much the same as those caused by the compression of a primary benign neoplasm But in cancerous cases the patient may be fully paralysed within a few days of the first signs of weakness, whereas in cases of benign neoplasm the paralysis develops slowly over months or even years

It is impossible to identify the origin of spinal cord compression by the first symptom A persistent pain of root distribution suggests a physical origin, and aggravation by straining or coughing confirms this

At the other end of the scale is the picture of complete paralysis, of gross sensory loss, of sphincteric paralysis, of decubitus ulcers, and of ascending infection of the kidneys

A diagnosis should be made as soon as possible after the appearance of the first symptom Neoplasms that are surgically curable nearly always progress slowly, and it is often possible to make a diagnosis on clinical evidence alone before irreversible damage has been done to the spinal cord

I thank Dr Raymond Whitehead, of the department of pathology of Manchester University, for his helpful criticisms. The preparation of this work was assisted by a research grant from No 1 Regional Hospital Board.

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THE NON-ANTIGENICITY OF CHONDROITIN SULPHATE

W C BOAKE
B Sc, M.B Melb, M R C P
ASSISTANT, MEDICAL UNIT

H MUIR
M.A, D.Phil. Oxfd
EMPIRE RHEUMATISM COUNCIL FELLOW

ST MARY'S HOSPITAL, LONDON

It has often been suggested that rheumatic fever and acute glomerulonephritis are due to the fact that the patient's tissues have become antigenic This concept has been largely based on the undoubted association between these diseases and antecedent β-hæmolytic streptococcal infection It is thought that these streptococci react with a normally non-antigenic component of the host's tissues (generally assumed to be a connective-tissue component in rheumatism), rendering it antigenic The auto antibodies thus formed are thought to react in situ with the changed or unchanged body component and so to produce the characteristic local lesions

This hypothesis has never definitely been proved or disproved, although it has been the subject of much experimental work.

Cavelti and Cavelti (1945) produced glomerulonephr in rats by repeated injection of dead streptococci toget with rat kidney tissue At the same time, antibodies w formed against the rat kidney This work, however, has been confirmed (Humphrey 1948)

McKee and Swineford (1951) injected guineapigs wit vaccine made from dead hæmolytic streptococci and gun pig joint tissue No joint or kidney lesions or precipi were found

Glynn and Holborow (1952a) produced arthritis in rab by a somewhat similar technique They injected rab with a vaccine prepared from β hæmolytic streptococci chondroitin sulphate, a polysaccharide derived from hu cartilage These rabbits developed swollen joints and synov This work differed from similar studies, however, in Glynn and Holborow prepared their vaccine by incuba chondroitin sulphate with live β hæmolytic streptoc because they had already shown that this process confe antigenicity on normally non antigenic polysaccharide vegetable origin (Glynn and Holborow 1952b)

We thought that their technique might be valu in work on rheumatism We therefore repeated this w but, in doing so, used rabbit protein-free chondro sulphate and a larger number of rabbits (Glynn Holborow used only very few rabbits and prepared t vaccine from human chondroitin sulphate) Altho human and rabbit chondroitin sulphate may be identi nothing is known about the immunological relation these two substances To demonstrate auto antib production it was clearly necessary to use a substa derived from an animal of the same species as subjected to the experiment

Materials and Methods

The methods described by Glynn and Holbo (1952a) were followed closely, and their paper shoul consulted.

Potassium Chondroitin Sulphate

Chondroitin sulphate was prepared by the met of Einbinder and Schubert (1950) from cartilage obta from ears, trachea, and ribs of ten rabbits Connec tissue and muscle were removed The cartilage sliced and suspended in a solution containing potassium chloride and 1% potassium carbonate, macerated in a Waring blender It was twice extra for forty eight hours with this solution The pro obtained was purified twice more by the metho Einbinder and Schubert (1950) and dried in vacuo phosphorus pentoxide

The resultant product contained hexosamine[1] 30 nitrogen[2] 2 15%, and potassium 13 6% The for for chondroitin being C_{14} H_{19} O_{14} NSK_2 $2H_2O$, would expect to find hexosamine 31 5%, nitr 2 45%, and potassium 13 66% Einbinder and Schu (1950) found in their potassium chondroitin sulp from ox trachea hexosamine 22 43–26 36%, nitr 2 07–2 18%, and potassium 10 95–11 3% The nitrogen content of the preparation and the fact th gave a negative Biuret reaction suggest that it conta little, if any, protein

For use in the experiment the chondroitin sulp was dissolved in sterile water in a concentratio 10 mg per ml (1% *w/v*) This was sterilised by filtration, which led to a loss of 30% of the mat determined by nitrogen estimations on the filtrate sterile solution was therefore considered to contain *w/v* of chondroitin sulphate

Preparation of Vaccines

A group A type 4 strain of a β-hæmolytic streptoc was obtained from the National Collection of Cultures and cultured for eighteen hours in try digest broth, centrifuged, washed twice with ph gical saline solution, and resuspended in a concentra n of 10^9 per ml The live streptococci were then cubated with an equal volume of a 0 7% w/v sterile lution of chondroitin sulphate for an hour at 37 C entrifuged again washed twice resuspended in physio gical saline solution in a concentration of 10^9 per l, and killed by heating to 56 C for 30 minutes Control ccines were prepared in the same way but without the hondroitin sulphate

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[1] Determined by a modification of the method of Elso Morgan (1933)

[2] Determined by the method of Conway (1947)

Immunisation

Young cross bred rabbits weighing 2 0–2 8 kg were ept on a mixed diet in individual cages Twelve selected t random were given intravenous injections of chondroitin-sulphate vaccine three times a week Seven injections were given initially, the dosage per injection was 0 1 0 2, 0 2, 0 5 0 5 1 0 and 1·0 ml (total 3 5 ml) A booster dose of 1 0 ml was given two weeks after the st course of injections The vaccine was always freshly prepared for each injection

Six other rabbits were injected intravenously with eat killed chondroitin free streptococci in the same sage as stated above Six other rabbits received only chondroitin sulphate solution 3 mg per rabbit

Tests for Antibodies to Chondroitin Sulphate

Precipitins—The method of Swift et al (194) ed by Glynn and Holborow (1952a) was followed actly, except that all the sera were tested in dilutions 1/1 1/10, 1/20 and so on, to 1/1280

Complement fixation—The method of Wyler (1929) ed by Ackroyd (1951), was adopted Sera were luted 1/1, 1/2, 1/3 1/4 1/10 1/15 1/20 These s were made on all sera obtained later than three weeks m the start of the experiment

Skin sensitivity to chondroitin sulphate was tested by ting intradermally in the flank 0 1 ml of a 0 7% w/v tion of chondroitin sulphate The skin was examined nty-four and forty-eight hours after the injection

Results

al Manifestations of Arthritis

rabbit in any of the three groups at any time before or up to a month after the last injection had , stiff or tender joints All had persistently l gaits and all gained weight throughout the ment. Three control rabbits died two from tory infections and one from intestinal obstruction

logical Manifestations of Arthritis

rabbits given chondroitin sulphate vaccine were a month after the last injection Their peri l, pleural and peritoneal membranes were all l. Their hip knee, shoulder, elbow and temporo bular joints were all macroscopically normal al membrane from at least one joint from each t was examined microscopically and found to be al. None of the control rabbits showed any ality of the joints.

nicity of Rabbit Chondroitin Sulphate

precipitins or complement-fixing antibodies to droitin sulphate were found in any of the sera of any rabbits at any time Streptococcal agglutinins ped in all the rabbits injected with streptococci.

Sensitivity to Rabbit Chondroitin Sulphate

rabbit at any time developed skin sensitivity to droitin sulphate.

Discussion

failure to find auto antibodies to rabbit chondroitin and to produce experimental arthritis is of some The only apparent difference between this ent and that of Glynn and Holborow (1952a) the chondroitin sulphate used It is also possible, that in this work there was no definite combination between the rabbit chondroitin sulphate and the streptococci We have no formal proof that this union took place if it did not, this is a possible explanation of our negative results

On the other hand the results obtained by Glynn and Holborow (1952a) may not have been due to chondroitin sulphate acting as an auto antigen but could possibly be interpreted as a sensitisation reaction to traces of protein in the chondroitin preparation

In any case our findings show once again that positive results obtained by techniques involving auto antibody production are difficult to repeat Such methods are not yet reliable and add little to current concepts on the ætiology of rheumatism Burnet (1954) points out that 'until a well defined circulating antibody of the type postulated can be demonstrated in every case of rheumatic fever at the appropriate period ' ideas must remain speculative

Although these experimental results were also negative we have thought it worth while to record them because they were obtained under well defined conditions

Summary

An attempt was made to produce auto antibodies and arthritis in rabbits by injecting a vaccine consisting of rabbit chondroitin sulphate and hæmolytic streptococci.

No auto antibodies were detected, and no rabbit developed arthritis

We wish to thank Prof G W Pickering and Dr J F Ackroyd for their criticism, and Mr D Pullen for his technical assistance One of us (W C B) was in receipt of a research grant from the endowment fund of St. Mary s Hospital.

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OUTPATIENT TRIAL OF
ACETAZOLEAMIDE IN PREVENTION OF PRE-ECLAMPTIC TOXÆMIA

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There is evidence that sodium retention may develop in pre eclamptic toxæmia. Dieckmann et al. (1952a) reported on the inability of patients with pre-eclamptic toxæmia to excrete a sodium load in a similar manner to healthy pregnant women Carey (1953) found an increased sodium space in patients with mild pre-eclamptic symptoms, and Chart et al (1951) noted increased excretion of sodium retaining factors in the urine of such patients In an attempt to prevent sodium retention low sodium diets have been given but it is difficult to reduce the sodium content of the diet below 1 g daily without rendering the diet unpalatable

Ion exchange resins (Odell et al 1951, Carey 1952 Dunster 1953) have been given in conjunction with a low sodium diet to prevent absorption of sodium from the

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Present address Department of Physiology University College Ibadan, Nigeria gastro-intestinal tract, but the large quantity of ion-exchange resin that has to be given daily is bulky and unpalatable, and other ions are adsorbed It therefore seemed of interest to see whether acetazoleamide, which increases sodium excretion by inhibiting the carbonic anhydrase in the kidneys, would be of use in preventing pre eclamptic toxæmia

Methods

Patients who had gained more than 6 lb in weight in any month after the 20th week of their pregnancy but had no other signs of pre eclamptic toxæmia were referred to a special clinic, where they received one of the following treatments

(1) A low sodium diet plus acetazoleamide
(2) A moderately low sodium diet plus acetazoleamide
(3) A low sodium diet plus a placebo
(4) A moderately low sodium diet plus a placebo

The diet provided 1800 calories daily and contained 175 g of carbohydrate, 96 g of protein, and 70 g of fat The low-sodium diet provided 1 2 g of sodium (Na^+) and the moderately low-sodium diet 3 0 g of sodium daily

To eliminate bias the treatments given were decided before the patients were examined The first patient arriving at the special clinic received treatment 1, the second treatment 2, and so on Each patient on arrival was given a code number so that the investigator at the subsequent examination did not know what treatment was being given

TABLE I—NUMBER OF PATIENTS WHO DEVELOPED PRE ECLAMPTIC TOXÆMIA

Diet	Treatment	Primiparæ	Multiparæ
Low-sodium	Acetazoleamide	2 of 13	1 of 13
	Placebo	8 of 11	7 of 13
Moderately low-sodium	Acetazoleamide	5 of 14	1 of 8
Moderately low-sodium	Placebo	5 of 12	4 of 9

All the patients showed an increase of weight of more than 6 lb a month before treatment
χ^2 test P> 0 01 <0 02 for both primiparæ and multiparæ (low sodium diet)
χ^2 test P> 0 5 <0 7 for primiparæ (moderately low sodium diet), and P> 0 1 <0 2 for multiparæ

The patients were seen once a month in the earlier stages of their pregnancy and weekly in the final month They were considered to have developed pre eclamptic toxæmia if they showed any one of the following signs clinical œdema of both hands and legs, a diastolic blood-pressure above 90 mm Hg, and albuminuria The blood-pressure and clinical œdema were assessed by the same observers throughout the series Blood-pressure was measured by an experienced sister and checked by a doctor Good correlation was obtained Visible œdema was judged by a doctor Acetazoleamide was given orally in a dose of 250 mg every third day Urinary sodium was estimated with an internal standard flame photometer

Results

The number of cases which developed signs of pre-eclamptic toxæmia is shown in table I Acetazoleamide significantly decreased the incidence of signs of pre eclamptic toxæmia in the patients on the low-sodium diet whether they were primiparæ or multiparæ (χ^2 test P between 0 01 and 0 02 for primiparæ and multiparæ) In primiparæ on the moderately high-sodium diet acetazoleamide produced no significant difference The numbers of multiparæ investigated on this diet were too few to prove that it had no effect The number of patients who developed albuminuria, visible œdema of both legs and hands, or a diastolic pressure greater than 90 mm Hg during the period of observation is shown in table II The mean weekly gain in weight in all groups treated with acetazoleamide was less than that of controls, but differences were not significant The onset of œd was often not associated with a sudden increase in patient's weight

TABLE II—NUMBER OF PATIENTS WHO DEVELOPED ALBUM URIA, VISIBLE ŒDEMA, OR A DIASTOLIC BLOOD PRESSU HIGHER THAN 90 MM HG DURING PERIOD OF OBSERVATI

Treatment	Primiparæ			Multiparæ	
	No of patients	Diastolic blood pressure > 90 mm Hg	Visible œdema	No of patients	Diastolic blood pressure > 90 mm Hg
Low sodium diet plus acetazoleamide	18	0	2	13	0
Low-sodium diet plus placebo†	11	2	6	13	4
Moderately low-sodium diet plus acetazoleamide	14	4*	1	8	0
Moderately low-sodium diet plus placebo	12	2	3	9	0

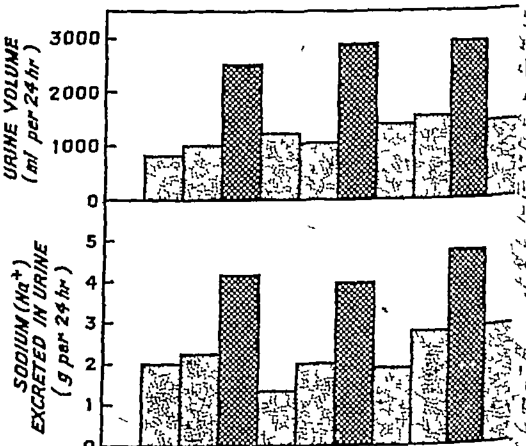
* One patient also had albuminuria
† One patient also had a diastolic blood pressure > 90 mm.

It was impossible to estimate the urinary excretio sodium in outpatients treated with acetazoleamide, it was estimated in three inpatients with established eclamptic toxæmia Acetazoleamide repeatedly prod a sodium diuresis in one of these patients (see figure), diuresis lasted about twenty-four hours In the two inpatients with pre eclamptic toxæmia no sodium diu was obtained

Discussion

Cummings (1934) found that the average monthly in weight in the last few months of pregnancy ra from 3 lb in the 8th and 9th months to 5 lb in th and 7th months, and Evans (1937) noted that 47 expectant mothers who had a weight gain of 6–8 any month of their pregnancy developed toxæ Dieckmann et al (1952b) reported that the weight gain between the 20th and 30th weeks of nancy was 7 7 lb, and Hamlin (1952, 1953) cons that patients who gained more than 8 lb betwee 20th and 30th weeks of pregnancy were liable to de pre eclamptic toxæmia

A weight gain of 6 lb or more in any one mont chosen for admission to the present trial This gain probably indicates that all the patients had



Effect of acetazoleamide on urine volume and urinary excr sodium in a patient with mild pre-eclamptic toxæmia (blood- 140/90 mm Hg): *Stippled*, placebo given at 9 a.m ; *hatched* ac amide 250 mg given at 9 a.m

degree of water retention on admission to the trial The onset of visible œdema without further sudden increase in body weight may be due to shift of fluid from the intracellular to extracellular spaces Dieckmann (1952) states that clinical œdema is usually due to an increased extracellular fluid space, but that fluid retention may be primarily intracellular

The standards of blood pressure in normal pregnancy set by various workers varies considerably DeLee and Greenhill (1948) took 130/90 mm Hg as the highest limit of normality Brews (1948), however, considered that 140/90 mm. Hg had to be recorded before a patient could be considered to have pre eclamptic toxæmia Browne and Browne (1955) believed that a blood pressure of 120/80 mm Hg was pathognomonic

In the present series the diastolic pressure alone has been considered, because Mukherjee and Govan (1950) and Hughes (1951) consider that a rise of diastolic pressure to be more significant than that of systolic pressure The present results suggest (table II) that acetazoleamide may prevent a rise in diastolic blood pressure Possibly its effect on sodium metabolism may be responsible for this. Restriction of sodium is well known to have a beneficial effect on essential hypertension.

Diuretics have been used previously in the treatment of pre-eclamptic toxæmia. De Alvarez and Richards (1954) have reported that aminophylline and Mercuhydrin induce a diuretic response in patients with pregnancy toxæmia Assali et al (1955) who investigated the effect of ammonium chloride say it appears that the inability of ammonium chloride to mobilise significant amounts of sodium limits its value in the treatment of the œdema of toxæmia of pregnancy ' Acetazoleamide has been used in the treatment of œdema of congestive heart failure (Friedberg and Halpern 1952 Gasch and Kröck 1953 Belsky 1953, Falbriard 1954, Ruskin 1955) The doses used in those studies were 250–750 mg daily In the present investigation 250 mg was given once every three days. This low dose had no untoward effect on the fœtus Acetazoleamide was administered only every third day because resistance had been reported with daily doses (Hofbauer et al 1955) Toxic manifestations were seen in two patients only : one complained of tingling in her hands, and another of nausea and epigastric pain. These symptoms ceased when acetazoleamide was withheld

One would not be surprised to find that acetazoleamide fails in some patients with pre eclamptic toxæmia In severe congestive heart-failure Evans et al (1954) have reported its failure to increase the urinary excretion of sodium. The main action of acetazoleamide is on the renal tubule, but W S Braverman, A L Rubin and A W Mead (personal communication) found that it also decreased the glomerular filtration rate in healthy people, although Ruskin (1955) has reported that it had no significant effect on the glomerular filtration rate in patients with heart-disease In pre-eclamptic toxæmia De Alvarez and Richard (1954) have noted a decrease in glomerular filtration rate Therefore if acetazoleamide further decreases the glomerular filtration rate, its effect on the renal tubule may be nullified

Summary

A selected series of pregnant patients were placed on a low-sodium (1 2 g of Na+ daily) or moderately low sodium diet (3·0 g of Na+ daily) and some were treated with acetazoleamide

The incidence of signs of pre-eclamptic toxæmia was significantly lower in patients who received acetazoleamide in addition to the low sodium diet but no significant difference was found in patients who received acetazoleamide in addition to a moderately low sodium diet

Acetazoleamide may produce a sodium diuresis in established pre-eclamptic toxæmia

I thank Prof G G Lennon and Prof H. Heller for their interest and criticisms Dr S Walker for facilitating the outpatient trial Sister E M. Staton for invaluable assistance in the special clinic and Miss E H. L Duncan for statistical assessment of the results. Dr F C Ottati and Dr A. T Monno of Lederle Laboratories Ltd kindly supplied the acetazoleamide ('Diamox') and placebos.

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GASTRO-JEJUNO-COLIC FISTULA

JAMES A RHIND
B.Sc M B Leeds F.R C.S
SURGEON PONTEFRACT AND CASTLEFORD HOSPITALS GROUP

Gastro jejuno-colic fistula results in incessant diarrhœa, true fæcal vomiting sometimes, and rapidly progressive cachexia and decline Untreated patients die in a few days or a few months. Pain almost invariable in uncomplicated jejunal ulcer usually lessens and disappears after the fistula is established (Aird 1950) Lowdon (1953) in a report on forty-six cases of fistula in the Edinburgh Royal Infirmary, recognised that mild cases occurred but thought these uncommon

Five consecutive cases in the Pontefract General Infirmary have shown features differing widely from those commonly described

Case reports

Case 1 —A man, aged 52 began having indigestion in 1930 His case-notes in February 1938 record pain two hours after meals, in attacks lasting a few weeks, with intervals of freedom. Fractional test-meal showed normal acid secretion It is assumed that medical treatment was prescribed and failed for he returned in October 1938 for operation. This revealed a duodenal ulcer and posterior gastro-enterostomy was performed

He attended my outpatient clinic in November 1952 when he complained of 'stomach trouble ever since his operation. There were remissions of three months between the attacks, but he was absent from work for about three months every year His chief symptoms were pain and vomiting the vomit having a foul smell Bowel action had been normal, except for an attack of diarrhœa lasting three weeks, six months previously He had lost no weight A tentative diagnosis of gastro jejuno-colic fistula was confirmed by barium enema ; a barium meal did not show this fistula, or any abnormality except the gastrojejunostomy and a defo[illegible] odenum.

He was admitted to hospital in Novem[illegible] d given succinylsulphathiazole and streptomycin [illegible] three days before operation. The gastroje[illegible] to gastro-intestinal tract, but the large quantity of ion-exchange resin that has to be given daily is bulky and unpalatable, and other ions are adsorbed It therefore seemed of interest to see whether acetazoleamide, which increases sodium excretion by inhibiting the carbonic anhydrase in the kidneys, would be of use in preventing pre eclamptic toxæmia

Methods

Patients who had gained more than 6 lb in weight in any month after the 20th week of their pregnancy but had no other signs of pre-eclamptic toxæmia were referred to a special clinic, where they received one of the following treatments

1. (1) A low-sodium diet plus acetazoleamide
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The diet provided 1800 calories daily and contained 175 g of carbohydrate, 96 g of protein, and 70 g of fat The low-sodium diet provided 1 2 g of sodium (Na^+) and the moderately low-sodium diet 3 0 g of sodium daily

To eliminate bias the treatments given were decided before the patients were examined The first patient arriving at the special clinic received treatment 1, the second treatment 2, and so on Each patient on arrival was given a code number so that the investigator at the subsequent examination did not know what treatment was being given

TABLE I—NUMBER OF PATIENTS WHO DEVELOPED PRE ECLAMPTIC TOXÆMIA

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Moderately low-sodium	Placebo	5 of 12	4 of 9

All the patients showed an increase of weight of more than 6 lb a month before treatment

χ^2 test $P > 0\ 01 < 0\ 02$ for both primiparæ and multiparæ (low sodium diet)

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The patients were seen once a month in the earlier stages of their pregnancy and weekly in the final month They were considered to have developed pre eclamptic toxæmia if they showed any one of the following signs clinical œdema of both hands and legs , a diastolic blood-pressure above 90 mm Hg, and albuminuria The blood-pressure and clinical œdema were assessed by the same observers throughout the series Blood pressure was measured by an experienced sister and checked by a doctor Good correlation was obtained Visible œdema was judged by a doctor Acetazoleamide was given orally in a dose of 250 mg every third day Urinary sodium was estimated with an internal standard flame photometer

Results

The number of cases which developed signs of pre-eclamptic toxæmia is shown in table I Acetazoleamide significantly decreased the incidence of signs of pre-eclamptic toxæmia in the patients on the low sodium diet whether they were primiparæ or multiparæ (χ^2 test P between 0 01 and 0 02 for primiparæ and multiparæ) In primiparæ on the moderately high-sodium diet acetazoleamide produced no significant difference The numbers of multiparæ investigated on this diet were too few to prove that it had no effect The number of patients who developed albuminuria, visible œdema of both legs and hands, or a diastolic pressure greater than 90 mm Hg during the period of observation is shown in table II The mean weekly gain in weight in all groups treated with acetazoleamide was less than that of controls, but th differences were not significant The onset of œden was often not associated with a sudden increase in t patient's weight

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	No of patients	Diastolic blood pressure > 90 mm Hg	Visible œdema	No of patients	Diastolic blood pressure > 90 mm Hg	Visible œdema
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Low-sodium diet plus placebo	11	2	6	13	4	4
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Discussion

Cummings (1934) found that the average monthly ga in weight in the last few months of pregnancy rang from 3 lb in the 8th and 9th months to 5 lb in the 6 and 7th months, and Evans (1937) noted that 47% expectant mothers who had a weight gain of 6–8 lb any month of their pregnancy developed toxæmi Dieckmann et al (1952b) reported that the norm weight gain between the 20th and 30th weeks of pre nancy was 7 7 lb , and Hamlin (1952, 1953) consider that patients who gained more than 8 lb between t 20th and 30th weeks of pregnancy were liable to devel pre eclamptic toxæmia

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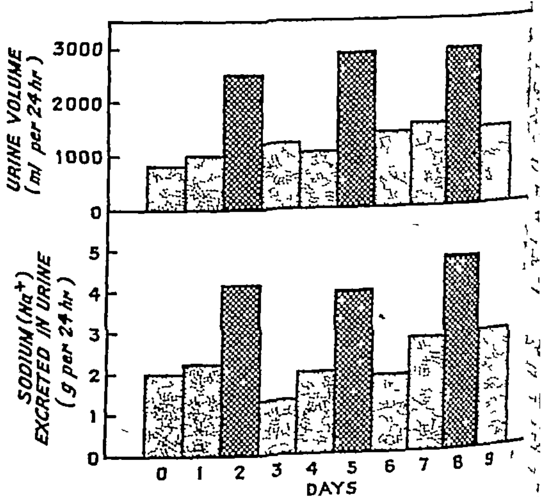

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'Gastro jejuno-colic fistula … results in incessant diarrhœa, true fæcal vomiting sometimes, and rapidly progressive cachexia and decline. Untreated patients die in a few days or a few months Pain, almost invariable in uncomplicated jejunal ulcer usually lessens and dis appears after the fistula is established' (Aird 1950) Lowdon (1953) in a report on forty six cases of fistula in the Edinburgh Royal Infirmary recognised that mild cases occurred but thought these uncommon

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He attended my outpatient clinic in November, 1952, when he complained of "stomach trouble" ever since his operation. There were remissions of three months between the attacks, but he was absent from work for about three months every year His chief symptoms were pain and vomiting the vomit having a foul smell. Bowel action had been normal except for an attack of diarrhœa lasting three weeks six months previously He had lost no weight. A tentative diagnosis of gastro-jejuno-colic fistula was confirmed by barium enema a barium meal did not show this fistula, or any abnormality except the gastrojejunostomy and a deformed duodenum.

He was admitted to hospital in November 1952 and given succinylsulphathiazole and streptomycin by mouth for three days before operation. The gastrojejunostomy was found to be puckered and contracted by active ulceration, and the diameter of the gastro-jejuno-colic fistula was $^{1}/_{4}$ in. The anastomosis and fistula were separated and the holes closed by simple infolding, a high partial gastrectomy was then performed This operation did not upset the patient unduly, and his recovery was uneventful He was transferred to a convalescent hospital on the seventh postoperative day, and he went home on the fourteenth

In this case the fistula was suspected from the previous history rather than from the patient's symptoms Although the barium enema showed a fistula, and its presence was confirmed at operation, his symptoms were so slight that the fistula must be regarded as "latent" The operation was no more difficult than a partial gastrectomy for a gastric ulcer, and the risks were slight

Case 2—A man, aged 33, began having indigestion in 1946 He was investigated in 1951, when a duodenal ulcer was diagnosed radiographically The presence of an ulcer was confirmed at operation on June 4, when a partial gastrectomy of the Hoffmeister type with a retrocolic anastomosis was performed On July 24, 1951, he was readmitted to hospital, radiography having shown a gastrojejunal ulcer He received medical treatment in hospital for four months, during this time his symptoms disappeared, and repeated radiographic examination showed no further evidence of an anastomotic ulcer

His pain returned in April, 1952, when he had severe diarrhœa for two weeks, thereafter slight diarrhœa persisted for two months, with foul eructations and vomiting He attended my outpatient clinic in November, 1952 His chief complaint was pain, mostly in the lower abdomen with radiation to the back, but also in the upper abdomen, the pain was sometimes relieved by milk and alkalis He had no vomiting, and bowel action had been normal for four months Fractional test-meal showed acid secretion a little above the normal, and a barium meal showed a large ulcer crater in the jejunum near the stoma An insulin test-meal produced free acid rising to 130 ml $N/10$ HCl

On Nov 27, 1952, transthoracic vagotomy was performed This route was chosen to avoid adhesions in the upper abdomen It was therefore a little disappointing to find the base of the lung adherent to the diaphragm, presumably owing to previous subphrenic inflammation The operation did not upset the patient, and his pain was relieved. A week later an insulin test-meal produced no free acid. About this time he began having slight diarrhœa This was at first ascribed to the vagotomy, but a barium enema showed a gastro jejuno colic fistula. He was advised to have a further operation, but refused and went home on Dec 10

He remained free from pain until Jan 4, 1953 On the following day he was admitted to hospital with an obvious perforation. His abdomen was opened five hours after the onset of pain, and a large opening was seen in the anastomosis A finger was passed easily through the perforation into the stomach, colon, and jejunum. The edges of the hole were so fibrosed that simple closure seemed useless, and the surrounding tissues were too rigid to infold The colon was separated from the gastrojejunostomy with great difficulty, because of the indurated adhesions, and the openings were closed in two layers The contamination of the peritoneum was not obviously fæcal, but paralytic ileus was anticipated The patient's postoperative progress was, however, completely uneventful and he made a rapid recovery When reviewed in June, 1955, he had had no further trouble, and was well and working

A fistula was considered at the first interview, although symptoms of this had been absent for at least four months A jejunal ulcer after gastrectomy is seldom recognised radiographically, and hyperchlorhydria is uncommon after a fairly extensive gastrectomy These findings diverted attention from the possible fistula until the "vagotomy diarrhœa" started At that time we had no reason to doubt the usual teaching, that a fistula encourages healing of ulceration, and since a vagotomy also reduces anastomotic ulceration, we wondered whether the fistula might eventually be closed by healing When the patient refused further operation, we had the opportunity of testing this idea That his ulcer might perforate was a possibility we had not considered His general condition must have been good, because he survived the very difficult operation of repair of the fistula while he also had a perforation

Case 3—A man, aged 51, had an acute perforation of a duodenal ulcer in 1942, and posterior gastrojejunostomy wa performed in 1947 Following this he was well for eighteen months, after which his dyspepsia recurred and radiography showed a jejunal ulcer He was advised to consult a surgeon but did not do so

He attended the outpatient clinic of my colleague, Mr Denley Clark, in December, 1953 For twelve months h had had no pain but for the past five weeks he had ha diarrhœa and vomiting, the vomit being very offensive and he had lost a lot of weight Fractional test-meal showe high acid secretion. Barium enema revealed a gastro jejuno colic fistula, which had not been shown by barium meal

After preparation of the intestine with chloramphenicol his abdomen was explored in January, 1954, by Mr Denle Clark The stomach was large and the duodenum stenosed although there was no active duodenal ulceration. Ther was a large gastro jejuno colic fistula, but no active anastomotic ulcer. The fistula was separated and the opening closed Three quarters of the stomach was removed an gastroduodenostomy performed (Billroth I operation) Th procedure did not upset the patient, and his convalescenc was uneventful

He was well until December, 1954, when he developed vagu symptoms, including backache "Influenza" was diagnose but after seven days, he had severe melæna and hæmatemes and he was admitted to a medical ward in a state of collaps With rapid blood transfusions he improved, but twelve hou later he again vomited a large amount of red blood, and aga collapsed He was given further rapid transfusion, and I operated on him

On the posterior wall of the Billroth I anastomosis the was an ulcer 1 in. in diameter, eroding the pancreas. When clot was removed, the gastroduodenal artery was seen spurt in the base of the ulcer The outer layer of the anastomo had been completed with silk, and a piece of this was hang in the stomach. A little more of the stomach was remove and continuity restored by gastrojejunostomy

This patient was the only one who had symptoms of fistula Even so, his general condition before t operation for fistula did not cause alarm, and his p operative preparation consisted only in lavage of t stomach and colon, and chemotherapy The anastomo ulcer after gastrectomy was sufficiently severe to penetra the pancreas and erode the gastroduodenal artery

Case 4—A man, aged 50, had acute perforations of pep ulcers in 1929 and 1935 Posterior gastro-enterostomy performed in 1940 for a "pyloric gastric ulcer causing m stenosis" He then served in the Royal Air Force unt further perforation was repaired in 1944, when he discharged

His weight had risen from his normal 10 st 2 lb to 12 st 4 while he was in the R.A.F, but fell to 10 st 9 lb at the t of the perforation, and remained steady until his n operation He frequently had diarrhœa after his f perforation, from 1952 onwards, although his bowels mo only once, or at the most twice, a day, the stool was alw liquid. In August, 1954, he was admitted to a Ministry Pensions hospital with severe pain and vomiting The p was most severe in the xiphisternal region, but spread over the epigastrium and through to the right loin. Bar meal showed that the gastrojejunostomy stoma was working well, and most of the barium passed throug deformed and tender duodenum. Fractional test m showed acid secretion above the normal He was g medical treatment, including an intragastric milk drip, later a barium meal showed that most of the barium pa through the gastrojejunostomy stoma, which appeared nor When he went home on Oct 30, after ten weeks' treatment, pain had gone and his stools were solid After a few d however, his pain returned and his stools became liquid ag

He was admitted to hospital under my care on Nov 1954, with an obvious perforation At operation typ contamination of the peritoneal cavity was found. Exam tion of the anastomosis showed the induration of an ul which was easily felt through the colon, there was, howe no perforation there The duodenum was exposed difficulty because of old adhesions to the back of his opera was a perforation was seen and closed His recovery was uneventful.

After three day's preparation with succinylsulphathiazole and oral streptomycin, his abdomen was reopened on Dec 8 and the presence of a gastro jejuno-colic fistula was confirmed The anastomosis and fistula were separated and the holes closed and oversewn. Partial gastrectomy was then performed, the duodenum presenting some difficulty because of the continued activity of the ulcer The patient s postoperative progress was uneventful and he went home on Dec. 22 He attended in June 1955 when he had returned to work. The usual small stomach ' symptoms were improving, but he had lost a stone in weight His stools were consistently solid for the first time in twenty years

This patient s duodenal ulcer was active in the presence of a gastro-enterostomy and gastro jejuno-colic fistula. His bowel history is difficult to interpret because his liquid stools dated from the first perforation probably the consistently liquid stools for two years signified that the fistula was open, and this was confirmed by the presence of solid stools after closure of the fistula. His duodenal ulcer perforated despite a recent long course of medical treatment His loss of weight since gastrectomy shows that his fistula had not reduced him to skin and bone "

Case 5 — A man, aged 57, began having indigestion in 1925 His abdomen was opened in 1928 for an acute perforation of a duodenal ulcer The perforation was closed and a posterior gastro-enterostomy performed; his appendix was also removed. He had had indigestion ever since then, with gradually increasing pain. I was called to see him at home in April, 1955 when the pain was severe enough to make him stay in bed His pain was felt in the epigastrium and back about an hour after *meals* and was *relieved* by *milk and alkalis*. In addition he had attacks of colicky umbilical pain accompanied by borborygmi His bowels were irregular, with a tendency to constipation and he did not think he had lost weight. A barium meal confirmed the presence of a gastro enterostomy with much deformity suggesting active ulceration there was an ulcer crater in the duodenum. The films also showed numerous fluid levels in the small intestine

His abdomen was explored on April 26 1955 There were a few adhesions to the back of the ulcer scar, but the remainder of the peritoneal cavity was free and there was no intestinal obstruction caused by the adhesions. A gastro jejuno-colic fistula was present large enough to take a little finger The loops were separated and the fistula closed There was a deep ulcer on the posterior wall of the duodenum penetrating the pancreas, the crater being about 1 in. in diameter The surrounding structures were so indurated and œdematous that dissection of the ulcer was regarded as too hazardous and prepyloric closure was used. A routine partial gastrectomy was performed On the third postoperative day his hæmorrhoids prolapsed but his abdominal condition never gave cause for anxiety, and he went home on the thirteenth day after operation.

This patient had many signs and symptoms of fistula in addition to those of an ulcer but some of these led to a diagnosis of subacute intestinal obstruction Despite the activity of the fistula his duodenal ulcer was undoubtedly causing symptoms, and the depth and extent of ulceration were sufficient to deter me from attempting to excise the first part of the duodenum

Discussion

During the period covered by my four cases of fistula, I have performed gastrectomy for anastomotic ulceration on twenty three other occasions (twenty following gastro enterostomy, one Polya gastrectomy, one Devine exclusion anastomosis, and one Billroth I gastrectomy, this being case 3 above) The incidence of fistula in my series was therefore about 15%

Most workers say that the symptoms of fistula may be intermittent, but imply that this is uncommon In cases 1 and 2 the fistula symptoms had been absent for two and four months, and the patient in case 5 had had long intermissions Disappearance of pain with prolonged healing of the ulcer is usually recorded as a prominent feature and is illustrated by case 3 Yet in three of my cases activity of the ulceration was the most striking feature manifest by perforation into the peritoneal cavity or penetration into the pancreas It might be argued that reactivation of the ulcer might be expected with a silent fistula and a scarred anastomosis but these three patients had definite symptoms of the fistula when their ulcers were active

Many operations have been described for the treatment of gastro jejuno-colic fistula most of them comprising several stages Improvements in anæsthesia chemotherapy and administration of intravenous fluids have occurred since many of these were described and perhaps their originators would have less use for them now Aird however still teaches that it is seldom possible to complete the treatment in one stage Lowdon's series covered the years 1926–51 and many cases did not have the advantage of modern methods, even so it is surprising that only two cases were considered fit for one stage gastrectomy Perhaps it is significant that the fistulæ were not recognised before operation in these cases.

I suggest that the terrifying picture of the effects of fistula is true of only the worst cases or the later stages of the disease If it were taught that mild cases are common the diagnosis might be made more often at a stage when radical treatment is possible and safe This treatment seems desirable both to prevent cachexia, and to avoid further complications of the still active ulceration

Summary

Five cases of gastro jejuno-colic fistula are reported Only one presented with symptoms due to the fistula the other four had symptoms which could reasonably be ascribed to active peptic ulceration All were fit for major operations

The usual description of the condition resulting from such a fistula applies to severe or advanced cases Mild cases or cases with intermittent symptoms are not generally recognised

I am grateful to Mr W I Wigg for information about case 2 up to 1951, and to Mr C Denley Clark for permission to include case 3

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RUPTURE OF THE LIVER IN A NEWBORN INFANT

WITH RECOVERY

J L Greaves
M D Lond M.R C P
CONSULTANT PÆDIATRICIAN TEES SIDE GROUP OF HOSPITALS

Rupture of the liver has been found in 1 2% of 2000 newborn and stillborn infants examined at necropsy (Potter 1940) Yet few cases are diagnosed clinically and so far as I can ascertain only 6 instances of survival have so far been recorded (Rubovitz [cited by Rogers 1934] Arden 1940 1951 Benson and Prust 1953) I describe here a further instance of recovery

Case record

The infant a female was born at 8 54 P.M. on Feb 2, 1955; *birth weight 5 lb 13 oz. The infant* was *delivered by an* experienced midwife and delivery was by the vertex and entirely normal. She was seen by the family practitioner shortly after birth when she appeared healthy with a normal pink colour The infant was put to the breast and sucked normally Her condition gave rise to no anxiety and she made normal progress, apart from vomiting a little mucus once or twice until 2 30 P.M. on Feb 4 when she refused her feed and vomited. At 4 30 P.M. her mother noted a furt change: the baby became pale with blueness and she appeared to collapse At 5 P.M the family doctor saw the baby and called for a second opinion.

On examination at 5 30 P.M the baby was very pale, breathing rapidly with some air-hunger The abdomen was slightly distended and there was a faint bluish discoloration around the umbilicus No shifting dullness could be elicited. No other abnormality was found, there was no evidence of blood in the vomit or on rectal examination or in the napkins Intraperitoneal hæmorrhage was diagnosed, and the baby transferred to the children's unit at Middlesbrough General Hospital Straight radiographs of the abdomen, taken with the infant in the horizontal and erect positions, showed no clear abnormality No helpful alteration of radiographic shadows was demonstrated by moving the patient (In retrospect the shadows in the peritoneal cavity were denser than normal)

Treatment—A transfusion of group O rhesus negative blood was set up, and the baby was seen in consultation with Mr Ernest Grahame The baby's condition improved greatly with the blood-transfusion, but it was decided to operate, to try to locate the site of bleeding and if possible to repair it

Laparotomy (Mr Grahame) was undertaken at 10 P.M under local anæsthesia On opening the peritoneum, which was purplish, fluid blood escaped, and about a quarter of a pint of blood was drained from the peritoneal cavity Blood was found to be coming from a tear, about 1 in long, in the lower border of the right lobe of the liver, which seemed very friable The bleeding was controlled by inserting three catgut sutures, and the abdomen was closed in layers with drainage

Further treatment and progress—The baby was given 'Synkavit' 10 mg and streptomycin 100 mg twice daily by intramuscular injection, and penicillin 0 25 mega unit six-hourly by intramuscular injection The drain was removed after twenty four hours Postoperative recovery was complicated by moderate abdominal distension and vomiting of some bile-stained fluid, which made it necessary to continue the intravenous drip until Feb 8 The baby was gradually got on to a normal feed for her age and was finally discharged on March 2, weighing 5 lb 15 oz and gaining weight satisfactorily The baby subsequently made good progress, gaining weight normally without vomiting The wound is soundly healed

Discussion

There is some divergence of opinion as to whether rupture of the liver is especially common in premature, normal, or post-mature infants

In 15 cases reported by Stein and Wright (1953) there was an equal distribution between premature and full term infants In Arden's (1951) series, however, the average weight of the infants was 9 lb 6 oz, and their large size appeared to be the only ætiological factor In the majority of cases delivery was spontaneous and normal, with no obvious trauma to the infant

During delivery the liver is more commonly injured than any other intra-abdominal organ (Ehrenfast 1931), probably because its free border is unprotected by the rib margin in most newborn infants A subcapsular hæmatoma forms and gradually enlarges, and if the bleeding does not stop this hæmatoma ruptures through the liver capsule, resulting in sudden loss of blood with collapse and shock (Potter 1940, Arden 1951) In the present case the infant had lost over half her blood-volume into the peritoneal cavity

The clinical picture is usually quite clear (Tow 1937, Arden 1946, 1951) The infant, previously apparently well, suddenly collapses some forty-eight hours after birth, with pallor and rapid breathing going on to air-hunger Sometimes there is an area of dullness down the right side of the abdomen, tending to confirm that the liver is the injured organ

Immediate blood-transfusion is the first step in treatment, and this may be required so urgently that there is no time for full cross matching When the immediate shock has been overcome, laparotomy can then be undertaken Arden (1951) now recommends treatment by transfusion alone, but I believe that it is wiser to locate the site of bleeding and if possible control it Moreover, rupture of the liver may be closely mimicked by other disorders—notably volvulus of the small gut (thou with volvulus the onset is usually within the first twent four hours of life) Accordingly laparotomy is importa in order to confirm the diagnosis as well as to apply lo hæmostasis In the present case vomiting and so abdominal distension were the only postoperative co plications, and this has been noted by others (Arden 195 Retained intraperitoneal blood is probably the cause

Summary

In an infant who collapsed forty four hours after bi intraperitoneal hæmorrhage was diagnosed At lapa tomy a tear in the liver was sutured The infant recove completely

I should like to thank Mr Ernest Grahame for carr out the operation with such success

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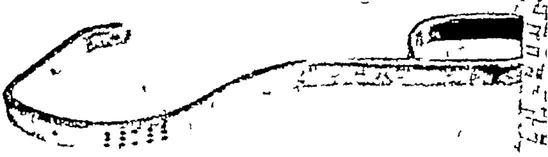
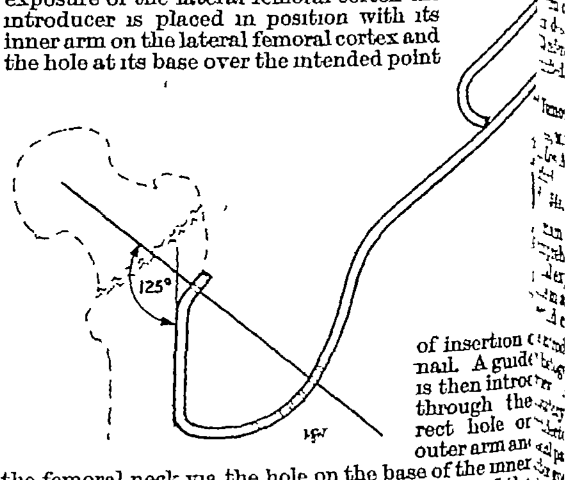
New Inventions

AN INTRODUCER FOR USE WITH THE CAPE NAIL-PLATE

THIS instrument allows a guide wire to be inserte that the angle between the wire and the lateral fem cortex is the same as that of the selected nail pl The anteroposterior radiograph taken after reductio the fracture allows the surgeon to select a nail pla the correct angle (It is assumed that the nail pla inserted immediately below the trochanteric ridge.) exposure of the lateral femoral cortex the introducer is placed in position with its inner arm on the lateral femoral cortex and the hole at its base over the intended point of insertion nail. A guide is then intro through the rect hole o outer arm an the femoral neck via the hole on the base of the inner The instrument is removed, and the position of the is checked by anteroposterior and lateral radiogr If this is satisfactory, the nail is then inserted the wire





I am most grateful to Mr R F Somerville, of Down for his valuable assistance

J S BATCHE
F.R C.S

London, W 1

Reviews of Books

Hemorrhagic Disorders

Mario Stefanini, M.D associate professor of medicine Tufts University Boston William Dameshek M.D professor of medicine in the university New York and London: Grune & Stratton 1955 Pp 308 70s

Blood-clotting and its disorders have been very studied of late and Biggs and Macfarlane have a standard text on human blood coagulation is fair to say as do the authors of this book, that works deal mainly with the laboratory aspects only incidentally with the clinical side of the subject that blood-clotting studies ' represent only one leg four-legged stool, of which the other legs are the the platelet, and the fibrinolytic mechanisms Stefanini and Dr Dameshek deal with all four sides hemorrhagic diseases, and their approach is that of clinician who regards clinical investigation with atory studies as only one phase in the management the patient. The physician who wants a modern to hæmorrhagic diseases will find everything needs in this well written and reasonably short

begins with a very necessary glossary of the terminology with the corresponding names used by some other pages deal with the details of normal hæmostasis this section and the following one effective use is made and figures The eleven chapters on the various hæmorrhagic disease form the bulk of the book illustrations are good, except for some lurid colour

many interesting points, we are glad to see the term hæmophilia ' used only for a congenital vascular ality; there is an interesting section on the differential between telangiectases and spiders the authors corticotrophin to cortisone for the treatment of purpura they distinguish sharply between limited idiopathic thrombocytopenic purpura and relapsing form they give an interesting list of " forms of treatment of this disease while the value of platelet transfusions; and there is a appraisal of the various forms of treatment sug for hæmophilia All the clinical aspects of diseases are in fact dealt with in a stimulating

mendations on treatment are usefully collected into chapter In another the hereditary aspects are and the authors repeat here their claim to be able some female hæmophilic carriers by studying the pattern of their serum proteins A short but appendix describes the techniques used and a of 753 references shows that the world literature fully consulted.

Gland Tumours

E. Ross M.D F R C.S chief surgeon Ross Loos Group, Los Angeles Springfield, Ill. Charles C Oxford Blackwell Scientific Publications. Pp. 86 54s

are two main types of monograph, sometimes —the comprehensive authoritative review, and of personal experience amplified and illustrated is possible in an article in a journal This book the second class.

example, the introductory chapters on the history of and on histogenesis are altogether too brief for review Again, there is no mention, under of gustatory sweating (Frey's syndrome) as a of parotidectomy nor of partial tarsorrhaphy of facial paralysis. On the other hand, in the the author goes very fully into the anatomy and of parotidectomy and though some of the many bony skull hardly seem relevant, detailed descrip- technique of parotidectomy with preservation of nerve are sufficiently uncommon to make this welcome

chapter analysing Dr Ross's own material is also particularly for the further evidence of the rarity facial paralysis after parotidectomy and for the possibility of preservation of the facial nerve in early carcinoma But perhaps these points might have been better made by an article in a journal.

There is a good bibliography with nearly 400 references, but it is surprising in view of the French contribution, to find little reference to Redon's work.

In his foreword, the author aptly sums up the modern approach to parotid tumours: ' Physicians do not realise adequately the serious nature and the potential danger of malignancy in these tumours There is a deep dread of injuring the facial nerve This leads to procrastination, and there is an average duration of seven years before surgical intervention Certainly, all should realise that these tumours can be removed adequately and yet the facial nerve can except in rare cases, be saved

The Princes in the Tower and Other Royal Mysteries

Sir Arthur S MacNalty F.R.C.P F.R.C.S London Christopher Johnson 1955 Pp 212 18s

Did Richard III murder the Princes in the Tower? Or was the villain Henry VII? Which censor of the Royal College of Physicians was racked twice in the Tower almost to death? Which St. Bartholomew's Hospital physician was found guilty of attempting to poison Queen Elizabeth I and hanged, drawn and quartered at Tyburn? Was it a trumped up charge? Did the son of Louis XVI die in prison or had a rachitic tuberculous child been substituted? These questions and others are raised in this modern examination of ten historical crimes that concerned the royal houses of England, Spain, France Sweden, Denmark, and Russia They make easy if unhappy and sometimes harrowing reading Stress is laid on what little medical evidence is available Several of the mysteries remain unsolved, but Sir Arthur concludes that the death of the youthful Caroline Matilda, Queen of Denmark, was due in all probability to cerebrospinal meningitis and not to poison Whether or not he is right in his conclusions about the murderer of the Princes in the Tower must be left to readers to decide.

Genital Prolapse and Allied Conditions

Percy Malpas CH.M. F.R.C.S F.R.C.O.G., surgeon to the Women's Hospital Liverpool London: Harvey & Blythe. 1955 Pp 190 47s 6d

The declared aim of this book is to clarify and systematise the author's experience of some 7000 operations and cases of prolapse

It covers the anatomy ætiology varieties, and symptoms of prolapse with chapters on the non-operative management the Fothergill operation, vaginal hysterectomy and other related techniques. There are also chapters about the complications of operation disturbances of micturition associated with genital prolapse the rectal complications of prolapse and retroversion of the uterus.

The book seems to have been written mainly for the author's own benefit, and it is therefore likely to appeal only to gynæcologists of experience It contains much wisdom, and many readers will be refreshed by the thoughts and opinions, even though they may disagree with them. But somehow it is disappointing Mr Malpas has not restricted himself to matters within his own experience as he implies in his introduction, for he has [illegible] considerable passages that belong to the experience of others, and this dilution has not always strengthened the [illegible]

The illustrations are poor many have been borrowed and a few are not clear some though clear are ill chosen and others have little or no [illegible] use.

Les cancers du côlon

M Roux, professor in the faculty of medicine, Par[illegible] F Carcassonne, professor in the faculty of med[illegible] Marseilles, R. Le Canuet, radiologist, Hospital [illegible] Pasteur [illegible] Paris. Paris: Masson 1955 Pp [illegible] Fr 3[illegible]

This monograph presents on traditional lines [illegible] plete survey of the surgical implications of can[illegible] colon.

The clinical manifestations are admirably [illegible] the [illegible] pages devoted to radiological app[illegible] excellent reproductions of radiographs, [illegible] explanatory diagrams. Naturally the [illegible] work is devoted to operative technique and details of preoperative and postoperative care, here the illustrations are very clear, though in contrast to the delicacy of the line drawings in the previous chapter, they have that harsh quality not uncommon in medical illustrations today The authors' own results are compared with those from other centres, and they are given in a way which permits an evaluation of operative method as well as the significance of the type of tumour, its extent, and complications This chapter rightly ends by considering the effect of the surgeon's experience on survival rate It is surprising that indications for operation are not considered until the final chapter

This is a painstaking work with which those especially interested in colon cancer (rectal lesions are excluded) should be acquainted

The Spine

A Radiological Text and Atlas BERNARD S EPSTEIN, M.D, chief, Department of Radiology, The Long Island Jewish Hospital, New York London Henry Kimpton 1955 Pp 539 £6

Dr Epstein has approached his subject in an original way which may well prove to be a valuable method of teaching Instead of producing an ordinary descriptive textbook of radiological appearances, he gives an extended account of the historical, ætiological, pathological, and clinical aspects, and often leaves the reader to make his own deductions about the radiographs All known disorders of the spine and all the diseases which can affect it have been included

The text is based largely on the literature there are about 1500 references in the bibliography, and many are quoted at some length. The author's own opinion (and his experience must be very wide) tends to get lost in this great mass of quotation

The illustrations unfortunately are disappointing both in quality and number The detail is poor, and many of the films have been too far reduced in size Many conditions described in the text are not illustrated

Nevertheless the book is a very useful reference to the literature for both physician and surgeon, and it should be a great help to the radiologist-in-training whose clinical knowledge is limited

From Witchcraft to Antisepsis

DOUGLAS GUTHRIE, M D, F.R C S.E, lecturer on the history of medicine, University of Edinburgh. Lawrence University of Kansas Press 1955 Pp 53 $1 50

TWO very readable and contrasting lectures, one on witchcraft and the other telling the oft-told story of Lister and his achievement, may appear, as the author says, to have little in common at first sight "Yet each represents the origin and growth of an idea, the first, magical, medieval, and detrimental to mankind, the second, logical, scientific, and supremely beneficial. Witchcraft and Antisepsis are as poles apart, the very antithesis of each other, yet, from both, we may learn lessons which are of interest and of value in relation to modern medicine" These were the 1955 Logan Clendening lectures on the history and philosophy of medicine

La carence de soins maternels

JENNY AUBRY Médecin des Hôpitaux de Paris Paris Presses Universitaires de France 1955 Pp 188 Fr 720

THIS study of the child separated from its mother was carried out by a team consisting of pædiatricians, a psychiatrist, psychologists, infant teachers, and social workers, working under Dr Aubry's direction at a reception centre of the Assistance Publique de la Seine

The centre, La Fondation Parent de Rosan, houses 60 children aged one to four, who are admitted after a stay of some days at l'Hôpital Saint-Vincent de Paul, and stay for a few weeks or several months This book records the methods of observation and testing, and the results observed, and graphs illustrate the effect on physical and psychological development of long or short deprivation at various ages Case histories of children who needed prolonged psychological treatment are used to show how variable the damage can be

In the final chapters Dr Aubry describes the practi
difficulties in avoiding separation of the young child fr
its mother, and some measures for giving those unavo
ably separated the best possible care either in an insti
tion or, preferably, in a foster-home A start has b
made in placing seriously deprived children directly w
selected foster-mothers rather than giving them spe
alised treatment in the institution, despite the high co
It is to be hoped that this step will have the success
deserves

Ultrasonic Engineering

With particular reference to High Power Applicatio
ALAN E CRAWFORD London Butterworths Scient
Publications 1955 Pp 344 45s

HIGH-FREQUENCY vibrations beyond audibility ha
been used to fragment bacterial cells and liberate th
enzymes or bacteriophage particles for further stu
to make localised brain lesions in experimental anima
to detect *tumours in various tissues*, and to treat
great assortment of physical ills According to this boo
in 1951 there was an ultrasonic generator for eve
six practising physicians in Western Germany alo
So far, however, there is very little objective eviden
for any clinical value of ultrasonics, and their applicati
mainly lies in many fields of industry—in emulsificati
and agglomeration processes, and in chemistry a
metallurgy This book explains clearly, with profu
illustrations, what ultrasonics are and how they may
produced and used Its medical value lies in any n
ideas it may give medical readers

Thoracic Surgical Management (2nd ed Londo
Baillière, Tindall, & Cox 1955 Pp 216 21s)—The han
book by Mr J R Belcher and Dr I W B Grant which h
proved so valuable to housemen and others has rapidly co
to a second edition, in which certain improvements may
noted The authors' aim is to provide a detailed account
preparation and after treatment for thoracic surgical ope
tions, and to illustrate the possible complications. T
instructions are precise and sufficiently dogmatic to lea
no room for confusion, and the diagrams are adequate
short, it is an admirable bedside book for the housem
who is suddenly thrust into the active practice of thora
surgery

The Numbers of Man and Animals (*Edinburgh* Oli
& Boyd. 1955 Pp 152 15s)—In 1954 the Institute
Biology held a conference of specialists in different subje
connected with the numbers of man and animals[1] This bo
reprints the main papers and gives what the editors, Pr
J B Cragg and Mr N W Pirie, F.R S, describe as "a sligh
idealised version" of the discussion which followed. T
medical contributors were Prof A L Banks, Prof L
Penrose, F.R.S, and Lord Boyd Orr, F.R.S

Biochemistry of the Developing Nervous Syste
(New York Academic Press London Academic Boo
1955 Pp 537 92s)—The proceedings of the first Int
national Neurochemical Symposium,[2] held at Oxford
July, 1954, have now been published under the editor
of Dr Heinrich Waelsch who, with Prof Joel Elkes, contrib
a preface

Short Textbook of Surgery (6th ed London J &
Churchill 1955 Pp 628 37s 6d)—Prof C F
Illingworth's book is deservedly popular because it does gr
service to students by covering the surgical field in 600 pa
packed tight with orderly facts Moreover, for the n
edition, the author has had the courage to discard wha
becoming irrelevant, thus, those classical infections wh
are seldom seen today—syphilis, gonorrhœa, erysipelas—
now given little room As usual, there are plenty of g
illustrations

Biochemistry of Vitamin B_{12} (London Cambri
University Press 1955 Pp 123 20s)—Under this t
the Biochemical Society has published, as no 13 of th
symposia, the proceedings of the meeting held in London
February The editor is Prof R T Williams, D.SC.

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[1] See *Lancet*, 1954, ii, 743

[2] *Ibid*, p 234

THE LANCET

LONDON SATURDAY DEC 10 1955

Needle Biopsy of the Kidney

NEEDLE biopsy of the liver is now a well established d relatively safe means of diagnosis In a recent view of over 20 000 hepatic biopsies[1] the mortality te was said to be only 0 17%, but SHERLOCK[2] nsiders that 0 3% is probably more accurate since aths directly caused by diagnostic procedures are ten not published. Needle biopsy of the kidney though it is being extensively used in many centres not so firmly established The value of renal biopsy as first shown by CASTLEMAN and SMITHWICK[3] who ok samples of kidney tissue during the operation f lumbar sympathectomy for hypertension They und that in 28% of patients there were no hyper nsive changes in the renal vessels, although these hanges were always present in post-mortem specimens rom hypertensive patients This observation showed hat the high blood pressure often preceded structural hanges in the vessels Percutaneous needle biopsy f the kidney was first extensively used by IVERSEN nd BRUN[4] The operation was performed with the atients in the sitting position, and suction was applied uring the removal of renal tissue The results have en reviewed by RAASCHOU,[5] who reported success n only 38% of attempts When satisfactorily carried t, this method produced a thin cylinder of renal sue, averaging 10 mm in length and containing bout ten glomeruli Last year KARK and MUEHRCKE[6] scribed an improved method of renal biopsy and w in collaboration with PIRANI and POLLAK they ve recorded the results in 200 patients –[9] These opsies were performed with the patient prone and modified Vim-Silverman needle was used Kidney sue was removed by the thin cutting blades of this strument without the need of suction Results were tisfactory in 93% of cases KARK et al[9] believe at these improved results are due to a more accurate thod of localising the kidney The surface marking the lower and outer pole of the right kidney was t determined by X ray examination The depth the posterior surface of the kidney was defined by a n exploring needle, which was slowly introduced il the movement of the kidney on respiration duced an equivalent swing of the protruding part the needle Although a needle biopsy can under eptional circumstances be performed on the left ney it is judged to be more dangerous because of e risk of damaging the spleen or large vessels

Needle biopsy should not be used when there is any dency to bleeding when there is only a single kidney, or when there is a possibility of renal cysts, hydronephrosis pyonephrosis, renal neoplasm, or aneurysm of the renal artery It is also contra indicated where there is calcification of vessels, or in uræmia with a steadily rising blood urea In expert hands the method appears to be as safe as liver biopsy Over 800 renal biopsies have now been reported and serious complications have been uncommon ALWALL[10] reported a case in which surgical shock and fatal anuria followed biopsy, and PARRISH and HOWE[11] described a patient who had a large retroperitoneal hæmatoma that required operation. With their new method KARK and his colleagues have had no complications more serious than transient hæmaturia and temporary renal colic due to the passage of clots In 1 patient the hæmorrhage was severe enough to require transfusion If bleeding should be serious modern experience in the management of traumatic injuries of the kidney[12] suggests that conservative measures are best. Obviously, needle biopsy of the kidney like many other means of investigation, is not free from risk, and for the time being it should probably be undertaken only in hospitals where it has been made a special study There seems little doubt, however, that it will presently be used more widely and that it will further our knowledge of the pathology, prognosis, and evolution of renal disease For instance, several patients have already had as many as four successive biopsies, giving detailed information of progressive renal disease which could not have been obtained by other means This is not however an adequate justification for a potentially dangerous operation, and biopsy should be used only when the information it gives will be of direct advantage to the patient and not merely a rather academic addition to medical knowledge

KARK and his colleagues[8 9] have described a form of nephritis which can be diagnosed only by renal biopsy They have called it ‘ subacute bacterial nephritis ” and they have already successfully treated it in 5 patients These patients all had proteinuria and depressed renal function but they showed no evidence of pyelonephritis Pathologically, there were interstitial inflammatory changes around the glomeruli, with actual necrosis in some areas Antibiotics appropriate to the organism cultured from the biopsy specimen stopped the proteinuria and improved renal function. Subsequent biopsies showed considerable resolution of the lesions Biopsy culture seems better than urine culture for identifying the organism responsible for acute and chronic pyelonephritis KIPNIS et al[13] have taken biopsies in 13 cases of pyelonephritis and there was no evidence afterwards of exacerbation or extension of the infection. The method will probably be most useful in urinary infections where several distinct organisms are obtained by urine culture, antibiotics should preferably be directed at the organisms obtained from renal tissue Biopsy has also proved of great value in the diagnosis of renal amyloidosis, polyarteritis nodosa, and lupus erythematosus Secondary amyloidosis may often resolve if the primary disease can be eradicated, and therefore accurate assessment of the renal changes may be essential in planning treatment Unfortunately,

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[10] Alwall N Acta med scand 1952 143 130
[11] Parrish A. E. Howe J R J Lab clin Med 1953, 42 152.
[12] Sargent J C. Marquardt, C R J Urol 1950 63 1
[13] Kipnis, G P Jackson G G., Dallenbach F D Schoenberger J A Arch. intern Med. 1955 95 445

renal involvement in the collagen diseases does not often respond satisfactorily to cortisone or corticotrophin, and therefore biopsy is at present of less direct value to the patient BJØRNEBOE et al[14] found that biopsy was useful in predicting the response of the nephrotic syndrome to cortisone or corticotrophin, patients with normal glomeruli or with only slight glomerular involvement are more likely to improve But a therapeutic trial would give the same information with less disturbance to the patient MILNE[15] has suggested that renal biopsy may help in the differential diagnosis between the recently described condition of primary aldosteronism[16] and hypokalæmic paralysis secondary to primary renal disease This differentiation is of especial importance since aldosteronism requires surgical treatment, whilst hypokalæmia due to renal disease can only be corrected by the appropriate potassium supplements

There are other interesting possibilities, but it seems unlikely that renal biopsy will achieve the importance that liver biopsy is now assuming Many lives have been saved by liver biopsy in the differential diagnosis of prolonged jaundice, but accurate differential diagnosis of renal disease is rarely of such immediate and crucial importance

Law and the Mental Patient

THE task of providing care and treatment for the mentally ill is certainly complex, yet hardly as complex as the laws designed to ensure that it is done Our own legislation, *a plant of slow growth*, cannot be said to have flowered yet, and in other countries equally backward vegetation is struggling towards the light So much is clear from the survey[17] of existing legislation in 40-odd countries, lately published by the World Health Organisation *It is a useful handbook*, nevertheless, for any country not too proud to profit from the experience of others

The earliest laws for the custodial care of the insane were designed to protect society, and introduced the danger of arbitrary detention Towards the middle of last century, however, several countries were devising laws to protect the rights of mental patients In some countries the duty of protection was placed on the medical or administrative authorities, *in others solely* on judicial authorities, and these arrangements have held, in the main, until now Whatever the authority, the certified patient becomes subject to legal disabilities he cannot control his property, make a will, or exercise paternal rights, and even today in some places provisions for placing the mentally ill in hospital are to be found only in laws dealing with civil incapacity Such arrangements naturally do not favour early *admission and treatment*, and the introduction of voluntary admission has been a great step forward In some countries, including our own, it suffices for the patient to apply (usually in writing) to be admitted for treatment as a *voluntary patient*, *in others a medical certificate*, or certificates, must be supplied, while others again require the signature of justices of the peace or of witnesses Obviously the simpler the procedure the better it is not clear, in any case, why a patient voluntarily seeking treatme in a hospital need sign *anything* at all Indeed so of our mental hospitals now have wards which acce without any formality, "non statutory" patie who come and go like the patients of general hospita —*a promising idea*, well worth exploring further

It is, of course, the patient too ill *to consent* treatment who presents the lawmakers with th greatest problem In some countries a patient m be received into hospital, without his consent, medical certification alone This type of admission h many of the advantages of voluntary admission makes early treatment possible, and does not requ the intervention of lay officials, which always carr *a stigma* Safeguards—such as notification of adm sion, inspections, rights of appeal, and *thoroug* medical examination, often by specially designat experts—minimise the risks of a sane person bei admitted against his will In England we use th *method only in the case of patients admitted f* "temporary" treatment—patients that is, who a expected to recover within a reasonable time, but a unable, at the time of admission, to say whether the would like treatment or not Used in this sens "temporary" is taken in most countries to mean, period of six months, at the end of which the patient— unless he has meanwhile recovered sufficiently become a voluntary patient—must be discharged certified *But in Northern Ireland an ingenious* a humane law, to which we have previously dra attention,[18] enables all patients other than volunta patients to be admitted with "temporary" stat Moreover, the initial period of treatment is for a yea and it can be extended for another year, or ev longer, if hopes of recovery are still good This h made it possible to avoid certification altogether a large proportion of cases, and always to postpone *for as long as hopes of an early recovery* remain. Italy, Peru, Spain, and Uruguay *all* involunta patients are admitted in the first place for observati —surely a sensible idea

In many countries the *usual method* of involunt admission is by judicial order, and there are seve ways in which the trauma can be enhanced. Thus some provinces of Canada the patient may be app hended by a court warrant, in some American Sta *special commissions* appointed by a judge, or stand commissions, either make the order for reception report their findings to a court for a final decis and in one State the patient's mental *condition* *decided at trial by jury* Such measures mean t in the public mind mentally ill patients tend to classed with criminals, and this tendency is increa where patients are lodged in gaol while await inquiry into their mental condition—as may hap in 37 of the United States In 40 States, moreover, patient may be transported from gaol to hospital the police

The World Health Organisation's expert commi *on mental health*[19] think that, in general, purely l considerations have been given too much weight, medical considerations too little Most exis legislation, they believe, is concerned too much placing checks on the mental patient and his ph cians, and too little with the public's responsib providing services for the mentally ill "It does ile to foster a positive approach to mental health" e psychiatric hospital can be either the best or the rst possible thing for a patient—a therapeutic mmunity or an instrument of desocialisation. Good atment depends on a humane and well trained aff, and in all countries the first necessity for which e law should provide is the recruitment and training such staff The number of hospital beds should pend on the number of people to staff them Good psychiatrists without specialised hospital tablishments would render greater service to patients d to the community than psychiatric hospitals thout adequate professional staff"

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[14] Bjørneboe, M, Brun C, Gormsen, H Iversen P, Raaschou, F *Acta med scand* 1952 266, suppl 240

[15] Milne, M D *Proc R Soc Med* 1955, 48, 780

[16] Conn, J W *J Lab clin Med* 1955, 45 3

[17] Hospitalisation of Mental Patients Geneva World Health [illegible] H.M Stationery Office 1955 Pp 100 6s 6d.

[18] *Lancet* 1954, i 1332

[19] *Wld Hlth Org techn Rep Ser* no 98 1955

Naturally *the law must provide for the treatment* thout their consent, of patients who are dangerous at it should also guarantee them guardianship and edical supervision The type of guardianship pro sed by the committee would be flexible providing vice for patients capable of giving valid consent on e management of their private affairs, assisting those ho are capable only of giving an opinion on such atters, and acting on behalf of those who are wholly apable in this respect A patient should have ready ans of appeal at any time after involuntary mission, and, whatever the composition of the dy which hears the appeal and if necessary thorises compulsory detention, its purpose should to pronounce on the *legality* of the detention it d not and should not be required to certify that a tient is insane or mentally subnormal "The dis ction between the authorisation of detention and certification of an individual's state of mind is an portant one" The committee also favour much re flexible arrangements for the discharge of pati ts, believing that the more widely within reason, powers are distributed the better The next-of should have, as here, power to discharge a tient, subject only to a veto from the medical rintendent on the grounds that the patient is rous to *himself or others* and the next of kin ld also have the right of appeal against such eto The medical superintendent, the medical ectors of the health authority, the hospital man ment committee, and the local or central health hority *should all, the committee hold, have the* t to discharge patients for nothing deters people seeking early treatment more effectively than the r that once one goes into a mental hospital it is ficult to get out

The committee find in almost every country con ing attitudes to the mentally ill in some of them laws are advanced while public opinion remains itive in others psychiatric care is well developed legislation backward. They suggest that while legislation is going forward, the old laws should retained and allowed imperceptibly to fall into ance or else that legislation should provide for manent body to be responsible for revising at ed intervals the laws affecting mental patients ugh this second proposal would hardly be consis- with British constitutional practice, we have other s of reaching the same end and our laws relating tification and detention of the mentally ill are resent being reviewed by the Royal Commission ded over by Lord PERCY of NEWCASTLE[20]

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[20]. *Lancet* 1954 i 353

Annotations

DETERGENTS AT LARGE

THE regulations which assess the quality and cleanliness of milk by statutory tests have without doubt been of benefit to the consumer but when these qualities are measured by the simple yardstick of 'pass' or 'fail' it is easy to forget the complexity of the biological mechanisms involved. Milk of an unusually high quality may be as proper a subject of inquiry as that which is judged unfit to be drunk Until a recent change in the regulations the pasteurised milk supplied to the hospitals of Paris should not have contained more than 100 000 organisms per ml (i e. the same standard which applied formerly in England and Wales) Routine testing showed that in fact a surprisingly large number of samples yielded bacterial counts so far below this figure that the presence of some disinfectant substance was suspected[1] The most probable was a detergent used in cleaning the milk plant especially one of the quaternary ammonium compounds which are *powerful bactericidal agents* and enjoy considerable popularity Like all detergents these are not easy to remove from surfaces of glass or metal without very thorough rinsing Using a simple but not entirely specific test the investigators showed that 12% of milk cans contained traces of substances which might have been of this nature

We know of no similar observations in this country The chemical detection of detergents is not easy and the quaternary ammonium compounds are usually reckoned too costly for use in the dairy Evidence for and against their toxicity in small doses is scanty Chemical technology is in fact bounding forward at such a pace that new compounds whose properties are but half known are on the market within a short time of their discovery Seldom has the buyer or the seller the scientific knowledge to form any estimate of the possible risk from some secondary action While the expert is in the position to forecast that a compound might cause dermatitis or cancer the public must rely upon the protection of the common law and the good conscience of the manufacturer—and to dismiss the second as valueless is both foolish and unjust The greatest danger from compounds new to our experience arise not when they are used for their designed purpose but when by accident or oversight they penetrate where they are unexpected and unwanted—to this milk for example Penicillin used for treating bovine mastitis has given the cheese maker many headaches by killing his starter cultures *It is to be hoped that overzealous sanitation* in the milk factories will not make unwanted (and illegal[2]) additions to our morning cup of tea

ASPIRINS FOR EMPHYSEMA?

SOME emphysematous patients puff and blow for many years without much deterioration others decline into respiratory *acidosis and anoxic heart failure with scarcely* a sigh Measurement of the respiratory response of such patients to induced changes in arterial gas tensions and pH confirms the clinical inference that the sensitivity of central respiratory control is reduced[3] One aspect of decreased sensitivity to carbon dioxide which attracted attention some years ago is the tendency for oxygen therapy to aggravate hypercapnia and respiratory acidosis with consequent drowsiness or even coma Many physicians became unduly timid about giving oxygen to anoxic patients but recent work[4] suggests that in acute respiratory insufficiency the acute anoxia

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1 Charonnat R. *Bull. Acad Méd Paris* 19[illegible] 139 450
2 Milk and Dairies Regulations 1949 IX, 20 [illegible] H M [illegible] Office,
3 Prime F J Westlake E. K. *Clin Sci* 1954 13, [illegible]
4 Westlake E. K. Simpson T Kaye M *Quart* [illegible] 24 155

may itself be responsible for the central depression which may recover completely under proper oxygen therapy This work supports the view[5] that these patients, who have become severely anoxic without time for acclimatisation, are in urgent need of oxygen, and that every effort should be made to restore them to a reasonable colour Patients with chronic anoxia present a different problem since their need for oxygen is less urgent and their central depression less labile

Of the various components into which respiratory insufficiency may be analysed,[6] central depression, although a common and occasionally the leading abnormality,[7] is perhaps the least understood As even the chronic form has no manifest structural basis, there is at least the hope of reversing it, and two drugs have recently been studied to this end The first is the carbonic anhydrase inhibitor, acetazolamide, whose continued administration for periods of several months has recently been reported[8] Doses of 500 mg a day were partially successful in sabotaging the kidney's attempts at compensating the respiratory acidosis, consequently the plasma-bicarbonate fell, the acidosis increased and, presumably through increased ventilation, arterial $p\text{CO}_2$ fell and $p\text{O}_2$ rose slightly There was no restoration of central sensitivity to carbon dioxide, nor in a complementary study[9] was there increased tolerance to oxygen It is not certain that this purchase of a modest reduction of hypercapnia at the cost of further acidosis is a good biochemical bargain, and we are not told what the patients felt about it Prolonged administration of acetazolamide entails a hazard of potassium depletion,[10] and few physicians will feel tempted on present evidence to use it in this way

The second drug to be considered is salicylic acid The hyperpnœa produced by large doses is familiar, and is now known to be due to a direct stimulation of the respiratory centre[11] The result is normally a hypocapnia and respiratory alkalosis mitigated by a decrease in plasma bicarbonate brought about by the kidney These changes are the reverse of those found in central respiratory depression in which it is to be expected that salicylates would tend to restore normal values, and this has been found to be so in a few patients given 3–7 g a day of aspirin[12] This dosage is not prohibitively high, but is likely to produce side effects, and the patients became irritable and some developed tremor Tenney and Miller,[13] in recent work on the pharmacology of salicylates, draw attention to a property previously reported but usually overlooked—namely, the stimulation of oxygen consumption An infusion of sodium salicylate may double oxygen consumption, oral dosage may produce a sustained increase of about 20% This may well limit its use in patients with respiratory insufficiency who are very sensitive to changes in metabolic needs

For patients with chronic respiratory insufficiency with prominent central depression, evidenced by hypercapnia with little respiratory distress, stimulation with aspirin may be worth trying Acetazolamide may be of value as a short term adjuvant in running down plasma bicarbonate There seems a fair prospect of objective improvement in blood gas tensions and pH Whether the patients will be grateful is doubtful, since, as Dornhorst[6] pointed out, successful reversal of central depression may prolong life but will almost certainly increase dyspnœa

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5 *Lancet*, 1953 i 380
6 Dornhorst A C *Ibid* 1955 i, 1185
7 Auchincloss J H, Cook E, Renzetti, A *J clin Invest* 1955 34, 1537
8 Fishman, A P, Samet P, Cournand A *Amer J Med* 1955, 19 533
9 Galdston, M *Ibid*, p 516
10 Counihan T B, Evans, E M Milne, M D *Clin Sci* 1954 13, 583
11 Rapoport S, Guest, G M *J clin Invest* 1945 24 759
12 Wégria, R, Capeci N Kiss G Glaviano, V, Keating, J Hilton, J *Amer J Med* 1955 19, 509
13 T Miller R. M *Ibid*, p 495

TREATMENT OF HYPERTROPHIC PYLORIC STENOSIS

It has been estimated[1] that hypertrophic pyloric stenosis appears in 3 or 4 out of every 1000 newborn infants The mortality of the condition has fallen strikingly in the past thirty years, partly because of the general reduction in infant mortality but mainly becaus of better diagnosis and treatment Surgical treatment i now more or less confined to Rammstedt's operation of pylorotomy, which has superseded earlier procedure such as gastro enterostomy or forcible dilatation of th pylorus Medical treatment consists of stomach wash outs, careful graduated feeding, and the administratio of a spasmolytic drug of the atropine series Atropin itself has been largely replaced by methyl atropin nitrate, which has a greater cholinergic effect, an this drug, either in watery or alcoholic solution, or in th form of lamellæ given sublingually, has been the standar drug A new spasmolytic derived from scopolamine ha now been used in a clinical trial described by Corner following favourable reports from Scandinavia[3] Methy scopolamine nitrate is said to have five times the spasmo lytic effect of atropine on guineapig intestine and t to three times that of methyl atropine nitrate Furth in ordinary doses, it less often has such side-effe as dryness of the mouth and mydriasis

Corner treated 117 babies with the new drug, combin with a strict feeding plan and the administration parenteral fluids when necessary The diagnosis w established by two criteria—visible gastric peristalsis a a palpable pyloric tumour—and confirmed by t experienced observers All cases were treated in hosp and the earlier ones were kept in hospital for the wh period of treatment The drug was generally given mouth in doses of 0 1 mg six times daily, fifteen minu before feeds If vomiting recurred, or the child w severely dehydrated at the start of treatment, the dr was given subcutaneously in doses of 0 05 mg six tim daily At the beginning of the trial supplies of the dr were scarce and treatment had to be stopped after a f weeks, and this sometimes led to relapse Later however, it was possible to continue treatment for least ten weeks and relapses no longer occurred T response to treatment was usually very rapid, vomit ceasing immediately in 75 cases and within forty-ei hours in a further 19 A few infants continued vomit slightly even after five days, but their condit was otherwise satisfactory and treatment was continu Gain in weight was at first rather slow in many bab but this could be partly attributed to the low cal intake at the start of treatment One child died dur the course of treatment he was severely infected although vomiting was controlled he had persistent an exia and died after four weeks' treatment Anot child responded inadequately to treatment, and Ran stedt's operation was performed on the nineteenth d

This trial confirms previous reports of the effectiver of the drug in hypertrophic pyloric stenosis It does however, decisively settle the argument in favour medical treatment on the one hand or surgery on other In the best circumstances, the mortality fr surgery is now very low[4,5], and the big advantag operation is that the infant can be sent home afte few days on a normal feed and no further supervisio usually needed once the sutures are removed Recurre after operation is exceptional Medical treatment, on other hand, requires a long period of supervision, w frequent visits to hospital Drug treatment must continued for many weeks, and if for some reason

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1 Davison G *Arch Dis Childh* 1946, 21, 113
2 Corner, B D *Ibid*, 1955, 30, 377
3 Malmberg N *Acta pædiatr, Stockh* 1949, 38 472
4 Wood, E C Smellie, J M *Lancet*, 1951, ii, 3
5 Browne, D *Proc R Soc Med* 1951, 44 1057

other stops treatment the symptoms are liable to recur further the lengthy treatment may lead to an over rotective attitude by the mother and breed difficulties later life Surgical success depends on the skill and perience of the surgeon and the quality of the nursing re Rammstedt s operation seems deceptively simple expert hands but requires constant practice for good sults. Todd [6] suggested that the indications for opera on were failure of medical treatment after a trial of even days, gross dehydration and a birth weight elow 7 lb But if an experienced surgeon is available peration is probably the best treatment unless there is vere infection

CHEMOTHERAPY OF TUBERCULOSIS

A REPORT of the 14th conference on tuberculosis hemotherapy of the Veterans Administration and National Tuberculosis Association of the U S A has lately ppeared [7] It is nine years since the 1st conference was ld, when the early results of treatment with strepto ycin at nine Veterans Administration hospitals were scribed The list of transactions at the 14th conference arly reflects the great advance in our knowledge of tituberculous drugs as well as the value of continuous operation in studying them Streptomycin *p* amino licylic acid and isoniazid in various combinations cupy much of the story but there is also news of razinamide cycloserine tetracycline viomycin s ethyl ysteine streptohydrazide calcium benzoyl *p* amino licylate corticotrophin and D glucuronolactone iso otinyl hydrazide The experimental design of the nerican organisations' large-scale trials may not always perfect but a machine has been constructed and aintained capable of giving valuable information in a rt time and flexible enough to adapt itself rapidly to nging ideas The Medical Research Council s trials this country are more rigorous and precise they ask er questions and the answers are correspondingly re definite The two types of cooperative clinical arch are complementary to each other

The future programme of the Veterans Administration ludes a study of the surgical removal of lesions aining after antibacterial treatment As we observed ently [8] only a controlled trial will finally decide whether s necessary to remove such lesions Such a trial was rted in a Veterans Administration hospital in June 53.[9] By the end of 1954 59 patients had been allocated random to resection and non resection groups So far 2 the 33 who had a resection and 2 of the 26 who did not e shown bacteriological or radiographic evidence of apse But it is much too early to draw conclusions clinical trials of the U S Public Health Service also lude examination of another important problem ndom group of children with uncomplicated primary rculosis is being treated for a year with isoniazid le a similar group receives inert tablets The children be followed for two years and it is hoped if sufficient bers can be included in the trial, to find out whether azid does indeed reduce the incidence of complica ns [10] Bentley [11] has lately expressed concern lest otherapy should actually increase the incidence of mental lesions in the lungs of these children In this try the M R C are planning a trial of long continued bacterial treatment of chronic infectious patients [12]— ther important aspect of modern therapy here remains the question of using isoniazid alone in onary tuberculosis [13] Here, again the Veterans Administration are carrying out a pilot study Unfortunately, no doubt for ethical reasons, only patients without lung cavities will be treated, and the trial is unlikely to give a clear-cut answer to the main problem In this country too such a trial would hardly be acceptable [11] but it could perhaps be carried out in countries where the social conditions justify taking a known risk for the sake of providing the only feasible treatment for large numbers of tuberculous patients

ANOTHER NEW BLOOD GROUP

MANY new blood groups have been discovered because an antibody has appeared in the blood of a patient who has been repeatedly transfused Recently a hitherto unidentified antibody was detected in the serum of a Mr V when his blood was being cross matched for his 27th transfusion and details of this antibody named after him have been reported from New York and London by DeNatale, Cahan Jack, Race and Sanger [14] Mr V was in St Luke s Hospital New York City and the prospective donor was a Negro Inquiry showed that 6 previous donors had been Negroes and tests with a set of 20 standard test cells showed that the only positive reactions with Mr V's antibody were obtained with 2 of the 6 specimens of Negro blood that happened to be included in the standard set Attention was thus directed to Negro blood and samples from 168 New York Negroes were tested 45 (27%) reacted positively with the V antibody The blood of 444 white blood donors was tested and only 2 (0 5%) positive samples were found both were natives of Puerto Rico Investigations were extended to London and to West Africa In London 407 samples of blood were tested and only 2 (0 5%) V positive reactors were found but a group of 150 West Africans living in Lagos or Accra included 60 (40%) V positive reactors When the rest of the blood groups of the tested bloods were worked out it was seen that V positive is particularly associated with the Rh types cde and cDe For this reason it is thought that the V antigen is some how connected with the Rh blood group system but at present the precise connection is unknown.

Racial differences in the distribution of blood groups are well known and Mourant [15] has shown how much information has been accumulated There are other examples of gross racial differences Thus only 3% of Chinese are Rh (cde) negative and the cde chromosome is rare or entirely *absent in the Siamese and in Central* American natives The North American Indians show only groups O and A with a remarkable preponderance of group O the distribution in the Chippewa Indians is 87 5% group O and 12 5% group A, with none in groups B or AB It is already known that African Negroes (south of the Sahara) show a high frequency of cDe various races show from 48 to 90% with an average of 60% and the mutation $cD^{u}e$ is almost limited to these peoples

From a practical point of view we need to know whether the V antigen is likely to lead to the formation of anti bodies and whether consequently Negro donors should be avoided when taking blood for transfusion into white recipients Fortunately V is apparently not a powerful immuniser As DeNatale et al point out tens of thousands of white people must have received blood transfused from Negro donors, yet only Mr V has responded by making anti V The antibody will be found and any possible reaction will occur only after a second transfusion of Negro blood Blood from the two V positive English donors was found to be still surviving in their V negative recipients two or three weeks after transfusion. Nor is it thought that the V antigen is likely to cause hæmolytic disease in newborn Negro infants

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odd R McL *Arch Dis Childh* 1947 22 75

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ancet Aug 13 1955 p 330

J W Decker A M Bell J W Trans 14th Conf motherapy of Tuberculosis 1955 p 199

H H *Ibid* p 123

ley F J *Brit med J* Oct 29 1955 p 1061

ry Hart I *Lancet* Sept 3 1955 p 509

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[14] DeNatale A Cahan A Jack, J A Race R. R. Sanger R *J Amer med Ass* 1955 159 247

[15] Mourant A E The Distribution of the Human Blood Groups Oxford 1954

because 20% of Negro matings would provide babies in which incompatibility of this type would arise, yet the disease is relatively uncommon, and when it does occur it can usually be traced to Rh (anti-D) incompatibility

No doubt transfusion centres will now include V-positive Negro cells among their test groups, but the rest of us can breathe a sigh of relief on learning that this new group is not one that needs to be reckoned with in everyday blood-transfusion work

TOXIC INSECTICIDES

CHEMICAL insecticides have saved millions from malaria, typhus, plague, dysentery, and other insect-borne diseases, and they have greatly increased the world's food production But many of them are toxic to man and other mammals The organic phosphorus compounds are especially dangerous because they inhibit the cholinesterases of the blood and nervous system Symptoms of poisoning are therefore due to failure of transmission of nerve impulses at synapses in the central nervous system and peripheral ganglia and at the motor end-plates of voluntary muscles The chlorinated hydrocarbons form another group of chemical insecticides, of which dicophane (D D T, chlorophenothane), gammabenzene hexachloride (B H C, 'Gammexane'), aldrin and dieldrin, chlordane, heptachlor, methoxychlor, and toxaphene (chlorinated camphene) are the best known They have certain properties in common they are soluble in fats and common organic solvents and insoluble in water, and all are relatively stable compounds They are stored in the fat depots of man and warm-blooded animals Acute poisoning results in disturbances of the central nervous system, and excitement, tremors, spastic and flaccid paralysis, and convulsions follow the absorption of large doses Six years ago,[1] we said that dicophane and gamma benzene hexachloride seemed to be the safest insecticides under normal conditions of pest control by experts, but that the cumulative effects of small doses had not been fully established This statement is still true today

Many symptoms have been ascribed to chronic dicophane poisoning Case[2] found that Servicemen exposed to high concentrations were liable to fatigue, emotional instability, and violent cramps in the limbs Campbell[3] described similar symptoms in a man who had been demonstrating the use of dicophane for six years Later Campbell[4] recorded 5 cases of peripheral neuritis (1 patient had a retrobulbar neuritis) and 2 other cases of isolated retrobulbar neuritis All these patients had been using a proprietary insecticide containing dicophane and pentachlorophenol for treating woodworm, so it was not certain that these symptoms were entirely due to dicophane Peripheral neuritis with purpura was also noted[4] in a chemist preparing a dicophane aerosol In 5 children under three who were exposed to dicophane, purpura developed, 4 were found to have thrombocytopenia and 2 had symptoms of nervous involvement (convulsions and loss of coordination)[5] A case of fatal aplastic anæmia with thrombocytopenic purpura was reported in the United States[6]

The greatest danger to the general population could arise from the constant ingestion of small amounts of dicophane sprayed on fruit and vegetables or contained in the fat of animals eaten as meat Occasionally large doses have been accidentally taken by mouth once dicophane concentrate powder was mistaken for baking-powder[7] and as much as 120 mg per kg body-weight was absorbed in one dose (7 out of a family of 11 were affected but all recovered) But men exposed to varyin concentrations of dicophane every day in their wor failed to show any abnormalities[8] Princi[9] holds tha no true case of chronic poisoning has ever resulted from exposure to any of the chlorinated hydrocarbons

As insecticide resistant insects emerge, more poten chemicals are being produced, and they are often brough into general use before their toxic effects on man an domestic animals is known or understood One of thes chlordane,[10] is regarded as one of the more dangerous the chlorinated hydrocarbons It can be absorbed throug the intact skin, and little is known about its tox properties For these reasons its use on food crops forage, hay, or silage crops intended as foodstuffs f dairy animals or poultry is prohibited And, in genera until active insecticides harmless to man have bee developed, all these compounds must be handled wi great care

"MIDDLE-LOBE SYNDROME"

THE middle lobe bronchus is peculiarly liable t occlusion from extrinsic pressure, because it is compar tively narrow and short, and because lymph glands ar so disposed around it that if they enlarge they w compress it like the jaws of a nutcracker Moreover, these glands drain the adjacent lower lobe as well as t middle lobe, atelectasis of the right middle lobe is a fai common sequel of primary tuberculosis—a fact whi was pointed out by Brock et al[11] as long ago as 19 Supervening infection may give rise to symptoms so after the bronchus has been obstructed, and then diagno is easy, but quite often there is no trouble for yea and then the occurrence, say, of hæmoptysis, coupl with the radiological picture of a collapsed right mid lobe, has a misleadingly sinister appearance If lobecto is performed, enlarged glands may be found compres the middle-lobe bronchus or they may have shrunk the course of time and histological examination m show no evidence of specific disease As some of th patients are tuberculin-negative,[12] it is clear that original lymphadenopathy is not always tuberculous, l the distinction is of no practical importance T sequence of events has been described by several work and it has become widely known as the "middle l syndrome"[12–16]

When respiratory symptoms are shown to have th origin in a diseased right middle lobe, this condition m be borne in mind, but a report on a series of such ca by Lindskog and Spear[17] is a useful reminder tha should not be overemphasised in the differential diagno Some of their cases proved to be examples of the so cal middle lobe syndrome, but others turned out to bronchial carcinoma, tuberculosis, abscess following to extraction, aspiration lipoid pneumonia, and so on. would, therefore, be unfortunate if the interest arou by the middle lobe syndrome tended to delay adequ investigation of middle lobe disease, and as ther little justification for the term in any case, it might be discarded The condition is merely an area of infe atelectasis resulting from bronchostenosis due to lym adenopathy, the middle lobe is a common but by means exclusive site, and as a variety of disease proce may produce the same clinical and radiological pict each case must be dealt with on its merits

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[1] See *Lancet*, 1949, i, 658

[2] Case, R A M *Brit med J* 1945, ii, 842

[3] Campbell A M G *Lancet* 1949 ii, 1178

[4] Campbell A M G *Brit med J* 1952 ii 415

[5] Karpinski, F E *J Pædiat* 1950 37, 373

[6] *J Amer med Ass* 1951 145 728

[7] Hsieh, H C *Arch industr Hyg* 1954 10 344

[8] McGee L C *Industr Med* 1955 24, 101

[9] Princi, F 11th International Congress of Industrial Medi Naples, 1954

[10] *J Amer med Ass* 1955, 158, 1364

[11] Brock R C, Cann, R J, Dickinson J R *Guy's Hosp* 1937, 17, 295

[12] Frotheim B *Thorax* 1952, 7 156

[13] Graham, E A, Burford, T H, Mayor, J H *Postgrad me* 1948, 4, 29

[14] Paulson D L, Shaw R R *J thorac Surg* 1949, 18,

[15] Brock R C *Thorax* 1950 5 5

[16] Rubin E H Rubin, M *Dis Chest*, 1950, 18, 127

[17] Lindskog G E Spear H C *New Engl J Med* 1955 253

Special Articles

THE FIRST THREE YEARS OF A PROVINCIAL PÆDIATRICIAN*

HUGH JOLLY
M.A., M.D. Camb., M.R.C.P., D.C.H.
PÆDIATRICIAN, PLYMOUTH CLINICAL AREA

Just over three years ago I became a consultant diatrician in the provinces after spending my registrar riod in London. During this time I have become cerned at the width of the gulf between London and vincial pædiatrics, and particularly at the fact that e average pædiatric registrar does not learn enough of e sort of work he would meet as a provincial consultant. cause of this I have been encouraged to present a tical analysis of my first years in the provinces. My marks refer to London because I have no experience the other large centres, but their problems must be milar in some respects.

This is the first consultant pædiatric appointment be held in Plymouth, and the clinical area covered retches across to Bude on the north coast of Cornwall, n half way to Truro, and up half way to Exter. ographically we are more fortunate than many areas cause, though the total population is 350 000, 220 000 e in Plymouth, and this is the natural focal point of e area. Our distance from London and other main ntres makes us largely independent.

All the beds for which I am directly responsible are in e hospital. They consist of a premature baby unit d neonatal beds, a ward for children over 18 months, d a new cubicle unit for babies shown in the photo ph. When I first came I had a share of two house- sicians, but there is now a house physician and a gistrar for the department.

CONTACT WITH COLLEAGUES

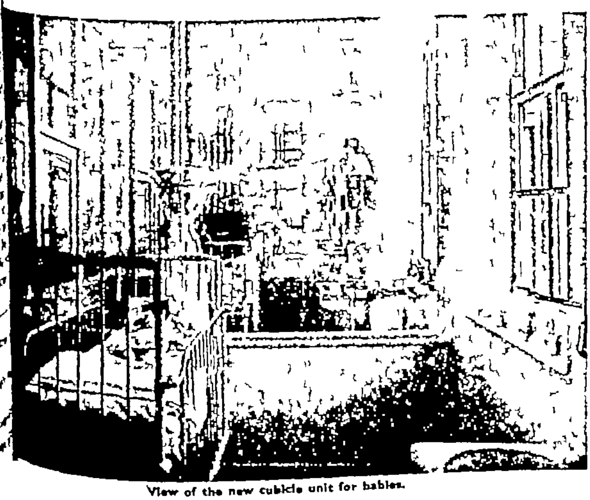
One of my earliest and most pleasant surprises was the liaison possible with the general practitioners compared with London. I felt that the standard of general practice was higher than in London, at any rate as seen through the eyes of a pædiatric registrar. I was particularly impressed by the high standard of the doctors' letters which accompanied the patients.

This close personal contact with practitioners exists because we meet often, both socially and professionally—especially during domiciliary visits, a service of which much fuller use is made in the provinces. Practitioners also attend ward rounds and outpatients from time to time, and occasionally they still accompany their patients to the consultation, particularly in the peripheral clinics in the country. Another form of contact is through lecturing to medical societies, and I have now addressed several of the groups in the area. From time to time I am asked to attend doctors' children, and during the winter I find that my work as a "general practitioner" for these children is quite considerable. Again, an evening rarely passes without at least one telephone call from a doctor who wishes to discuss a case without my necessarily being asked to see the child. My impression is that these personal calls are much commoner than in London, and they give endless opportunities for discussion of modern pædiatric methods with the family doctor, as well as for receiving his suggestions. One of the results of this close association is that it is possible to discharge children from hospital for home nursing much earlier than one could in London.

Despite all this I would like to attain a still closer relation with the practitioner, especially over the admission of patients. We have a bed bureau comparable to the Emergency Bed Service in London, but I have always felt this to be a very impersonal method. It is obviously a necessary evil in London, but less so with us, and I am doing what I can to encourage practitioners to phone one of the pædiatric staff instead, since we learn far more about the child from a phone call than from any letter. The practitioner's complaint that he wastes time while the telephonist finds the house physician has been largely met by a modern call-system.

A second important liaison is with the public health departments of Plymouth, Devon County, and Cornwall County, from whom I have had unlimited coöperation. When I arrived I found that children were being referred to outpatients by school and infant-welfare officers without reference to the family doctor. This was obviously undesirable, especially as the child was sometimes later referred to outpatients by the family doctor. It was therefore agreed that all clinic cases requiring a pædiatric opinion would be referred to their family doctor in the first instance. As a corollary I arranged that copies of my outpatient and discharge letters should be sent to the medical officer of health for distribution to the clinic concerned with the child. Only two practitioners raised any objection to this, and once it was pointed out that it was only fair since the clinics were no longer referring the patients direct, the objection was withdrawn.

The M.O.H. for Plymouth has arranged for each of his health visitors to attend my outpatients for three months, and this is a tremendous help to me. These nurses often arrive armed with a great deal of information about a child due to attend, which they have been given by the health



View of the new cubicle unit for babies.

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* Read before the British Pædiatric Association in April 1955.

visitor in charge of the case The outpatient health visitor takes notes on the children who attend and passes on this information to their own health visitor when she meets them all on the morning after outpatients It is therefore easy for me to refer any requests about a child to the health visitor concerned and to pass on any new ideas on pædiatrics in general Unfortunately, owing to the shortage of health visitors in Plymouth they do not yet work in the pædiatric or maternity wards, but this is to be remedied as soon as the numbers increase At the same time, the atmosphere in the wards is such that they are very welcome there, and they often call to see a child in whom they are interested The health visitors tell me that, now they are more closely associated with the hospital, their status has risen in the eyes both of the family doctor and the parent

The M O H has helped in countless other ways In my first year I found that in Plymouth there was a surprisingly high incidence of ferrous sulphate and lead poisoning The M O H agreed to send a circular to this effect to all practitioners and chemists, which led to a dramatic fall in both conditions

Close association has also been possible with the tuberculosis staff and with other branches of the public-health department I now hold a study day twice a year for these medical officers and some of them are attached as clinical assistants to the outpatient department

OPPORTUNITIES FOR TEACHING AND LEARNING

In moving deep into the provinces I have felt the greatest losses to be the reduction in academic atmosphere, and the lack of student-teaching Nothing can make up for these, but an unexpected compensation has been the greater opportunity for combined clinical work with consultants in other specialties

For the surgical aspect of my own patients I work mainly with one surgeon We do our outpatients and rounds on the same days and can therefore achieve a high degree of collaboration This surgeon is now a member of the British Association of Pædiatric Surgeons and of our own South West Pædiatric Club I also have a weekly round with two other surgeons on their patients in the children's ward of another hospital and a weekly upper-respiratory clinic with an E N T surgeon and an oral surgeon Once a month I attend a general orthopædic clinic with one orthopædic surgeon and once a month with another orthopædic surgeon I attend a clinic for cerebral palsy I do a screening session with a radiologist once a week, while my rounds of the neonatal beds are undertaken with the obstetric house staff so as to cooperate closely with the two obstetricians

In the south-west region we are fortunate in having a professor of child health in Bristol who takes a fatherly interest in each of the clinical areas, and this is immensely to our advantage We are known to have central support for our development schemes, and in Plymouth an obvious advantage has been the creation of a pædiatric registrarship shared with Bristol The registrar spends one year in Bristol Children's Hospital and one year in Plymouth

Most people agree that this interchange of registrars between teaching hospital and provincial centre is desirable, yet it is still rare For the registrar, provincial experience is invaluable, if only because he will learn at first hand the work of a provincial consultant, which is the type of work he may ultimately undertake himself He will see more of the possibilities for preventive pædiatrics than in London and he will have greater responsibilities, while the clinical material from so large an area is almost limitless The amount of experience with the newborn is greater than in many teaching centres, and a premature baby unit with a yearly admission rate of 250 babies offers endless possibilities The job demands more tact because of the closer relationship with the family doctor, but a good registrar wi find that he is often phoned by the family doctor fo advice In this region we have started a form of speciali consultant service between ourselves For example, pædiatrician and a radiologist have visited centres to se groups of children with cardiac conditions and I hav seen some with endocrine disorders

I feel that there is room for more visits to the provinc from physicians and surgeons in the main centres W are lucky in being in a holiday area and each summ lay nets across the main roads to trap and entice Plymouth any visiting pædiatricians As we are al the closest port to America and on the fastest route fro the States to London, a number of American pædiatricia have visited us Interestingly enough, I find th American pædiatricians are amazed at the possibiliti available in an English provincial centre as compar with their own

Lately a surgeon from London has operated he on two cases of hydrocephalus using a new techniq he has designed Demonstrations of this kind in th provinces would increase the amount of work which c be done there For some time we have been working hydrocephalus[1] and this experience has convinced that greater use should be made of provincial centres specialised research, since the closer association possi between physician and surgeon makes them particula suited to this type of work Our own research invol five consultants, but we have never had any real difficu in getting everybody together In the area we also ha one of the few residential schools for cerebral pal and the four consultants involved make use of this cen for research as well as for therapy

I should like to see these exchanges extended to incl students, whether undergraduate or postgradua Edinburgh has a scheme whereby its medical stude have to attend some other centre during their sum vacation, and in Plymouth we thoroughly enjoy th visits The students are attached to different dep ments and can gain an immense amount of experie and teaching from consultants who miss the opportu for teaching in the normal run and are glad to do I would welcome groups of say 4–6 students at time and would guarantee to make their stay wo while As for postgraduates, my own feeling is that th attending courses at Great Ormond Street are not learn enough of the general-practitioner pædiatrics requ by those who do not aim at becoming consultants T is more easily taught in provincial centres and I bel that these postgraduates should spend half their tim the provinces and half in London

One of Plymouth's greatest disadvantages is its dista from London , but the length of this distance is to s extent an attitude of mind ! Since moving to the W I have maintained that Plymouth is a suburb of Lon and now that I have taken to driving up after dinner has become more true One must attend meeting London and other large centres, and every opportu should be given to provincial consultants to att courses in London The provincial consultant is o readier to travel than his London colleague, and I always interested to see the number who have come l distances for London meetings

The other major disadvantage is the isolation f pædiatric colleagues This is hard to overcome, but nearest pædiatric colleague, who is in Exeter, and I ho round in each other's hospital one Saturday in ev month In the ideal pædiatric service of the fu every centre would be big enough to have at least pædiatricians on its staff A further criticism of present organisation is that in many areas the pædiatri as no entry to the fever hospital and no facilities e treatment of gastro enteritis

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[1] Jolly, H R *Proc. R Soc. Med* 1955 48, 843

om my own experience I would suggest to the newly inted provincial pædiatrician that his first task d be to start a premature baby unit if none exists, se that is the quickest way to save lives Since nit started the neonatal mortality rate for premature s in Plymouth has fallen from 203 to 100 We are nate in having an additional sister who looks after ble premature babies on the district This nurse is e staff of the M O H but attends ward rounds in the and is very much part of the department She takes on feeding problems in full term newborn s if her time permits

would also advise the new consultant to concentrate ork in one hospital at the centre and not to under peripheral work until his base is secure

umming up the advantages of provincial pædiatrics uld say that the greatest of these was the chance to tise child health in a manner which is impossible in don (Much of this conception we owe of course to ce's work in Newcastle.) I believe that the pædian has a greater opportunity than any other con ant to serve a community and that the way to achieve s to work through the doctors in that community over, he has the opportunity to inspire with modern iatric ideas not only the doctors but also the nurses the provinces the consultant has more beds and often varied clinical material because of the size of the drained and, despite the distances he probably ds less time in travelling than his colleagues in don, for he can move faster as well as more pleasantly can keep in touch more easily with his interesting nts, not by unnecessary outpatient attendance but quiry from the child's own doctor when they . Also, he can usually be certain that a child who ll again will be sent back to his unit and not to some hospital

iew of all this I feel that whatever his particular ts, every young pædiatrician should spend at five years in the provinces as an essential part of ining

INFANTS IN MATERNITY UNITS

MEMORANDUM[1] from the Ministry of Health to al hospital boards hospital management com and boards of governors suggests methods for provement of existing arrangements for the care nts in maternity units

memorandum points out that, for the most part s in maternity units are kept either in nurseries ying in wards with their mothers The congregation ge number of infants in a nursery is not without principally from the spread of infection and less ly from accidents The Ministry is particularly about the practice of leaving a number of new babies alone in a nursery especially at night, for periodic visits by a nurse who in the course r duties pays occasional visits to the nursery ally a baby has been found dead in his cot perhaps having been caused by suffocation or by on of regurgitated food Such deaths are fortun are—9 deaths during the first fourteen days of life ed from this cause in hospitals in 1952 and 16 in Infants who die in this way may in fact have been —though almost 'silently' so—for a few hours death. These deaths should be less likely when the are under constant supervision by the mothers nursing staff who may detect any slight deviation normal.

practice of keeping babies with their mothers, known as 'rooming in' either continuously or for the greater part of the time has certain advantages, the memorandum continues The mother gets to know her baby and learns how to care for him the mother-child relationship is gradually and steadily established Where the mother and baby are in a single room the risk of infection is reduced to a minimum and even in larger wards the risk of an epidemic spreading to all infants is reduced The infants are not subjected to frequent changes of environment and temperature by being taken at intervals to and from nursery and lying in ward for feeding As the infant is constantly under the eye of the mother and nursing staff, any abnormal sign is likely to attract attention at once Where it is at all possible the infant should remain in the ward with the mother Where for any reason this is inadvisable—for example, when the infant is noisy and troublesome or when the mother is not well—the infant should be kept in a nursery until it is possible to return him to his mother with no disturbing results

Where infants must be kept in a nursery, the number should be small There should always be adequate cot spacing so as to decrease the chances of cross infection and the nursery should be near the lying in ward so that infants may be easily taken to their mothers for feeding and nursing Where possible a member of the staff should be in constant attendance

The memorandum says that ' rooming in ' should not normally require any extension or adaptation of premises, some reallocation of existing accommodation is likely to be sufficient in most cases. This practice should however be borne in mind when new maternity units are being planned

DRUGS AND BEDS

IN their third report[1] in the 1955–56 session the Committee of Public Accounts give further particulars of the Ministry of Health's investigations into the prices of standard drugs proprietary preparations and basic drugs The prices paid for standard drugs, they were glad to learn had on the whole not been excessive But the profits on some of the 91 proprietary preparations selected for investigation reached 60% on selling prices and the return on capital when it could be calculated ranged from a loss of 24% to a profit of over 100% Three of the firms the committee were glad to learn had lately made price reductions which would save the Exchequer about £850 000 a year The investigation into basic drugs covered four selected groups on which N H S annual expenditure was about £10 million Here too trading results varied Some firms seemed to have made losses but some of the larger suppliers of antibiotics appeared to have made profits of 30–40% on selling prices

To the committee these findings were unsatisfactory and they were concerned at the continued payment of prices which seemed to allow a profit margin substantially in excess of that hitherto accepted as appropriate for Government contracts' Their concern was not lessened by the evidence of the Ministry and the Treasury that little progress had been made in negotiating with the industry Drugs provided under the N H S were supplied by retail chemists from stocks and not bought direct by the Government and the committee recognised that this practice made it difficult to fix a suitable price They suggested, therefore that manufacturers whose prices had been shown by costing to be excessive might be persuaded to give annual rebates to the N H S

The committee counted the cost from the doctor's as well as the chemist's point of view In 1954–55 some 244 million prescriptions were dispensed under the N H S

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[1] H.M. (55)116

[1] H.M. Stationery Office 1955. Pp 21 1s.

In 1949 the average cost per prescription in England and Wales was 3*s* 1*d* , in August, 1954, it was 4*s* 4*d* , and more lately in Scotland it was 5*s* 2*d* The increase was mainly due to new expensive drugs, but a secondary cause was an increase in the proportion of proprietary preparations prescribed, many of which cost more than their equivalent standard drugs The committee appreciated that under the N H S a doctor had an absolute right to prescribe what he considered medically suitable for his patient, but they also recognised that the taxpayer had "every right to expect due economy in prescribing"

HOSPITAL PROBLEMS

Variations in the costs of different hospitals also attracted the committee's attention They appreciated that the variation in the range of services provided in different hospitals was necessarily reflected in the cost of running the hospital Uniformity was not to be expected But a study of the costing returns of other hospitals could offer useful pointers, and the regional hospital boards had made substantial economies based on investigations into differences of expenditure The board of governors of teaching hospitals had not been so cooperative Of the 34 boards of governors, 17 indica that the returns were of little or no use to them, 5 m no reply The committee were particularly surprise learn that the board of governors of St Bartholom Hospital had not found these comparisons of cost w consideration, for the cost per patient a week at B was £28 9*s* 9*d* , compared with an average of £25 4*s* for all general teaching hospitals in London, and the of provisions in 1953–54 was 8*s* per patient week m than at any other London teaching hospital

Another group of teaching hospitals, the Un Manchester Hospitals, also drew the committee's Year after year, they pointed out, the auditors have with a refusal on the part of the board to interfere the policy of their own management committees insisting on group purchasing of provisions and c petitive tendering The board contended that hospitals had had good and long service from t present suppliers and that bulk purchasing would b only small economies But the committee rema unconvinced that independent purchasing by e hospital of commodities in common demand was economical as joint-purchasing for the whole group

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Points of View

DO WE REALLY NEED MORE HOSPITAL BEDS ?

Somerville Hastings

M S Lond , F R C S , M P

The incidence of disease is changing with almost alarming rapidity Infectious disease is decreasing rapidly, partly because we are now able to prevent and treat it more efficiently but mainly perhaps because overcrowding is much less The death-rate from tuberculosis is falling although the incidence is still high Some believe that if we once decided to treat tuberculosis as an infectious disease it might be eliminated within a generation Children's wards and children's hospitals are being closed or taken over for adults, because of the rising standard of life, less overcrowding, the provision of milk in schools, as well as a safer milk-supply as the result of pasteurisation or tuberculin-tested herds

On the other hand the incidence of psychosomatic disease seems to be extending But whether there is a true increase or merely an increasing recognition of a psychological element in a greater number of diseases it is difficult to say Undoubtedly there are many more old people, and these are more prone to sickness than normal healthy adults They do, however, recover as a rule, though less rapidly than younger people

To what extent can we foresee the future incidence of disease and model our hospital policy accordingly ? In Basildon, Harlow, and other new towns they are building factories that are at first mere shells but can be divided up according to the industry that is developed in them Is there a lesson here for hospital development ?

Our principal voluntary hospitals, and especially our teaching hospitals, developed in response to an urgent national need The Industrial Revolution resulted in overcrowding and appalling conditions of life The homes of the people were too bad to be ill in, or even to die in, and something had to be done Because the voluntary hospitals were incapable of fully supplying the need the poor law infirmaries were called in and had to assist in the good work

But housing conditions are improving and an increasing number of people live in houses with 2 or 3 bedrooms in which it is possible to be ill in relative comfort, provided of course that medical and nursing services are available and no surgical or other specialised treatm is required Moreover, there is increasing evidence certain classes of people do much better at home u such conditions This applies especially to children old people It seems clear that the psychological e of removal to hospital affects adversely some child Old people also move badly and in many cases do survive for more than a week or two The reas this is by no means clear It may be in part p logical, since in the bad old days few old people returned to their homes from poor law infirm Some chest physicians are treating many more ca pulmonary tuberculosis at home They claim th psychological and other reasons they often do better

There can be no doubt that many more hospita for mentally deficient children are required can be no doubt, too, that many hospital wards, whole hospitals, are hopelessly out of date and la in essential facilities One has only to visit m hospitals, such as those recently built in Basl Zürich, to realise how great is our need In th general hospital at Zürich the largest ward has 6 beds

What we urgently require is better hospitals, do we actually require more beds ? And if these provided could we staff them ? Today there are thou of hospital beds in buildings of moderate quality for want of staff Are not half-way houses for old p in which hospital facilities can be brought to the pa as and when required, a much greater need ? I vast majority of illnesses in old people, medic nursing care can be given in such accommodation w removing the patient

It is easy to understand why doctors shou for more hospitals, especially in the areas where th practising It is much easier to do good work i patient is subject to the discipline of a hospital wa under the skilled observation of a trained nurse or It is easy to appreciate why every town of an that has not a general hospital is now demandin Bringing hospital facilities to the patient in his usually implies an increase in the local rates, sinc facilities are provided by the local authority ar by the hospital service Besides it is much nicer ill in a hospital near one's home where one's can visit daily More women are now going out t and have therefore but little time to attend to s in the home

In the case of new towns and large housing esta demand is especially vociferous It is pointed o y cases there is no hospital within several miles and this hospital has already a considerable waiting list t is the best way of meeting this need the building series of new and relatively small general hospitals ? all hospital is often neither efficient nor economical m. Nor should every hospital expect to have dent facilities for every specialty Hospitals can be ped for this purpose so that for instance inpatient ment for eye or skin diseases can be provided by one hospital in a group of three or four and for rarer specialties such as brain and chest surgery the ps should be much larger Transport is much easier n it was and it is always possible to provide free sport for patients friends if required

ight not the best solution of these admitted difficulties band in the provision in the new towns and elsewhere nsultative stations for outpatients making specialist re readily available to the local doctors for their nts, and in linking these stations with parent tals to which the consultant is attached so that uity by the same specialist can be assured if the nt has to go to hospital for further observation or ment This may of course imply extension of ar hospitals but this is infinitely better than ling a number of small general hospitals remote the places of residence of the consultants who are nsible for the patients in them

ch consultation stations might be in health centres e they exist or be built as a first instalment of e health centres Alternatively special buildings t be erected or existing buildings adapted Perhaps of all, in view of the fact that so many health ons are still in the melting pot temporary build might be provided or as has been so successfully with health centres at Harlow New Town[1] buildings be erected which could be readily converted into ry dwelling houses in case of need

t certainly need better and more up to date hos but do we need to increase the total number of al beds ?

Medicine and the Law

An Overheated Cot

n inquest on Nov 29 the overheating of a cot aternity unit was held to be a contributory cause eath of a three day old infant[2] His mother had h of pregnancy and the baby was prematurely ed by cæsarean section on Nov 18 He weighed at birth In evidence a sister said that she d the infant to a rack cot on the evening of Nov 19 d everything normal but next morning she and rintendent sister noticed that the cot thermometer d 110°F and that the red warning light (which the cot) was burning The infant s tempera 105 F Two pupil midwives who were on duty before the warning light was seen said that they red nothing out of the ordinary and they had ched the heating switches The matron of the d and that ward sisters were in charge of cot and nurses were not allowed to touch the switches d that occasionally cots were heated before being by newborn babies but the switches were not to be left at high '

thologist said that death was due to bilateral rrhage and atelectasis prematurity being tory factor He considered that the infant obably have died in any case but that the , had it been present for a long period might ened death A verdict of accidental death was d.

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[1] See *Lancet* Oct. 22 1955 p 803

[2] *ffordshire Evening Sentinel* Nov 29 195

In England Now

A Running Commentary by Peripatetic Correspondents

DURING a dull operating list, my anæsthetist suddenly said she had had a vivid dream about me the previous night As my anæsthetist was a very attractive young woman I felt duly flattered However it transpired that she had seen me in a plane which crashed and did a double somersault As each month I fly to a remote hospital and I was due to go the following day, I was able to point out to Betty the implications of her dream. The poor girl was horrified having forgotten my usual routine visit but she hastened to add that the dream could not really apply as she had seen me in the pilot's seat However it so happened that on this occasion I had not been able to book my usual flight Instead I was told to contact a certain Captain Evans at 6 A.M on arrival at the airport. Next morning found me in the cold grey dawn inquiring for the said gentleman I ran him to earth in a distant hangar—a striking figure complete with traditional handlebar moustache, rows of ribbons on a faded R.A F tunic and shabby corduroy trousers He informed me he had only just taken over this charter plane business, but would be delighted to fly me to my destination He then volunteered that last week his predecessor had 'written off' his plane and himself Also that he was licensed to carry freight only and he was sure I would not mind signing on as flight engineer for the trip Finally with what I thought was rather misguided humour he said would I mind paying in advance so that he could leave the money to his widow ? I entered the plane jammed with luggage and was immediately requested to occupy the only vacant space—the co pilot s seat

Happily we landed safely and here the story might have rested but recently I again met my anæsthetist, whom I had not seen for a long time No I was not flying to my remote hospital this weekend no, there was no chance of an emergency visit as I had another important engagement In that case said Betty she didn t mind telling me She had again been troubled by a vivid dream of a plane crash—identical with the dream of five years ago, except for the absolute conviction that it was going to happen this weekend Of course we laughed over the absurdity of dreams and the notion that they could have any bearing on real life I still feel this as I gaze through the windows of the airport lounge and reflect on the reason for my being unable to visit my remote hospital this weekend In half an hour, I board a plane to take me across the Atlantic

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We have always been assured that if we kept animals as pets the children would early acquire an understanding of biology But my faith in the system has been rudely shaken

We were visited lately by an uncle of mine whom we had not seen for many years judging by his girth and air of contentment they had been prosperous years The children—good hosts as always—were literally all over him Our three-year-old girl was sitting happily on his knee when there was a pause in the conversation 'Uncle' said she prodding his abdomen 'are you going to have a baby ? I was not sure of the depth of my uncle s joviality but I need not have worried He showed that he was a good psychologist by merely replying 'no with an air of great seriousness. Well then asked the child, what is it ? Is it puppies ? '

* * *

Seven years ago I described[1] the pyrotechnic meeting of our dining-club We are still going strong and this year s meeting was held on Nov 5 at Stockbridge on the Test. For the first time for many years we had an additional summer meeting at Broadway ; and after visiting the Tower and Snowshill Manor some gastronomic explorations took place at a small inn at Ilmington Regrettably the 15 ton club yacht was sold in 1951 This is a reflection of our increasing commitments and (dare we admit it ?) advancing years and only one member now sails, in a 16 ft dinghy

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[1] *Lancet* 1948 ii 787

Our club is now 30 years old with a record of at least two meetings a year (war years excepted) of which your correspondent has missed one only But it can, in fact, trace its roots back 35 years, when, as described in the 31st letter of the Corpus (Cambridge) Association, three of its members were in residence at that college—two others being at Emmanuel and Pembroke These five, together with another, later came to live in Gordon Square, Bloomsbury, whose name the club bears For longevity as a one-generation club, the Kaleidoscopes of Corpus [2] probably holds the record This was formed in 1882 by ten Corpus freshmen, eight of whom became parsons, and continued as an annual dining-club, being gradually whittled away by the successive deaths of its members, until the three survivors met sadly to wind it up in 1950 after a life of 68 years

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Dailys come and dailys go, but ours goes on for ever She comes up hill, down hill, through wood, through briar, in storm, rain, wind, or snow to reach our little thatched cottage On arrival she is always cheerful and willing, keeping us permanently amused by her outlook on life In these democratic days it is embarrassing to be told that there "allus has been gentry and there allus will be," and that she doesn't hold with all this new education and thinks the children would be much better put out to work before they are fifteen, learning something useful

The eldest of nine, she started work on a dairy farm at the age of twelve and for years went to bed at 5 P M, because there was nothing else to do Though her father was earning only ten shillings a week, she has saved throughout her life and now has from £1300 to £1400 tucked away in a savings bank Her unkempt and unusual appearance suggests gipsy blood, and she has a strange, almost clairvoyant, flair for betting On Derby Day, listening in together, I found that she had backed the first, second, and third winners all in the right order, but alas, only 1s each way

Her conversation is limited and repetitive "It's GOD's truth" follows nearly every statement of hers, and practically all mine are answered by "Well I never" Another of her sayings is "It would be a lovely drying day if it wasn't raining" Nowhere could you find a more honest and affectionate loyalty and I have long ago become accustomed to little idiosyncrasies such as finding my carving knife hidden behind a sofa cushion

When really ill with bronchitis or flu no power on earth can persuade her to ask her doctor for help, but when she is well or "better than she was," she will walk up two miles to the weekly surgery, dressed in her Sunday best, to ask for a bottle of medicine.

She can turn her hand to anything, from lifting tatties to bottling fruit, and keeping accounts for a butcher This year she went for the first time in her life more than a few miles from home This was a coach outing with her Women's Institute to Windsor Castle and she took a most intelligent interest in the whole proceeding It makes one wonder what "progress" is worth

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Formerly a strong objector to the Archers as a background to Sunday breakfast, I have lately become an enthusiastic listener, for I find that I pick up a lot of interesting information on agricultural and rural matters from Farmer Dan and his friends Tom Forrest, for instance, lately described the voracious habits of wood-pigeons and offered advice on the habits of the pike Philip Archer discussed with the vet the differential diagnosis of the sudden sickness which had afflicted his Ayrshire herd But in the rival programme, Mrs Dale's Diary, Dr Dale never warns us on the unwisdom of excessive sunbathing, or gives the pros and cons of isolation for contacts in poliomyelitis Are we missing an excellent opportunity for health education? Surely much useful information could be impressed on tea-time listeners by the best-known medical household in the country

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Heard in committee

"Mr Chairman, now that we are frozen to a ceiling "

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[2] *Camb Rev* March 3 1951

Letters to the Editor

VACANCIES FOR CHEST PHYSICIANS

SIR,—Much has been written about the difficultie those aspiring to consultant status in the health serv In 1948 the senior hospital medical officer post was cre and the various trainee grades were brought into be The S H M O grade has been one of the features sing out for most severe criticism, since it has been regar by many as a form of cheap labour The numer strength of this grade in the chest service greatly exc that of consultants

We are employed in the chest service and have bee increasingly concerned about the prospects before us indeed of the general well being of the service following figures show the numbers of consultants S H M O S in the chest service by age groups

Age-group (yr of birth)	*England and Wales* *Cons*	*S H M O s*	*Scotland* *Cons*	*S H M O s*
1880–84				
85–89	8	2	1	
90–94	14	15		
95–99	34	21	1	1
1900–04	65	46	11	2
05–09	58	48	2	7
10–14	68	80	14	18
15–19	50	100	6	24
20–24	9	45	1	8
25–		1		2
Totals	306	358	36	56

Senior registrars in the chest service are distrib as follows (whole of Great Britain) first year 24, se year 18, third year 4, fourth year 9, others 10, tot (England and Wales 57, Scotland 8)

The inference seems to be that in the next five some 20 retirement vacancies for consultants ma advertised in England and Wales For these pos potential field of applicants drawn from S H M O s senior registrars is 415 These figures are very distr and they must surely deter any young man rec qualified from entering the chest service

This obviously has a bearing on the future effic of the chest service, which must constantly ho encourage able young men to join its ranks

The Strachan committee's report, valuable thou recommendations are, does not go far enough An and searching investigation of the chest servi required The aim should be to establish conditic service which will promote confidence in the futur without such confidence no one will wish to ente service) and also provide broad long-term plans of the changing pattern of tuberculosis

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W S HAMILTO
GRAHAM W PO

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WHO ARE THE INFECTORS?

SIR,—In your editorial (Nov 26) you stress the find the unknown infectors and you write off the patient with chronic tuberculosis and positive sput the sentence "Once diagnosed practically all bu recalcitrant and unteachable soon cease to be a to public health"

From a fairly long acquaintance in general p with the problem of the middle aged and elderly p with tuberculosis whose disease is chronic and progressive but who still has tubercle bacilli in his sp I think that this problem is still underestimate needs a more active approach

I have at this moment 2 patients in this category visit fortnightly to impress on them the need for segre and who I know pay fairly frequent visits to public

Another patient with fibroid phthisis and occasional in his sputum, when convalescent from an injury in a ward, would have been returned to his family, inclu children, in a 3 room back to back house because he not require active sanatorium treatment and therefore not be admitted to a sanatorium It is not unusual for children to be hastily ejected from the room of an infectious at before the front door is opened to the general [illegible]

We can write off these patients as ignorant unteach and recalcitrant but we cannot write them off sources of infection

When a middle aged man who has had bronchitis for is told that he now has tuberculosis, that he is tious, and that he must shun the club and the -house, he usually accepts this and follows the e for the first few months but if chemotherapy not give him back his liberty he gradually resumes former habits

we want to keep him away from susceptible groups must do more than admonish him In Birmingham is an occupational therapy centre but it appears be patronised by the younger age groups distance home and cost of materials appear to discourage patients from using it

ere appears to be a definite need for a hostel to the chronic tuberculous patient who cannot be non-infectious by chemotherapy and may occupy in a sanatorium or, worse still in a lodging house there is nowhere else for him to go

difficult to devise methods to keep these patients at home but suitable day centres and extension tered factories within easy reach might help the lant patient

the patient feels that there is no more to be done him and contact with his medical advisers and services becomes infrequent he tends to return former mode of life and social contacts

ham. M Barrow

—Dr Chalke's interesting letter last week prompts draw your attention to a promising infector pool which a fly or two might be cast

years ago when I was a locum in a country e I had the sputa of all the chronic bronchitics ed for tuberculosis and bagged five new cases a brace of grandfathers The elderly person tuberculosis which is almost saprophytic in them uncommon, it may be a new infection as it was in the case of Sir Arthur Keith which about in his autobiography or far more it is a return of a purposefully forgotten nightmare I suggest a trial in one area where of all chronic bronchitics asthmatics, all those from chronic cough (especially those who say it's just the fags ') and all who have had three bottles of expectorant or cough sedating mixture be examined—*and cultured* This would entail a operation between the G.P.s, the patients and the health authorities but if the same amount of put into eradicating tuberculosis as the agri committees are putting into the extermination rabbit it should not be beyond the wit of

is another point about your incomplete on which I should like elucidation and it is many reports tell us that isoniazid resistant make feeble growths which die out Does the happen in human beings? When a patient as having isoniazid resistance it may mean 1% or less of his bacteria are so resistant and symptoms depend on the 99% that are not a resistant patient infects someone and bacteria are found in the infected person it that these resistant bacteria are but harmless of the lads who cause the caseation and concern Are there any clinical reports on patients who might reasonably be supposed to have only isoniazid resistant bacteria—people who have been taking isoniazid neat for a year or so? When one considers how easy a thing it is to swallow a few tablets of isoniazid without the slightest discomfort ensuing, this seems to me to be a very important point

Beckley Rye. C G Learoyd

Sir,—Your leading article states an important problem May I add to your list of solutions?

In South Warwickshire in 1954 19% of new cases of pulmonary tuberculosis had extensive disease (group III) the majority of these patients were over 40 years old On average each had more than two abnormal symptoms A general practitioner tells me that he refers to hospital under 1% of the patients that consult him I believe that this figure applies to most of the country Surely then the first step to reduce the ' infector pool is to radiograph the remaining 99% of general practitioner patients thus obtaining a yield of 2% pulmonary tuberculosis cases The value of this method was first demonstrated in 1944 by Toussaint and Pritchard

Most X ray departments in general hospitals are working to capacity and only a handful have been able to establish routine radiography of outpatients and inpatients Development on these lines has almost come to a standstill owing to restricted capital works Furthermore some patients recommended to attend hospital fail to do so because of social and economic restraints These facts suggest that radiography should be taken to the patient This could be achieved by means of small easily transported photofluorographic units exposing roll film and sited for periods of a few weeks either in or very near general practitioners surgeries The main problems would be accommodation and staffing and their solution would involve regional hospital boards local authorities, and executive councils

Cases of tuberculosis in part III accommodation in Warwickshire are common and I entirely agree with the substance of Dr Marsh's letter (Nov 26) He rightly states that there is need for segregation of patients with tuberculosis The majority of welfare committees are reluctant to recognise that such ambulant cases exist and fail to offer adequate facilities in part III accommodation This lamentable state of affairs helps to perpetuate the infector pool" to which you have rightly drawn attention

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P G Arblaster

Sir,—The difficulty in finding a common denominator for the unknown infectors—i e apparently fit persons with chronic infectious tuberculosis—has been responsible for a diversity of policies in mass radiography ranging from attempts at examining whole communities, to more detailed schemes which aim at pinpointing the odd case

Is it not possible to narrow down the search for the infector to a tangible group of people?

They have in common a tendency either to defer radiographic examination until alarming symptoms force them to seek medical advice or else to refuse at all times to use facilities for radiography Experience in mass miniature radiography makes it possible to suggest a number of reasons for this attitude: (1) fear of losing employment and causing hardship to dependants (2) already existing economic insecurity; (3) superstition and low intelligence (4) fecklessness and general lack of interest in anything but the bare essentials of life

Any one or any combination, of the above conditions in a group of persons could be instrumental in the formation of a pool of infectors Given favourable local conditions the perpetuation of the disease in the young would be assured while they themselves could in turn constitute a new potential pool.

It is not suggested that chronic infectious tuberculosis is confined to any one stratum of the population, it is, however, probable that the delay in diagnosing the disease is greater in those among whom the above conditions are more likely to be found

These considerations point to a social and economic denominator Provisional figures for a period of three years in the Islington static unit suggest a connection between the type of disease and social groups as defined in the 1951 Census for England and Wales They suggest that social groups IV and V should be seriously taken into account when searching for cases of tuberculosis long overdue for diagnosis This explanation would account for the present lower discovery-rate of pulmonary tuberculosis in large organised groups in which the number of semiskilled and unskilled workers is small, and it would narrow the field to those communities in which groups IV and V form a considerable proportion of the population

The problem of how to bring these groups to the X ray screen on a voluntary basis is a different matter

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G Z BRETT

SIR,—Your leading article stresses the value of the X-ray machine in tuberculosis case finding, particularly when used on certain occupational groups having close and frequent contact with a large public There are two methods of attack with the X-ray machine

First there is the selective technique by which certain specified groups known to have a high morbidity, such as Dr Marsh's (Nov 26) lodging-house occupants, contacts of known tuberculous patients, contacts of infected schoolchildren,[1] and patients with symptoms referred by doctors

Secondly there is the mass technique by which whole communities are examined radiographically at intervals (this is widely practised in Scandinavia and Holland)

In order to use the first method successfully it is necessary to know a great deal more about the epidemiology of tuberculous infection Such questions as the following are still not answered with certainty

How close must be the contact and how large the dose of tubercle bacilli? What is the effect of a single small dose compared with repeated or large doses? How is infection related to morbidity at different ages, particularly in the young adult? Does infection occur most frequently at home or at work? Does any occupation carry a high risk of infection or morbidity? What effect has milk spread bovine or human infection on the epidemiological pattern of infection and disease?

The regular routine use of the tuberculin test can help us to answer these and many other questions

van Zwanenberg,[2] studying infection and morbidity in child contacts in the home, showed that the patient with directly positive sputum was responsible for nearly all morbidity, whereas the patient with a sputum or laryngeal swab positive only on culture was responsible for a great deal of infection but little or no disease

A recent tuberculin survey of school children in a small town in East Suffolk known to have one milk-supply infected with tubercle bacilli showed that by taking a complete history of the child's milk supply since birth it was possible to determine not only which milk supply had been infected but also the time at which infected supplies had ceased

Our experience, like that of others, of detecting naturally infected school children suggests that a large amount of this infection occurs in the home, particularly in the preschool child

These three examples indicate what can be done in small surveys in collecting information on the epidemiological behaviour of the tubercle bacillus Extension of this technique of regular routine tuberculin testing to other groups and ages in different environments will in t give us a better understanding of the methods of spr and the human response to invasion by the tube bacillus

Time is short, and as you say, "as B C G, now an the future, may well interfere with the value of tuberculin test, we should see to it that both weapons used intelligently and as far as possible not allowe blunt themselves by needless clashing"

A more complete understanding of the epidemiolo tuberculosis will enable us to direct our case fi and preventive methods, including preventive vaccin more skilfully

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CHARLES J STEWA

MUSCLE IMBALANCE IN SCOLIOSIS

SIR,—May I answer some of the points raise Dr Basmajian (Nov 26)?

Firstly it is true that orthopædic surgeons sometime the word strength, as applied to muscles, ambigu especially when they are discussing deformities due eith upper motor neurone lesions or to reflex spasm seconda irritation of joints In such circumstances a muscle is said to be stronger when we really mean that it is the abnormally frequent contractions or that its tone is g than normal By convention, in anterior poliomyeliti other lesions of the final common path, the word stren used to denote the tension produced by a maximal, volu isometric contraction, this is the sense in which the w used in our paper It is usually believed that strength i sense is an expression of the number of muscle-fibre tractions in a given time We do not claim or wish to s that there is a direct mathematical relationship be muscle strength and the amplitude and frequency of unit action potentials Our cumbersome notation of and (0)s was used in order to avoid giving such an impre as we know from experience how the Medical Research C grading of muscle strength in numbers may lead o assume that grade 4 is twice as strong as grade 2 W however, believe that if, for example, the spinal muscles left side show either a few, small, infrequent action pote or none at all, while those on the right side show many and frequent potentials then it is reasonable to say th muscles on the right are acting more strongly or show activity

With regard to fibrillation potentials we did not recor although they were observed occasionally, but in n our cases the disease was of long standing and one wo expect many fibrillation potentials from atrophic, non contractile fibres

We do not claim that electromyography provides a co picture of muscle activity, but we do suggest that it way of examining the activity of muscles which can examined by ordinary clinical methods

Secondly we did consider the possibility of the imbalance being secondary to the deformity, in its draft our paper contained a long discussion of this an theories We decided that the inclusion of such would have made the paper unbalanced, and acco some of the theoretical aspects have been incorpor another paper which, it is hoped, will be published in the special journals

Finally to answer the question whether I advi colleagues to try the suggested operation, the an No—for two reasons Firstly those patients who ca colleagues were referred for a specific investigation, advice on treatment, and secondly I do not think hypothesis is sufficiently certain to justify its clinical tion What we said was "if the deformity is due to muscle action, then weakening the stronger muscles prevent the deformity," and we suggested one diminishing the action of the deep rotator muscle analogous statement about the foot would be "if deformity is due to the balance between the anter posterior tibial muscles being upset in favour of the then weakening the calf muscles should prevent the def one way of doing this is to divide the tendo achillis."

The practice of medicine and surgery is m traditional craft, and innovations should be ly with caution and if they are based on good scientific idence Our article was not meant to be a plea for a peculative operation—which, as far as I know has ever been done We do suggest that the activity of the ep spinal rotator muscles should be investigated in ery patient with paralytic scoliosis If in some tients, imbalance of these muscles appears to be an portant factor then consideration might be given to recting this imbalance

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[1] MacDougall I A Mikhail J R, Tattersall, W H Med Offr, 1951 86 253, Brit med J 1953 I 64 Davies, J V Tubercle, 1955, 36, 69

[2] van Zwanenberg, D Tubercle, 1955 36, 238

In a traditional craft suggested innovations nearly ays provoke resentment Fortunately *The Lancet* ovides a means by which new ideas can be proposed lished, discussed, and confirmed or refuted—dis sionately and scientifically That is why we submitted r original article and is also my excuse for this long ter

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ROBERT ROAF

IN THE MENTAL HOSPITAL

Sir,—I am sure that the series of articles under this ding has been read with profound interest by all who re not satisfied with the status quo As an occupational apist who has been on the staff or visited some of the spitals mentioned I would welcome many of the ideas gested and although some seem visionary it may that their main defect is that they are well ahead their time—at least in this country

There are three points only briefly mentioned hitherto ch I would like to stress.

(1) There is a definite difference (although not always reciated by institutional staff) in the function of the ward (bed area) between the mental hospital and the general hospital In a general hospital the ward bed is workbench on which the patient is serviced (if is not being too impersonal) and then passed on for con ative treatment via the outpatient department In the tal hospital, the ward bed is of no greater therapeutic than a bed at home. The main treatment centres should the psychiatrist's consulting room occupational therapy other work centres the gymnasium the social club the 's field, and (dare one hope ?) extramural activities even the extent of part time employment in local industry ath Park Hospital is a good example of this last ay)

my first hospital appointment I was asked to organise upational and work therapy programme for the acute cases, and for this purpose I was given one of the d, darkest and dirtiest rooms in the building Before both the patients and I were encouraged by having the and brightest ward cleared of beds and put at my al as a treatment centre

In the mental hospital the ward should be regarded as a itory Pride of place and finance allocations should be n to the active treatment centres.

Dr Martin has reminded us in his article last week of often insidious dangers of the staff as well as the patients ming "institutionalised. Thinking especially of the es, I cannot help feeling that working a 96 hour fortnight architecturally reminiscent of the Bastille must have an institutionalising effect

Little has been said in this series of the very strong of the artisan-staff trade unions to destroy many work apy programmes If you invite a patient who is, say a carpenter to repair a ward door the artisan staff may strike action I find this the bitterest pill of all

would like to make two specific recommendations

(1) That local industries around the hospital be encouraged the extent of subsidy to employ on a part time basis groups of stabilised inpatients. They should be accom d by a trained nurse not in uniform.

(2) That discussion at Ministerial and T U C level be ed to work out a new integrated and open hearted on the rehabilitation of the stabilised inpatient as an ted feature in normal industry

LIONEL A BAINGER

KOROTKOV'S SOUNDS

SIR—This is a preliminary announcement of discoveries which it is hoped to publish fully in the near future concerning the nature and origin of Korotkov's sounds

This subject has been investigated with the aid of an electronic oscillometer designed for the purpose which displays the brachial pulse wave and also a graph of the amplitude of this pulse wave related to the pressure of the cuff of a sphygmomanometer applied to the arm

The elasticity of arteries has been studied by a method involving mathematical analysis of the oscillometric curve It has been found that the initial slope of this figure hitherto considered to be a straight line, is in fact curved Whereas some of these curves can be described by the formula of compound interest, deviation occurs from this rule in others, this, with evidence derived from other sources suggests that the curve of the initial slope which can be related to the volume pressure curves of arteries belongs to a group of sigmoid and hyperbolic curves, described by the formula

$$y = \frac{kx^n}{1 + kx^n} + c$$

y and x are arterial volume and distending pressure, respectively while k, n and c are constants. The formula does not seem to have been employed in this connection before

A study of many photographs of the brachial arterial pulse wave and of the propagation of pressure waves in elastic tubes has led to a theory which is advanced here for the first time namely

Theory 1—The arterial system of the circulation of the blood is in a state of harmonic motion

Further study concerning the behaviour of bodies of fluid set into harmonic motion by rhythmical applied force of the anatomy and physiology of arteries, and of the velocity of conduction of the pulse wave in arteries has led to the following conclusion

Theory 2—Arteries resonate to two forces in each pulse cycle, these forces being related to production of the heart-sounds.

The actual frequency of the resonance in arteries has been found to be considerably higher than the frequency of the pressure wave arising in the left ventricle of the heart Study of the action of reflected waves in arteries has led to a third theory which is likewise original

Theory 3—Systems of stationary waves develop in arteries with fixed nodes and antinodes at certain points in the arterial system.

Application of the pressure cuff of a sphygmomanometer to the upper arm which compresses the brachial artery has been found in certain cases to alter the wave length and frequency of resonance in the brachial arterial system with a change in the system of stationary waves, which accounts for the Erlanger Recklinghausen index well known in oscillometric studies

The utilisation of these theories and observations has enabled harmonic analysis of the brachial pulse wave as modified by cuff pressure, to be effected This has revealed the existence of harmonic vibrations in arteries at certain critical points which are related to the cuff pressures at which the Korotkov sounds occur

The formula describing arterial elasticity the three theories of the arterial system which might be termed 'laws, and the well known principles of hydrodynamics applying to fluids flowing in pipes including the theory of Reynolds number, cavitation and water hammer have been applied to explain the production and nature of Korotkov's sounds.

Ely Cambridgeshire.

JOHN E MALCOLM

grateful to Dr G C Paine in whose laboratory at the Hospital for Women Sheffield these numerous endo says were made by Mr L. F. Mitchell PH D and J Level, B.SC for permission to publish them. Dr Stott, after the manner of good house physicians, drew attention to the gynæcomastia.

DOUGLAS HUBBLE

XERORADIOGRAPHY

oth you and Dr Allchin (Dec 3) appear to be unfortunate in the radiographs you see In charge y department I see many radiographs and the visualisation of bone and soft tissue structures to me commonplace and essential practice The tion that we pursue interesting special procedures ling in the efficient performance of 'everyday' aphy needs to be refuted

significance of the illumination and viewing con in relation to the subjective contrast and definition image does not appear to be fully appreciated by outside X ray departments Often in clinics and one sees a good-quality film showing to poor vantage against an illuminator in which 20% of the are not functioning while the remaining 80% are ant with direct sunlight Or, worse still the image hastily surveyed with the help of the nearest window Allchin's reference to the necessity for correct sures and processing needs to be extended to include optimum viewing conditions

ham, 11. MURIEL O CHESNEY

HYPERTENSIVE RESPONSE TO INJURY

—In your annotation of Nov 12 you draw attention important clinical feature of many patients with erate and even severe injuries Under civilian condi and particularly when patients are seen early and sion is started promptly a hypertensive response trauma is less uncommon than is suggested by the rience of Grant and Reeve[1]

During the past few years we have been studying al patterns of response to injury in association with mations of blood volume A phase of hyper sion has occurred in nearly 50% of 80 patients investi d. In some of these the increase in blood pressure ient and the pressure falls to normal with anæs a. These patients are similar in many respects to described by Prentice et al[2] from Korea They relatively minor injuries and small blood loss and d evidence suggests that the high blood pressure be determined by painful stimuli or psychogenic ces.

In many of our patients with hypertension how blood loss has been greater than 30% and in hypertension has not always responded to anæs a, nor has it necessarily indicated a good prognosis. ingly we have become convinced that within first two hours after injury there is little correlation the blood pressure and the degree of oligæmia sion needs can be assessed more adequately the extent of injury than from the pattern of sure, except when this consists in an extreme fall od pressure associated with pallor cold extremities rapid pulse. Commonly such patients have already half their blood volume

I agree with your statement that hypertensive se should be viewed against the background of severity of the injury and should give rise to a ant attitude and repeated observation It is not ever just a question of watching such patients later fall in blood pressure Such collapse can be anticipated and prevented by adequate and early transfusion, which is not contra indicated by a raised blood pressure

There remains the problem of the nature of the hypertensive response itself I have the impression that it is not necessarily either 'compensatory" or clinically desirable I am not certain that 'over-compensation' explains anything at all There is a considerable body of evidence that the over all nature of the circulatory response to injury cannot be explained solely in terms of blood volume changes The nature of the injury and its treatment are relevant Further elucidation of the mechanisms involved requires consideration of various neurogenic components affecting circulatory patterns These can be evaluated only against a background of quantitative knowledge of blood loss and the adequacy of its replacement[3]

Birmingham Accident Hospital RUSCOE CLARKE

MODIFIED ELECTROCONVULSION THERAPY

SIR —We cannot agree with Dr Kelleher and Dr Whiteley (Dec 3) that any undue cyanosis occurs with the Ectonus technique of E C T

One of the desirable features of this technique is that respiration is stimulated and the period of apnœa is shortened In practice we find that cyanosis is rare and is always much less than in straight E C T

The extended tonus stage produced with ectonus is no longer than the clonic phase with straight E C T The Valsalva phenomenon may possibly occur but in our experience it has not produced any ill effects.

Regarding the fatality and fracture rates with ectonus we find a great improvement compared with other methods We have given over 3000 ectonus treatments (over 1000 cases) in the past eighteen months. There has been 1 death and 1 fracture The fatality was an exceptional case in that the patient had had a lobectomy twelve days before E C T and at this treatment spontaneous pneumothorax developed on the unaffected side The fracture was an impacted neck of humerus in a woman aged 69 Radiography showed marked rarefaction of the bones

Many of our cases have been 'poor risks' including 2 with recent coronary thrombosis, but we have felt confident to treat them because we believe that ectonus offers a higher degree of safety than other methods.

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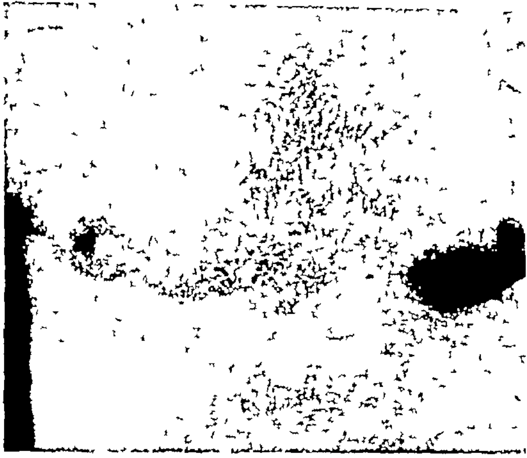

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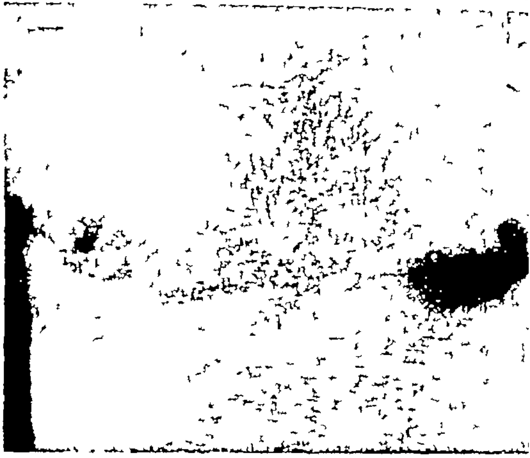

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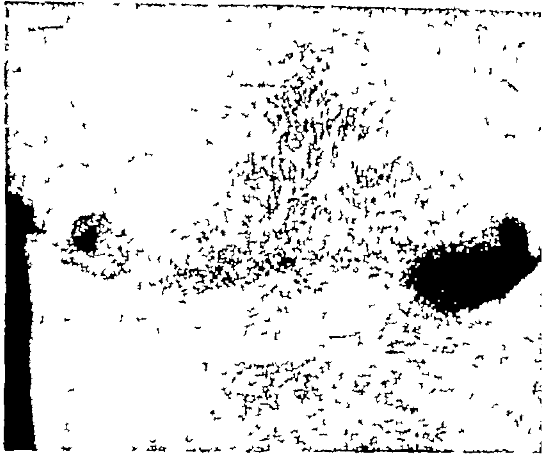

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If the management side persists in its unrealistic attitude they will in a few years have very few technologists to manage They may perhaps have plenty of girls to fill the junior posts until they marry, but if laboratories in the National Health Service are to have a solid core of experienced trained technologists, something better must be offered

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L P SNOW
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Group Pathology Laboratory,
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RESPONSIBILITY INDIVIDUAL OR COLLECTIVE ?

SIR,—In the Medicine and the Law section of your issue of Nov 26, you quote a medical advisory committee as having stated that in their opinion the treatment of a patient entering a hospital (in this particular case a mental hospital) is the "sole responsibility" of the doctor in charge of the case I do not agree with this opinion, and I consider that the apparent simplicity of this formula (superficially so attractive to us doctors) is dangerous in its implications and obscures important medicolegal issues and other important issues which concern the National Health Service I submit that when a patient enters a hospital he does so believing that he is entitled, not only to the individual "attention" of *a particular practitioner, but also to the* benefits which he *assumes (and* therefore expects) will be available as *a consequence* of *his entering a hospital*, viewed as an organic unity, that is to say, he believes he is coming under the care of a corporation *comprised of practitioners* and their auxiliaries, many of whom *are likely to be* engaged on tasks in relation to his medical welfare, few (if any) of which in fact can be satisfactorily performed in their entirety by any individual practitioner or auxiliary acting alone

I submit *therefore* that the "responsibility" *for his care* and treatment is *vested in the "hospital"* viewed as a corporate body Naturally there are particular instances of individual responsibility discernible within that total corporate responsibility, and some of these individual responsibilities may even devolve in fact on lay members of the corporation, as well as on its *medical members* The *corporate teamwork and organisation prerequisite and* implied in most surgical theatre procedures is, I submit, a very good example in support of my opinions, and the law no longer holds to its former rigid and unrealistic notions that in fact any surgeon can humanly scrutinise and therefore be held *individually respon sible for each and all of the technical minutiæ in complicated surgical theatre procedure*

I *am* of the opinion, moreover, that a governing body (which might be wholly composed of lay members) to some extent and in particular circumstances enters into this organic relationship with the patient For instance, if a management committee either fails to produce adequate technical *facilities* or interferes in some way *or other* with the development or maintenance of *corporate* feeling (and therefore corporate care and skills) it might be held responsible if, as a consequence of such negligence or such interference, the safety of a patient is jeopardised or an accident supervenes An instance of the former would occur if an *explosion took place in a surgical theatre as a direct consequence* of a managing committee *having* failed to heed the warning of its doctors concerning faulty electrical installations An instance *of the latter* would occur if it could be shown that by intrigue or other means the committee had so fractionated the medical services of a particular hospital as *to impair the standard* of professional work *in that hospital* Such a situation would, in my opinion, merit the scrutiny and possibly the censure of a coroner

The necessity of viewing a hospital as possessing a corporate and organic quality of responsibility towards its patients can, however, best be exemplified when we consider the "firm" system *This, as* we all know, frequently *results in a patient* being seen by a duty officer of one firm in the evening, whereas *the next* morning (at, say, 9 A M) the patient comes under *the* care and attention of a practitioner who belongs to another firm and thereafter may cease *absolutely to be the* concern of the first medical (duty) officer who *attended* him the night

before I *submit that it is* only by maintaining this princ
of organic *responsibility of the hospital* as opposed to
notion of "sole responsibility" of the *practitioner* that
can possibly safeguard the continuity of treatment
responsibility at law which in such circumstances must
held to apply as a necessity

Moreover it must be borne in mind that the structur
the National Health Service *presupposes* that registrars req
training Now *whatever we mean by this, we must* n
that it implies that instruction is to be given on *partic*
matters, and it may turn out that a particular matte
which the registrar requires instruction concerns how to b
into play the medical and administrative and other org
teamwork *involved* in the proper care and attention
treatment of a particular *patient admitted to hospital.*
may be that this in turn becomes one of the *objects*
coroner's scrutiny Moreover how can it be maintained
a patient liable to be attended in turn by a registrar
S H M O, and a consultant is the "sole" responsibility of
most junior member of such a trio ?

In the case described in your report, the patient applie
writing to be admitted to a "hospital," *committing*
welfare in the first instance to the care of the medical sup
tendent thereof—not mark you as his "sole" responsibi
and not to a registrar It was the care of a hospital w
she sought

I submit that if our profession allows the corpo
and organic unity of our hospitals to be fraction
there will develop logically nothing other than a situa
in which every single doctor will become dire
responsible to lay management committees through
agency of lay secretaries This modern (and Socia
structure of society is opposed to our former org
structure of society, *and* inevitably involves disouss
of *propositions derived from a multiplicity* of categ
and thereby *engenders complex results* Where a me
hospital is concerned, I submit that it is at variance
the existing law

Finally I submit that it is *germane to* my main th
to point out that (as I read his criticisms) the cor
concerned in your report was more disposed to crit
the "hospital" than the medical practitioner
medical practitioner therefore has only the me
advisory committee involved to blame if these critic
were deflected on to him In my opinion the cor
was right in his attitude because it did not and c
not lie within the power of an individual doctor to
all the coroner's criticisms, nor did it lie within his p
to put anything right which required putting right
could only be the function of the organic entity—
hospital When will lay *management* committees
those who have been responsible for the present struc
of our medical services see what an illogical position
have got themselves into ? Assuredly, we are all Ean

HAROLD PALME

St Albans, Herts

THE ANAL SPHINCTERS

SIR,—In your annotation of Oct 15 you remark
while it was accepted *that* the subcutaneous ext
sphincter was the cause of the anal fissure and also for
its base

> "the internal sphincter wilted under neglect. But
> *remained in some minds* [1], for why should the muscle,
> in *dissection* undertaken for fissure and termed ext
> sphincter, appear so pale—too pale, *it would seem, for sor*
> origin ?"

The reference in this *passage* was to an article of m
and the passage suggests that I was in doubt *about*
function of the internal sphincter You may *be una*
of two other papers of mine dealing fully *and conclu*
with the new concept of the *internal* sphincter [2]
conclusions of this work were *based on* dissection
operations under *local anæsthesia* The external
internal sphincters were *marked* by black silk su

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[1] Eisenhammer S *S Afr med J* 1953 27 266
[2] Eisenhammer S *Ibid* 1951 25, 496, *Ibid*, 1954 28 2

t operative exposure and histological sections further proof of the correctness of the new hypo s The relation of the internal sphincter to Miles s n hand was fully discussed and clarified

1951 I introduced this work to Mr Henry R pson at St Mark s Hospital Mr Thompson ted my operation of internal anal sphincterotomy he cure of anal fissure and he has been responsible popularising this technique It was his further mical observations that led the staff of St Mark s ital to publish a revision of their anatomy

ban Court
th Africa.

STEPHEN EISENHAMMER

THE RENAL DUCTS OF BELLINI

n.—During 1954 you published three letters[1–3] ing to my interpretation of the anatomical morph y of the Bellini ducts Since then the results of her study have been published elsewhere describing morphology of the excretory tubes in kidneys of the then[4]

t appears that the Bellini ducts join together in pairs ing a hairpin bend which has an ‘ os ’ with a slit appearance situated not at the end but at its side the hairpin itself ends in a conical cul-de sac

The anatomical structure of the Bellini duct suggests that the os of the hairpin bend may act as a slit like avoiding a urinary backflow thereby explaining difficulty in filling the Bellini ducts during a retro pyelogram and second the collection of mineral cipitate in the cul-de sac may be the starting point the sterile urinary calculus occasionally found at the of the pyramid[5]

Department of Pathology,
h Hall Children s Hospital
Manchester

F DURAN JORDA

DIOPHOSPHORUS IN THE TREATMENT OF CAPILLARY NÆVI

R—Dr Roe and his colleagues (Nov 26) claim ent results in four out of seventeen cases of nævi ed with radiophosphorus and they include before after photographs of three of these Each of these graphs is typical of the so-called strawberry nævi as Roe et al say disappear spontaneously in the se of time

In these three cases the nævi are entirely superficial they are not the same as the deeper red or purple ine-stain marks which persist despite any treat short of destruction of the skin which bears them is essential to differentiate accurately between the us types of vascular nævi before evaluating the of treatment, and to appreciate the natural history different types Otherwise the confusions of the will be perpetuated

strawberry nævus be it superficial subcutaneous th, will eventually clear up on its own so does not a very great ultimate problem whereas the port-mark, excluding those in the midline at the base nose or on the occiput does not fade as the by nor has it been convincingly shown that any treatment makes the least difference As Lister[6] out, a history of growth after birth is of the value in the diagnosis of strawberry nævi

dard β-irradiation with radiophosphorus is found p in the treatment of port wine nævi this a great advance in therapy but the premature of totally different lesions should not be accepted ence of this

uth.

R D SWEET

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[1] Jones, C H., Howell R F Lancet 1954 ii 290
[2] Rose J A. Ibid p 758
[3] Thung P J Ibid p 658
[4] Duran Jorda F J Anat 1955 89 part 4
[5] Lancet 1954 ii 1000
[6] Lister W A. Ibid 1938 i, 1429

CARCINOMA OF THE BREAST

SIR —I am very interested in Mr Heanley s letter last week Quite simply stated my custom for the past 6 years has been to do a local mastectomy (with axillary gland clearance if required) followed by deep X ray therapy and injections of testosterone The ages of patients ranged from 40 to 78 years Results for about 12 cases have been excellent no recurrence and no secondaries I simply record the facts without discussing their interpretation

Solihull
Warwickshire

F S PAGE

RECOVERY WARDS

SIR Dr Hex Venn points out (Oct 29) that an exhaustive list of the advantages of a recovery ward would need more than a letter But I feel that an outline of them must be repeated from time to time if this important matter is to get the attention due to it The nursing shortage will progressively exacerbate the problem I have been most impressed by the efficacy and economy of maintaining such a ward

1 In the immediate postoperative period all patients who need it can have special nursing without delay

2 The equipment and supplies needed in such care are readily available in one area and need not be duplicated elsewhere

3 More patients can be operated upon and released the same day after recovery

4 Emergency operations can be done at any hour without disturbing patients or routine in other wards

5 Ward nurses are relieved of the care of patients at the time when nurses are busiest and patients need most attention They need not be hampered by visitors to these patients or to others on the ward

6 Anæsthetists and surgeons are readily available for emergencies

7 This is an ideal job for married registered nurses. These trained nurses represent a big loss to the profession and their integration into other aspects of hospital life is difficult

8 The preoperative patient is saved psychic trauma in that he is saved the spectacle of returning moaning patients and the postoperative patient does not have his appetite ruined

There is an excellent account of the subject in *California Medicine* of May 1953

One big question is where to put the recovery ward If all else fails it can be put where the surgeons and nurses dressing rooms are at present

Boston Mass U.S A

BARRY O DONNELL

POLISH PATIENTS IN MENTAL HOSPITALS

SIR —In the mental hospitals of England and Wales nearly 1500 Poles many of them ex Servicemen are under treatment Attention has been drawn in your columns to their situation ; for although they benefit from professional skill and are well cared for unlike their British fellow sufferers they lack the support the encouragement and the patient sympathy of relatives and life long friends One of your contributors suggested that their plight was one which should rouse the humanitarian interest of the authorities

This association which is a completely voluntary association seeks to stretch out a friendly hand to these sad people who in a double sense sit in darkness ’ We have pledged ourselves to send to each of these patients a Christmas parcel with a greeting in their own language and during the coming year to arrange for a personal visit to as many as possible by someone who both understands their distress and speaks their language

We appeal to all those who remember Poland s tragic loss of freedom and what the Polish pilots did in the Battle of Britain to preserve our homes We need (*a*) more people to enrol as friends at an annual subscription of

5s 0d , (b) some hundreds of contributors to our Christmas Appeal Fund Will your readers please help ?

A R N ROBERTS
Chairman, Association of Friends of Polish Patients in Mental Hospitals in England and Wales.

14, Collingham Gardens,
London, S W 5

COLLEGE OF GENERAL PRACTITIONERS

Writing as chairman of the postgraduate education committee, Dr ANNIS GILLIE expresses the warm thanks of the college to the firms which contributed to the cost of its symposium on the General Practitioner Obstetrician, held in London on Nov 20 They were Allen & Hanburys Ltd , Armour & Co Ltd , British Schering Ltd , Ciba Laboratories Ltd , Cyanamid Products Ltd , May & Baker Ltd , Parke, Davis & Co Ltd , and the Wellcome Foundation

Public Health

A Panel for the Personal Services

WHEN the National Health Service Act came into force in 1948 a few local authorities combined their health and welfare services in one department Now the council of the county borough of Southampton have gone a step further Not only have they brought their health and welfare departments, so closely associated in aims and work, under the unified control of their medical officer of health, Dr H C Maurice Williams, but they have also appointed a personal services panel which includes all the principal officers of the corporation associated with welfare in its broadest sense

The medical officer of health, as chairman of this panel, will deal with all special accommodation required for old people, handicapped persons, and problem families He will set up a review committee, consisting of himself, the housing manager, the children's officer, the chief sanitary inspector, and the superintendent health visitor, to consider all cases in these three categories and decide on the type of accommodation needed These recommendations will be submitted to the personal services panel who have the authority of the council to allocate suitable accommodation without reference to the council committees It is hoped in this way to reduce the departmental obstacles that have often hindered rehousing

There is also a scheme afoot to unite some districts into larger areas so that welfare officers working for, say, the education department or the children's department cover the same area as a group of health visitors When this scheme is put into operation the work will be centred on a district health centre where the welfare officers of the area will meet weekly to discuss their problems and avoid as far as possible duplicate visits

Infectious Diseases in England and Wales

Disease	Week ended November			
	5	12	19	26*
Diphtheria	5	16	5	10
Dysentery	482	535	618	629
Encephalitis				
Infective	2	2	5	2
Postinfectious		4	2	1
Food poisoning	143	544	405	212
Measles, excluding rubella	2327	2355	2451	2521
Meningococcal infection	26	32	22	26
Ophthalmia neonatorum	31	26	26	31
Paratyphoid fever	11	12	14	11
Pneumonia primary or influenzal	368	442	374	411
Poliomyelitis				
Paralytic	154	127	111	91
Non paralytic	105	99	63	68
Puerperal pyrexia	204	252	224	223
Scarlet fever	794	1011	1047	1131
Smallpox				
Tuberculosis				
Respiratory	621	677	657	644
Meninges and C N S	8	15	8	18
Other	93	94	94	75
Typhoid fever	5	5	9	11
Whooping-cough	948	1072	1147	1184

* Not including late returns

An Unidentified Illness

Last week we described a mysterious outbre headache, dizziness, nausea, and abdominal pain a secondary modern school at Tottington, Lanca Since then, there has been only one further case

On Thursday, Dec 1, a girl of 13 felt dizzy in the afte at school She also had some abdominal pain She home about 4 30 P M and felt sick Her parents reported about 8 P M , she was in a " faint " for about seven mi When she recovered, she had " no use in her legs " 9 30 P M , she vomited a considerable quantity of When seen next morning her temperature was 97 8°F pulse rate 80 The pupils were within normal limits The s doctor thought there was definite slight inequality uniform lighting conditions She was still slightly dizzy

The cause has eluded the most careful inquiries, it still seems likely that these illnesses were du fumes of some kind, possibly from the low chim which is only 31 feet above ground level and has large boilers and a small domestic boiler attache it On the other hand, the delayed onset of sympt is hard to explain

Parliament

The Ban on Heroin

IN the House of Lords on Dec 1, Viscount ELIB asked the Government whether Dr E A Gregg, chairman of the Council of the B M A , wrote to Home Secretary early in November stating that he convinced that the decision to ban heroin was exc ingly unfortunate , whether the Government were aw that Dr Gregg had also stated that he and the meml of the association who were on the Standing Med Advisory Committee were not on it as representat of the association, and that it was most regrettable t the B M A as an association was not consulted as rega the ban so that the opinions of doctors thorou representative of the profession might be obtai regarding the use of heroin , and whether in all tl circumstances the Government would consider appoin an ad-hoc committee to inquire into the position, of postponing the operation of the ban pending committee's report

Lord MANCROFT, joint parliamentary under-secre of State for the Home Department, said that as a del on the subject was to take place in the House Dec 13 he would restrict himself to a short statem The possibility of dispensing with heroin in medicine considered in 1950 when the Government were adv by the bodies which advised them in medical mat that it would be justifiable to prohibit the use of he in the United Kingdom if international agreement reached to prohibit the manufacture of that d In 1954 the Economic and Social Council of the Ur Nations adopted a resolution urging all governmen prohibit the manufacture, import, and export of he except for small amounts for scientific purposes December, 1954, the Minister of Health consulted advisory bodies and was told that they concurred the United Kingdom Government's proposal to ac the resolution of the Economic and Social Council Home Secretary announced in the House of Com on Feb 18 last his decision to grant no further lice after Dec 31, 1955, for the manufacture of heroin ex for small quantities for scientific purposes or the m facture of nalorphine It was not until May last tha first indication that the B M A was opposed to decision reached the Minister of Health

The matter was fully discussed with a B M.A. de tion by the Minister of Health, the joint parliamen under-secretary of State for Scotland, and the H Secretary, on July 11 As the Government's adv adhered to the advice which they had originally g it was decided that the decision not to permit the ge manufacture of heroin after the end of this year stand and the decision was notified to the B M.A Oct 17 last

AN INTERNATIONAL PROBLEM

The Government, said Lord Mancroft, had given most anxious and sympathetic consideration to all as complex problem, including the position and nce of other countries It was their view that the al ban should be maintained They would, of , keep its working under constant review in the f the experience gained

ount ELIBANK asked if Lord Mancroft was aware is answer was not the whole story, although it provide food for debate In the interval before date, would not the Government give the most consideration to the interests of the many patients, lleviation of whose sufferings ought to be one of the al points in this controversy, but which was a sometimes too readily forgotten by some of those avoured the ban? Lord MANCROFT said that while undesirable to go into detailed debate now, he assure Lord Elibank that the question of suffering ients was foremost in the mind of the Government this matter was considered

d JOWITT hoped that when the debate took place Mancroft would be able to consider the possibility nding the ban to the export of heroin Lord HADEN r asked if Lord Mancroft could say whether the of the best medical opinion in this country was not vour of the ban on heroin at the present time; the question of heroin production, manufacture e was a world problem and that heroin had already banned by 61 nations? And was it not desirable this country should follow suit in the practice here, giving a lead towards the disuse of a drug which not essential and could be and frequently was d by other drugs Lord MANCROFT agreed that drug had been banned by 61 other countries Lord t's suggestions commanded a certain respect were controverted by others Lord Mancroft felt it would be better to leave this controversial subject the debate on Dec 11

rd KINNAIRD said that from a report in *The Times* 23, and in a subsequent letter, it seemed that B.M.A. was not fully consulted He wondered if the rnment could not ensure that such bodies were consulted as a matter of course Lord MANCROFT that whether the B M A were consulted was again r of controversy That would undoubtedly be one aspects which would be discussed in the debate ould confine himself to saying that the Govern t adhered firmly to the view that they took all the ltation that they properly should have taken

plying in the House of Commons to a number of questions e proposed ban on the manufacture of heroin, Major n LLOYD-GEORGE Home Secretary repeated in much ame terms the statement of Lord Mancroft in the House ords. Replying to a further question he said that the ntage of heroin addicts in the population of the United stem was 0·0001% Heroin was not imported into the Kingdom Exports in the twelve months ending on 1955 were valued at £201

APPROPRIATE ADVISERS

A D D BROUGHTON asked the Minister of Health whether view of the concern that had been expressed by many mem of the medical profession about the proposed prohibition of manufacture of heroin he would take steps immediately lt practising doctors as a whole as to the wisdom of ng the drug.—Mr IAIN MACLEOD replied: Before ng the Home Secretary I consulted as did my pre rs, the Standing Medical Advisory Committee which s the most highly regarded medical opinion in the y. This committee when it considered the problem g its members 10 doctors who were in active practice are this is the most suitable body to consult

BROUGHTON asked the Minister of Health whether of the opinion expressed by a number of practising s to the effect that he had been ill advised on the utic value of heroin he would alter the composition of edical advisory committee by including among its a pharmacologist Mr MACLEOD: The Standing al Advisory Committee already includes a distinguished r with both pharmaceutical and clinical experience STROSS: Is the Minister aware that his decision to manufacture of heroin has shocked many members of medical profession and has caused serious concern among lic, and will he not consider altering the constitution committee by adding other distinguished pharmacologists to it, so that the committee will have among its members a body of individuals understanding the value of drugs? Mr MACLEOD: The hon gentleman is switching his ground He asked me whether I would include among its members a pharmacologist and I have said that there is already one of great distinction on the committee namely Sir David Campbell who is president of the General Medical Council and who has recently reaffirmed his views Perhaps I may add to that a quotation from the *British Medical Journal* of 1949, which stated on this subject that pharmacological opinion has long held that the social dangers of heroin overshadow its therapeutic importance Therefore, it may well be that if we increased the membership of the committee in the way suggested we would get an even more definite expression of opinion

Sir ROBERT BOOTHBY: Is it the opinion of the Minister that the medical advisory committee was set up under the Act for the purpose of giving advice on this kind of subject namely the therapeutic value of a specific drug? Mr MACLEOD: The first section of the Act lays on the Minister the comprehensive duty of providing health services for all the people of this country This clearly comes within the matters which would normally be referred to the committee

Mr SOMERVILLE HASTINGS: Is the Minister aware that while the work of consultants who are so well represented on the medical advisory committee, is to confirm or make a diagnosis and indicate a line of treatment, the carrying out of that line of treatment, and the relief of symptoms such as pain and cough is often the responsibility of the general practitioner and ought he not to have consulted the general practitioners before taking this step? Mr MACLEOD: General practitioners are well represented on this committee, which includes three members of the council of the British Medical Association All these matters were carefully taken into account by that committee, which included no less than 10 members with active clinical experience at the time of the recommendation to me Dr EDITH SUMMERSKILL: Is it not a fact that the members of this committee representing as they do pharmacologists general practitioners surgeons and physicians were unanimous in their recommendations, and that similar committees in 61 other countries have recommended their governments in a similar fashion and that their decision has been accepted? Mr MACLEOD: Yes, it is true that this distinguished committee was unanimous in the opinion that it gave It is equally true that in the majority of countries similar advice has been tendered in similar circumstances. All the same I do not want to pretend anything other than that this decision is a desperately difficult one for a government to take, and I recognise that there are sincere differences of opinion on the matter Sir JOHN CROWDER: May I ask the Minister if he has read the leading article in *The Times* today (Dec. 6) which says clearly that the medical advisory committee is not the proper and efficient body to give its opinion on whether heroin should be banned or not? Would he reconsider the question and submit it to an altogether different body of practical doctors? Mr MACLEOD: This subject has been referred by four ministers of health of different parties to the same advisory committee over five years Until the last few days it has never been suggested that this body was other than the correct one to which to refer it

SUITABLE SUBSTITUTES?

Air Commodore A V HARVEY: Will the Minister take into account the serious views of sections of the medical profession and the public which have been shown in the Press and in speeches in the last few days and will he say why it is that in America where heroin is prohibited there are about 100 000 drug addicts against the very small number of 53 in this country? Mr MACLEOD: The responsibility in this matter rests fairly on the Government and we would not wish to put it on to any other shoulders. We have most carefully and with great sympathy considered all these matters in taking what I said earlier was a desperately difficult decision As regards experience in America I have been in communication with the Surgeon General of that country and I have heard his opinion today by letter, namely, that there are adequate alternatives to heroin available for use by clinicians Mr I J BELLENGER: While it is difficult for non-medical Members to follow these arguments and counter arguments, can the Minister say specifically that in stopping or alleviating pain there is any suitable substitute for this drug? Mr MACLEOD: All one can say on this matter which is to some extent in dispute is that we have taken the best medical advice we could find, and that this is the *general* opinion. I would recommend hon Members who are interested in this matter to read an article on the alternatives to heroin in this week's edition of *The Lancet* If I may add one more point, which I am not sure everybody realises who thinks that this matter is perhaps of small importance here—which it is in *relation to the number of addicts* we have—it is that in this country we produce not a small quantity but about 70% of the world's heroin Dame FLORENCE HORSBRUGH Might I ask whether in the article in *The Lancet* it is made clear what alternatives are being used and found successful in, say, Canada and the United States ? Mr MACLEOD Yes, that matter is specifically covered by quotations from American textbooks and, as I have indicated, I, or rather my chief medical officer, has been in touch with the Surgeon General of the United States on their experience of this matter

Mr HERBERT MORRISON Would not the Minister agree that there is something to be said for considering the production of a white paper in which the issues could be canvassed, the arguments set out, and the conclusions of the Government stated ? Mr MACLEOD I am very ready to consider that suggestion. This is not a question of pure black and white in which one can say finally that one opinion is right or another is not In the last resort, it is a matter for judgment and, therefore, decision by the Government I am anxious, if I can, to carry public and medical opinion with me on this matter, and I will be glad to consider any steps I can take to make people better informed

Mr DAVID PRICE asked the Minister whether, in determining to ban the manufacture of heroin, he was aware that there was no adequate substitute for heroin in the symptomatic treatment of cancer of the lung —Mr MACLEOD In advising the Home Secretary on the proposal that heroin should be [illegible], I was guided by the advice of my Standing Medical Advisory Committee After anxious and sympathetic consideration the Government have not felt justified in departing from that advice

Dr BROUGHTON asked the Minister what consultation he had with the Medical Research Council on the question of suitable, adequate, and equally effective substitutes for heroin before he reached his decision to ban the manufacture of the drug —Mr MACLEOD I did not consult the Medical Research Council direct but before tendering to me its advice the Standing Committee consulted the British Pharmacopœia Commission who had in turn consulted the M.R C before the monograph on heroin was deleted from the *Pharmacopœia*

Effects of Noise and Vibration on Health

In the House of Commons on Dec 2, Sir LIONEL HEALD drew attention to the detrimental effect of noise and vibration on the health, well-being, and efficiency of the nation, and urged the need for more effective measures for the protection of the public A great deal could be done about noise, and much had been done already Failure to appreciate the efforts of those who had tried would be unfair to the pioneers in medicine, science, and industry, such as, for example, the late Lord Horder and his followers Recently, important work had been done at King's College Hospital by Mr Littler and others But some people seemed to think that nothing need be done Lord Horder had said that the cause of most of the trouble with noise was selfishness, and the House of Commons, in moulding public opinion, could do good work It would be excellent if some single department of the Government or member of the Government could be made responsible for the subject

Mr H A MARQUAND asked whether the Government were considering introducing some system of periodic medical examination of workpeople in places where excessive noise prevailed By such means, he thought, the onset of inner-ear deafness could be detected and the worker could be removed to a more suitable occupation before the damage went too far

Sir HUGH LUCAS-TOOTH, joint under-secretary of state for the Home Department, said that no-one would deny that the background of noise could cause distraction, or even acute irritation, to people who had not been able to adjust themselves to it, but there was no medical evidence that this background of noise had any effect on health or efficiency The Medical Research Council had considered whether this was a matter which could be made the subject of research, but it had concluded that it was too intangible for any measurable results to be obtained Such medical research as could be carried out wa concerned with particular noisy occupations

Exhaust noise, he admitted, could not be eliminate completely, but it could be reduced to a reasonable lev by efficient silencers The aircraft industry was als alive to the need for noise reduction, not only in th public interest, but for passenger comfort. Superson bangs were an inevitable phenomenon of aircraft fly supersonically, but most supersonic flying was direc out to sea Over land there was a general minim height of 30,000 feet Exceptions to this limit were ma only with special authority For some years the Build Research Station of the Department of Scientific a Industrial Research had been studying the protection people from noise inside buildings Means were a being devised to reduce the transmission of sound. T question was largely one of cost Satisfactory meth of sound insulation had already been developed, a efforts were now being made to reduce the expense.

Noise was one of the perennial problems of hospit A report on the subject from the committee of the Cent Health Services Council had been circulated by Minister of Health to all hospital boards and committe Inquiries were constantly made by the Minister's medi and nursing officers when they visited hospitals and th was evidence that much had been done to improve t position The effect of noise in factories had been fu investigated by the Medical Research Council throu its Industrial Health Research Board One of the resu of that work had been to determine the noise-level abo which serious damage was likely to be caused to hearing An investigation made in noisy weaving-she showed that the wearing of ear-defenders could incre personal efficiency Investigations at present bei carried out were expected to throw light on the m general psychological effects of noise

QUESTION TIME

Capital Punishment

Mr SYDNEY SILVERMAN asked the Home Secretary if would bear in mind that even among the dwindling number persons who desired in some cases to retain the death pena there was a universal feeling that the law, in its present fo at any rate, could not be defended In those circumstan would the Home Secretary reconsider the matter ?—Ma LLOYD GEORGE It is important that the present state public opinion should be ascertained in this matter, surely there is no better place for that than this House

Replying to a further question, Major LLOYD GEORGE s that he could not hold out any prospect of legislation on t subject in the near future

Discharges from Broadmoor

Replying to a question, Major LLOYD GEORGE said t the number of patients in Broadmoor Institution at Dec 1954, was 917 The average number of discharges over five years 1950–54 was 32,

Mr W S SHEPHERD Will the Home Secretary whether, in considering suitability for discharge, he inv opinion from outside sources, or whether he relies entir upon the Home Office medical services ?—Major LLO GEORGE In most cases we rely on the medical opinion of staff

Alcoholics Anonymous and Prison Visits

Replying to a question asking what approach had b made to him by the Alcoholics Anonymous organisation allow members to visit inmates of our prisons who had tur to crime through drink, Major LLOYD GEORGE said that t movement had been allowed to send literature to prison medi officers and had been supplied with a list of names addresses for this purpose Members of the movement h been permitted to visit suitable prisoners Mr N N DOD Will the Home Secretary say whether he is hopeful of succ from this ?—Major LLOYD GEORGE While it is too soon come to a final conclusion about the matter, I can say th the influence of this society has had a beneficial effect on so prisoners

Closing of Approved Schools

Replying to a question, Major LLOYD GEORGE said th action had been taken this year to close 8 approved scho which were surplus to requirements, 5 would close December and the rest early in 1956 No further closing ools was in prospect at present The reduction in demand places in approved schools was due largely to the decrease juvenile delinquency

Scottish Patients and Swiss Sanatoria

eplying to a question, Mr JAMES STUART, Secretary of te for Scotland, said that the Government had decided end the arrangements for sending Scottish tuberculosis tients to Swiss sanatoria. Patients now in Switzerland uld remain as long as their medical treatment required could give an assurance that this scheme would not have n dropped had the need for it continued Only 180 tients were now waiting for admission to sanatoria in tland, most of them so as to get into sanatoria near their es. Of 6019 staffed beds at Sept 30 856 were unoccupied, d in the western region

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Obituary

CHARLES RONALD ST JOHNSTON

M.D Birm., F R.C.P

Dr. Ronald St Johnston died in Birmingham last aturday at the age of 45 Medicine was in his blood s father and his uncle were doctors, his brother is general practitioner, and he married a doctor, a fellow ident at the General Hospital and herself a member f a medical family

When he left King Edward s School he went to the University of Birmingham where in 1934, in the final amination, he was awarded the Foxwell memorial prize n medicine He held resident appointments at the eneral and the Queen s Hospitals and was a medical gistrar at the Queen Elizabeth Hospital when it was pened shortly before the war While holding this ppointment in 1945 he was elected to the consultant ff of the United Birmingham Hospitals. This hospital ad grown out of an amalgamation of the General and Queen's Hospitals and St. Johnston liked to claim a ly relationship with Dr Johnson, a physician who d served the Queen s Hospital in the middle of the century He was appointed also to the staff of the nor Hospital, Walsall

During the war he was in the E M.S and later in the R.A.M.C. where he held the rank of lieut -colonel. mingham University awarded him the degree of M.D. in 1940 and he was elected to the fellowship of the Royal College of Physicians in 1951

C.O P writes: Though particularly interested diseases of the alimentary tract, Ronald St Johnston mained a general physician. He wrote little and he s wont to regret that he lacked the mind of the search-worker, but he practised and he taught the t of medicine.' His colleagues turned to him with ir troubles because they knew his worth the care th which he weighed up a clinical problem his gentleness, his sympathy and his fearless honesty He was accomplished mimic and used this ability with effect, that his teaching was clear and stimulating Many his friends will remember him as the star of hospital ows, and especially an occasion in 1937 when he ok off' Mr Middleton, the well known broadcaster His pleasures were in his home he was a keen rman and a good swimmer He was a gay and ertaining companion for he was a born humorist, d his wit was never unkind his most delightful tales re often told against himself He faced great anxieties d a long and distressing illness with courage which me from a firm belief in the truths of the Christian faith.'

He married in 1938 Evelyn Mary daughter of Dr R. Fisher of Atherstone She survives him with their children.

MALCOLM HECTORSON VALENTINE CAMERON

M.D., F R.C.S.(C.) F.A.C.S

We have received with regret news from Canada the death of Dr Malcolm Cameron, a past president the Toronto Academy of Medicine. For many years ted as our Canadian correspondent, and the charm erudition of his informative despatches won him y friends among our readers.

He was born in Bruce County in 1876 and was educated Woodstock Collegiate Institute and the University of Toronto As a student he had already begun to write and he was the editor of *Varsity* He graduated in 1905 and three years later he joined the staff of St. Michael s Hospital He completed over twenty years' service with the hospital before he retired in 1930 and was appointed consultant surgeon For many years he was a lecturer at the University of Toronto and a member of the senate.

Despite his work as a surgeon and as a teacher he continued the editorial career which he had begun as a student and besides contributing to medical and lay journals he edited the *Bulletin of the Academy of Medicine*

One of his Canadian colleagues J W S, writes: "The passing of Dr Malcolm Cameron brings to a close the long and brilliant career of a well loved surgeon He was a gentle, kindly man who inspired confidence and gratitude among his patients, and respect and affection from his colleagues. By current standards his formal education was meagre, but he had a thirst for knowledge and a love of learning that never waned, and led him to the top of his chosen profession He had a passion for teaching, and although ill health forced him to retire from the university staff five years ago, even this autumn he continued to take classes on every possible occasion, should a clinician be absent or late for an appointment. For half a century medical students have been inspired not only by his clinical ability but also by his wisdom and graciousness As an undergraduate, he added to his income by writing a weekly column in the *Toronto Globe*, and throughout his medical career he continued to write not only on surgery but also on the history of medicine The many papers and articles that have come from his pen attest to his scholarly mind and mastery of English prose. His influence will continue for many years not only because of the advice and instruction that he gave to so many younger men, but also because they have known this humane, honest, and upright man"

Dr Cameron, who was a widower leaves three sons, one of whom is a doctor

WALTER JAMES EDWIN LUPTON

O.B.E., M.A., B.M Oxfd

Dr Walter Lupton, who died at Oxford on Nov 27 at the age of 84 had spent half a life-time in the Indian Civil Service before he returned to England to study, and to practise medicine

Born in 1871, at Clapham, Surrey of yeoman stock, he was educated at the Aldgate ward school in London —where incidentally he was a chorister in two city churches—and at the City of London School. He went up to New College, Oxford on a science scholarship, and for a time he seems to have wavered between science and classics He finally decided to read the latter, and after taking his degree with first-class honours, in 1893, he obtained a high place in the entrance examination for the Indian Civil Service, and proceeded to India in 1894 There he served in the United Provinces, till, for domestic reasons he retired in 1920 His service ranged from district and revenue settlement work to appointments in the government secretariat and the board of revenue His career was described as brilliant" by Lord Meston one of the governors under whom he served For his service in India he was appointed O.B.E.

On his return to England he submitted himself as he was wont to say, to the rigours of training in medicine' and graduated B.M. in 1924 at the age of 53 From his youthful co-students, he won the appelation of The Old Bean in a Hurry After qualifying, he served in the Radcliffe Infirmary, Oxford as casualty officer, and as house-physician. He settled in North Oxford where he soon had a large private practice. With this, he combined work at the Radcliffe Infirmary and for many years he was clinical assistant in the E N T department and second in-command to Dr Duigan, as official anæsthetist, and anæsthetist to the dental department and to the Oxford Eye Hospital.

In 1936, when the British Medical Association s annual meeting was held in Oxford he gave useful help in its preparation and organisation. Before the late war, when the committee of civil defence was making its precautionary plans, Dr Lupton was appointed emergency medical officer, and when war broke out he became secretary of the local medical war committee of the Oxford division and conducted its activities until 1947. At the same time he was deputy group officer from 1940 until 1945.

In 1943 a coronary thrombosis incapacitated him for many weeks but, on recovery, he carried on though he had to curtail his activities. A busy life left little time for writing, but he contributed letters, notes, and articles to *The Lancet*, the *British Medical Journal*, the *National Dictionary of Political Economy*, and the *Journal of the Royal Asiatic Society*, in which he wrote much on Buddhism—a subject which he had studied in India and Ceylon. His interest in Buddhism began while he was an undergraduate at Oxford, where he taught himself Pali and Sanskrit in order to read the Buddhist scriptures in original. Since his retirement in 1947, he had "amused himself," as he said, by writing a chapter and verse record, against the background of great national and international happenings, of how the local medical profession rose to an emergency. "Luppy," as he was affectionately called, has left behind him an honoured name and a record of high endeavour and achievement. To those of us who knew him there remains the memory of a cultured, wise, and very kindly gentleman.

In 1900 he married Sybil, daughter of Major-General Fendall Currie, who died in 1932. The two daughters of the marriage survive him.

R McC

THOMAS JAMES EVANS

M.A. Oxfd

Mr T. J. Evans, who died on Nov. 23 at the age of 80, came to Guy's in 1914 as lecturer in biology. From 1937 until his retirement in 1945 he served also as dean of the medical school, an office which had never before been held except by a doctor. For sixteen years his post was part-time, but in 1931, when the school first received financial help through the University Grants Committee, he was appointed whole-time lecturer.

Born in a small Cardiganshire village, he was fortunate in coming under the influence of a wise headmaster who early recognised his qualities and ability, and encouraged him to continue his studies first at University College, Aberystwyth, and afterwards at Jesus College, Oxford, where he soon made his mark as a zoologist. Later he carried out original investigations at the Marine Biological Station, Naples. As a schoolboy he was almost entirely Welsh-speaking, so that when he first visited London to take the matriculation examination he had difficulty in making himself understood. All his life he read widely and had many interests outside his chosen subject of zoology. Although he spent most of his adult years in England, and became a master of both spoken and written English, he never lost his attractive and musical Welsh intonation, and maintained a passionate interest in the language, literature, and culture of his native country.

Evans had a great gift for stimulating the interest and arousing the enthusiasm of his students, and under his wise guidance the biology department gradually developed into a large, well-equipped department playing a full part in the activities of Guy's. When the 1939–45 war broke out Evans, as dean, took immediate steps to move the preclinical departments to Tunbridge Wells, where within a few weeks students' hostels were set up and laboratory accommodation improvised. Although past the usual age for retirement he never spared himself, but worked incessantly for the welfare of the medical school and the maintenance of the Guy's tradition despite all difficulties. He will long be remembered for his personal charm, kindly nature, and human qualities, which won the respect and affection of all who knew him, and not least of those with whom he was so closely associated during the critical war years.

G S

Births, Marriages, and Deaths

DEATHS

JAGGER.—On Nov. 30, at the Royal Hampshire County Hospital, Winchester, Francis Field Cunningham Jagger, M.B., F.F.R., of Priors Acre, Abbotts Road, Winchester, aged 80.

Diary of the Week

DEC. 11 TO 17

Sunday, 11th

SIGERIST SOCIETY
3 P.M. (Bedford Hotel, Southampton Row, W.C.1.) Dr
Morris: James Parkinson—Social and Political Re

Monday, 12th

UNIVERSITY OF LONDON
5 P.M. (London Hospital Medical College, Turner Stree
Prof. H. M. Weyrauch (Stanford University, U
Non-obstructive Urinary Infections.
MANCHESTER MEDICAL SOCIETY
9 P.M. (Medical School, University of Manchester.)
Practice. Dr C. Metcalfe Brown: Preventive Medi
General Practice.

Tuesday, 13th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, *Lincoln's Inn*
W.C.2
3.45 P.M. Prof. Geoffrey Hadfield: Pituitary-dependent
Cancer. (Imperial Cancer Research Fund lecture.)
5 P.M. Professor Weyrauch: Landmarks in Uretero-int
Anastomosis. (Moynihan lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Me
Keppel Street, W.C.1.) Dr J. N. Hunt: Gastric Dig
Function in Man.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Experimental Medicine and Therapeutics*. Dr
Muehrcke, Dr R. A. Joske: Renal Biopsy.
8 P.M. *Psychiatry*. Prof. W. M. Millar, Mr Arnold B
Psychiatry and Psychology.
INSTITUTE OF NEUROLOGY, National Hospital, Queen Square,
5.30 P.M. Dr R. A. Henson: Central Pain, including P
Phantom Limbs.
INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. *Dr P. D. Samman*: The Erythemas.
MANCHESTER MEDICAL SOCIETY
8 P.M. *Surgery*. Mr D. C. Racker: Pelvic Exenteration.

Wednesday, 14th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine*. Dr J. Shulman: Organis
of Physical medicine Departments in a Provincial
teaching Hospital.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr H. Haber: Lichen Planus and Lichenoid Erup
ROYAL SOCIETY OF HEALTH, 90, Buckingham Palace Road, S
2.30 P.M. Sir Weldon Dalrymple-Champneys: Vaccin
Against Poliomyelitis.
BIRMINGHAM MEDICAL INSTITUTE, 154, Great *Charles* S
Birmingham, 3
8 P.M. *Psychiatry*. Prof. Alexander Kennedy: Human Rea
to Danger.
NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY, 64, St. James's S
Nottingham
8.30 P.M. Mr N. L. Eckhoff: Plastic Surgery in Relati
General Surgery.
MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Pathology*. Dr Harry Harris: Human Bioche
Genetics.
ROYAL COLLEGE OF SURGEONS OF EDINBURGH, Edinburgh, 8
3.30 P.M. Sir Stewart Duke-Elder: Some Problems in B
plasty with special reference to Corneal Grafting.
ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vi
Street, Glasgow, C.2
5 P.M. Mr Roland Barnes: Modern Trends in Bone and
Tuberculosis.

Thursday, 15th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Sir *Geoffrey Marshall*: Tudor Edwards—His Contrib
to the Study of Diseases of the Chest. (Tudor Ed
lecture.)
ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Prof. Roger Warwick: Oculomotor Organisation.
and Gale lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and *Tropical Medi*
Dr R. E. Davies: *Biochemical* Aspects of G
Secretion.
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M. (Hammersmith Hospital, Ducane Road, W.12.)
D. W. *Currie*: Carcinoma of Cervix.
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant,
8 P.M. Dr R. M. Evans, Mr J. Howell *Hughes*: Medica
Surgical Aspects of the Treatment of *Peptic* Ulcer.

Friday, 16th

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M. (Chelsea Hospital for Women, S.W.3.) Dr
Fahmy: Pelvic Tuberculosis.
ROYAL MEDICO-CHIRURGICAL SOCIETY
8.30 P.M. (Royal Faculty of Physicians *and* Surgeons
St. Vincent Street, Glasgow, C.2.) *Prof.* Robert Cr
shank: Acute Respiratory Infections.

Saturday, 17th

INSTITUTE OF ORTHOPÆDICS, 234, Great Portland Street, W.1
10 A.M. Mr J. N. Wilson: Treatment of Club Foot.

Notes and News

L COLLEGE OF PHYSICIANS OF EDINBURGH

... an important extension to the library of the ... College of Physicians of Edinburgh was opened by the ... and March. This extension is on the ... Adam house adjoining the college's hall in Queen ... The smaller front room has been set aside as a ... reading room, and the larger front room as a general ... room; the back room has been fitted to house ... and monographs.

... library was founded a few weeks after the college ... its charter from King Charles II on St. Andrew's ... 1681, and since 1840 it has been contained in the ... present hall. It includes some 200,000 books ... and pamphlets; there are about 400 current ... and about 500 books and pamphlets are added each ... The library is maintained solely by the college, but ... any doctor or other suitable person can ..., subject to simple formalities, borrow in person ...

ATION DANGERS FOR THE TUBERCULOUS

... meeting of the British Tuberculosis Association on ... Nov. 18 Dr E. T. W. Starkie discussed the danger ... maximum safe dosage of radiation being exceeded in ... under treatment for tuberculosis. Patients sub... to multiple tomographic examinations and those ... with artificial pneumothorax or pneumoperitoneum ... requiring frequent fluoroscopic examination might ... dangerous doses. Dr Starkie described a simple ... consisting of aluminium and copper which if inserted ... the line of the rays reduced the amount of soft rays ... safe limits and yet permitted good radiography and ... copy. Other suggestions for reducing the radiation ... included the use of multiplane tomography and the ... of high voltage radiography.

DENTAL CHANGES IN KERNICTERUS

... meeting of the odontology section of Manchester ... Society on Oct. 21 Dr R. M. Forrester opened a ... on Kernicterus and Related Dental Changes. ... in every case where kernicterus had originated in ... the disease the enamel of the deciduous teeth was ... The most distinct evidence of this disorder was ... to the canines. This change bore little relation to ... pigmentation that followed severe neonatal jaundice ... with green teeth usually escaped kernicterus. In a ... of premature infants with cerebral palsy similar lesions ... been found on the teeth and this suggested that the ... might have originated as ... kernicterus or ... —without blood-group incompatibility. Similar ..., but much milder and more restricted, were found in ... infants with birth weights below 4½ lb. The lesions ... been observed in full term children with hæmolytic ... in the absence of kernicterus nor had they been found ... other forms of cerebral palsy.

... Miller remarked that the hypoplastic grooves in the ... in cases of kernicterus were apparently associated with ... metabolic disturbance. The green pigmentation ... often followed severe hæmolytic disease consisted of a ... band in the dentine of the deciduous teeth corre... to the neonatal period.

A CLINICAL EVENING

... further contribution to good relations between hospital ... general practitioner[1] the London Hospital has given ... of clinical meetings for doctors who regularly refer ... patients to the London. Another of these meetings ... held on the evening of Nov. 30—with notable success. ... clinical meetings are less effective than they should ... partly because too much is on show and visitors who are ... familiar with the cases or the conditions they illustrate just ... not the time to take everything in. But the London's ... wisely confined itself to three subjects—suicide, ... and pulmonary suppuration. Dr Henry ... talk on the suicidal risk and the suicidal gesture ... full of good advice and many of his listeners may have ... that they had heard it as students. After the patients had been questioned and examined Mr Cave Butler discussed ... of the features of ... particularly the ... for surgery, and Dr ... spoke of the ... of interpretation ... suppuration ... and the importance of ... carcinoma ... There will be another clinical evening at the London ... month when Sir Russell Brain and Mr D. W. C. Northfield ... with some disorders of the nervous system.

University of Cambridge

On Nov. 26th the degree of M.A. was conferred on Dr D. ... university lecturer in the department of ... and ... assistant director of research in the department ...

University of London

... I. D. Scott, temporary senior lecturer in morbid ... at St. Mary's Hospital Medical School, has been ... the university readership in morbid anatomy ... Hospital School of Medicine.

... qualified from St. Mary's Hospital in 1949 and took ... years later. He has held appointments as junior ... in the University of Aberdeen and as junior ... at Worcester Royal Infirmary. His published ... of reticulosarcoma of the thyroid, ... hypertrophy of the pancreas ... adrenocorticotrophic hormone on brain ... He proceeded to the M.D. Lond.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on Nov. 26, with Mr ... the president, in the chair, it was announced ... the Wellcome Trust had offered a grant of £25,000 to ... the cost of the museum in the new college and a further ... for the cost of two research rooms. The museum will be ... the Wellcome Museum of Obstetrics and Gynæcology.

Dr Naguib Mahfouz of Cairo was invited to give the William Meredith Fletcher Shaw lecture in 1956. Sir Arthur ... and Prof. Margaret Fairlie were coöpted to council. The council authorised the establishment of a regional council in South Africa.

Leverhulme research scholarships were awarded to:
J. Gardiner, M. K. Rinsler, J. Walker.

R. W. Forman was admitted to the membership.

The diploma in obstetrics was awarded to the following: B. P. Appleby, J. G. Abercrombie, D. H. Alltree, T. D. Anderson, D. T. G. Barber, G. A. Ecroft, Betty A. Astle, J. T. B. Bain, J. D. Begg, W. P. Bonniel, R. O. O. E. J. J. C. Barry, Rosemary A. Bensley, Miriam Brennan, R. G. Bromhley, J. B. Buchanan, J. B. Bowle, W. M. Browne, Elizabeth J. Bretell, Irene I. Brown, D. R. Chase, Saroj Kumar, J. C. H. F. Carrera, A. Clark Jones, L. A. C. Buckell, D. H. Clarke, H. J. Clarke, I. D. Craig, J. D. Chatterji, R. M. Clark, R. Mc Corfield, Joan M. Curtis, J. A. J. D. C. Cook, Albert Cooke, W. H. N. Cummings, Madhuri De, Peter Craven, S. O. Cross, G. J. Davies, K. D. Davies, Elizabeth M. C. Dyke, David B. C. Davies, A. K. N. Dunton, Rosalind A. Elliott, Dilnot, I. H. Denison, D. P. Elam, Helen Eyre, J. H. I. P. Dyson, Harry Eaton, M. J. Evans, R. J. Fothergill, Gwenda W. Evans, Jill M. Evan, J. I. M. Forsyth, Alasdair Fraser-Fairley, W. J. Falconer, W. P. Fitt, D. M. Fraser, M. G. Gelder, Jennifer M. Fowles, R. C. Francis, L. C. Fuller, D. N. Darling, J. R. Freeman, P. J. Frost, J. H. Graham, J. M. Gray, D. J. A. A. Gilberd, A. G. Gordon, W. J. H. Graham, G. S. Hall, Margaret M. Guest, Jharna Sen Gupta, Eric Hainsworth, Hartshorne, J. E. Hodgkin, Handford, J. C. Hartgill, Margaret A. Hill, R. H. Hill, M. J. Hunter, Heley, I. A. Henderson, C. J. M. Hill, J. H. Hughes, G. P. Jeffrey, J. M. D. Hooper, I. A. Hopkins, A. J. G. Hyde, F. L. Jones, I. J. Huntingford, Ruth Hutchinson, W. A. Johnstone, A. H. Lasbrey, Claire D. Johnston, J. A. Johnston, Margery R. Lane, Kathleen M. K. R. Kidd, P. N. Knight, C. N. R. Loveys, John McGlone, C. F. Lay, Merton Long, J. S. Lord, M. A. McDonald, Rona MacLean, Lumb, Isabel M. McCullough, D. G. G. McLeish, L. J. Kathleen McKee, M. B. McKerrow, Bernard Martin-Smith, A. M. Sheila Malhotra, Ann B. Marples, O. V. Maxim, Helen Menzies, Masters, Geoffrey Matthews, Krishna Mukerjee, Subodh Chandra Middleton, R. J. Morgan, Ann O. Mullin, D. D. Munro, Jack Mukerji, R. A. C. Mulligan, M. R. Oates, R. G. Orr, Nickson, F. O. A. Noon, Khin Than Nu, J. D. W. Peck, Elizabeth I. M. D. H. Paterson, J. B. Pearson, E. M. Pilkington, A. D. Perkins, J. H. Peters, Anne T. A. Phillips, Leslie Preger, Keki Dinshaw Pippett, A. I. Poole, A. M. W. Porter, Anne L. Robinson, D. E. Printer, J. G. Pritchard, Patrick Quinn, A. H. Roscoe, Roche, Anne M. Rodger, R. B. Roe, O. A. Rogerson, D. E. Shackland, Ruth Roseveare, A. O. Russell, A. J. Salmon, J. S. Skipper, R. O. D. F. E. Shaw, D. C. Shields, P. V. Skinner, S. R. Somers, Small, I. F. Smith, Margaret B. Smith, R. A. Smith, J. L. Stevens, Joan V. Stavert, Mary K. Stedman, Angeline Stephen, V. R. Tindall, Douglas R. M. Stewart, Sheila A. S. Thompson, M. F. Tunstall, J. A. Troup, Arthur Trueman, Maureen A. Tudor, Prudence Valentine, Tutton, C. L. Tutty, Anthony Unsworth, T. H. M. Warburton, N. F. Walker, G. S. Wallace, G. I. Walsh, H. I. Wells, Derek Wardale, D. S. Watson, Marjorie E. Watts, Eric Wilkes, J. A. Whillis, O. J. Whitehead, Dorothy J. Whitney, Mary A. Winter, J. C. Willan, J. T. N. Williams, A. R. Williamson, N. L. Wright, A. J. Winterton, Elaine Wong, Enid M. Worencroft, L. W. M. Yolland, N. W. H. Young.

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[1] See *Lancet*, 1951, i, 511

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In 1900 he married Sybil, daughter of Major-General Fendall Currie, who died in 1932 The two daughters of the marriage survive him

R McC

THOMAS JAMES EVANS

M A Oxfd

Mr T J. Evans, who died on Nov 23 at the age of 80, came to Guy's in 1914 as lecturer in biology From 1937 until his retirement in 1945 he served also as dean of the medical school, an office which had never before been held except by a doctor For sixteen years his post was part-time, but in 1931, when the school first received financial help through the University Grants Committee, he was appointed whole-time lecturer

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G S

Births, Marriages, and Deaths

DEATHS

JAGGER.—On Nov 30 at the Royal Hampshire County Hospital Winchester, Francis Field Cunningham Jagger, M B, F.F R, of Priors Acre Abbotts Road, Winchester, aged 80

Diary of the Week

DEC 11 TO 17

Sunday, 11th

Sigerist Society
3 P M (Bedford Hotel Southampton Row, W C.1) Dr A
Morris James Parkinson—Social and Political Refor

Monday, 12th

University of London
5 P.M (London Hospital Medical College, Turner Street
Prof H M Weyrauch (*Stanford University, U.S.*
Non obstructive Urinary Infections
Manchester Medical Society
9 P.M (Medical School University of Manchester) *Gen*
Practice Dr C Metcalfe Brown *Preventive Medicin*
General Practice

Tuesday, 13th

Royal College of Surgeons of England, Lincoln s Inn Fiel
W C 2
3 45 P M *Prof Geoffrey Hadfield Pituitary-dependent Bre*
Cancer (Imperial Cancer Research Fund lecture)
5 P.M *Professor Weyrauch* Landmarks in Uretero-intesti
Anastomosis (Moynihan lecture)
British Postgraduate *Medical Federation*
5 30 P.M (London School of Hygiene and Tropical Medicin
Keppel Street, W C 1) Dr J N Hunt Gastric Dig
Function in Man
Royal Society of Medicine 1 Wimpole Street, W 1
5 30 P.M *Experimental Medicine and Therapeutics* Dr R. C
Muehrcke Dr R A Joske Renal Biopsy
8 P.M *Psychiatry* Prof W M. Millar, Mr Arnold Burrill
Psychiatry and Psychology
Institute of Neurology, National Hospital Queen Square, W.C
5 30 P.M Dr R A Henson Central Pain, including Pain
Phantom Limbs
Institute of Dermatology, Lisle Street, W C 2
5 30 P M Dr P D Samman The Erythemas
Manchester Medical Society
8 P.M *Surgery* Mr D C Racker Pelvic Exenteration.

Wednesday, 14th

Royal Society of Medicine
4 30 P.M *Physical Medicine* Dr J Shulman Organisatio
of Physical medicine *Departments in a Provincial* No
teaching Hospital
Institute of Dermatology
5 30 P.M Dr H Haber Lichen Planus and Lichenoid Erupti
Royal Society of Health, 90 *Buckingham Palace Road* S.W
2 30 P M Sir Weldon Dalrymple-Champneys Vaccinatio
Against Poliomyelitis
Birmingham Medical Institute, 154, Great *Charles* Stre
Birmingham, 3
8 P M *Psychiatry* Prof Alexander Kennedy Human Reactio
to Danger
Nottingham Medico-Chirurgical Society, 64, St James's Stre
Nottingham
8 30 P.M Mr N L Eckhoff Plastic Surgery in Relatio
General Surgery
Manchester Medical Society
4 30 P M *Pathology* Dr Harry Harris Human Biochemi
Genetics
Royal College of Surgeons of Edinburgh, Edinburgh, 8
3 30 P M *Sir Stewart Duke Elder* Some Problems *in*
plasty with special reference to Corneal Grafting
Royal Faculty of Physicians and Surgeons, 242, St. Vince
Street, Glasgow, C 2
5 P.M *Mr Roland Barnes* Modern Trends in Bone and Joi
Tuberculosis

Thursday, 15th

Royal College of Physicians of London
5 P.M Sir Geoffrey Marshall Tudor Edwards—His Contributi
to the Study of *Diseases of the Chest* (Tudor Edwa
lecture)
Royal College of Surgeons of England
5 P M Prof Roger Warwick *Oculomotor Organisation* (Arn
and Gale lecture)
British Postgraduate Medical Federation
5 30 P.M (London School of Hygiene and Tropical Medic
Dr R E Davies Biochemical Aspects of Gast
Secretion.
Institute of Obstetrics and Gynæcology
3 P.M (Hammersmith Hospital Ducane Road, W 12.)
D W Currie Carcinoma of *Cervix*
Liverpool Medical Institution, 114 *Mount* Pleasant
8 P M Dr R M Evans Mr J *Howell Hughes* Medical a
Surgical Aspects of the Treatment of Peptic *Ulcer*

Friday, 16th

Institute of Obstetrics and Gynæcology
4 30 P M (Chelsea Hospital for Women, S W 3) Dr E. C
Fahmy Pelvic Tuberculosis
Royal Medico-Chirurgical Society
8 30 P M (Royal Faculty of Physicians and Surgeons
St Vincent Street, Glasgow C 2) Prof Robert Cruik
shank Acute Respiratory *Infections.*

Saturday, 17th

Institute of Orthopædics, 234 *Great Portland Street* W 1
10 A.M Mr J N Wilson Treatment *of Club Foot*

Notes and News

OYAL COLLEGE OF PHYSICIANS OF EDINBURGH

ast Monday an important extension to the library of the al College of Physicians of Edinburgh was opened by the l of Wemyss and March This extension is on the first e of an Adam house adjoining the college s hall in Queen et The smaller front room has been set aside as a ows reading room and the larger front room as a general ding room the back room has been fitted to house odicals and monographs.

his library was founded a few weeks after the college eived its first charter from King Charles II on St Andrew s 1681; and since 1846 it has been contained in the iety s present hall It includes some 200 000 books iodicals, and pamphlets there are about 400 current rnals and about 600 books and pamphlets are added each ar The library is maintained solely by the college but a recent decision any doctor or other suitable person can d there and subject to simple formalities borrow in person by post

RADIATION DANGERS FOR THE TUBERCULOUS

At a meeting of the British Tuberculosis Association in ondon on Nov 18 Dr F T W Starkie discussed the danger the maximum safe dosage of radiation being exceeded in tients under treatment for tuberculosis. Patients sub itted to multiple tomographic examinations, and those eated with artificial pneumothorax or pneumoperitoneum d requiring frequent fluoroscopic examination might ceive dangerous doses. Dr Starkie described a simple ter consisting of aluminium and copper which if inserted the direct line of the rays reduced the amount of soft rays within safe limits and yet permitted good radiography and oroscopy Other suggestions for reducing the radiation anger included the use of multiplane tomography and the evelopment of high voltage radiography

DENTAL CHANGES IN KERNICTERUS

At a meeting of the odontology section of Manchester edical Society on Oct 24 Dr R M Forrester opened a iscussion on Kernicterus and Related Dental Changes He said that in every case where kernicterus had originated in emolytic disease the enamel of the deciduous teeth was isordered. The most distinct evidence of this disorder was groove on the canines This change bore little relation to he green pigmentation that followed severe neonatal jaundice hildren with green teeth usually escaped kernicterus In a roup of premature infants with cerebral palsy similar lesions ad been found on the teeth and this suggested that the isturbance might have originated as "kernicterus or pre maturity"—without blood group incompatibility Similar esions, but much milder and more restricted, were found in [illegible] of infants with birth weights below 4½ lb The lesions ad not been observed in full term children with hæmolytic isease in the absence of kernicterus, nor had they been found other forms of cerebral palsy

Mr J Miller remarked that the hypoplastic grooves in the namel in cases of kernicterus were apparently associated with neonatal metabolic disturbance The green pigmentation hich often followed severe hæmolytic disease consisted of a arrow band in the dentine of the deciduous teeth corresponding to the neonatal period

A CLINICAL EVENING

As a further contribution to good relations between hospital and general practitioner[1] the London Hospital has given a series of clinical meetings for doctors who regularly refer their patients to the London Another of these meetings was held on the evening of Nov 30—with notable success. Sometimes clinical meetings are less effective than they should be simply because too much is on show and visitors who are unfamiliar with the cases or the conditions they illustrate just have not the time to take everything in. But the London s meeting sensibly confined itself to three subjects—suicide ulcerative colitis and pulmonary suppuration Dr Henry Wilson s talk on the suicidal risk and the suicidal gesture was full of good advice and many of his listeners may have wished that they had heard it as students. After the patients had been questioned and examined Mr Clive Butler discussed some of the features of ulcerative colitis particularly the indications for surgery; and Dr Lloyd Rusby spoke of the difficulties of interpreting the significance of a suppurative pneumonia and the importance of bronchial carcinoma as a cause There will be another clinical evening at the London next month when Sir Russell Brain and Mr D W C Northfield will deal with some diseases of the nervous system

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[1] See *Lancet* 1951 I 611

University of Cambridge

On Nov 26 the degree of M.A. was conferred on Dr D'Almero Kok university lecturer in the department of medicine and Dr J A Hislop, assistant director of research in the department of human ecology

University of London

Dr G B D Scott temporary senior lecturer in morbid anatomy at St Mary s Hospital Medical School has been appointed to the university readership in morbid anatomy at the Royal Free Hospital School of Medicine

Dr Scott qualified from St. Mary s Hospital in 1942 and took his M B Lond five years later He has held appointments as junior lecturer in pathology in the University of Aberdeen and as junior assistant pathologist at Worcester Royal Infirmary His published work includes papers on diagnosis of reticulosarcoma of the thyroid gland and (jointly) on lipomatous pseudohypertrophy of the pancreas and effects of cortisone and adrenocorticotrophic hormone on bruise dispersion in skin In 1952 he proceeded to the M D Lond

Royal College of Obstetricians and Gynæcologists

At the meeting of the council held on Nov 26 with Mr C D Read the president in the chair it was announced that the Wellcome Trust had offered a grant of £25 000 to meet the cost of the museum in the new college and a further £5000 for the cost of two research rooms The museum will be named the Wellcome Museum of Obstetrics and Gynæcology

Dr Naguib Mahfouz of Cairo was invited to give the William Meredith Fletcher Shaw lecture in 1956 Sir Arthur Gemmell and Prof Margaret Fairlie were coöpted to council The council authorised the establishment of a regional council in South Africa

Leverhulme research scholarships were awarded to:

J Gardiner M. K Rinsler J Walker

R W Forman was admitted to the membership

The diploma in obstetrics was awarded to the following:

J G Abercrombie D H Alltree, T D Anderson B P Appleby G W Ashcroft Betty A Astle J T B Bain D T C Barber P J C Barry Rosemary A Beasley, J D Begg W P Bonniel N J B Bowie R G Brenchley Miriam Brennan, R O O F Bretell Irene P Brown, W M Browne Elizabeth J B Buchanan E. A C Buckell, J O B E Carrera, D R Chase, Saroj Kumar Chatterji R M. Clark D H Clarke H J Clarke A Clark Jones, J D O Cook, Albert Cooke R Mc Corfield L D Craig J D Craven, S O Cross W E N. Cummings, Joan M Curtis, J A Dand, B O Davies G J Davies K D Davies Madhuri De Peter Dilnot P H Dootson A K N Dunton Elizabeth M C. Dyke R P Dyson Harry Eaton, D P Elam Rosalind A Elliott Gwenda W Evans, Jill M. Evans M J Evans Helen Eyre, J H Fairley W J Falconer W P Fitt J I M Forsyth R. J Fothergill Jennifer M. Fowles R O Francis, D M Fraser Alasdair Fraser-Darling J R Freeman, P J Frost, L O Fuller M G Gelder A A Gibbord A G Gordon, W J H Graham, J M Gray D N Guest, Jharna Sen Gupta Eric Hainsworth G S. Hall D J Handford J O Hartgill, Margaret A Hartshorne, Margaret M. Heley P A Henderson C J M Hill R H Hill J E. Hodgkin J M. D Hooper I A Hopkins J H Hughes M J Hunter P. J Huntingford Ruth Hutchinson, A J C. Hyde O P Jeffrey Claire D Johnston J A Johnston W A Johnstone F L Jones, K. R. Kidd, P N Knight, Margery R. Lane A H Lasbrey O. E. Lay Merton Long J S Lord C. N R. Loveys Kathleen M. Lumb Isabel M McCullough M. A McDonald John McGlone Kathleen McKee M B McKerrow D G G McLeish Rona Maclean Sheila Malholm Ann B Marples Bernard Martin-Smith F J Masters, Geoffrey Matthews O V Maxim Helen Menzies A M. Middleton, R J Morgan Krishna Mukerjee, Subodh Chandra Mukerji R A. C. Mulligan Ann G Mullins D D Munro, Jack Nickson, F G A Noon, Khin Than Nu, M. R Oates R. G Orr D H Paterson, J B Pearson, J D W Peck Elizabeth L M. Perkins J H Peters Anne T A Phillips E. M. Pilkington, V D Pippett A I Poole A. M. W Porter Leslie Preger, Kekl Dinshaw Printer J G Pritchard Patrick Quinn, Anne E. Robinson D A Roche, Anne M Rodger R B Roe C. A Rogerson A H Roscoe Ruth Rosevear, A O Russell A J Salmon, D E. Sharland P E. Shaw D O. Shields, P V. Skinner J S Skipper, R G D Small, L F Smith Margaret B Smith R A Smith S R Somers Joan V Stavert Mary K Stedman Angeline Stephen J L Stevens R. M. Stewart, Sheila A S. Thompson, V R Tindall, Douglas Troup Arthur Trueman, Maureen A Tudor M F Tunstall J A. Tutton C I Tutty Anthony Unsworth Prudence Valentine N F Walker, G S Wallace G P Walsh, T H M. Warburton Derek Wardale, D S Watson Marjorie E. Watts H L. Wells, J A. Whillis C. J Whitehead Dorothy J Whitney Eric Wilkes J C Willan J T N Williams A R. Williamson Mary A Winsor A. J Winterton Elaine Wong, Enid M Worrocroft N L Wright L. W M. Yelland N W H Young

University of Glasgow

Mr Guido Pontecorvo, F.R.S, has been appointed to the newly founded chair of genetics He is at present reader in genetics and head of the department of genetics in the university

Faculty of Radiologists

At a recent examination for the fellowship the following were successful

George Ansell, Ellis Barnett, D C R. Burrows, Sheila M. Cameron, John Hung Chiu Ho P A W Lea, H A. Luke, Yumna E M Mansour, Basil Strickland (radiodiagnosis), A. M. Jelliffe, Jean K Ritchie (radiotherapy)

British Postgraduate Medical Federation

The central office of the postgraduate federation is moving on Dec 12 from Gordon Square to a new building at 18, Guilford Street, London, W C 1 (telephone HOLborn 2716) This building is on a site purchased for the federation by the University of London It is the first stage of the proposed postgraduate medical centre which will include the medical section of the university library

Society of Apothecaries of London

Dr Neville Finzi, the master, presided over an informal dinner for members and their guests, held in the great hall on Dec 1 About 130 persons were present, including Dr Richard Trail, acting senior warden, and Sir Lionel Whitby, acting junior warden. After dinner Mr W G MacKenzie, curator of the Chelsea Physic Garden, gave a talk, illustrated by lantern-slides, upon the garden and its library and their connection with the society

Gloucestershire Royal Hospital

A social gathering was held in the board room of this hospital on Nov 17 when local general practitioners were invited to meet members of the administrative, professional, and technical staffs who had hitherto been "a voice on the telephone" or "a name on a letter" It is hoped that the meeting will become an annual event

The Royal Society

Sir Cyril Hinshelwood, Dr Lee's professor of chemistry in the University of Oxford, has been elected president of the society Dr. G L Brown, Jodrell professor of physiology at University College in the University of London, was elected biological secretary Other members of council elected included Sir Alan Drury, Prof J H. Gaddum, Prof J S Mitchell, and Sir Rudolph Peters

Congress on the Pathology of Infectious Diseases

The first Congrès International de Pathologie Infectieuse will be held at Lyons from May 24 to 26 The main subjects chosen for discussion are virus infections of the nervous system and collagen disorders in infectious diseases Further particulars may be had from the secretariat of the congress, Institut Pasteur de Lyon, 77, rue Pasteur, Lyon, France

British Schools Exploring Society

Applications are invited for the posts of an honorary physician and an honorary surgeon for the 1956 expedition to Iceland, leaving about July 28 and returning mid-September, 1956 The cost to each member will be £200, including personal equipment Applications should be sent as soon as possible to the secretary, British Schools Exploring Society, 2/W Artillery Mansions, 75, Victoria Street, London, S W 1

London Varicose Clinic

The first anniversary of the opening of this clinic, at York Road, Battersea, S W 11, was celebrated on Nov 24, when methods used at the clinic were demonstrated Dr Simpson Harvey presided, the Rev Stanley Southall welcomed visitors on behalf of the Battersea Central Mission, in whose premises the clinic is situated, and Dr Stanley Rivlin, the superintendent, described the work done He said that, of 140 patients with ulcerated legs who had attended for treatment, 112 were now healed and the other 28 were following the normal healing course This had been achieved at a clinic which opened only one whole day a week. Patients attended once a fortnight for approximately six visits and they had been able to live a perfectly normal working and domestic life in between. The steadily growing waiting list of patients underlined the need for a complete specialist hospital.

Royal Photographic Society

Medical Group —Dr Keith Simpson will address this gr at 16, Princes Gate, London, S W 7, on Thursday, Jan at 7 P M He is to speak on Crime in Camera

Association of Medical Records Officers

At a meeting of this association to be held at St Bartho mew's Hospital, London, E C I, at 6 40 P.M., on Tuesd Dec 13, a Canadian film *Science against Cancer* will be sho and there will be a discussion on cancer registration procedu

Scandinavian Hospital in Korea

In South Korea a 500 bed hospital under Scandinavi management is expected to be ready for use in January, 19 Sweden, Norway, and Denmark are to contribute Kr 47,600,0 worth of material, and 80 Scandinavians will be attached the hospital

Society of Chemical Industry

On Wednesday, Dec 14, at 6 30 P.M in the rooms of t Linnean Society, Burlington House, Piccadilly, London, W. this society will hold the second meeting in their series o Nutrition Requirements and Food Fortification, when D H. M Sinclair, Miss A M Copping, and Mr J B Coppoc PH D, will speak on vitamins of the B group

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In a recent leading article (Nov 12, p 1020) we mentioned th difficulty in obtaining supplies of pure 5 hydroxy indole acetic ac (5 H.I A.A) to serve as a standard in the assay of this substan Messrs May & Baker (Dagenham Essex) inform us that p 5 H I A.A may be had from their new products division.

Sir Harold Whittingham, director of medical services of Bri Overseas Airways Corporation, has been re-elected chairman of th medical committee of the International Air Transport Associat

Dr L Rendell Baker has been appointed Fulbright excha assistant professor in clinical anesthesia at the Mercy Hosp Pittsburgh, Pennsylvania, U S.A

CORRIGENDA *Standing Medical Advisory Committee of Central Health Services Council* —A footnote to last week's anno tion on Heroin purported to give the names of all who were mem of this committee at the end of December 1954 but it unfortuna omitted those "appointed by the Minister after consultation w representative organisations"—namely, Sir WILLIAM GILLI F.R.C.O.G Dr HORACE JOULES, Dr H M. C. MACAULAY, D RALSTON PATERSON, Dr G W H TOWNSEND, and Dr S. WA

A Film for Expectant Mothers —The film *My First Baby* describ in our issue of Nov 26 (p 1146) was sponsored by Miss J Burton Brown, F R C.S The National Birthday Trust F provided facilities at their house for the preview

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Appointments

BROWN MARGARET W M B Edin, F.F.A R.C.S, D.A. consult anæsthetist, Sunderland area H.M.C

FLYNN, F V, M D Lond whole-time biochemist, dept of clin pathology, University College Hospital London

RAYNER, M J, M.B Birm. D.P.H. senior asst M O.H and sch M O, Dudley

SAUNDERS, E G, M B Lond appointed factory doctor, Whi Bridge Cheshire

STRACH, E H M D Prague M CH ORTH Lpool, F.R.C.S p time consultant orthopædic surgeon, St. Helens area

Leeds Regional Hospital Board

CARTER, J R., M.B Lond M R C.P whole time asst. c physician and deputy medical superintendent, Castle H Sanatorium

HUNTLEY, D G, M.B Leeds, D A, whole time asst. anæsth (S H.M O), Wakefield A and B groups

MACLEOD, PEARL A I M.B Glasg, F R.F.P.S, F.R.A C.S., who time asst orthopædic surgeon, Harrogate

Manchester Regional Hospital Board

KASASIAN, A -H, F F.A R.C.S, D.A consultant anæsthet Wigan and Leigh Hospital Centre

KIRKMAN, N F, M D Manc., F R.C.S consultant surge Withington Hospital, Manchester

LEVENE, M., M.R C.S, D PATH whole-time asst. patholog South Manchester group laboratory

MITRA, A K, M.B Calcutta, D O asst ophthalmologist, Stock port and Buxton hospital centre

WALTON, D A. H M B Calcutta, D M R.D whole-time consulta radiologist Oldham and district hospitals

WEBER J C P, M.D Lond whole time asst chest physici Barrow and Furness hospital centre

South Western Regional Hospital Board:

MANDLEBROTE, B, M B Cape Town, D.P.M medical superi tendent, Horton Road and Coney Hill Hospitals Gloucester

SINGHA H S M.B Camb F.R.C.S surgical registrar, Sou Devon and East Cornwall Hospital Plymouth

VARMA, R M. M B Madras registrar dept of neurolog surgery Frenchay Hospital Bristol.

CHILDREN IN HOSPITAL

OME OBSERVATIONS ON THEIR REACTIONS WITH SPECIAL REFERENCE TO DAILY VISITING

R S ILLINGWORTH
M.D Leeds, F R C.P , D P.H D C.H.
PROFESSOR OF CHILD HEALTH

K S HOLT
M.D Rochester, M.B Manc M.R C P D C.H
LECTURER IN CHILD HEALTH

DEPARTMENT OF CHILD HEALTH, UNIVERSITY OF SHEFFIELD

In recent years there have been many papers about e effect of hospital care on the child Among valuable ers on the subject those by Edelston (1943), Bowlby 51) Prugh et al (1953), and Capes (1955) are par larly notable Although these workers and others ake it clear that institutional care with separation m the mother, may cause considerable psychological uma, they leave many questions unanswered For tance how much is the emotional trauma related to e child's age family, and social background the quency of visits by the parents, and the duration of y in hospital ? In particular does it do any lasting m to a child to be emotionally disturbed for a few s as a result of admission to hospital ? Unfortunately, is extremely hard to answer these questions The many pers which we have been able to find refer in general ms to the psychological trauma of stay in hospital but y do not attempt to define the incidence and extent the problem particularly in relation to age

Any study of psychological reactions in a large group children is beset with difficulties and fallacies and it s with full knowledge of these difficulties that we barked on investigations to determine some facts out the responses of children in hospital with parti lar reference to their reaction after visits There are controls ' who were not visited In our view a trolled investigation, which would allow daily visiting some children but not for others, would be unethical convinced are we of the importance of daily contact parents with their sick children

The First Study

Daily visiting was introduced at the Children's Hos al, Sheffield, in April, 1952 At first only 1 parent was wed to visit at a time but in January 1955 both ents were allowed into the ward together The ting time is 6 00 P.M. on weekdays and 2 30 P.M on days

When daily visiting was introduced the senior resident F Lees, kept a daily record of the number of visits made endeavoured to observe the reactions of the children. It s later decided that other members of the department of ld health should keep a more comprehensive record of the t of visiting, and we prepared a proforma which was to be d in for every child

After over a year's work it became obvious that the investi on was unsatisfactory In the first place observations had been kept on a small number of children, and this upset whole study because it might mean that children observed e "selected." They might for instance have been ed because they reacted in a particular way to visits dly the proforma allowed replies which were too vague which would make analysis impossible For instance, the ter was asked to fill in, each day columns headed haviour during visit   behaviour after visit   behaviour ng day "

We therefore prepared a second proforma details of h are described below and began again from the beginning We shall call the first investigation which included 100 children, series A but in the analysis of results we shall only refer to the second investigation, which included 161 children (series B), unless the contrary is specifically stated

The Present Study

The *proforma* demanded the following information about each child

Age, name, address, sex, diagnosis, date of admission, date of discharge, hospital ward (one of two), maximum number of visits possible, total number of visits made, cost of travel and time taken in travel for each visit, and reasons given for failure to visit Previous admissions to hospital were recorded

On each of the first fourteen days of the child's stay in hospital (if he stayed as long as fourteen days), the following information was required: person visiting (mother, father, grandparent, uncle, or aunt, other person) the child's behaviour during the day, under the following headings: (1) apparently happy, (2) miserable, (3) crying a lot and the behaviour (*a*) five minutes and (*b*) thirty minutes after visitors had left, in each case under the headings (I) apparently happy, (II) asleep (III) crying (IV) merely miserable The appropriate mark was made in each of the columns every day

The day to-day records were made by the house physicians, but if they happened to be called away at the time when the observations were to be made, or were away on holiday the observations were recorded by the sister, charge nurse or resident medical student by arrangement. It was clear to us before the investigation began that the records would sometimes have to be made by people other than the house-physician, because he would inevitably be called away to deal with emergencies, and he would be very likely to be engaged in talking to parents after they had left their children's bedside. It was felt, however that the simplicity of the observations called for would avoid much in the way of mistakes though some differences of opinion about the child's behaviour would be inevitable However desirable it was clearly impossible that one person should make the observations throughout The description of the child's behaviour during the day was made by the house physician after consultation with the ward sister

POSSIBLE FALLACIES

When a child was ill and was thought to look miserable, it was a matter of opinion whether his behaviour was due to his illness, to his separation from his parents, or both If a child was unduly silent, it had to be decided whether his silence was due to separation from his mother or merely to shyness It had to be left to the common sense of the observer If a child was in coma, or slept through visiting time, or was under the influence of an anæsthetic, his behaviour could not be usefully recorded and the appropriate note was made so that on that day his behaviour would be excluded from the final analysis We did not expect that the figures given by the parents for the time taken for travel and for the cost of travel would be absolutely accurate, but we felt that they would give a good idea of the time and cost involved

Another difficulty arose from the fact that wherever possible when admitting young children we admit their mothers with them especially if it seems obvious that separation would be difficult for either mother or child Such cases had, of course, to be excluded from the study with the result that many children who would have been particularly likely to show emotional disturbances during the day and after visiting were not included in the investigation Such were the main fallacies of the study

THE CHILDREN

The whole investigation was under the constant supervision of one of us (K S H) and was discussed as

TABLE I—AGE AND SEX DISTRIBUTION OF CHILDREN

Age (yr)	Total no of children	Male	Female
1	28	21	7
2	17	5	12
3	20	14	6
4	12	7	5
5	26	9	17
6	18	11	7
7	9	5	4
8	9	4	5
9	15	10	5
10	9	6	3
11	8	2	6
12	5	4	1
13	4	1	3
14	1		1
Total	181	99	82

For analysis the children were put into five groups ages 1–2 (45 children), 3–4 (32), 5–6 (44), 7–9 (33), and 10–14 (27)

a whole at frequent intervals by the full departmental staff

All children, aged one year or more, who were admitted to the professional unit of the Children's Hospital, were *included in the study* The *only exceptions were children* admitted with their mothers, and all patients admitted during three short periods when the wards were being redecorated

The total number of children studied was 181 The distribution by age and sex is shown in table I

The average duration of stay in hospital is shown in table II It will be seen that the younger the child, the shorter his stay in hospital tended to be 50 6% of the children of 1–4 years of age stayed in hospital seven days or less, as compared with 18 5% of those aged 10–14 A high proportion of the older children who had a long stay in hospital were suffering from rheumatic fever or *tuberculous meningitis 41 of the children had been in* hospital before

Causes and Frequency of Visiting

The *frequency* with which visits were made by parents is shown in table III In compiling this and other tables a visit by more than 1 person on a visiting day was regarded as 1 visit

TABLE II—DURATION OF STAY IN HOSPITAL

Age (yr)	Proportion of children in hospital for			
	7 days or less	8–14 days	15–31 days	32 days or more
1–2	48 9%	17 8%	24 5%	8 9%
3–4	53 1%	15 6%	3 1%	28 1%
5–6	34 1%	20 4%	22 7%	22 7%
7–9	30 3%	27 3%	38 5%	3 1%
10–14	18 5%	37 0%	14 8%	29 6%

It is a striking fact that parents or others made 90 6% of 1587 possible visits during the observation period The proportion was still higher in the younger age groups

In the case of the 3–4-year olds and 7–9 year olds, the corresponding figures were 94 0% and 94 1% respectively. 76 7% of the children were visited on every possible day Only 1 child was not visited at all he was a *defective child* of a problem family In the case of children who stayed in hospital eight days or more, *88 8% of possible visits were made during* the observation period There was no relationship between the frequency of the visits and the sex of the child

Table IV shows the *cost of visiting* in time and money, and table V shows the relationship between this and the frequency of visits

The average *cost of the round journey* was *2s 1d*, and the average travelling time for the round journey was 105 minutes It will be seen that in more than 1 in every 5 children each visit cost *3s* or more *For 8 4% of the 181 children each visit* cost *5s* or more The round journey in the case of 85% children *occupied* an hour or more in travelling time, a excludes the time spent in the hospital *In* 42 7% o visits took two hours or more in 16% three hours or and in 8 8% four hours or more

It is striking, however, that even when visiting was sive, a high proportion of possible visits was made instance, 74 1% of all possible visits (86 out of 116) wer to children when the visits *cost 5s* or more per day of possible visits were made when the visits occupied hours or more in travelling time, *and 76 5% (114 out* possible visits) were made when they occupied four or more

As one of the sisters put it, " *most parents* will heaven and earth to visit their children in hospital should be noted that part of this investigation being conducted during winter months, and on a number of *occasions travelling conditions* were very difficult by snow, ice, and fog

Table VI shows that the mother visited in 73 cases, either alone or with another person, and the f *in 34 1% of cases*

We *attempted* to analyse the reasons offered by paren not visiting, but the *result* was *not satisfactory In some*

TABLE III—FREQUENCY OF VISITING IN RELATION TO AGE STAY IN HOSPITAL (OBSERVATION PERIOD FIRST 14 DA

Age (yr)	No of chil-dren	Total no of visits pos sible	Pos sible visits made	Chil dren who had full number of visits	Stay in hospital			
					One week or less		8 days more	
					Total visits pos sible	Visits made	Total visits pos sible	Vi m
1–2	45	329	84 8%	75 5%	113	92·0%	216	80
3–4	32	255	94 1%	87 5%	92	96 5%	163	[illegible]
5–6	44	414	92 9%	72 7%	82	90 2%	332	93
7–9	33	318	94 0%	87 9%	63	98 4%	255	[illegible]
10–14	27	271	79 9%	59 2%	80	86 6%	241	[illegible]
Total	181	1587	90 6%	76 7%	380	93 4%	1207	[illegible]

the house-physician forgot to ask the parents about th subsequent visits, and the reasons given were varied and multiple, so that analysis was impossible In *14 cases* were missed on *account of cost* and distance, in 9 cas presence of small children at home made visiting impos Other reasons included illness at home, the non-existen parents, and a variety of *social* factors In 2 cases pa did not visit because they feared that visits would their child

Behaviour of the Children

Table VII shows the number of children who appe during the whole of their observation period, to emotionally normal during the day and to be undis after departure of their visitors Taking both together, 32 4% of the children aged 1–4 were appar normal during the day, as compared with 56 8% of aged 5–6 and 72 4% of those aged 7–14

In the younger age group (1–4) boys *appeared to be* liable to be disturbed than girls, *for only* 25 5% of the

TABLE IV—COST OF VISITING IN MONEY AND TIME

Cost of round journey (average *2s 1d*)		Duration of round journ (average 1 hr 45 min.)	
Range		Range	
Cost	Percentage	Time	Perce
0 –11*d*	19 1	Less than 1 hr	15
1*s* –1*s* 11*d*	37 1	1–2 hr	41
2*s* –2*s* 11*d*	23 1	2–3 hr	26
3*s* –3*s* 11*d*	6 2	3–4 hr	[illegible]
4*s* –4*s* 11*d*	6 7	4 hr or more	[illegible]
5*s* or more	8 1		

ppeared normal during the day, as compared with 43·3% of e girls. This difference, however, is not statistically signi ant. The situation is reversed in the 7–14 year-olds: 77·4% the boys being normal during the day as compared with 6% of the girls.

Similar age and sex differences apply to the behaviour the children after visiting. 13·9% of children of both xes aged 1–4 were apparently undisturbed after parture of their visitors as compared with 62·1% of ose aged 7–14; 10·7% of the boys aged 1–4 and 16·9% the girls of that age were apparently unaffected. The rresponding figures for the age of 7–14 were 67·7% oys) and 55·5% (girls).

It is interesting to note that in series A, the pilot survey, which all the observers were different from those in the

TABLE V—VISITS IN RELATION TO COST OF VISIT IN TIME AND MONEY (OBSERVATION PERIOD FIRST 14 DAYS)

Cost of visit	Possible visits made	Time: Duration of travelling	Time: Possible visits made
0–11d	93·3%	Less than 1 hr	97·2%
1s.–1s. 11d	92·7%	1–2 hr	91·7%
2s.–2s. 11d	89·0%	2–3 hr	85·7%
3s.–3s. 11d	74·7%	3–4 hr	78·4%
4s.–4s. 11d.	78·8%	4 hr or more	76·5%
5s. or more	74·1%		

sent series, 13·3% of the children aged 1–4 were apparently disturbed after departure of their visitors, as compared with 0% of the present series—a strikingly similar figure. It is s that the younger the child the greater is the likelihood emotional disturbance both during the day and after ting time.

The emotional responses of those children who appeared be disturbed during the day and after departure of the itors were many and varied. In some cases they only urred on one or two days, and in others on many of days at risk. These are some of the comments from proformas.

1) Aged 18 months. Cried all day for his mummy; only pped when exhausted or asleep. Only one visit. Threw s round mother and sobbed. After visit, cried for fifteen utes. (This child was an inpatient for two days only.)

) Aged 2 years. Screamed "don't come near me" as one approached the cot. Refused to eat. Burst into tears

TABLE VI—THE IDENTITY OF THE VISITOR

Visitor	Percentage of visits
her alone	56·2
her and father	14·1
her and grandparent	1·9
her and aunt and uncle	1·7
her and friend	0·1
her alone	10·8
her and grandparent	0·1
er and aunt and uncle	0·2
ndparents alone (one or other)	3·3
le or aunt	1·7
er person	1·7

y time on seeing his mother clinging to her. Screamed rly on her departure. So fretful and crying so much the day with outbursts of crying when parents visit it was thought best to admit the mother.

) Aged 2 years. Although the child never cried I am of impression that she was very deeply affected by this erience. After visits quiet and bewildered.

) Aged 2 years. After visit watched the door quietly ten minutes.

) Aged 2½ years. "Took a week to settle in, crying more most; then was good for several weeks; then became dy, dirtying the bed, baiting other children."

) Aged 21 months. Happy unless approached, then cries. ble, sullen, tearful by day; clinging in visits.

TABLE VII—PROPORTION OF CHILDREN APPARENTLY NORMAL THROUGHOUT THEIR STAY (OBSERVATION PERIOD FIRST 14 DAYS)

Age (yr)	Total no. of children at risk	Apparently normal every day: Girls	Apparently normal every day: Boys	Apparently normal every day: Both sexes	Apparently normal after every visit: Girls	Apparently normal after every visit: Boys	Apparently normal after every visit: Both sexes
1–4	77	43·3%	25·5%	32·4%	16·9%	10·7%	13·9%
5–6	44	58·3%	61·0%	59·8%	33·3%	23·0%	29·5%
7–14	58	66·6%	77·4%	72·4%	55·5%	67·7%	62·1%

Records of 2 children were not used for analysis of behaviour.

(7) Aged 16 months. "Squealing incessantly unless sedated or asleep."

(8) Aged 20 months. "Bright and charming during visits, sullen and reproachful afterwards, wanting to be left alone."

(9) Aged 2 years. "Settled almost immediately. Sat up and received the situation happily. Minimally disturbed. Was outgoing and apparently happy."

(10) Aged 18 months. "Very tearful, bewildered, negativistic. Settled very slowly; never really at ease. In visits clinging and reproachful. I think that this child was profoundly affected by this hospitalisation, bewildered and insecure."

(11) Aged 3 years. "Lay curled up most of day; would not talk to us. Hugged rabbit. Took a good ten days to settle; till then whimpered if approached, took comfort in his rabbit and thumb. During visits, clinging and asking to be taken home. After visits cried, cuddled rabbit, and sucked thumb."

TABLE VIII—BEHAVIOUR DURING THE DAY

Age (yr)	No. of children at risk*	Disturbed on one or more days	Days on which disturbed	Total no. of disturbance days	Proportion of total disturbance days manifested by: "Misery"	Proportion of total disturbance days manifested by: "Crying"
1–2	45	68·9%	51·0%	178	75·2%	24·8%
3–4	32	68·7%	44·7%	67	79·4%	20·6%
5–6	41	43·2%	23·8%	51	94·2%	5·8%
7–9	33	33·3%	26·3%	45	96·0%	4·0%
10–14	25	20·0%	17·5%	11	100%	

* Records of behaviour in 2 children not used.

Example.—In 10–14 age-group 5 out of 25 children (20%) were upset for a total number of eleven days (17·5% of the total days these children were observed): all 5 (100%) reacted by "misery" rather than by "crying."

Analysis of the replies to the specific questions on the proforma was more difficult. Table VIII analyses the incidence of behaviour disturbances during the day. The third column shows the proportion of children who were disturbed on one or more days during the observation period. This corresponds to table VII: 68·9% of the children aged 1–2, 43·2% of those aged 5–6, and 20% of those aged 10–14 fell into this category. Table VIII also gives information about the extent of such disturbances. It will be seen that the children in the 1–2 group

TABLE IX—BEHAVIOUR AFTER VISITS

Age (yr)	No. of children at risk	Disturbed after one or more visits	Proportion of visits after which they were disturbed	Total no. of days on which disturbance followed visits	Proportion of visits after which disturbance was manifested by: "Misery"	Proportion of visits after which disturbance was manifested by: "Crying"
1–2	45	86·3%	76·9%	166	27·4%	73·0%
3–4	32	74·1%	61·3%	109	33·8%	61·2%
5–6	44	70·3%	31·4%	9	47·8%	52·2%
7–9	33	30·3%	24·8%	30	87·5%	12·5%
10–14	25	34·0%	20·7%	17	91·1%	6·0%

For explanation see footnote under table VIII.

who showed any disturbances at all were disturbed on more than half the days at risk—54 9% The corresponding figures were 44 7% for the 3–4-year olds and 17 5% for the 10–14 year-olds The last two columns analyse the responses shown in the two broad groups of "merely miserable" and "crying" None of the affected older children cried during the day three quarters of the affected 1–2-year-olds appeared to be "miserable" during the day, the other quarter "crying excessively"

Table IX indicates the extent of the emotional disturbance after visiting time It will be seen that even in the 10–14-year-olds, a third of the children (32%) showed some disturbances after one or more of the visits The younger the child, the more likely he was to be upset after departure of the visitors 70 5% of those aged 5–6 and 86 3% of those aged 1–2 were disturbed after one or more visits In the older age-group (10–14 years) the affected children were upset after approximately 1 in 5 of the visits (20 7%), whereas the 1–2-year-olds were upset after 3 out of 4 visits—76 9% To put it in another way, the 8 affected 10–14-year-old children were disturbed on a total of 17 visiting days the 38 1–2-year olds were affected on a total of 186 visiting days—a much higher proportion

As one would expect, far more of the younger children showed their feelings by crying than did older children 72 6% of the 1–2-year olds responded by crying, and 27 4% by merely looking miserable 52 2% of the 5–6-year olds responded by crying, and 5 9% of the 10–14-year-olds It will be seen that there was much more overt crying after the departure of visitors than there was during the day

Table X was designed to show whether the emotional disturbance was confined to the first few days or not The table shows the proportion of children in the various age groups who were disturbed during the day and after visiting in each of the first 3 four-day periods—i e, in the first twelve days after admission to hospital It will be seen that whereas in the older age group only a small proportion of children showed any disturbance after the first four days, a very high proportion of the younger children continued to be affected after several days in hospital, and in fact were disturbed just as mu the third four day period as in the first For instan the 10–14-year old children, 25 9% were upset afte or more visits in the first four days, as compared 8 2% in the third four days, and the frequency o turbance within the third four day period was tı averaging a tenth of a day per child The figures that the incidence of emotional upsets rapidly fe in all children of 5 years or older after the first fou period In the case of the 1–2 year olds and the year olds, however, there was no falling off in the quency of upsets as the days went by Of the 3-4 olds, 68 7% were upset after visits in the first four period, as compared with 70 0% in the third period corresponding figures for the 1–2 year olds were 8 and 100% Furthermore, the 1–2 year-olds were u on an average of 3 out of 4 visiting days in the t four-day period In other words, they did not settle d as the days went by They were better during the but during the day a third (31 2%) were still distu between the ninth and twelfth days

TABLE X—INCIDENCE OF EMOTIONAL DISTURBANCE IN THE FIRST THREE FOUR-DAY PERIODS AFTER ADMISSION

Age (yr)	First 4 days		Second 4 days		Third 4 days	
	Showing emotional disturbance	Average no of days in which disturbance occurred	Showing emotional disturbance	Average no of days in which disturbance occurred	Showing emotional disturbance	Average no of days in which disturbance occurred
1–2						
During day	68 9%	2 2	41 9%	1 0	31 2%	0 9
After visits	82 2%	2 9	74 9%	2 2	100%	3 1
3–4						
During day	54 6%	1 2	26 9%	0 8	16 8%	0 2
After visits	68 7%	2 1	46 1%	1 6	70 0%	1 6
5–6						
During day	38 6%	0 8	20 5%	0 4	8 3%	0 1
After visits	63 6%	1 1	33 3%	0 7	13 0%	0 4
7–9						
During day	33 0%	0 6	10 7%	0 1	5 3%	0 2
After visits	36 1%	0 7	14 3%	0 2	9 3%	0 2
10–14						
During day	22 2%	0 3	9 1%	0 1	5 1%	0 1
After visits	25 9%	0 5	5 9%	0 2	8 2%	0 1

The first column in each case shows the percentage of children in each age-group who showed emotional disturbance The second column in each case was calculated by determining the number of days at risk for each child, and then calculating the proportion of such days on which emotional disturbances occurred—e g, if a child stayed in hospital for only 7 days, the number of days at risk in the first 4 day period would be 4 as compared with 3 in the next 4 day period, if a child was only visited twice in the first 4 day period the number of days at risk would be 2 Having determined this proportion, the average number of days disturbance in each 4-day period was calculated for the group of children showing d

The duration of disturbance after departure of vis can be only partially assessed In 58% of the 427 day which disturbance occurred after visiting, the child settled when observed again half an hour after visitors left In 40 5% the child was still upset at t time The remaining children seemed to be set immediately after departure of the parents, but turbed thirty minutes after The proportion was same in all age groups, and has not, therefore, b tabulated

A further analysis was made to determine whetl there was more disturbance after the departure of t mother than after that of other visitors Disturba occurred after 28 8% of 781 visits of the mother alo 27 5% of visits by the father alone, 33 7% of visits the mother and father, and 61 7% of the 47 visits the grandparents The difference between the effect visiting by the parents and the grandparents is statistical significance The reason for this odd finding obscure It did not seem to be related to a different a distribution in the children visited by the grandparents compared with those visited by the others

We did not set out to determine whether children days when they did not have a visitor were upset wh other children did We know that about a third (32 8 of children were upset at visiting-time on a total 22 1% of the 172 days on which they did not rec visitors but we cannot say whether more of the child were upset when they did not receive visitors, because records may be incomplete

Discussion

The important facts which this study has brought are the remarkable faithfulness of parents in visit their children as much as they possibly can, how costly it is in time and money, and the frequency which children of all ages, but particularly the young children, show emotional disturbances when separa from their parents The study also casts light on immediate after-effects of visiting, and the different of response shown by children of various ages. T few responses which we have described correspo exactly to those recorded by Robertson and Bowl (1952)

Inevitably, many questions are left unanswered F instance, it is impossible to define the sort of child was more likely to be upset than others One wo naturally expect that the wiser the management of child before admission becomes necessary, the more he loved, and the greater his sense of security, the less wo he be disturbed by admission to hospital and the short lasting would any harmful effects be We cannot r those children who were most disturbed in hospital ared at home For all we know they may have been ing constantly at home We cannot estimate the ling of security experienced at home by those children o were most upset when their parents left them at iting time. As we stated in our introductory remarks e difficulties in an investigation like this are great l we have done is to present our observations and er interpretation is a matter of opinion It is certainly ar that a high proportion of young children experience otional disturbance in hospital and it behoves us to everything possible to reduce that disturbance to a nimum. This is a big subject, which we cannot discuss detail here, but certain points seem to us to be of rticular importance.

ndance of Admission

Young children should not be admitted to hospital nless it is absolutely necessary Of the last 220 new ses" referred to the professorial unit in the Children's ospital at Sheffield, only 3% were admitted

paration for Hospital

Children should be told if possible, that they are ing to be admitted to hospital and they should be given me idea of the experiences which they will meet The ildren s Hospital for the East Bay California issues little booklet for the purpose with illustrations designed give the child some idea of what the hospital will like.

e Rôle of the Mother

Where possible the mother should be admitted with her all child, to share a bedroom Every hospital with children s unit should have such accommodation Often course, domestic circumstances will not allow the mission of the mother Such an arrangement is par ularly important for the young child who is going to be iously disturbed by separation from his mother at the y time that he most needs her when he is ill and is a great help to the mother who is particularly closely tached to her child, avoiding the trauma of separation d giving her the satisfaction of taking an active part bringing about the child s recovery We have such commodation at Sheffield. The Babies Hospital Newcastle, which has similar facilities, is well own.

If domestic circumstances prevent the mother staying night with her child the next best thing is for her to end the day with her child, taking a large share in ing him, giving him his meals attending to his toilet ds, and so on If she cannot spend the whole day may be able to spend at least part of the day with m. If the mother cannot come in during the day, the t best thing is daily visiting

It may be argued that the high incidence of emotional turbance in young children on departure of the parents powerful argument against daily visiting We cannot ree with that suggestion, for it seems reasonable to do rything one can to maintain the mother-child relation p It is surely better for a child to see his mother ry day—an event to which he very soon learns to look ward—even though he will be very sorry when she s to go than to allow the child to pine for her every day dually becoming more and more convinced that she deserted him and perhaps that he is being punished ally forgetting her and thus breaking the mother-child tionship the strongest tie in his young life.

In any case it is surely the right of parents to see their ldren daily when they are ill. There is no doubt at all t parents greatly appreciate the right to visit their ldren daily and our data show that the great majority parents are deterred from visiting neither by the time t cost involved even when these are considerable We d too that the doctors and nurses welcome daily visiting because it gives them much more contact with the parents and therefore understanding of their children and gives the parents much more opportunity to discuss their children's progress with those in charge of them so that they lose much of their anxiety if progress is satisfactory, and gain confidence in the hospital.

Hospital Design

Much more thought is required about the general design and decoration of children s hospitals Certain modern outpatient departments may be efficient and easy to run but they are distinctly forbidding and totally unattractive to the child The child likes bright colours and attractive pictures, and there is no great difficulty in supplying these

Cubicles are desirable for babies, but they should be used for toddlers and older children only when it is essential to prevent the spread of a specific infection One of us recently visited a new wing of a famous Continental children's hospital and was proudly shown the inpatient arrangements Every child, up to the age of 14 was in a separate cubicle One must balance the risk of cross infection which anyway is only partially prevented by the use of cubicles against the psychological trauma of solitary confinement

Ideally a child who is not too ill should be admitted to a playroom attached to the ward, where the sight of cheerful toys will help him to lose his tension An attractive playroom cum-dining room should be a part of every ward

Admission Procedure

The mother should be allowed to accompany the child to the ward see him into bed and sit with him for a time until he has become at least in part accustomed to his surroundings. Contrary to the opinion of many, we think that it is a good thing for the mother to be with her child when he is coming round from an anæsthetic

At the Sheffield Children s Hospital we give all parents a leaflet, telling them, among other things of the importance of visiting the child every day and of using the visiting time to the best advantage by reading to him, giving him his supper and perhaps brushing his teeth, and tucking him up in bed for the night. They are warned not to promise to take him home unless what they say is true They are reminded to give him his favourite teddy and toys and to send him letters and cards so that he does not feel that he is forgotten

Occupational Therapy

A child who is well enough to appreciate them should be given suitable toys or books as soon as he comes in The tendency is to delay giving them until he cries, or looks bored The ward should have plenty of toys and books, especially for the younger children Often the toys and books are for older children, and there is nothing for the younger ones. Moreover, toys tend to be too mechanical educational toys * are of much greater value, in that they occupy the child for much longer periods and he enjoys them much more The toys suitable for children of different ages have been discussed in detail elsewhere (Illingworth and Illingworth 1954) It is the doctor s responsibility to see that there is a supply of such toys in every ward and that they are issued It is important that nurses should realise that a children s ward need not always be tidy

An occupational therapist is of much value in a children's hospital She in turn, teaches the nurses who are attached to her for a period of their training

Older children gain greatly from ward teaching They thoroughly enjoy it and it is excellent occupational therapy In addition it serves to minimise psychological disturbances when the child returns to school, for otherwise he may find that he has dropped a long way behind his fellows

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* Such as those made by E. J Arnold & Co. of Leeds, Philip & Tacey Ltd, Charles & Son Educational Supply Association, and Wilkane Ltd

Voluntary workers have an important part to play They keep the children occupied, read to them, and befriend them

Instruction of Nurses and Students

This instruction should include the psychological features of the normal child and his development, the special problems of the sick child, and the effect of emotional deprivation and of separation from the mother, including the different types of response shown by children In particular nurses need to know that the young child who is seriously disturbed by separation from his parents, crying excessively, and failing to cooperate, is not "naughty" or "spoiled," but is reacting normally, and needs all the love that can be given to him It is wrong to devote spare time in the ward to the happy smiling child, and to ignore the one who needs attention most—the miserable, crying uncoöperative child who misses his mother so severely

Nurses and students must understand the importance of striking a balance between the risks of cross-infection and psychological trauma, so that they will pick the child up and give him love when he most needs it Other points requiring emphasis are the danger of talking in front of the child about his treatment and prognosis the *importance of never telling him a lie about procedures* being painless when in fact they are painful, or about his going home when it is untrue, but of trying at all times to explain to a child exactly what is going to be done The importance of premedication before anæsthetics must be emphasised The child must not be allowed to see other children suffering, having mechanical procedures, such as lumbar puncture, carried out, or recovering from operations, such as tonsillectomy In the Children's Hospital at Sheffield all nurses and students receive such instruction They are all shown the film *A Two-year-old Goes to Hospital*, made by members of the Tavistock Clinic Nurses are given a lecture demonstration on Toys and Play Students take part in debates on the ethics of research involving children, and on the avoidance of admitting children to hospital.

Responsibility of the Doctor

It is the doctor's responsibility to see that children are never kept in bed unnecessarily that they are kept occupied that their emotional needs are attended to, as far as possible that the food which they are given is attractive and that the duration of their stay is kept down to an absolute minimum We are confident that much could be done in many children's units to reduce the duration of stay in hospital, and that a conscious effort should be made to do this As an example of what can be done, a colleague at the Children's Hospital, Sheffield, Mr R B Zachary, admits his patients with inguinal hernia in the morning, operates on them in the afternoon, and discharges them home on the following morning

Finally, when the child is about to be discharged, the doctor can do much to ensure that the parents' attitude to their child on his return home will be a healthy one, that they will not "spoil" him, and that they will have some understanding of problems which may arise as a result of his experiences

Though it is clear that separation from the mother is a disturbing experience to the child, we must preserve a sense of balance We have no evidence that the child suffers anything but a temporary disturbance by his hospital experience, and it would certainly be disastrous if family doctors, conscious of the psychological trauma which may befall a child if he is taken into hospital, allowed him to suffer serious physical harm by not allowing him to have specialised investigation and treatment which can only be given in hospitals Much be done, by effective treatment in the home, and by efficient outpatient department, to keep children ou hospital, but some have to be admitted, and it is responsibility of all those responsible for his care ensure that his stay in hospital is as happy as it can and that psychological trauma is reduced to a minim

Summary

(1) We made a planned study of the behaviour children in hospital, of the cost of *visits by relatives,* of the reaction of children to the departure of t visitors The *study covered 181 children, and follo* a pilot survey of 100 children

(2) *50 6% of the children aged 1–4* years stayed hospital 7 days or less

(3) 90 6% of the maximum possible number of vi were made in the fourteen-day *observation period*—th is, less than 1 in every 10 chances for a visit was n *accepted by a visitor* of some kind.

(4) The average cost of each round journey by visitor was 2*s* 1*d* 15 1% of all visits cost 4*s* or mo each The average travelling time involved in each vi was 1¾ hours 16% of all visits occupied 3 hours more in travelling time In spite of the high cost in mon and time, strikingly few parents were deterred fro frequently visiting their children They made 74 1% all visits costing 5*s* or more, and 76 5% of all vi occupying 4 hours or more in travelling time.

(5) The mother visited in 73% of cases, and the fath in 34 1% of cases, alone or with another

(6) 32 4% of the children aged 1–4, 50 8% of tho aged 5–6, and 72 4% of those aged 7–14 appeared to *emotionally normal during the observation period.* On 13 9% of those aged 1–4, 29 5% of those aged 5–6, an 62 1% of those aged 7–14 appeared to be undisturb throughout the observation period *on departure of visitors* As expected, the older children showed th emotional disturbance mainly by subdued behaviour by their facial expression, while the younger child cried, especially when their parents departed In child of 5 years and over the emotional disturbance follow visits grew much less frequent after the first few da but in the younger ones it persisted or became even m striking as the days went by We emphasise that have no information about the behaviour of th children at home, so far as the amount of crying concerned

(7) We are strongly in favour of daily visiting, bec it helps to preserve the mother-child relationship far better for the child to see his mother every day, e though he will be upset when she has to leave h than to allow him to become more and more cer that she has deserted him, and finally to forget altogether

(8) It is important to do everything possible to red *psychological trauma* to children in hospital, and have outlined practical steps, based on experience at Sheffield Children's Hospital

(9) The wiser the management at home, the more se the child is, and the less likely is he to suffer harm fr admission to hospital, and a short stay in hospital unlikely to have any but a very *temporary* distur influence on a mentally healthy normal child

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VASCULAR OBSTRUCTION IN CHRONIC PYELONEPHRITIC KIDNEYS

AND ITS RELATION TO HYPERTENSION

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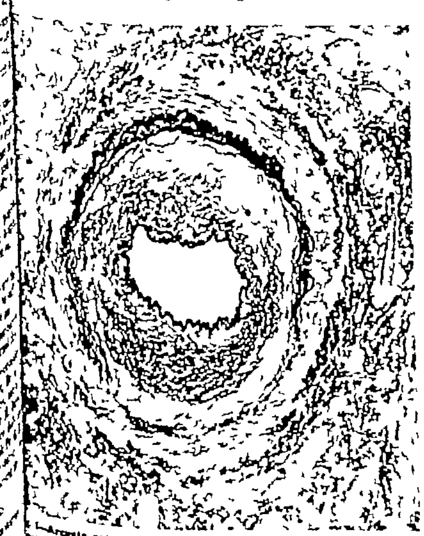
THE typical histological features of chronic pyeloneph s have been described by Löhlein (1917), Staemmler d Dopheide (1930), Fahr (1938) and Weiss and rker (1939)

I present here a new concept of the pathogenesis of ronic pyelonephritis and suggest a mechanism for the oduction of hypertension in this condition It is stulated that vascular occlusion producing multiple chæmic areas is largely responsible for the contracted yelonephritic kidney These areas show the incomplete r partial infarction (*Teilinfarzierung*) described by Fahr 934): crowded glomeruli separated by shrunken tubules he association between hypertension and obstruction of e renal arterial system is well known (Fishberg 1954, ckering 1955) On the basis of the present observations is suggested that the same mechanism explains the evelopment of hypertension in some cases of chronic yelonephritis

Observations

HRONIC AND HEALED PYELONEPHRITIS WITH ASSOCIATED HYPERTENSION

10 cases of malignant hypertension, in which irregularly arred pyelonephritic kidneys were found at necropsy, m the material for this part of the study The clinical gnosis of malignant hypertension was only accepted the presence of hypertensive retinitis with papillœdema. llular intimal hyperplasia in small arteries and fibrinoid crosis in arterioles in the kidneys and other organs tablished the pathological diagnosis. The classical macroscopic and microscopic appearances of chronic pyelonephritis were present in all 10 cases In 6 of these the disease was confined to one kidney No obvious urinary obstruction was found at necropsy Further particulars are given in table I



1—Arcuate artery showing irregular destruction of internal and ernal elastic laminæ especially of the latter Intima shows ellular hyperplasia with narrowing of lumen. (Weigert's elastic d neutral red × 98.)

Vascular Lesions

The arterial lesions were most commonly found in interlobar and arcuate arteries They were also seen in interlobular arteries.

The external elastic lamina sometimes showed very gross thickening Numerous abrupt and irregular interruptions were seen in both internal and external elastic laminæ, they were more numerous in the latter (fig 1)

TABLE I—PYELONEPHRITIS AND HYPERTENSION

Case no	Age (yr)	Sex	Kidney weights (g)		Macroscopic description of kidney (abstracted from records)
			Right	Left	
Unilateral pyelonephritis					
1	59	F	200	50	Left kidney: coarse irregular scarring
2	22	F	70	165	Right kidney irregular scarring shrunken lower pole no obstruction in artery to lower pole
3	27	F	Half normal	Normal”	Right kidney: irregular scarring and contraction
4	43	F	90	190	Right kidney: irregular areas of cortical atrophy
5	15	F	“40 mm in length”	180	Right kidney very small and scarred
6	50	F	150	70	Left kidney shrunken and pyelonephritic” with calculi in pelvis
Bilateral pyelonephritis					
7	25	F	72	40	Irregular scarring and shallow cortical depressions of both kidneys
8	23	F	46	Not recorded	Irregular scarring and cortical atrophy of both kidneys
9	17	F	110	85	Irregular scarring of both kidneys atrophy of lower third of left kidney with no occlusion in the artery to this area
10	46	M	127	125	Irregular scarring of both kidneys

The elastic laminæ were often corrugated (figs. 2 and 3) Not uncommonly all that remained of an artery was a cylinder of coiled elastic fibres, the place of the remainder of the vessel having been completely taken by collagen Fibrous tissue often took the place of the medial muscle at the same site as the destructive lesions in the elastic laminæ (fig 4)

The changes in the intima were very striking and extended beyond the areas where definite destruction of the media could be demonstrated. They were invariably

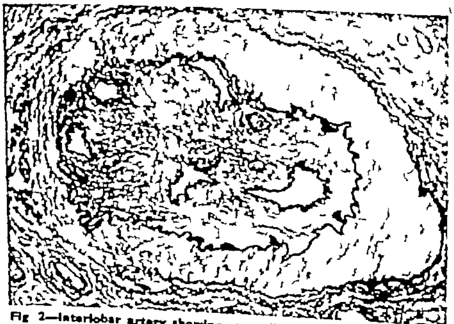


Fig 2—Interlobar artery showing recanalisation of lumen by several separate channels corrugation of internal elastic lamina, and areas of interruption of external elastic lamina. (Weigert's elastic and neutral red. × 91)

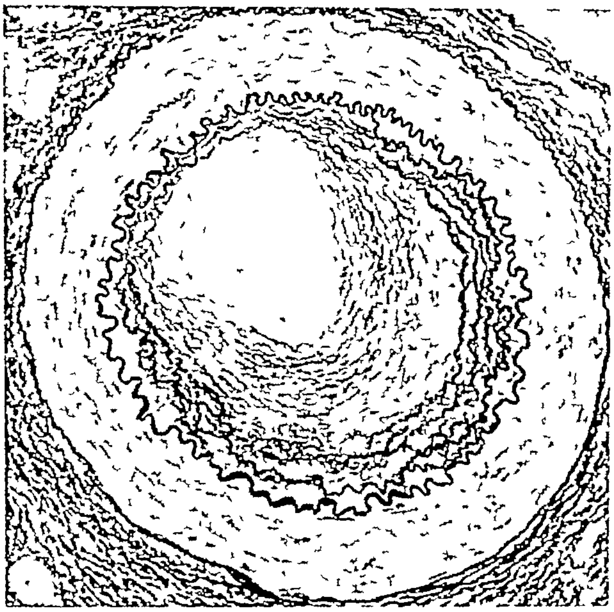


Fig 3—Interlobar artery showing lunate (eccentric) intimal thickening and corrugation of internal elastic lamina. (Weigert's elastic and van Gieson × 67)

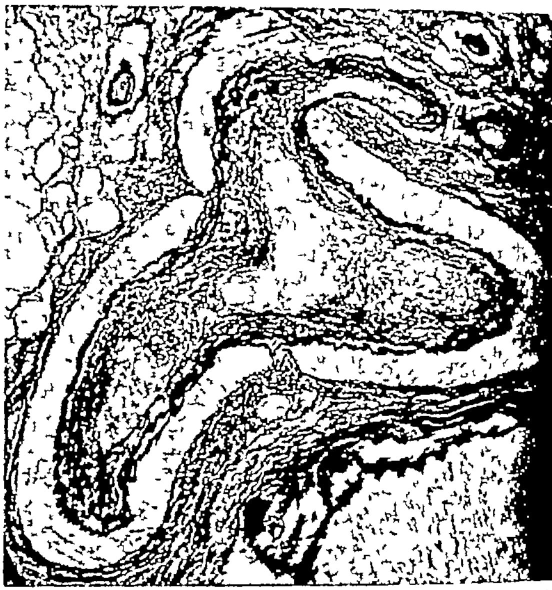


Fig 5—Interlobar artery showing extreme narrowing of lumen b fibrocellular intimal proliferation (Weigert's elastic and van Gies × 43)

present throughout an area of scarring but were far less noticeable in relatively normal areas of cortex Since, however, each patient had had severe hypertension, no entirely normal vessels were observed The usual lesion was a fibrocellular intimal proliferation in which fine collagen and elastic fibres were present (figs 1–5) Extreme narrowing of the lumen was common (fig 5), but complete occlusion was not A lunate intimal proliferation (fig 3) similar to that described by Doniach (1949) in tuberculous meningitis, was seen in a few arteries Dense hyaline collagen, devoid of cells and elastic fibres, sometimes obstructed the lumen at the site of severe destruction of the media In several instances the picture was identical with that seen in recanalisation following thrombosis (Wright 1954), here two or three separate vascular channels were present, each with a newly formed internal elastic lamina (fig 2)

Lesions of Renal Parenchyma

The parenchymal lesions in chronic pyelonephritis ar subdivided below into (1) those following ischæmia and (2) thyroid-like areas in which acute inflammation thought to be an important causal factor Althoug the two pictures described are often clearly distinc various combinations of the two may be seen

Lesions following ischæmia.—Serial sections showed that arteries with severe lesions like those described abov often supplied contracted and sharply demarcated are of renal cortex (fig 6) The size of the area varied wit the size of the artery involved, the larger ones corre ponding to broad shallow U shaped depressions see macroscopically In these areas it was possible to tra a gradation from purely ischæmic lesions to class chronic pyelonephritic lesions (figs 7–9) Ischæm areas with no superimposed inflammation were uncomm and resembled the incomple infarcts described by Fa (1934), showing small nep rons with glomerular crowdi due to tubular atrophy. Th atrophic tubules had sma lumina lined by cuboidal ep thelium (fig 7) Inflamm tory changes superimposed this picture, consisting periglomerular fibrosis an cellular infiltration (fig produce the classical stage of chronic pyelonephrit (Staemmler and Dopher 1930) A gradual transitio is seen from this appearanc to the well recognised pyel nephritic lesion in which th glomeruli show partial or com plete hyalinisation and th tubules show further atroph and contain small collo casts (fig 9) as in stage I of Staemmler and Dopherde These observations sugge that the three pictures des cribed are stages in th

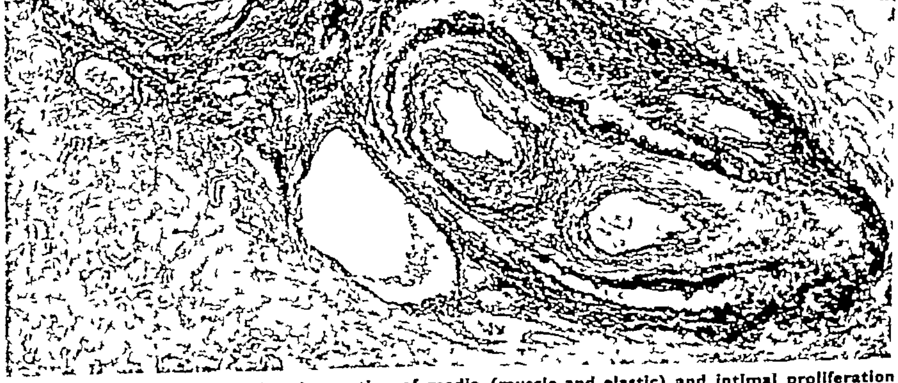


Fig 4—Arcuate artery showing destruction of media (muscle and elastic) and intimal proliferation The area of cortex supplied by this vessel is shown in fig 6 (Weigert's elastic and van Gieson × 40)

[illegible] demarcated contracted area of renal cortex showing [illegible] depression of surface and incomplete infarction with mild [illegible] inflammatory changes. Damaged vessel supplying this [illegible] of cortex is in bottom left-hand corner Fig 4 shows another [illegible] of same vessel. (Hæmatoxylin and eosin. × 8)

[illegible] was of the type of pyelonephritic scarring and that [illegible] is the primary factor in this process.

Thyroid-like areas.—A different appearance also [illegible] of chronic pyelonephritis, is that seen in thyroid-like areas (fig 10): dilated tubules with a [illegible] epithelium are filled with colloid and glomeruli are represented by scanty hyaline scars This appearance corresponds to stage III of Staemmler and Dopheide [illegible] who regard it as a progression from stage II [illegible] observations, however suggest that the thyroid [illegible] result rather from acute inflammation of the renal parenchyma with consequent destruction of most of the nephrons and persistence of colloid-filled tubules [illegible] glomerular scars

[illegible] of incomplete infarction showing crowded glomeruli and [illegible] tubules without inflammatory changes. (Hæmatoxylin [illegible])

COMPARISON OF LESIONS IN HYPERTENSIVE AND NORMOTENSIVE PATIENTS WITH CHRONIC PYELONEPHRITIS

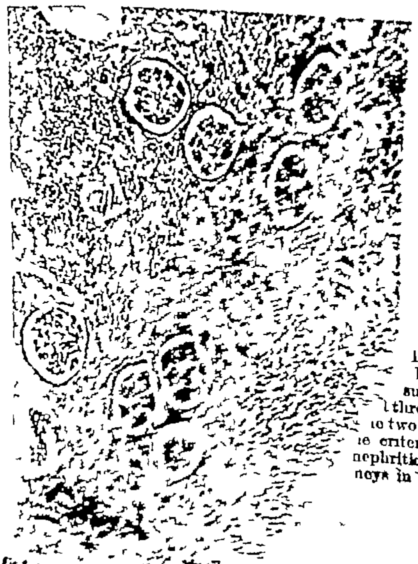
Of 45 consecutive patients with chronic pyelonephritis examined at necropsy in this department during the past ten years 30 (66·6%) were hypertensive and 15 (33·3%) normotensive The hypertensive patients usually had severe renal contraction and extensive pyelonephritic scarring, whereas the kidneys in the normotensive group were often of normal size with only occasional pyelonephritic scars Histologically the hypertensive patients had numerous lesions of the type described above as following ischæmia—areas of incomplete infarction and of stages I and II of Staemmler and Dopheide. In the non-hypertensive kidneys these lesions were rarely seen There was no significant difference in the extent of thyroid-like areas in the two groups The extent of the ischæmic lesions in hypertensive and normotensive patients is summarised in table II

LESIONS IN ACUTE PYELONEPHRITIS

The nature of the arterial lesions observed in chronic pyelonephritis suggested that they resulted from inflammation This prompted the study of 50 post-mortem kidneys showing acute pyelonephritis with a view to finding arterial lesions in the acute stage

Vascular Lesions

In cases where intense acute inflammation involved an artery a heavy polymorph infiltration of the arterial wall was accompanied by destruction of muscle and elastic tissue (fig 11) This type of lesion was [illegible] associated with secondary thrombosis in the [illegible] thrombus being adherent to the areas of most [illegible]



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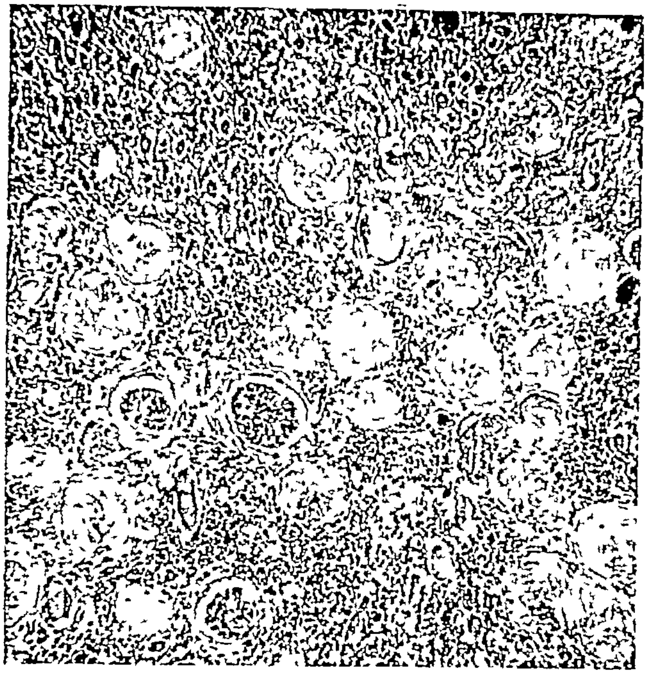


Fig 9—Ischæmic area showing periglomerular fibrosis and hyalinisation of glomeruli, inflammatory infiltration, and colloid casts in small atrophic tubules. (Staemmler and Dopheide stage II) (Hæmatoxylin and eosin × 73)

Minor degrees of inflammatory destruction involving only the outer part of the arterial wall were common

Inflammatory endarteritis was common but usually produced far less narrowing of the lumen than that seen in chronic cases The amount of endarteritis was proportional to the intensity of the inflammation involving the vessel wall and surrounding tissue The endarteritis consisted of loosely arranged elongated cells apparently arising from the endothelium (fig 12) Occasional polymorphs were present among the proliferated endothelial-cells This intimal proliferation differed from that described in chronic pyelonephritis in its loose arrangement and in the paucity of collagen and elastic fibres

Parenchymal Lesions

No areas of incomplete infarction were seen in acute pyelonephritis except where the acute inflammation was superimposed on a chronic lesion Occasionally complete infarction was observed, however, resulting from infla matory arterial thrombosis Where inflammatory d truction of tubules caused glomerular crowding, superficial resemblance to incomplete infarction noted The two conditions could usually be distinguish however, by the presence of small atrophic tubu between the glomeruli in the ischæmic areas, whereas those resulting purely from inflammation the glomer were separated by granulation tissue

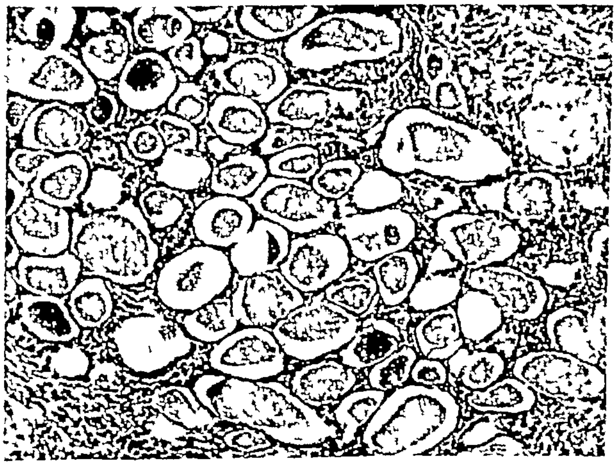


Fig 10—Thyroid like collections of tubules showing flattened epithelium and containing colloid casts. A few hyaline glomerular scars are present. (Hæmatoxylin and eosin × 100)

Comment on Observations

This study of the lesions in acute and chronic pyel nephritis indicates that, when the arteries are involv in the inflammation, destructive lesions of the w appear with accompanying complete occlusion or extren narrowing by inflammatory endarteritis There may may not be associated thrombosis The *greater deg* of intimal proliferation observed in chronic cases sugges that this process continues as long as active inflammatio is present in the kidney

Vascular lesions identical with those described abov have not been observed in kidneys other than thos showing pyelonephritis In healed polyarteritis nodos the arterial lesions may be very similar and the damage vessels supply cortical areas of incomplete infarction In this condition, however, superimposed inflammatio is not usually seen in the ischæmic renal parenchyma and because of other well known distinctive feature confusion with pyelonephritis should not arise.

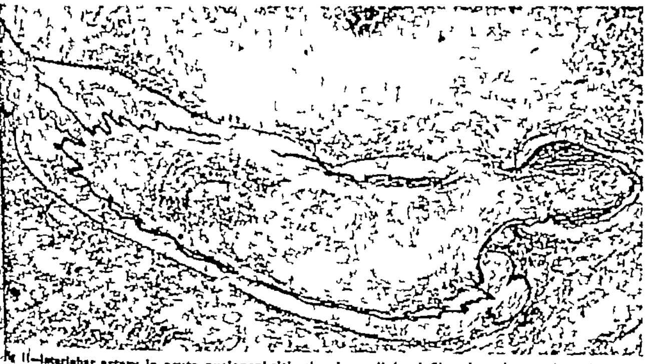
It has been mentioned that parenchymal lesion resembling areas of incomplete infarction were found in the cortex supplied by the narrowed or occluded vessel in chronic pyelonephritis These areas were often wedge shaped, and their superficial surfaces showed bro shallow depressions, said to be characteristic of nephritic scars (Weiss and Parker 1939, Raaschou Allen 1951) The ischæmic areas are likely to be susceptible to further involvement by inflamm They often show distinct infiltration by lymph and plasma cells but retain small atrophic tubules distinguish them from areas of glomerular cro resulting from inflammatory destruction of tubules. sharp border often seen between an area of c pyelonephritic scarring and normal renal parenc could be explained on the basis of inflammation l to an ischæmic area A similar explanation may to the sharply defined wedges of inflammatory infilt mentioned by Allen (1951) in his *description of sub* pyelonephritis

TABLE II—ISCHÆMIC LESIONS IN HYPERTENSIVES AND NORMOTENSIVES

Extent of ischæmic lesions*	Hypertensive group (30 cases)	Normotensive gro (15 cases)
Severe	24 cases (80 %) including 6 cases of malignant hypertension	1 case (6
Moderate	2 cases (6 6 %)	2 cases (1
Slight	4 cases (13 3 %)	12 cases (

* This term includes areas of incomplete infarction and Sta and Dopheide s (1930) stages I and II of pyelonephritis.

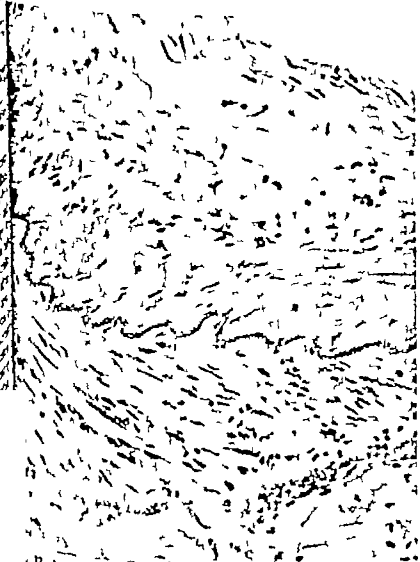
Observations in this series support the view of Ma et al. (1940) that *thyroid* like areas result from distension of tubules with polymorphs Staemmler Dopheide (1930) postulated that stage II pyeloneph progressed to thyroid like areas (their stage III) ever, it is difficult to appreciate how the large diste tubules of thyroid-like areas could develop from small atrophic tubules of stage II of Staemmler Dopheide The small *colloid* filled tubules scatt through areas of stage II pyelonephritic scars (fig 9) probably their counterpart. I suggest that thyroid areas result from acute inflammation of renal parench



ig 11—Interlobar artery in acute pyelonephritis showing cellular infiltration destruction of medial muscle and elastic, and secondary thrombosis (Weigert's elastic and van Gieson × 45.)

hich may have been either normal or rendered ischæmic y the vascular lesions but before definite contraction nd tubular shrinkage have taken place No relation f thyroid-like areas to hypertension was found in his study

Observations in the 45 cases of chronic pyelonephritis owed that lesions differed in the hypertensive and on hypertensive groups Both the degree of renal ntraction due to pyelonephritic scarring and the number f ischæmic areas were greater in the hypertensive cases. hese results are however, not entirely conclusive, ecause the small normotensive group did not include ny patients with severely contracted pyelonephritic idneys. Such cases have been reported by Longcope nd Winkenwerder (1933) and Weiss and Parker (1939) Only one such case was found in our records



12—Interlobar artery in acute pyelonephritis showing intimal perplasia, polymorph infiltration of wall and interruption of ternal elastic lamina. (Hæmatoxylin and eosin × 190.)

A woman aged 32 came to necropsy with a five year history of recurrent attacks of pyelonephritis During the last two years of life the blood urea level had been about 200 mg per 100 ml rising terminally to 650 mg per 100 ml. The blood pressure was 130/70 mm Hg during most of the period of observation but shortly before death it rose to 160/100 mm Hg At necropsy both kidneys (45 g and 60 g) showed gross contraction fibrosis, irregular scarring and adherent capsules Microscopic sections of kidney from three different areas showed a few collections of grossly hypertrophied nephrons but the remainder of the renal parenchyma had been completely replaced by thyroid like areas devoid of glomeruli Vascular changes were similar to those in hypertensive cases but no areas of incomplete infarction or stages I and II of pyelonephritis (Staemmler and Dopheide 1930) were present

It should be emphasised that, in the above described case and in the few normotensive cases in this series with pyelonephritic renal contraction arterial lesions were found which were similar to those described in hypertensive cases The important difference lay in the parenchymal lesions Incomplete infarction and stages I and II (Staemmler and Dopheide 1930) of pyelonephritic lesions were common in hypertensive cases and either minimal or absent in normotensive ones. Thyroid like areas formed the main parenchymal lesion in contracted kidneys from normotensive cases and since these were present in both groups their relation to hypertension was not apparent

Where damaged vessels were present in normotensive cases they supplied thyroid like areas. Therefore I suggest that ischæmic areas (incomplete infarcts and stages I and II of pyelonephritic lesions) are causally related to the development of hypertension in pyelonephritis Where, however parenchyma deprived of its blood supply has been converted to a thyroid like area by superimposed acute inflammation no such relationship is maintained In other words, hypertension in chronic pyelonephritis is associated with areas of ischæmic renal parenchyma which have escaped complete destruction or conversion to thyroid like areas by acute inflammation

Discussion

Pathology of Chronic and Healed Pyelonephritis

I have not been able to find in published reports any mention of the production of areas of incomplete infarction in chronic pyelonephritis Kimmelstiel and Wilson (1936) commenting on the close resemblance between pyelonephritic scars and incomplete infarction suggested that in the latter the finding of an old arterial thrombosis in the artery of supply would differentiate the two lesions Weiss and Parker (1939) apply the same criterion for differentiating old infarcts from pyelonephritic scars. The macroscopic appearances of the kidneys in chronic pyelonephritis and in multiple old infarction may be identical (Weiss and Parker 1939 Raaschou 1948 Allen 1951) The present observations elucidate this macroscopic and microscopic resemblance by showing that arterial obstruction with or without thrombosis may result from pyelonephritis

This study shows that broad shallow scars in pyelonephritis may result from arterial occlusion I do not suggest that this is the only cause of pyelonephritic

TABLE III—AGE-DISTRIBUTION

Type	No of cases	Age (yr)	
		Range	Average
Malignant hypertension (clinically and pathologically)	7	22–50	34
Hypertension with diastolic B P over 110 mm Hg but without clinical and pathological features of malignant hypertension	14	40–83	57
Hypertension with diastolic B P between 100–110 mm Hg	10	31–77	59
Normotensive	14	43–87	69

scarring, which can clearly also result from inflammatory destruction of renal parenchyma Previous descriptions of the vascular changes in chronic pyelonephritis (Staemmler and Dopheide 1930, Linder 1937, Fahr 1938, Weiss and Parker 1939) have not, however, drawn attention to the importance of the obstructive arterial lesions in the pathogenesis of the contracted pyelonephritic kidney

Chronic Pyelonephritis and Hypertension

In this series of 45 cases of chronic pyelonephritis all those which showed severe renal contraction due to pyelonephritic scarring were hypertensive Heptinstall and Gorrill (1955) found, in experimental pyelonephritis in rabbits, hypertension only in association with severe renal scarring

The age distribution in the present series is shown in table III Although this is a small series, these figures, taken in conjunction with the pathological findings, suggest that, particularly in the younger age group, pyelonephritic contracted kidneys are often associated with hypertension Only one young normotensive with grossly contracted pyelonephritic kidneys could be found in our records

In an extensive review of the incidence of hypertension in pyelonephritis Smith (1948) cites figures varying from 9% to 47% One of the highest figures cited was that of Braasch et al (1940) in "atrophic pyelonephritis" in 1684 cases subjected to renal surgery they found hypertension in 18 6% of cases of "pyelonephritis other than atrophic" and 46 5% in "atrophic pyelonephritis" They state that "renal infection was not an etiologic factor in hypertension unless it caused widespread atrophic changes in the renal parenchyma"

The incidence of hypertension found by Weiss and Parker (1939) in chronic and healed pyelonephritis was 75%

Longcope (1937) found hypertension in 10 of 15 patients with terminal chronic pyelonephritis

The present figure of 66 6% for the incidence of hypertension in 45 cases of chronic pyelonephritis is in keeping with the latter two series The incidence of hypertension in a pathological survey may differ from that in a clinical series for two reasons a clinical attack of pyelonephritis may lead to insignificant renal scarring, and cases of hypertension associated with chronic pyelonephritis may have no clinically detectable features of the latter condition

Weiss and Parker (1939) first suggested a causal relationship between the vascular changes in pyelonephritis and hypertension They were concerned mainly with arteriolar changes which they called hyperplastic arteriolosclerosis They concluded that hypertension in pyelonephritis depended on obliterative lesions of the renal arterioles

The evidence presented here shows that a situation exists in chronic pyelonephritis which is analogous to that in renal vascular obstruction due to various causes known to be associated with hypertension

Since Goldblatt et al. (1934) showed that hypertension followed experimental clamping of the renal artery, many reports have appeared of hypertension associated with renal ischæmia due to different processes lesions of the main renal artery (Leadbetter and Burkland 1938, Howard et al. 1940, Perry 1945, Goodman 1952, Pickering 1955), embolism of renal vessels (Prinzmetal et al 1942, Fishberg 1942), an ligature of an aberrant renal artery (Pickering and Heptinsta 1953)

Leiter (1938) reported a case of malignant hypertensio associated with occlusion of multiple small renal arterie producing a histological picture of alternating areas of norm and ischæmic renal parenchyma.

A similar microscopic appearance in the kidney is seen i polyarteritis nodosa (Russell 1929), which only causes hyper tension when it involves the renal arteries (Fishberg 1954)

Among reports demonstrating the causal relationshi between renal arterial obstruction and hypertension is tha of Howard et al. (1954), removal of the ischæmic kidney i six cases relieving severe hypertension

In many of the above mentioned reports where histo logical details on the kidney are available the pictur of incomplete infarction is described Selye's (1950 endocrine kidney, which is deprived of most of its blood supply by ligation of the aorta between the two rena arteries, a manœuvre producing malignant hypertension in rats, shows a somewhat similar picture of crowded glomeruli and atrophic proximal convoluted tubules The occurrence of ischæmic areas in chronic pyeloneph ritis and their association with arterial obstruction sugges that they are causally related to the development of hypertension in this condition

Summary

Obstructive vascular lesions and associated ischæmic renal parenchymal lesions in hypertensive chronic pyelonephritis are described

The renal parenchymal lesions in 45 consecutive necropsy cases of chronic pyelonephritis are compared, and differences between the hypertensive and normotensive cases are described

Because the nature of the vascular lesions in cases of chronic pyelonephritis suggested that they were the result of inflammation, 50 necropsy kidneys showing acute pyelonephritis were studied Destructive lesions of the arterial walls and obstructive lesions of the lumen were found in these cases

These findings are discussed in relation to their importance both in the pathogenesis of contracted pyelonephritic kidneys and in the development of hypertension in pyelonephritis Ischæmic parenchymal lesions such as are described here in chronic pyelonephritis are also found in other conditions in which renal vascular obstruction is known to be associated with hypertension In view of this the ischæmic lesions are thought to be causally related to the development of hypertension in chronic pyelonephritis

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PERSISTENT FUNGUS INFECTIONS OF SKIN, HAIR, AND NAILS

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Although many species of dermatophytes live on the human body without necessarily causing symptoms or signs the same species may without obvious reason give rise to signs of clinical disease which is normally localised to an area characteristic for the species and may spread to another person Such infections may show very considerable variation in their natural course and in their response to treatment

In spite of much effort to improve therapy the results are little, if at all, better than they were under treatment by the more old fashioned methods The two categories of infections which particularly illustrate this are (1) tinea capitis due to the anthropophilic group of fungi and (2) those due to *Trichophyton rubrum*

Immediately after the 1939–45 war there was a world wide epidemic of tinea capitis due to *Microsporum audouini* which focused attention on treatment by methods other than epilation by X rays Claims were made for the effectiveness of many fungicides applied topically; but review of the results showed that no one method produced consistently more than 70% cure in any large series of cases

Most observers noticed many inflammatory reactions and appreciated that these constituted a non specific reaction on the part of the host by which the infection was normally terminated The results also suggested that, where the infection was cured without evident clinical inflammation, this might be due to some equivalent non-specific reaction rather than to destruction of the fungus by a topically applied fungicide

The epidemic gradually came to an end about 1950 Hence, although we were able to report results of treatment in 261 cases observed in 1947–49 (Barlow et al. 1950) we saw only sporadic cases in 1949–51 since when we have not encountered a single case in the school population of Huddersfield Other observers have had the same experience and we find it difficult to believe that it is due to the effectiveness of our treatment but feel that it is more likely due to the natural waning of the epidemic which has curtailed the spread of infection Indeed it is of particular interest that although at the height of the epidemic we were able to obtain a cure rate as high as 74% the same local treatment was much less effective when used in a smaller series of sporadic cases

We concluded that there must be considerable differences between epidemic and sporadic cases the host parasite relationship in epidemic cases normally being more unstable and the natural course of the disease therefore much shorter This seems to explain the discrepancy between the findings of Kligman (1955) and those of many other observers on the chronicity of *M audouini* infections His beautifully controlled observations were made on an artificially induced epidemic and, though this has shown in perfect detail the morphology of invasion of the skin and hair follicle by the fungus one must be chary of assuming that natural infections involute in the way in which artificial infections apparently do Indeed in his original report (Kligman 1952) he noted that among those children who acquired infection naturally there were a significant number in whom spontaneous resolution did not occur even after two years This is in contrast to the experimental series who had undoubtedly a lesser degree of susceptibility ”

A greater understanding of the host parasite relationship is we feel essential to the whole subject of fungus infections, for it is being increasingly appreciated that there may be very wide variations Advances on these lines require a detailed knowledge of the formation properties and structure of keratin as well as of the biochemistry of the fungi concerned

Variations in Parasite

The dermatophytes form a large heterogeneous group, probably derived from soil fungi, which are very adaptable to parasitism on man and animals. From a clinical point of view two distinct groups seem to emerge in one the main attack is on the hair follicle with the production of tinea capitis, tinea corporis, and tinea circinata; in the other the attack is essentially on the horny layer, possibly the nails and only very rarely the hair follicle as in tinea pedis

Normally a species keeps to its particular pattern of attack but it is being increasingly appreciated that there may be a very wide variation within a species, a factor which gave rise to the naming of 184 different species by 1934 (Gregory 1935) It is now recognised, however, that most of these are really variants of a much smaller number, and it is therefore not surprising that any species which may show such wide variation in artificial culture should show equally wide variation in parasitism

Species which are normally parasitic on an animal have the ability to invade a hair follicle, and when they attack man they invade the follicles whether on smooth or hairy skin Thus the zoophilic organisms *M. canis*, *T discoides* and *T mentagrophytes* in all of which the host parasite relationship is unstable, invade the follicles and cause inflammation in man

T mentagrophytes seems occasionally able to adapt itself to man more completely, but in so doing it apparently loses the ability to invade the hair follicles and becomes the cause of tinea pedis, possibly with infection of the nails. Such infections, however, are not so persistent as those due to the anthropophilic *T rubrum* being more amenable to treatment and possibly resolving spontaneously more often. Sulzberger and Baer (1955) suggest that *T mentagrophytes* may require interspersed passages through an animal host to maintain its virulence If this is so one would expect it to reacquire its tendency to invade the follicle and therefore to produce follicular infection again in the human host. If these two forms are to be regarded as variants of *T mentagrophytes* it would seem that the form giving rise to tinea pedis is an attenuated variant of the animal strain This is supported by the work of Silva and Benham (1954), who showed that fungus isolated from tinea pedis and inoculated into a guineapig produced only transitory epidermal infection and did not invade the follicles as did strains isolated from a natural infection in a mouse

No variants of this type seem to have been attributed to *T discoides* or to *M canis* and the former may at least retain its virulence for its normal host after long

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periods in artificial culture We have produced with a homogenate of a culture used for metabolic work in the laboratory for eight months characteristic lesions in a calf

Medium for Parasitic Growth

The host offers to the parasite, as a medium for growth, a thin sheet of soft keratin dipping down in the hair follicles to ensheathe a shaft of hard keratin and a keratogenous zone beneath Growth of the fungus is for all practical purposes restricted to these structures, although the development of occasional granulomatous lesions in *T rubrum* infections suggests that this fungus may invade the dermis

Most observers state that the fungi can grow only in fully keratinised tissues, and that the keratogenous zone is never invaded Unfortunately there are no accurate observations on this, and it is difficult to be dogmatic about the exact point at which hard keratinisation in the hair follicle is complete In any case, the biochemical circumstances of the lower two thirds of the follicle influence very much the growth of all those dermatophytes which invade it (1) growth of the fungus is most persistent in this region, the epidermal infection dying out, (2) the method of invasion and sporulation is normally characteristic for a species, and (3) both species of microsporon and *T schoenleini* produce fluorescent materials when growing there This last characteristic has never been shown except in the lower two-thirds of the living follicle, and there is no record of its production in vitro For years we have grown representative strains of the dermatophytes on keratin in vitro under different conditions in attempts to simulate the parasitic pattern of growth but always unsuccessfully We feel that this pattern is probably related to keratinisation

There is increasing evidence (Sulzberger and Baer 1955) that the dermatophytes can live saprophytically on the skin without producing any visible signs of their presence Once, however, pathogenic invasion has taken place, the clinical picture is ascribable to two main factors (1) damage to the fabric of the skin, hair, and nails which the fungus causes by its growth through it, including scaling, lustreless, and broken hair and nails, and (2) the host's reaction, including both epidermal and follicular inflammation as well as varying eczematous reactions and hyperkeratosis of the affected areas

Inflammation essentially due to follicular infection and potentially curative is the rule with zoophilic fungi but may develop with any fungus which invades the follicles, and has been described in infection with most of the anthropophilic fungi

Eczematous reactions, on the other hand, are not curative and develop essentially in infection with those organisms which give rise to tinea pedis

Hyperkeratosis of the palm or sole, where corresponding nails are affected, is characteristic of *T rubrum* infections and not only is not curative but also predisposes to chronicity, since it provides a medium in which the fungus may vegetate and through which topically applied fungicides cannot penetrate

There is no exact knowledge of the factors which stimulate the host's reaction, but it has been suggested by Kligman (1955) that *M audouini* may produce "an exotoxin which irritates the skin" This seems possible, but whether a specific toxin is elaborated by each dermatophyte or some common by product of metabolism is produced to which the host may become sensitive remains open to question

Aspects of Treatment

Until recently the usual treatment, apart from epilation by X rays in tinea capitis, has been the topical application of fungicides The uncertainty of the results, however, has caused the production of a wide variety of agents in a wide variety of bases Though these prep tions have shown high fungicidal activity in vitro have rarely produced the expected clinical results, it has been appreciated that many other factors involved

The two categories of infections which are resistant to treatment are infections of the scalp du the anthropophilic fungi and the group of infections to *T rubrum* In both of these the host's reactio minimal, and, until a method is devised of altering host-parasite balance or of obtaining excretion thro the skin of fungistatics or of substances which so mo the keratin that it becomes impermeable to fungal gro treatment will have to be by topical application

For some years we have made careful and deta observations on both types of cases, and we feel that problem is essentially the same in both groups—that getting the fungicide or the fungistatic to the site wh the fungus is growing In scalp infections we have u salicylic acid, salicylanilide, phenyl mercuric nitra brilliant-green, and cuprammonium hydroxide in a w variety of surface active bases, including 'Carbowa 'Intraderm,' and different oil-in-water and water-in- emulsions Carefully evulsed hairs from infected s were examined microscopically, and the degree penetration was assessed by appropriate counte staining, but in no instance could we demonstrate to o satisfaction the presence of the reagent in the shaft of t hair below the upper limit of the internal root sheat

Much work has been done on the physical structure hard keratin in the woollen industry, and it has be shown that the keratin molecules are so arranged th in the dry state they will only allow molecules small than propanol to pass between them This structure ca be opened up by saturation in water or by breaking inte molecular bridges by alkalis or other degrading agent and larger molecules should then be able to penetrat Similar modifications can be brought about in the so keratin of the epidermis

When keratin is degraded, however, fungi can attac it more easily in vitro (*Barlow and Chattaway* 1955) therefore clinical applications of such degrading agent should contain a fungicide freely soluble in water an preferably of small molecular size to increase the likelihood of its diffusing through the keratin

Conversely, however, increasing the cross linkag between keratin molecules diminishes attack by fungi and we have felt it logical to attempt a combination of both methods

Lithium bromide, which disrupts hydrogen bonds between keratin molecules, has already been used as keratolytic (Rothman 1953), with considerable succes when used continuously for several months It takes long time, however, and we felt that adequate penetration might be obtained by prolonged immersion in aqueous solutions of keratolytic agents

Of the degrading agents which rupture hydrogen bonds we preferred urea to lithium bromide since it was considered less likely to cause epidermal reactions, and we used it in combination with sodium metabisulphite to break disulphide bridges as well As a cross linking agent between keratin molecules we chose ninhydrin (Cockburn *et al* 1953) because it is easily detectable by the purple staining it produces, which indicates the depth of penetration achieved

Keratin so modified has been shown to be less susceptible to attack by fungi in vitro (Barlow and Chattaway 1955) Five patients with resistant *T rubrum* infections of the nails and corresponding soles were selected, and treatment was confined to one foot only As a preliminary measure the nails were pared down, the greater part of the upper nail-plate was removed with a dental drill, and the foot was soaked continuously for six hours in the following solution

Sodium metabisulphite	5 g
Phenyl mercuric nitrate	0 133 g
Urea	50 g

Water to 100 ml.
With the addition of 0·1 % calsolene oil to 100 ml. of solution.

In one patient a slight reaction developed around the ies, and treatment had to be curtailed, but the other atients had no untoward symptoms After six hours the les and nails were kept continuously moist for two urs by spraying with a solution consisting of 2% nhydrin and 0 133% phenyl mercuric nitrate in 50% hanol The whole treatment was repeated in forty ght hours, and the feet were not washed for a week

Scrapings taken five days after treatment showed that he outermost layers of the sole and nail and the fungus n them were freely stained by ninhydrin, but the deeper ayers showed no staining and mycelium was present e-examination at the end of six weeks showed con derable improvement clinically, the nail plates appear g normal and the soles less thickened Scrapings, owever still contained mycelium although very much ss than at the beginning of treatment and compared ith the opposite (control) foot

It is obvious that penetration was inadequate possibly ecause urea is not so effective a keratolytic as lithium romide. It must, however, be borne in mind that many f the fungicides in current use owe their activity to actions with the protein of the fungus and they robably react also with the proteins of the tissues. This most certainly true of fungicides containing mercury, nd this factor may make their penetration into the eeper layers of the epidermis more difficult

The possibility of giving antimycotic drugs which are xcreted as mercapturic acids in combination with keratin attractive and seems to be a suitable line for inquiry pencer and Williams 1950) but unfortunately most of e substances that are excreted in keratin are toxic and suitable for clinical use Patients who have had epacrine for long periods, however show altered oresecence of hair and nails under Wood s light ermann and Miller (1952) found this alteration in the ir root which fact suggests that mepacrine is excreted combination with keratin Although the alteration viously does not affect the parasitism of the dermato-hytes, we assessed the ability of fungi to attack such ir in vitro and found that *M canis* can invade such ir more freely than control hair

Conclusions

Our experiences with degrading and cross linking ents underline the need for closer study of the barrier esented by keratin to the penetration of fungicidal ents into the deeper layers of the epidermis and into e lower two thirds of the hair follicles

Further progress in the treatment of persistent dermato yte infections calls also for an increased knowledge of metabolism of these organisms and of the many tors which determine their parasitism including the ects of temperature humidity and their susceptibility fungicides when growing parasitically

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FRUCTOSE IN THE TREATMENT OF SEVERE DIABETIC KETOSIS

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KETOSIS in diabetics is corrected by giving insulin, and in some cases glucose to restore carbohydrate utilisation There are good reasons for avoiding the use of glucose in the early stages of treatment of severe ketosis with a high blood sugar level (Nabarro et al 1952a) Briefly these are that if the blood sugar level is above 600 mg per 100 ml raising it further will not accelerate carbohydrate utilisation, although glycosuria and osmotic diuresis will be increased and rehydration delayed Administration of glucose at this stage also makes it difficult to use changes of blood sugar level as a guide to insulin requirements as treatment proceeds

Reports from American centres advocate the use of fructose instead of glucose in the early stage of treatment of severe diabetic ketosis (Darragh et al 1953, Dolger et al 1953 Miller et al 1953 Rosecan and Daughaday 1954) Duncan (1953) writes: "It is probable that the intravenous administration of fructose with the initial saline solution may well become part of our therapy for diabetic coma. Fructose has been used because it is removed from the blood as quickly in untreated diabetics as in healthy people (Weichselbaum and Daughaday 1951, Miller et al 1952)

In diabetic ketosis it has been claimed that fructose given in the early stages does not aggravate the hyper glycæmia or osmotic diuresis (Dolger et al 1953), that it increases carbohydrate utilisation (Miller et al 1953), and that the plasma ketones disappear faster in patients treated with fructose and insulin than in those treated with insulin alone (Rosecan and Daughaday 1954)

It has also been suggested that giving a hypotonic sodium solution brought to isotonicity by the addition of 2 5% fructose allows of the administration of a proportion of free water' to initiate cellular rehydration (Darragh et al 1953)

With few exceptions the studies on which these claims have been based were made on cases of experimentally induced or mild ketosis The investigations described here were made on patients admitted to hospital with diabetic ketosis Preliminary observations were made of the effect of giving oral fructose without insulin to patients with moderate ketosis. Five patients with severe ketosis and high initial blood sugar levels were given insulin and intravenous fluid to which fructose 50 g per litre was added for the first 4–6 hours The results were compared with those obtained in controls treated with insulin and a carbohydrate-free intravenous solution In addition two patients with severe diabetic ketosis but only slight hyperglycæmia were treated with insulin and intravenous fructose-containing solutions.

Methods

In the cases of severe ketosis the initial dose of insulin was usually 100–200 units (1/3 intravenously and the remainder by deep intramuscular injection) Further doses were given at intervals of 2 or 3 hours, the amount depending on the blood-sugar level. The intravenous

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R. Samuel McLaughlin travelling fellow working in the Medical Unit University College Hospital, from July to December 1953.

fluid given in the initial stages was a saline-lactate solution (sodium 130 m eq per litre, chloride 100 m eq per litre, and lactate 30 m eq per litre) The first litre was given rapidly, and the patients received 2 or 3 litres in 4–6 hours In the fructose treated cases fructose 50 g per litre was added When the blood-sugar level had fallen appreciably, provided the excretion of urine was satisfactory, rehydration was continued with a glucose electrolyte solution containing glucose 50 g per litre, sodium 20 m eq per litre, potassium 30 m eq per litre, magnesium 5 m eq per litre phosphate 10 m eq per litre, and chloride 45 m eq per litre (Nabarro et al 1952a)

On admission to hospital the patients were placed on a balance régime Intake was by intravenous infusion, and all urine was collected, if necessary by an indwelling catheter When possible, urine was obtained for a short period before treatment started Specimens of blood, were taken frequently for estimation of sugar, ketones, urea, and electrolytes The balance data have been corrected to a standard body-surface of 1 73 sq metres to facilitate comparison of the fructose treated and the control cases

The chemical methods were those usually used in this laboratory (Nabarro et al 1952b) Fructose was estimated by the method of Higashi and Peters (1950) and plasma and urinary ketones by that of Greenberg and Lester (1944)

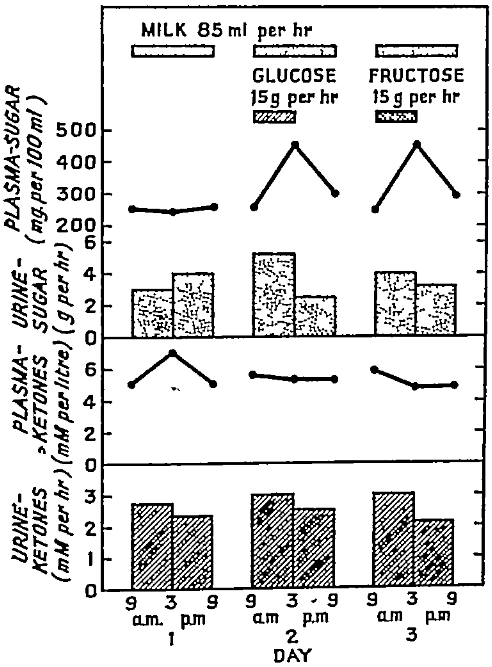


Fig 1—Effects of glucose and of fructose on glucose and ketones of plasma and urine in previously untreated diabetic.

Preliminary Studies

Three patients admitted with ketosis due to previously untreated diabetes were given fructose by mouth before they received any insulin The first patient took 120 g in 6 hours, and his plasma-ketone level, measured by the rough quantitative method of Dumm and Shipley (1946), fell from 12 mM per litre to 8 mM per litre His blood-sugar level rose from 320 mg per 100 ml to 425 mg per 100 ml, and his glycosuria increased from 2 g to nearly 10 g an hour The plasma-fructose level and urinary excretion of fructose were negligible From changes in the glucose level in the "glucose space" and in the urinary output of nitrogen and glucose it was estimated that less than half the fructose given was utilised or stored the remainder being converted to glucose and for the most part excreted in the urine

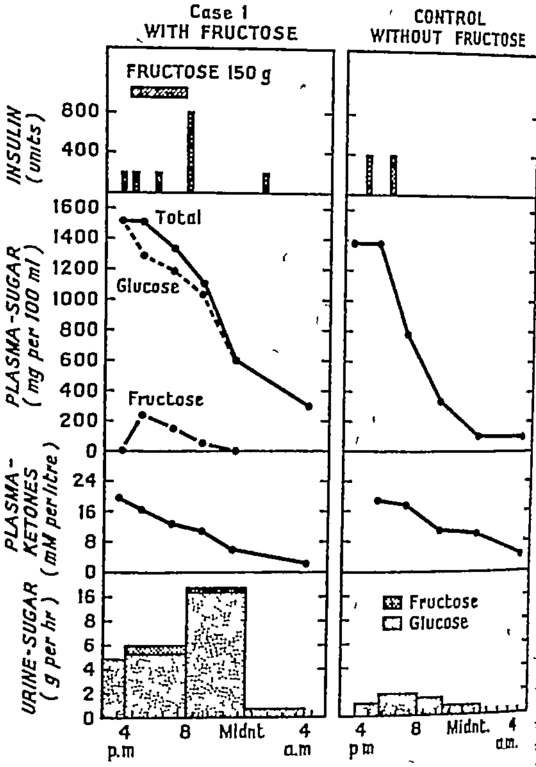


Fig 2—Results of treatment of case I with fructose and of control pat without fructose.

The calculation was made as follows

Fructose 120 g was given in 6 hours The plasma gluco level rose from 384 mg per 100 ml. to 500 mg per 100 ml The amount of glucose needed to do this if the glucose spac is assumed to be 30% of the body weight, would be 22 g Since 57 g of glucose was excreted in the urine in the hours, 79 g of glucose became available during the period 16 g of this could be accounted for by gluconeogenes (3 5 × urine nitrogen) From data obtained in a 4-hour control period before the fructose was given it appear unlikely that the remaining 63 g of glucose came from an carbohydrate stores in the body In the control period th glucose needed to raise the concentration in the body fluid (3 g) and the glucose in the urine (8 g) almost exact balanced the glucose derived from gluconeogenesis (10·6 g) The unexplained 63 g of glucose that became available the fructose period was presumably from fructose, in additi 1 g of fructose was excreted in the urine and 3 g remaine in the body-fluids This leaves only 53 g of the 120 originally administered for utilisation or storage

TABLE I—CASES OF SEVERE DIABETIC KETOSIS TREATED WI INTRAVENOUS FRUCTOSE

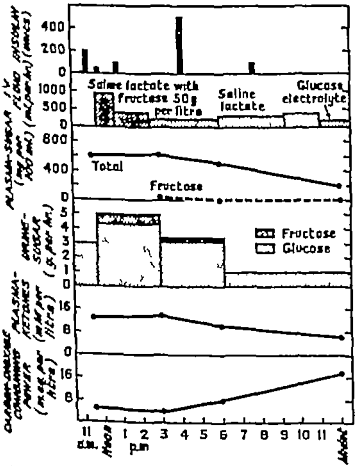
Case no	Sex	Age (yr)	*	Blood-sugar (mg per 100 ml)	Plasma bicarbonate (m eq per litre)	Plasma ketones (mM per litre)	Plasma potassium (m eq per litre)	Fructose		Insulin in first 12 hr (units)
								Amount (g per kg of body weight)	Duration (hr)	
1	M	71	1	1290	3 6	19 8	6 3	2 4	4 25	160
			2	196	16 1	2 1	3 3			
2	F	69	1	725	5 0	16 0	5 7	3 7	4 25	950
			2	215	22 5	4 0	3 1			
3	F	36	1	600	5 0	16 0	6 7	2 3	6 5	900
			2	156	18 1	7 0	3 9			
4	M	28	1	530	1 3	28 5	4 9	1 9	5 5	500
			2	179	16 7	6 7	3 8			
5	F	26	1	388	4 0	13 3	5 4	1 4	4 25	[illegible]
			2	56	15 0	1 4	3 5			

*1 initial value 2, 12 hour value

The two other patients had mild ketosis (plasma tones 3-7 mM per litre) They were given hourly milk eds on 3 consecutive days on the second day glucose 5 g. hourly was added to the milk for the first 6 hours, d on the third day fructose 15 g hourly The results these two patients were similar (those obtained in one them are shown in fig. 1) The effect on plasma and nary ketones was slight, the most significant finding s that the rise of plasma sugar level was as marked fter fructose as after glucose This sugar was all glucose e plasma fructose being negligible

Severe Diabetic Ketosis

Details of the five patients with severe ketosis treated th fructose are given in table I Cases 1 and 2 were ry ill on admission to hospital each received 3 litres f the fructose-saline-lactate solution in just over 4 hours. he clinical improvement of all five patients was as apid as that of patients treated without fructose Plasma tone levels were estimated in only two of the controls e rates of fall in case 1 and in a comparable patient eated without fructose are shown in fig 2 The rise of asma-bicarbonate level, which reflects to some extent e rate of fall of plasma ketone level is shown in table I he improvement after 12 hours treatment is similar to at obtained in the controls in which the mean initial vel was 5 0 m.eq per litre rising to 17·4 m eq per litre 12 hours (the corresponding figures in the fructose-treated cases were 3 0 and 17 7) Ketonuria was abolished egative Rothera test) by 6 hours in case 5 by 12 hours cases 1 and 2 and by 18 hours in the two other uctose-treated patients whereas in the controls it was olished in 12–18 hours



3—Slow fall of blood-sugar level in case 3 treated with fructose.

The mean initial blood-sugar levels and insulin require ents in the first 12 hours of the fructose treated and ntrol patients are given in table II In addition to eding more insulin the patients receiving fructose eded to maintain their initial high blood sugar level hile the fructose was being given This was not entirely e to fructose in the blood the highest level found was mg. per 100 ml after the infusion of 100 g in 90 nutes. The changes in blood sugar level in case 1 d a comparable control patient are shown in fig 2 The details of insulin dosage in case 1 indicate the fficulty of assessing insulin requirement while fructose is being given Concern was also felt for case 3 because of the slow rate at which the blood sugar level fell (fig 3)

TABLE II—BLOOD SUGAR INSULIN DOSE AND CARBOHYDRATE BALANCE FOR FIRST TWELVE HOURS

—	No fructose (mean of 5 cases)	Fructose (mean of 5 cases)
Initial blood-sugar (mg per 100 ml.)	1048	707
Carbohydrate given (g)		
Glucose	50	50
Fructose		145
Insulin given (units)	500	850
Glycosuria (g)	21	45

The figures for carbohydrate intake and glycosuria have been corrected to a standard body-surface of 1 73 sq metres

Details of carbohydrate intake and excretion in the first 12 hours of treatment are also shown in table II The fructose treated patients retained a mean of 156 g of carbohydrate out of 201 g given, whereas the controls retained 36 g out of 50 g It is impossible to show whether the additional carbohydrate retained by the fructose treated patients was utilised or stored The reduction of plasma potassium level (table I) was no greater than in the controls, and the excretion of potassium was slightly greater in the fructose-treated patients If the extra carbohydrate retained were being stored as glycogen in the liver an accentuation of the fall in the levels of plasma and urinary potassium would be expected.

The glycosuria in the controls was on an average 24 g in the first 12 hours and in the fructose treated patients 45 g made up of 41 g of glucose and 4 g of fructose In view of the greatly increased carbohydrate intake of the fructose treated patients the increase of glycosuria is small this is presumably related to their higher insulin dosage

The effect of the increased glycosuria on the urine volume and electrolyte excretion is shown in table III Comparison of the two groups in this respect is not entirely satisfactory because the fructose-treated patients received more fluid and extracellular electrolyte than did the controls. They lost a greater proportion of the infused fluid in the urine, but it seems unlikely that this was due to an osmotic diuretic effect

Discussion

If the early administration of fructose is to become part of the routine treatment of severe diabetic ketosis, it must be shown to improve the results and not to make the management of these cases more difficult. The chief benefit that has been claimed to follow the use of fructose is more rapid clearing of the ketosis Rosecan and Daughaday (1954) compared the effect of insulin alone insulin and fructose and insulin and glucose on the rate of fall of the plasma ketone level in experimentally induced episodes of mild ketosis The fall was more rapid when insulin was given with glucose or fructose than when insulin and saline solution were given In their study a fixed, rather small, dose of insulin was

TABLE III—WATER AND ELECTROLYTE BALANCE FOR FIRST TWELVE HOURS

—	No fructose (mean of 5 cases)	Fructose (mean of 5 cases)
Water (litres)		
Given	4·6	5 0
Retained	3 4	3 4
Sodium (m eq)		
Given	420	510
Retained	400	440
Chloride (m.eq)		
Given	360	410
Retained	310	3[illegible]0
Potassium (m.eq)		
Given	35	28
Excreted	26	51

Corrected to a standard body-surface of 1 73 sq metres. No allowance has been made for either fæcal or extrarenal losses.

given on each occasion, the blood sugar levels remained higher in the carbohydrate-treated episodes, and this may explain the increased rate at which the ketosis cleared In the present five fructose-treated patients the ketosis cleared rapidly, possibly a little faster than in the controls and in other patients treated without fructose It is difficult to be certain whether this is due to the fructose or to the larger insulin doses

Rosecan and Daughaday (1954) found that the glycosuria was greatly increased by giving fructose but do not give figures for urine volume or electrolyte content Miller et al (1953), who made a similar study on one patient, reported that the urinary loss of water and electrolyte was not increased by giving fructose Our present cases show that it is possible to avoid any great increase of glycosuria or osmotic diuresis when fructose is given to patients with severe diabetic ketosis, but that considerably more insulin is then required

We had difficulty in some cases in judging the dose of insulin to be given Published reports of the use of fructose in diabetic ketosis include only one where there was a very high blood sugar level (Darragh et al. 1953, case 6b), and no reference has been made to this aspect of the problem If the insulin dose is being assessed on alterations of the blood sugar level, the administration of fructose gives rise to a further complication The methods usually used for determining blood-sugar levels estimate both fructose and glucose One of our patients with severe ketosis but only slight hyperglycæmia had an initial blood-sugar level of 260 mg per 100 ml She was treated with insulin and intravenous fructose and after four hours had a mild hypoglycæmic attack The total blood-sugar level at the time was 130 mg per 100 ml Subsequently, when the blood-fructose level of the specimen was estimated, it was found that the blood-glucose was only 50 mg per 100 ml, and fructose, which is not utilised by the brain, accounted for the remainder

Solutions for the rehydration of patients with severe diabetic ketosis should be hypotonic as regards sodium (Butler 1950) If, however, the solutions given are too dilute, restoration of the extracellular fluids is likely to be delayed The saline lactate solution was suggested as a suitable fluid for rapid restoration of the extracellular fluid volume and at the same time allowing cellular rehydration to begin at an early stage (Nabarro et al 1952a) Darragh et al (1953) have studied the effect of giving a solution containing sodium 77 m eq per litre and fructose 2 5% They showed that cellular rehydration started in the first 5 hours of treatment In most of their cases there was no delay in the restoration of the extracellular fluid volume, but they had to give the infusions rather rapidly—4 litres in 3 6 hours in one case—and their patients had considerable glycosuria after treatment started.

Summary

The effect of giving fructose to patients with diabetic ketosis was studied

Oral fructose given without insulin to patients with mild ketosis lowered the plasma-ketone level At the same time the blood-glucose level rose and glycosuria increased

Five patients with severe diabetic ketosis were given insulin and intravenous fructose in the early stages of treatment Their progress was compared with that of five patients treated without fructose

Improvement in clinical condition was satisfactory in all the cases, the ketosis possibly cleared a little quicker in the fructose-treated patients

The administration of fructose tended to delay the fall of blood-sugar level and increased the insulin requirement

Significant increase of glycosuria or of osmotic diuresis could be avoided if sufficient insulin was given, but it was more difficult to assess the amount needed.

There appears at present to be no reason for includ the early administration of fructose in the rout treatment of severe diabetic ketosis

These studies were initiated in the medical unit of Univers College Hospital Medical School, London, and contin (by J D N N) in the Institute of Clinical Research of t Middlesex Hospital, London We thank Dr F V Fl and the staff of the biochemical laboratories of Univers College Hospital for some of the blood analyses, and Brit Drug Houses for the fructose Many of the biochemi estimations were made by Miss Audrey Moxham. This wo was supported by a grant from the Lund Research Fund of t British Diabetic Association J D N N thanks the clini research committee of the Middlesex Hospital for faciliti and for a personal grant for research.

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PERNICIOUS ANÆMIA IN THE SOUTH AFRICAN BANTU

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Megaloblastic *anæmias associated* with pregna or malnutrition are not uncommon in the Bantu races Southern Africa (Foy et al 1951, Adams and Wilm 1953) Pernicious anæmia on the other hand is exce ingly rare Trowell (1951) in Uganda first described case, in a Ganda man Adams and Wilmot (1953) in paper on megaloblastic anæmias of pregnancy, said th they had seen one African woman in whom the clini features were indistinguishable from those of pernicio anæmia In neither of these patients were there a neurological symptoms Foy et al (1952) mentioned t cases of probable pernicious anæmia in East Afric women who had vague nervous symptoms We rec here a case in which prominent neurological featu were made worse by folic acid and were relieved b vitamin B_{12}

Case-record

An African woman, aged 50, was admitted to this hospi in June, 1955, complaining of *weakness* of the legs. S stated that her symptoms *had* started about a month befo *admission.* She was quite definite that she was of pu Bantu stock.

On examination the mucosæ were pale and the *tongue* smoot and red There was no evidence of cardiovascular dise except a soft systolic murmur The legs were weak and th muscles slightly wasted The knee jerks were present, b the *ankle* jerks absent, no plantar response could be elicited There was analgesia to the elbows and knees. *Vibration* an position senses were lost, the former up *to the* iliac crest Romberg's sign was positive The *gait* was grossly ataxi

Investigations—Blood count hæmoglobin 4 7 g per 10 ml., packed-cell volume 14%, mean corpuscular hæmo globin concentration 33%, white blood-cells 4800 per c.mm (polymorphs 48%, lymphocytes 52%) A stained film showe anisocytosis, poikilocytosis, macrocytosis, and polychro masia. Radiographs of chest and spine normal. Cerebro al fluid, no abnormalities found Fæces, no occult blood ermann reaction negative in blood and cerebrospinal . Gastric analysis histamine fast achlorhydria was d on two occasions. Bone-marrow megaloblastic

eatment and progress —In view of the rarity in Africans ernicious anæmia with subacute combined degeneration of spinal cord it was decided to treat the patient as a case of itional megaloblastic anæmia with polyneuritis associated achlorhydria and to watch progress. Treatment con d in administration of folic acid 20 mg twice daily and amin B complex ('Plebex') 2 ml intramuscularly daily hæmatological response was good and a maximum eticulocytosis of 30% developed by the eleventh day At time the hæmoglobin level had risen to 8·5 g per 100 ml, l by the twenty first day the level had reached 10·8 g 100 ml Nevertheless the neurological condition deterio al. The weakness of the legs increased and walking became ost impossible; and pain which formerly had been absent ame prominent The calf muscles became tender, but the exes remained unaltered

The diagnosis was reconsidered and vitamin B_{12} in doses 100 µg. daily was substituted for the folic acid The matological response was maintained, and after a further days the hæmoglobin level had risen to 12·9 g per 100 ml o weeks after vitamin B_{12} had been started the neuro gical symptoms had improved considerably The pain had inished and the patient could walk with less difficulty e stocking-glove analgesia had been replaced by hyper thesia, but there was no indication of change in the lesions the posterior columns of the spinal cord or in the tendon es. The tongue was almost completely coated

A biopsy specimen of the gastric mucosa obtained at troscopy (Dr P Meyrick) was reported on as follows E. G Roach): 'Sections show atrophy of the mucosa and moderate plasma-cell infiltration. The glands are atrophic d show a marked metaplasia to a small intestinal type of nd. The histological picture is consistent with that ociated with Addison's megaloblastic anæmia'

Follow-up —The patient was then discharged from hospital d arrangements were made for treatment to be continued A month after discharge the patient reported back for essment. She stated that she felt better and was walking th very little difficulty The hæmoglobin level had reached 8 g per 100 ml. There was a striking improvement in neurological condition. All hyperæsthesia and analgesia d disappeared and vibration was felt as far down as the t ankle and the lower third of the left leg Romberg's n was absent and the gait no longer ataxic The reflexes re a little brisker and the plantar response was obtainable d was flexor

Discussion

The diagnosis of pernicious anæmia was established by ding megaloblastic anæmia histamine fast achlor dria, and a characteristic gastric mucosa. This diag sis was further supported by the response to treatment the neurological disorder It is well known that folic d aggravates subacute combined degeneration of the nal cord associated with pernicious anæmia, and that s is relieved by vitamin B_{12} in large doses This ture was well illustrated here The patient apparently d early subacute combined degeneration of the spinal d without severe involvement of the pyramidal tracts.

Summary

A case of pernicious anæmia and subacute combined generation of the spinal cord in a pure bred South rican Bantu woman is described

The patient's neurological disorder deteriorated during atment with folic acid but greatly improved when tead vitamin B_{12} was administered

We thank the director of the Natal Provincial Medical rvices and Dr J Parker medical superintendent of Eden e Hospital, for permission to publish this case; and F W Laurie Dr K. O Watson, Dr M. Addison and E G Roach of the Natal Pathology Service for their help

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ECZEMA VACCINATUM
WITH VACCINIAL LESIONS STRICTLY CONFINED TO THE ECZEMATOUS PATCHES

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ECZEMA vaccinatum has long been known under the names of pustulosis acuta varioliformis, pustulosis acuta vacciniformis, postvaccinal eruption, eczema varicellatum Kaposi's varicelliform eruption, and generalised vaccinia Roncheso (1943) suggested the name dermatitis vaccinica but it seems better to use "eczema vaccinatum" for a vaccinial eruption associated with eczema and "eczema herpeticum" for herpetic lesions associated with eczema the clinical picture of these two associations may be identical There is still another association of eczema with a vesicular rash from which no virus has been isolated (van Rooyen and Rhodes 1948a)

In the previously published cases of eczema vaccinatum the vaccinial pustules appeared not only in the eczematous patches but also surrounding them; in some cases there was true generalised vaccinia In the case described here the vaccinial lesions were strictly localised The diagnosis was established by isolation and identification of the vaccinia virus from the pustules and by the clinical history

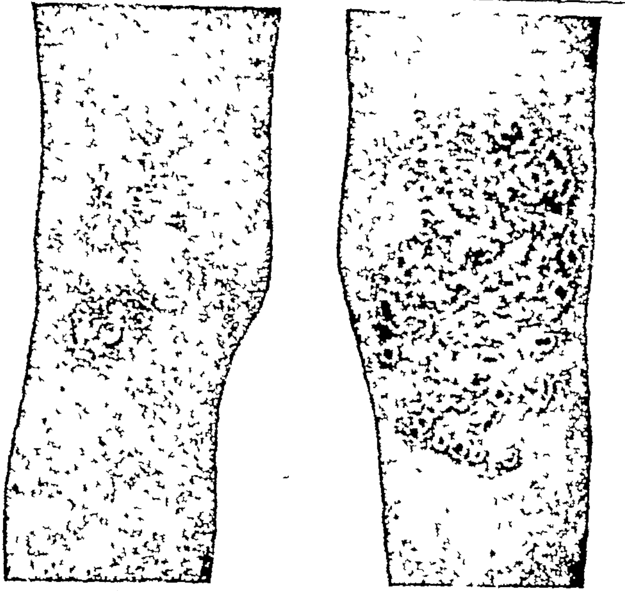
Case-report

A white boy aged 2 years, was admitted on Sept 23 1954 with the clinical diagnosis of eczema vaccinatum. Five days earlier his mother had noticed that eczematous patches which he had had at the back of his knees for one and a half years had become swollen hot and painful and he had a temperature of 104°F and was restless and anorexic. Two days later purulent vesicles 5–6 mm. in diameter, appeared in both popliteal regions. Since then his temperature had been 98·6–104·0°F In the next two days the vesicles increased in number but not in size and were exclusively restricted to the patches of eczema, which were pruriginous and painful. On the first day of the present illness the child had had a sore throat and a very painful enlarged right crural lymph gland Two days later a left crural lymph-gland became enlarged.

Previous History —For three months from birth the patient had eczema of the scalp; when this disappeared, his neck became eczematous. The eczema disappeared later from the neck and for the last one and a half years only two eczematous patches had been present, one in each popliteal region The patient had never been vaccinated but his mother had been vaccinated against smallpox twenty days before his admission, and he had been scraping one of her vaccination pustules

On examination he was in good physical condition with temperature 102·2 F pulse-rate 160 respirations 52 a minute and blood pressure 100/60 mm Hg A hard painful lymph gland about the size of a pigeon's egg was palpable in each crural region The pharynx, tonsils, and tongue were hyperæmic. In each popliteal region was a well demarcated infiltrated eczematous patch with numerous confluent umbilicated greenish yellow pustules (see figure) An erythematous halo surrounded both patches.

Investigations —Biopsy of a lesion showed degenerated cells numerous lymphocytes, and few epithelial-cells Bacteriological examination of the contents of the pustules showed streptococci and micrococci The search for a virus is described below



Popliteal patches of eczema vaccinatum

Treatment and Course—Gauze impregnated with yellow soft paraffin and nitrofurazone was used as a local dressing and vitamins A, D, and B complex were given For four days after admission the boy's temperature was 98 6–99 7°F , later it became normal Two days after admission the pustules in the right popliteal region burst, except some which were crusted and later shed their crusts, exposing an easily bleeding surface The pustules in the left popliteal region dried up and developed crusts The crural lymph glands became smaller and less painful Six days after admission a purulent exudate appeared on both eczematous patches and quickly responded to treatment Recovery began on the thirteenth day after the onset of the rash Eight days later the boy was discharged with only the eczematous patches visible

Search for Virus

One sample was collected from each eczematous patch Each sample consisted of the roof of several pustules because no fluid was then present in the pustules Both samples were ground separately and suspended in 0 5 ml of broth Penicillin and streptomycin were added to these inocula and allowed to act for 30 minutes at room-temperature The chorio-allantois of 10 day hen s eggs was inoculated by the standard Burnet technique Eggs opened after 3 days' incubation at 37°C showed heavy bacterial contamination The original inocula were then treated with chloramphenicol (Hall et al 1953), after which inoculation yielded typical vaccinia virus lesions on the chorio-allantois Four serial passages were then made, every one of which yielded the same appearance, which fact has considerable diagnostic value (Downie and Dumbell 1947, MacCallum 1954)

One of the chorio allantoic membranes from the fourth passage was suspended in broth at 10^{-1} concentration for use as inoculum in inoculation of rabbit skin and cornea After the skin had been shaved, the inoculum was spread on the skin of one side and on the cornea on the same side Scarifications were then made at both places with a sharp scalpel The cornea exhibited a slight opacity on the second day after inoculation, and severe keratoconjunctivitis on the third day Scrapings of the cornea were inoculated on the chick-embryo chorio-allantois after treatment with penicillin and streptomycin Typical vaccinia-virus lesions developed Inoculation of rabbit skin yielded confluent papular lesions which strictly followed the scarification tracts, these had purposely been made well apart On the fourth day vesicles were apparent, and on the sixth day recovery began A biopsy specimen of a vesicle on the fourth day was fixed in Helly's fluid and showed the typical histology of vaccinial lesions in rabbit skin (Ames 19
Only intracytoplasmic inclusion bodies were observe

An anti vaccinia hyperimmune rabbit showed no le
on the skin and cornea after inoculation by scarificat
with the virus isolated from the patient's right leg
activity of this challenge was tested by simultane
inoculation on the chick embryo chorio allantois,
typical vaccinial lesions were again observed The rab
had been hyperimmunised by several inoculations of
vaccinial calf-lymph used at the Butantan Institute
Sao Paulo for preparing anti-smallpox vaccine. T
strain has received numerous calf skin passages for a lo
time, with yearly passages on rabbit skin, and it h
been used in millions of human vaccinations The fi
inoculation for hyperimmunisation was made on t
rabbit skin and cornea Typical reactions were seen
both places Three subcutaneous inoculations were lat
made at weekly or slightly longer intervals, 0 5 ml.
10^{-1} broth dilution of the lymph being injected in eac
subcutaneous inoculation

A neutralisation test (Scott et al 1949) was made o
the chorio allantois A pool of sera from two rabbit
hyperimmunised with the Butantan Institute vacci
lymph as has just been described, was used as well a
the virus isolated from the patient From 10^{-1} to 10
dilutions of chorio-allantoic membranes inoculated wi
the latter virus were mixed with an equal volume
hyperimmune serum diluted 1 to 16 in saline soluti
The mixture was then incubated in the ice-box for o
and a half hours Inoculation on the chorio allantois
10 day eggs was made with 0 05 ml of this mixture pe
egg There was neutralisation in the mixtures co
taining 10^{-3} and 10^{-4} dilutions of the virus, which show
a significant decrease in the number of lesions compar
with the controls The latter were inoculated with
same virus dilutions, mixed with an equal volume
1 to 16 dilution of normal rabbit serum

Discussion

The data given above leave no doubt about
diagnosis Eczema typical in localisation, morpho
recurrency, and therapeutic response existed before
accidental infection with vaccinia virus One of
(L D P) had treated the child for several months bef
Contact with the recently vaccinated mother was
suggestive The appearance of pustules and th
localisation also indicated eczema vaccinatum T
identity of the vesiculopustular rash was establis
through isolation and identification of vaccinia vi
from several of these lesions Various tests of path
genicity, pathology, serology, and immunology sat
factorily identified the agent isolated from the pat
as vaccinia virus The vaccinia virus strain used
standard in the serologic and immunologic tests wa
one used in vaccinating the patient's mother,
apparently was the source of contagion Accide
contagion of vaccinia in a family has been reported
Gray (1948)

The appearance of lesions on the chorio allanto
which has considerable diagnostic value (Downie a
Dumbell 1947, MacCallum 1954), the behaviour on rabb
skin and cornea, and the results of neutralisation a
immunologic tests completely eliminate herpes simpl
virus as the causal agent of the vesiculopustular ra
The behaviour of the isolated agent on the chick-embr
chorio allantois and rabbit skin and cornea also eliminat
variola virus The neutralisation and immunologic te
are of little or no value in differentiation with vari
virus owing to known group cross reactions (McCart
and Downie 1948)

As regards the method of contagion, since the chi
used to scrape his mother's vaccine pustule, dire
inoculation on to his pruriginous eczematous lesions seem
at first obvious, but analysis of the clinical data does n

support this hypothesis Lesions appeared simultaneously in both eczematous patches and immediately spread If the portal of entry was the eczematous lesions, one would expect only a few lesions to appear on one leg only, on the same side as the hand which the child used to scrape his mother's vaccine pustule Scratching on the popliteal region of the opposite side seems to be difficult, and would provoke lesions localised in a suggestive manner: the primary lesions, or lesions of inoculation, would appear first along the scratching paths in the same way that lesions appear on the scarification lines from inoculated rabbit skin. Finally, the secondary lesions would have appeared after an interval as in generalised vaccinia The rapid spread of the lesions and the identical developmental stage of the pustules seen on examination of the patient indicate that all the lesions originated from the same rash

The strict limitation of vaccinial lesions to the eczematous patches as well as the data presented above can in all probability, be interpreted as a result of hæmatogenous spread of the vaccinial infection The agent probably entered the body through the respiratory tract and not through the eczematous lesions In all probability it provoked external (skin) lesions in the locus minoris resistentiae (the eczematous patches) during a viræmic phase of infection Abundant clinical and experimental data clearly indicate a relationship between the appearance of vaccinia lesions on the skin of numerous hosts and the pre-existence of allergic lesions or various generalised conditions of the skin (van Rooyen and Rhodes 1948b) We have not been able to find any published report of such strict localisation as was found in the present case but a similar example was reported in eczema herpeticum (Leider 1951)

Ohtawara (1922) was the first to call attention to the hæmatogenous origin of generalised vaccinia skin lesions, and numerous experimental and clinical reports have confirmed his findings Special attention should be called to Fenner's (1948) thorough study of the pathogenesis of skin lesions in ectromelia, another member of the variola vaccinia group The demonstration by Downie et al (1950) of a viræmic phase in human variola is also worthy of mention

Summary

In an eczematous child who used to scrape his mother's vaccine pustule vaccinial lesions appeared which were strictly confined to the eczematous patches on both popliteal regions

The vaccinia virus was isolated and identified

The probability of a hæmatogenous origin of the vaccinial lesions is discussed

We are indebted to Dr Juan J Angulo of the Instituto Adolfo Lutz for advice and criticism about the laboratory work and for help in preparing this paper

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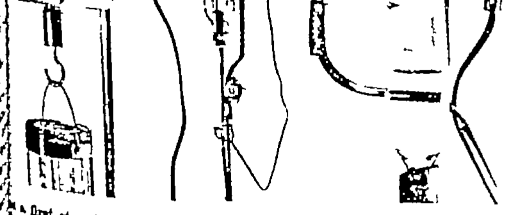
New Inventions

THE BARTS ENFIELD DRIP INDICATOR

In these days of automation, when our understaffed hospitals are still so wary of mechanical and electrical aids to nursing that methods discarded by industry fifty years ago are still normal practice we welcomed the Matburn electrical drip recorder, described by Evans,[1] as a first step towards the introduction of labour-saving kers into the wards.



The recorder enables a night-nurse in a darkened ward to observe the rate of a transfusion at a glance and from anywhere in the ward without interrupting her other duties. However, it falls short of providing complete control by failing, until too late, to give any indication of when a bottle is running out.

A companion device has therefore been designed to provide this information Essentially it is a specially sensitive spring loaded switch, which illuminates a steady warning light when the weight of the bottle and its contents falls to a predetermined level Experimental weighings of numerous standard pint transfusion bottles containing the usual intravenous solutions showed that the variation in weight was small enough, when a small quantity remained in the bottle, to allow the device to be reasonably accurately preset. It can however, be adjusted for alterations in weight.

At a later stage it was decided, with permission from Dr Frankis Evans, to incorporate the two devices in one comprehensive drip-control unit to be known as the Barts Enfield drip indicator The warning device can be used alone if required and it is set in action simply by hanging it from a support and suspending the bottle from the hook underneath.

The unit is powdered by one high tension battery and uses neon bulbs, so that the current drain is very small and the battery should be almost ever lasting The device can be adapted for use with a buzzer, but the visual warning is usually adequate and far less disturbing

The unit was produced by Mr J T Burns, of Messrs. Matburn Ltd to whom I am indebted for his invaluable assistance in translating a crude prototype into the virtually foolproof finished product I must also thank Mr Hardwicke Knight for his excellent photographs.

Since preparing this note for publication I have learnt that a drip alarm on similar principles though mechanically somewhat different has already been described.[2]

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[1] Evans F T *Lancet* 1955 i 29

[2] Bottoms R. W A. *Ibid* 1954, i 1167

Reviews of Books

Studies in Tuberculosis

R G FERGUSON, M B E, B A, M D, LL D, former director of medical services and general superintendent, Saskatchewan Anti Tuberculosis League Toronto University of Toronto Press London Oxford University Press 1955 Pp 124 28*s*

IN the prairie districts of Canada the decline in tuberculosis mortality came sooner than elsewhere, and this book epitomises the considerable experience and careful epidemiological observations of the staff of the Saskatchewan Anti-Tuberculosis League

The author's views, clearly the result of logical thinking on much data, are carefully expressed, with words used so sparingly that sometimes the reader must concentrate very hard One of the hazards of the epidemiological approach is the tendency to concentrate mainly on the infective and hereditary aspects, and here this is not altogether avoided Comparatively little account is taken of stress factors which lead to breakdown in those whose first infection has healed The rôle of infection, however, is submitted to such a searching examination that modern thought on the subject is advanced a stage or two further, particularly in relation to the part played by the "summation" of all infections, and the effect of infection on the already infected also receives much needed scrutiny The importance of inherited resistance is accorded due recognition and the natural course of a tuberculosis epidemic is rationally analysed Finally, the foundations of a preventive programme are presented and Dr Ferguson attempts to answer some of the more difficult questions about the length of follow-up required for patients and their contacts

This valuable book illustrates a type of thinking along epidemiological and preventive lines to which many people in this country are now beginning to turn

Allergy and Anaphylaxis

KEIZO NAKAMURA, M.D, professor of bacteriology, Nippon Medical School, Tokyo Tokyo Nippon Medical School 1955 Pp 114

FROM the results of orthodox animal experiments, mainly with diphtheria toxin, Professor Nakamura concludes that antitoxic immunity and toxin anaphylaxis are due to the same antigen-antibody reaction, the former involving blood-borne antibody, the latter antibody in tissue Anaphylaxis and allergy have the same basic mechanism.

Evidence is brought forward that acetycholine is released in anaphylactic reactions, the effects of which are potentiated by organic phosphorus drugs with anticholinesterase activity Synthetic anti-histamine drugs with appreciable anti acetylcholine activity reduce the symptoms of anaphylaxis, while those with weak anti acetylcholine action are less effective, even if their anti histamine activity is potent The author therefore stresses the rôle of acetylcholine, and hence the autonomic nervous system, in the mechanism of allergy and anaphylaxis

This readable book is also of value because it summarises Japanese work on this subject over the past twenty years, and much of this has not previously been recorded in a European language

Psychocutaneous Medicine

MAXIMILIAN E OBERMAYER, M D, clinical professor and chairman, department of dermatology, School of Medicine, University of Southern California Springfield, Illinois Charles C Thomas Oxford Blackwell Scientific Publications 1955 Pp 487 70*s*

THE most comprehensive work yet published on the significance of emotional factors in dermatology, this book tackles a subject which still causes a good deal of argument, and more heat will no doubt be raised by the choice of "psychocutaneous" for the title "Psychodermal" would have been more satisfying to the purist, but "dermatological neuroses," as used by O'Donovan, has probably not been bettered

After a brief historical review, there is a very useful chapter by Dr Richard D Evans on dynamic considerations of the psyche This should help to make the rest of the book more intelligible to those readers who are not familiar with technical language and modern concepts of psycholog mechanisms The chapter on theories of mechanisms methods of study should be read by anyone contempla research in dermatological neuroses The author then d with the true dermatoneuroses and dermatoses in w emotional factors are in varying degrees significant Fin he discusses the diagnostic approach and the rôles of dermatologist and the psychiatrist

There are over 100 clinical photographs, presuma intended to help readers unfamiliar with skin diseases, even so, it seems excessive to show, for example, 8 pictu of neurodermatitis, including 3 of lichenification of the a cubital regions It is stretching the psychogenic theme its limit to include molluscum contagiosum, and surpris to see 5 pages (and 3 clinical photographs) on emotio factors in lupus erythematosus

Readable, stylishly written, and well produced, t book is a reasoned and (as far as can be) unbiased critical review all opinions receive their fair share attention

Moderne Therapie der Anämien

WALTER TISCHENDORF, professor at the Univers of Göttingen Stuttgart S Hirzel 1955 Pp 1 DM. 14

TREATMENT is classified by Professor Tischendo according to the pathogenesis of the anæmia—hæm lytic, deficiency, or myelopathic The theoretical bac ground for certain types of treatment is well discussed there is, for instance, a complicated diagram showin the relationship between folic acid, vitamin B_{11}, and othe substances active in megaloblastic anæmias On the who the treatment recommended follows standard Angl American practice, but it is surprising to see that fol acid is advised for pernicious anæmia. The doses recom mended for vitamin B_{12} are much smaller than are no given in this country

L'hérédité en médecine

Caractères, maladies, correlations A. TOURAINE, memb de l'Académie de Médecine Paris Masson. 19 Pp 875 Fr 7200

Dr Touraine is a French physician with a spec interest in genetics He has written this book for h French colleagues to interest them in medical genet and also to serve them as a work of reference

There are two sections the first deals with general pr ciples and the second covers systematically the genetics each bodily system The book, therefore, is a French equiva of the recent English publication *Clinical Genetics*, edit by Professor Sorsby, but it is the work of a single autho The clinical section is remarkably comprehensive but do not attempt to be critical. The approach is through t inspection of individual family trees rather than throu analysis of the frequency with which different degrees relatives are affected The genetics of physiological as w as pathological characters are discussed The section dermatology is especially good For English readers t book will also be useful as a source of reference to Continen publications

Dr Touraine also includes a sensible chapter on t social application of human genetics He sees positi eugenics in terms of social measures to raise the bir rate, by improving the standard of living, of classes society where favourable hereditary characters a especially common Quantity and quality of populatio he considers, are objectives to be pursued together

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Administrative Medicine (New York Josiah Mac jun., Foundation 1955 Pp 172 $3) —The transactio of the third conference on this subject, sponsored by th Foundation, which was held at Princeton in October, 19 have now been published under the editorship of Dr George have now been published under the editorship of Dr George Stevenson The scope of the discussion is indicated by th attributes and talents which members of the conferen thought necessary for the ideal administrator A list of supplied by Dr A. J J Rourke included the humanitaria talents of a physician, the system and order of an accountan the equilibrium of a philosopher, the flexibility and agilit of a fox, the blending abilities of a baker, and a crystal ba to look into the future

THE LANCET

LONDON SATURDAY, DEC 17, 1955

Poliomyelitis in 1955

THE story of poliomyelitis vaccines has shown a markable series of changes in the year now ending, d 1955 will probably be regarded in the future as a dmark in the history of the disease A dramatic ount of the year's happenings in the United States s given last week by Dr ALEXANDER D LANGMUIR, the Communicable Disease Center U S Public alth Service, Atlanta, to a meeting of the section of demiology of the Royal Society of Medicine The vourable results announced on April 12 of the big ld trial of the Salk vaccine encouraged the U S blic Health Service to authorise the production and ease of vaccine by six commercial firms In an traordinarily short time a huge vaccination pro mme was under way, but within two or three weeks re followed what Dr LANGMUIR described as an idemiological disaster A number of cases of alytic poliomyelitis were associated with inoculation vaccine prepared by the Cutter Laboratories and circumstances left no doubt that this was a mmon source epidemic for which the vaccine was rtly responsible Altogether 204 cases including deaths, were accepted by the poliomyelitis sur llance unit as associated with Cutter vaccine Of e cases, 79 were in vaccinated persons 105 were mily contacts of vaccinated persons and 20 were community contacts It seems remarkable that so community contacts were involved, after the few infections had appeared the numbers of cases ong vaccinated persons and family contacts behaved h as expected, but Dr LANGMUIR disclosed that numbers among community contacts were very ch smaller than was at one time feared Laboratory stigation later confirmed what was very soon r from epidemiological evidence—namely, that live omyelitis virus (type I) was present in certain ches of the Cutter vaccine There were two her incidents a few cases were reported from nsylvania and Maryland among children inoculated ccine prepared in the Wyeth laboratories and ong family and community contacts of these . Particularly in Maryland the circumstances strong suspicion that this was not fortuitous, er extensive laboratory tests no poliomyelitis were isolated from the vaccine A detailed of the methods of preparing and testing the of the vaccine was at once undertaken by the ublic Health Service and, as a result, stricter standards for the manufacture and testing of e were imposed. Since then constant epidemio surveillance has revealed no further evidence gnificant association between poliomyelitis and t of vaccine

second task of the poliomyelitis surveillance mme described by Dr LANGMUIR was to te the efficacy of vaccination carried out in This was not a strictly controlled study, and there were stops and starts in the vaccination programme during the Cutter incident, it is therefore extremely hard to assess accurately the value of the vaccine The surveillance unit made an elaborate investigation of the incidence of poliomyelitis in vaccinated children and compared the figures with those in unvaccinated children So far not much stress has been laid on the number of doses of vaccine given and many of the children received only a single dose Among preliminary reports from a number of States, figures for New York give paralysis rates of 4·0 per 100,000 for vaccinated children and 20·0 per 100 000 for unvaccinated children Similar figures for Minnesota, where the difference between the two groups is largest are 2·7 for the vaccinated and 30·1 for unvaccinated children. In Georgia, where the difference is smallest, the paralysis-rate for vaccinated children is 3·4 per 100,000, compared with 7·6 per 100 000 unvaccinated There were usually smaller differences when the rates of non paralytic poliomyelitis were compared in the two groups, but here confusion is likely from the inclusion of cases of aseptic meningitis, as Dr J H S GEAR emphasised in the discussion at the Royal Society of Medicine So far as can be judged at present, these results show the same order of efficacy as was found in the 1954 vaccine trial But Dr LANGMUIR was well aware of the possibilities of error in arriving at these figures, and he looked for independent confirmation of the findings A study of the age-distribution of paralytic poliomyelitis showed that in children aged 7 and 8 the attack rate was lower than in younger and older children. Since poliomyelitis vaccine was most widely used in children of 7 and 8 this finding which is in contrast to the experience of other years, is taken as independent evidence that the vaccine protects against paralytic poliomyelitis This method does not of course give a quantitative estimate of the effectiveness of the vaccine

The World Health Organisation recently held a study group in Stockholm on poliomyelitis vaccine[1] Experts from eight different countries reported their experience with the use of inactivated vaccines, and apart from the incidents in the U S.A. no paralytic poliomyelitis developed in circumstances which suggested that the vaccine was to blame The Salk vaccine, it was concluded, offered good protection to children aged 0–10—the only age-group for which sufficient evidence had been gathered to justify a conclusion In Canada, preliminary results showed an attack rate of paralytic poliomyelitis of 1·07 per 100,000 for vaccinated children and 5·39 per 100 000 among unvaccinated children. In Denmark, there were no cases of paralytic poliomyelitis among over 400 000 vaccinated children, but only 7 cases of paralytic poliomyelitis were reported in the whole of Denmark this summer In this country, vaccine was made but was never issued for use, because of the doubts about its safety, the vaccine now in commercial preparation is being made with a less virulent type-I virus than that hitherto used in the U.S.A.

Hopefulness about poliomyelitis vaccines is slowly returning, and the outlook, as the year ends, is brighter than seemed even remotely possible a few months ago Many people feared that the Salk vaccine had been used for mass inoculation before its safety was assured, and that the understandable enthusiasm of those who were convinced of the vaccine's value had carried them close to catastrophe Nothing that has happened since has convinced us that these fears were unfounded, but there is now no doubt that the 1955 programme of poliomyelitis vaccination in the United States was a bold step towards the conquest of the disease The more venturesome policy has been at least partly justified by information quickly gained about the vaccine's powers With the new safety tests, the Stockholm meeting felt that the chances of producing paralytic disease by vaccination were extremely small But at least one important question cannot yet be answered is vaccine which has satisfied the new safety standards undiminished in its protective power[2] And there are several other unknowns, particularly concerning the duration of protection Moreover, there are many possibilities of improvement towards a better vaccine, and the W.H O group are anxious to encourage further research with live attenuated virus

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[1] See *Lancet*, Dec. 3 1955 p. 1199.

Dermatomyositis

Rarest of the collagen diseases, dermatomyositis can present a difficult exercise in diagnosis A study of what has been written about this disease is apt to leave the reader with a confusing picture of widely varying clinical patterns, and Domzalski and Morgan, in a recent review,[1] have done well to emphasise the central theme of non-suppurative polymyositis with dermatitis and œdema, the triad on which a secure diagnosis must finally be based. A bewildering variety of skin eruptions have been described—erythematous, erysipeloid, macular, papular, telangiectatic, purpuric, vesicular, bullous, ulcerative, exfoliative, or psoriatic The skin may be shiny or dull, thickened or atrophic, scaly or wrinkled like parchment Hypertrichosis, alopecia, hyperhidrosis; photosensitivity, and Raynaud's phenomenon may occur Follicular keratosis, pitting of the finger-nails, dermographia, urticaria, erythema nodosum, and erythema multiforme have all been described—as, on the other hand, has a complete absence of changes in the skin From this array the most characteristic manifestation is probably cutaneous telangiectasia, associated with periorbital œdema and discoloration—Keil's "heliotrope eyelids"[2] The signs of myositis are more constant and the diagnosis cannot be seriously countenanced in their absence Pain, weakness, and stiffness are the cardinal symptoms, and the neck, shoulder, and pelvic girdle their commonest sites Weak muscles may on occasion feel normal, though more often they are tender, swollen, and doughy at first, and hard and fibrotic later Contractures are common, and if the muscles of respiration and deglutition are involved the patient may die of asphyxia or of aspiration pneumonia

The only really helpful laboratory aid is the measurement of creatine in the urine Normal adult men excrete little or no creatine, but women, children, and elderly men excrete up to 400 mg in twenty-four hours In dermatomyositis creatine is excreted in large amounts—up to 1100 mg in twenty-four hours[3] Unfortunately creatinuria is encountered at
times in other conditions,[4] [5] including systemic lupu
erythematosus, which may be difficult to distingui
from dermatomyositis, demonstration of the lupu
erythematosus-cell phenomenon is helpful. A biop
of muscle is sometimes of value, but the histologic
changes of dermatomyositis are not specific and ma
not be found in a small sample of tissue Dermato
myositis shares with scleroderma a distribution o
lesions in skin, muscles, and heart Calcinosis i
common in both, but involvement of the pulmonar
and alimentary systems is a feature only of sclero
derma, and the early skin changes of dermatomyosit
tend later to recede Differentiation of dermato
myositis from rheumatoid arthritis is usually easy
stiffness and contractures are common to both, bu
actual arthritis is rare in dermatomyositis. Excep
tionally, changes indistinguishable from rheumato
arthritis have been described[6] [7] Of 9 patients reporte
on by Jager and Grossman,[8] 3 had arthralgi
without swelling of joints, and O'Leary an
Waisman[3] found arthritis in 2 of 40 cases an
arthralgia in a further 4 In Keil's view[9] pain whi
seems to be situated near a joint is likely to be due t
lesions in adjacent muscles, tendons, or subcutaneo
tissue, and deformity (found most often in the elbo
knees, hips, and fingers) to fibrosis of these tissu
Pathologists have seemed incurious about joints, an
Domzalski and Morgan could find no description
the histology of joints in dermatomyositis

The ætiology of dermatomyositis is at least
obscure as that of any of the collagen diseases, but
recent years attention has been focused on t
rather striking incidence of carcinoma in patients wi
the disease This association was recognised twe
years ago by Bezecny[10] Forman[11] and Pr
Thomas[12] described further cases in this co
and others have been recorded in the United
Domzalski and Morgan collected accounts
patients with dermatomyositis and carcinoma
site of the neoplasm did not seem to be materia

Treatment remains empirical and unsatisfa
As we said in a recent leading article[13] the re
to cortisone is neither consistent nor dramati
the disease can certainly be modified to some
by corticotrophin or cortisone,[14–17] and the ha
of hormone therapy may have to be accept
seriously ill patients These hazards included g
ulceration and hæmatemesis in 1 of the cases tr
by Domzalski and Morgan and an acute psycho
the other Tocopherols may decrease cre
excretion,[18] but the therapeutic effects claime
these substances[19] and for potassium *p*-a
benzoate[20] have not been confirmed Palli

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[1] Domzalski, C A, Morgan, V C *Amer J Med* 1955, 19, 370

[2] Keil, H *Ann intern Med* 1942 16 288

[3] O'Leary P A, Waisman, M. *Arch Derm Syph, Chicago*, 1940, 41, 1001

[4] Griffiths, W J *Brit. J Derm* 1940, 52, 295

[5] Beard, H H Creatine and Creatine Metabolism. Bro 1943

[6] de Morsier G, Feldmann, H., Argand, J, Wiesmer, B *Psychiat Neurol* 1952, 123 97

[7] Anderson, T E *Brit J Derm* 1952 64, 71

[8] Jager, B V, Grossman, L V *Arch. intern Med* 1944, 73

[9] Keil, H *Ibid*, 1940, 66 339

[10] Bezecny R. *Arch. Derm Syph., Berlin*, 1935, 171, 2

[11] Forman, L *Brit med. J* 1952 ii, 911

[12] Prosser Thomas, E W *Ibid* 1953, i, 101

[13] See *Lancet* Nov 19, 1955, 1071

[14] Thorn, G W, et al *New Engl J Med* 1950 242, 8

[15] Oppel T W, Coper, C, Michorat, A T *Ann. intern.* 1950, 32, 318

[16] Lever W F *New Engl J Med* 1951 245 359

[17] Andrews, G C *Arch. Derm. Syph., Chicago*, 1951, 64 2

[18] Millharat, A T Toscani, V, Bartels, W E. *Proc Soc Biol, N Y* 1945, 58 40

[19] Burgess, J F *Lancet* 1948 ii, 215

[20] Zarafonetis, C J D, Curtis, A C., Gulick, A. E *Arch in Med* 1950, 85, 27

tment in the final stages may have to include a rator and tube feeding In general the prognosis oor. Deterioration may be arrested by spontaneous ssion, but at least half the patients die from the ase and the average duration of survival is two rs.[21]

The Ureter

HE anatomy of the ureter gives little clue to the plexity of its function. It increases in thickness it runs from the kidney to the bladder, partly addition of a third outermost layer of longitudinal cle, and partly by an increase in bulk of the two er muscle layers In the empty organ the epi lial lining lies in folds which open out as the er fills. Cross sections of the fully filled ureter that the lumen is narrowest at the bladder where the muscle bulk is greatest This structural tern is common to many species, such as man, cat, rat, sheep pig, and buffalo, so it has clearly developed after man assumed an upright posture, ugh it may have been one of the factors making posture possible Pharmacologically the nerve ply is both sympathetic and parasympathetic, anatomically it is hard to be dogmatic What- their source, once the nerves reach the ureter form a network along its whole length under outer fibrous coat[22], and a second network been described in the submucosa[23] Most workers e that ganglion cells are to be found in the ureter, groups of them at the lower end, smaller groups he upper and perhaps along the whole length ell.[23]

e usual and perhaps too readily accepted belief at as urine is formed it is swept by peristaltic s straight down to the bladder that the strength speed of the waves depend on the rate of urine and that continued back pressure or obstruction cause dilatation or atony of the ureteric muscle Peristalsis is believed by some to be controlled e central nervous system and by others to depend cal factors The use of sympathomimetic or sympathomimetic drugs suggests that peristalsis ally controlled but that tone is regulated centrally aps by some reflex originating in end-organs e bladder or ureter itself Tonic contraction s to be largely a function of the lower half of the r[24] Clearly the ureters must have a fair degree ndependence since many experimental obser ns have been made on the movements of the ed organ, either perfused or suspended in a bath inger Locke solution. Moreover, a quiescent ed ureter can be made to contract rhythmically istending it with a solid body such as a bead ith fluid, when the vigour of peristalsis depends e head of pressure of the perfusion fluid[25] Several ers have compared the behaviour of the upper, le, and lower portions of the ureter Satani[26] el that the renal end showed small contractions faster rate than the other parts the middle n contracted most powerfully and slowly, and the bladder end gave small slow contractions The belief was that the upper end normally served as pacemaker, though the ureter could develop anti-peristalsis if it was treated with adrenaline or perfused from the lower end[27] On the other hand, antiperistalsis has not been seen in the intact organ.[24] Recent work[24 26] confirms SATANI's findings on the activity gradient and brings out some other interesting points Pressure records were obtained from ureters of various animals by thrusting hypodermic needles attached to strain gauge manometers into the ureteric lumen, in this way the passage of fluid from kidney to bladder was uninterrupted[24 25] Two patterns of ureteric activity were observed superimposed on minor species and individual differences in one, a regular series of peristaltic waves originating at the upper end of the ureter caused a rise of pressure at successive needle points with a return to basic level between waves, in the other, each of a regular series of waves in the top section produced only a small peak and a slight rise of pressure further down the ureter—i e, the waves faded out before reaching the bladder When the basic pressure in the lower part reached a certain level a large contraction occurred in this part, following which the basic pressure fell, and the pattern was then repeated Thus ureteric flow might show a through or a segmental pattern In the segmental pattern, the upper reaches of the ureter pushed urine into a pool in the lower part, when this pool was large enough to stimulate the ureteric muscle by distension, it was discharged in whole or part into the bladder Even when bladder pressure was increased, the strong muscle at the lower end of the ureter was capable of discharging urine by a process of more powerful peristalsis and a rise in basic pressure Man regularly needs this power, and so do animals in any attitude in which the pelvis is lower than the rest of the abdomen When man stands or sits his abdominal contents press on the bladder and raise its pressure to as much as 20-40 cm water[28] That this is a true rise in intravesical pressure and not merely a rise in intra abdominal pressure is shown by the fact that in these circumstances intragastric pressure falls All workers who have tried it agree with GALEN's old observation that it is very difficult to force fluid back into the ureter from the bladder, because the simple flap at the ureteric orifice and the oblique passage of the ureter through the bladder wall form a highly efficient valve

It seems then that through peristalsis occurs at high rates of urine flow At slow rates, flow in the ureter is segmental with pooling at one or more sites At intervals the whole or part of a pool moves on to the next pool or into the bladder itself[24] The flow is also segmental when bladder pressure is high since the pooling, by stretching the ureteric muscle enables it to do more work. An interesting observation was that on raising bladder pressure by compression the basic pressure in the lower part of the ureter increased but that this increase was not transmitted to the renal end, and that a constriction might be maintained between the upper pool and a vigorously contracting lower one so that the back

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nder J L Arthritis and Allied Conditions London, 94.

lmann, T W *Pflüg Arch ges Physiol* 1860 2, 213

ter C M. *Physiol Rev* 1913 13 197

ld, D W Hsieh A. C L. Tinckler L F *J Physiol* 1955 [illegible]

ld, D W, Hsieh A. C L. Tinckler L F *Ibid* p 426

ni, Y *Amer J Physiol* 1919 49 474

[27] Gruber C M. *J Urol* 1928 20 27

[28] Gould, D W Hsieh A. C L Tinckler L. F *J Physiol* 1955 129 448

ward flow of urine was prevented and the nephrons protected[24] This protective function of the ureter is hinted at by measurements of renal pelvic pressure At low rates of urine flow this is zero or even slightly negative[29], at very high rates the pressure rises only a little and then flattens out, since the formed urine passes down the ureter in a continuous stream[30]

The work that has been done on animals can probably be applied in full to man, and cineradiography may be a means of confirming this point[31] TRATTNER[11] designed an apparatus whereby he could record flow and pressures from the ureters in man, and, allowing for the difficulties and inaccuracies inevitable in such observations, the pressure patterns and t of flow agree well with those found in animals N everyone believes that the through type of flow the only normal one in man BEGG[33] has not how often the X-ray appearances are consiste with the segmental or cystoid[34] type of flow, he pointed out that this should by no means considered abnormal It must be remembered th pyelography is usually performed when the patie is somewhat dehydrated and has a slow rate of uri flow According to the work of GOULD et al, mental flow would be expected and normal in su conditions Thus, many of the variations seen pyelograms are physiological or compensatory reversible phenomena, and not a sign of disease.

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[29] Lucas, D R. *Amer J Physiol* 1908, 122, 243
[30] Morales P A, Crowder, C H, Fishman, A P *J Urol* 1952, 67, 484
[31] See *Lancet* Nov 12, 1955, p 1042
[32] Trattner, H R *J Urol* 1932, 28 1
[33] Begg, R C *Brit J Urol* 1946, 18, 176
[34] Fuchs, F *Z urol Chir* 1936, 35, 169

Annotations

TOO EARLY RETIREMENT

To be unable to find work when one is still fit and able is both a personal tragedy and a waste of the community's resources, so it is encouraging to learn, from the second report of the National Advisory Committee on the Employment of Older Men and Women,[1] that more work is now being found for the aged The shortage of labour generally has certainly acted as a spur to industry to find suitable jobs for the older unemployed, but the publicity given to the first report[2] of the National Advisory Committee has also played a part

Unobtrusively the reasons for employing the aged have become more social and less economic More information is now available about the trends of population, and it is noteworthy that, whereas the first report estimated that between 1951 and 1977 the number of "producers" would remain much the same while the number of retired people over minimum pension ages would increase by about 2½ million, the second report talks of an increase of over a million in the number of producers by 1979, against an increase of only about 2 million retired people

Discussing the inquiry made into the reasons that lead people to retire or stay at work after pensionable age,[3] the committee point out that about a quarter of the men studied were retired or discharged by their employers Such retirement is due more to the custom or pension arrangements of the occupation than to any careful assessment of the ability of the worker to carry on "No doubt there were many who might have continued to give efficient service in their old jobs among familiar surroundings and work-mates and with an employer they knew, who would not have felt able to face work in a new environment" About half the men and women retiring at minimum pension age did so for health reasons, but the majority of these did not have serious records of sickness Their reason, in fact, was often not based on medical evidence, it was subjective

The emphasis of the present report is on propaganda and research Research is clearly needed in each *firm* to find work opportunities for the older worker, and the committee conclude that industry generally ought also to promote research, though they do not say who is going to finance it Much useful investigation of ageing is being undertaken at present under the auspices of the Nuffield Foundation, the Medical Research Council, and other bodies, but one subject which is not, we think, receiving attention and clearly deserves it is "subject ill health" Much more information is needed about high proportion of men who complain of ill health have little objective record of it This problem of medicine must not go by default

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[1] Cmd 9628 London H.M Stationery Office 1955 Pp 28 1s 9d
[2] Cmd 8963, see *Lancet* 1953 ii, 871
[3] See *Lancet* 1954, ii, 1167

ALLERGY AND ENCEPHALOMYELITIS

THE precise way in which demyelination is bro about in the nervous system is unknown, except per in the postvaccinal type of encephalomyelitis procedures which can start demyelination in exp mental animals have been reviewed by Wolf[1] T include the repeated injection of heterologous or hom gous brain emulsions with or without adjuvan lesions so produced are disseminated and periven predominantly in the white matter As well as de tion, there is proliferation of adventitial cells an times of microglia Encephalitis due to arsphe or following streptomycin and *p* aminosalicyl is possibly the result of hypersensitivity The si of the features in experimental animals *to those* disseminated encephalomyelitis and *acute* hæm leucoencephalitis in man suggests *that these* co are allergic In acute disseminated *encephalomyeli* of perivascular demyelination *show no* inflam cells and there is little evidence *of nerve*-cell destr some perivascular *cuffs of* lymphocytes are pres *petechiæ are occasionally found* Reviewing the ture, Crawford[4] *states* that multiple capillary rhages *and* fibrin *impregnation* of the vessel wa characteristic of hæmorrhagic leucoencephalitis

Russell[5] believes that these two conditions are v of one pathological process She describes an c of hæmorrhagic leucoencephalomyelitis *with* history and distribution of lesions but *scanty* rhagic foci, and a case of acute disseminated *ence* myelitis showing greatest damage in the *brain* ste spinal cord, with hæmorrhage visible *to the* nak She also notes fibrinoid degeneration *of* the ves hæmorrhagic leucoencephalitis *and* a polyart nodosa type of arteriolar lesion *in* acute dissemi encephalomyelitis Russell's *view* suggests that th diseases differ principally *in* the violence with a common agent attacks the central nervous sy a concept which receives support from other wor Marshall and White[6] studied the reactions of the ret tissues of rabbits to various antigens, they *found* mablasts appeared in the spleen within a few days, d if repeated injections of antigen were given immature d later mature plasma-cells accumulated Campbell d Good [7] observed similar changes in the spleen in eapigs with encephalitis due to sensitisation to ologous brain tissue Russell describes the develop nt of foci of plasma-cells and their precursors in the in in both acute hæmorrhagic leucoencephalitis acute disseminated encephalomyelitis, and she es from these findings that the two conditions are ologically one and that allergy is the basis of the tion in the central nervous system

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[1] Wolf A 1st Internat. Congr Neuropath Rome, 195 p 121.
[2] Russell, D S *J Path Bact* 1937, 45 357
[3] Cavanagh J B *J clin Path* 1953, 6, 128
[4] Crawford T *Ibid* 1954 7 1
[5] Russell D S *Brain* 1955, 78 369
[6] Marshall, A H E, White R G *Brit J exp Path.* 1950 31,

REGIONAL ILEITIS

rom every aspect regional ileitis is hard to treat The e was when Crohn's disease was excised as soon as ealed but hard facts culled from efficient and persis t follow up have altered our approach At the Mayo nic,[8] the recurrence-rate following operation on 270 ents was 37% at two years, rising to 80% at fifteen rs. In this country Cooke [9] describing a series of 90 ents, 83 of whom were operated on, found recurrences 45% at two years and 78% at ten years Only a few of se recurrences were disclosed by routine X ray examina n in patients free from symptoms Resection cannot efore be regarded as a cure. Indeed a difficulty arises oon as resection is contemplated for any attempt at ication calls for wide resection because there are low ulcers confined to the superficial layers of the osa at considerable distances beyond areas of obvious ealing and no clue to their presence and situation y be found on the serosal surface of the gut.[10] Even ensive resection becomes ineffective if it does not ude all 'aphthoid'' ulcers, which can conceivably the starting point of recurrence The trouble is that e patients are prone to steatorrhœa (it was present , out of 57 patients investigated by Cooke) and ection aggravates this. It therefore seems that ery has no place in cure but must be reserved for ain complications, the most important of which is ruction if only because it is the most common Even decision calls for nice judgment since obstruction is no means always the outcome of simple stenosis ed a frank localised stricture is rare and usually ess healing More commonly a length of intestine is ered immobile by thickening and œdema, but retains men through which alimentary contents are propelled a tergo But the propulsive force from the normal stine above is lost with potassium depletion , the total angeable potassium may fall to one sixth of normal, to chronic depletion by diarrhœa. Under these cir tances the normal intestine becomes distended and tic. Potassium must therefore be restored before a tion is made to excise an area of ileitis which appears e provoking obstruction

ternal fistulæ and failure to thrive after proper ical care are further indications for operation, but e surgery can offer no cure there is also no specific ical remedy We rely on rest, aided by restoration of y-fluids and chemistry Cooke emphasises the need protein (low serum-albumin levels are not uncommon) potassium the depletion of which, apart from its s on somatic and plain muscle may cause mental tion The value of corticoids remains unproved but ms that they can induce remissions in children and arly or acute cases Their place in chronic disease after resection when a maintenance dose may put the evil day of recurrence But Cooke's first rule of treatment is that all patients must remain under regular medical supervision so that recrudescence can be countered before biochemical changes have gone too far

BABIES' MEDICINE

AN inquiry was lately carried out by Bryant [1] to determine how often parents give medicines to their children without medical advice ; to assess the frequency of infants' visits to family doctors and welfare centres , and to see how far additional vitamin foods were used A representative sample of families with children under twelve months were interviewed by health visitors Only 8 out of 503 infants had not been given an unprescribed medicine during the first year three-quarters had been taken to the family doctor at least once 1 in 6 had attended hospital outpatients or been admitted , half were ' regulars '—i e , known attenders—at the welfare centre and another fifth " occasional " attenders Social class seemed to make no difference as far as attendance at the family doctor was concerned but welfare-centre attendances were less frequent in families in the lower part of the social scale On the other hand children in the less well to-do families were taken to hospital more often This confirms the Newcastle experience [2] that the mothers and families of semi skilled and unskilled workers use welfare centres less than others but attend hospital more often one reason is that infants in these families are more likely to have serious infections In the Newcastle survey in 1947–48, there was also no indication of social-class difference in the number of times the doctor was called, but there was evidence that he was called for a smaller proportion of illnesses in poorer families But it is apparent that today most infants are seen either by family doctors or welfare centres at some time in the first year and that half of all infants who see their family doctor do so more than once. This in turn is additional evidence if any be needed, of the need of the family doctor for pædiatric training and experience.

Unprescribed medicines or applications were given on occasion to almost every infant, and there was no difference in this habit between the social classes A wide variety of substances were given : cough medicine, sleeping medicine (aspirin was commonly given for this purpose) aperients, and boracic acid or ointment for napkin rashes and many children had glycerin, borax and honey or *gentian violet* applied to their mouths. Surprisingly few mothers seemed to rub the child's chest, and camphorated oil was not even mentioned. Most of these home treatments seemed to be given only once or twice, and only a very few children received ' regular medicine other than aperients , and even these were given regularly to only 1 in 8 infants (aperients ' presumably includes all mild laxatives) It would have been interesting to know how many infants received more than one type of medicine regularly and how this correlated with the standards of maternal care

As *Bryant observes*, many (and perhaps most) of the substances given are almost certainly harmless ; but he recalls the sinister story of pink disease and mercury teething powders and no-one can be entirely happy about home treatment with boracic acid [3] Nevertheless it would be wrong to deny the mother simple medicines or blame her if she sometimes follows, without asking, the common teaching of welfare centres. But the facts that Bryant records go further there is cause for satisfaction that several disturbing practices of earlier days are declining , thus, alcohol was given to only 1 infant, and gripe-water ' cinder water and ' tar ' water are not mentioned, nor is breast milk for conjunctivitis.

Campbell, B Good R. A *Arch Neurol Psychiat.* 1950 63 2

Van Patter W N , Bargen, J A Dockerty M. B., Feldman, W H., Mayo C. W., Waugh, J M. *Gastroenterology* 1954 26 3

Cooke W T *Ann. R Coll. Surg Engl* 1955 17 137

Brooke B N *Lancet* 1953 1 1230

[1] Bryant, H. *Med Offr* 1955 94 309

[2] Spence J Walton, W S Miller F J W., Court, S D M. A Thousand Families in Newcastle upon Tyne London, 1954

[3] See *Lancet* 1954 1 507

Nearly 10% of the infants did not get cod-liver oil added to their food, as the orthodox teaching of pædiatric and welfare practice demands, so in this respect these mothers were falling short of accepted standards But in this country today vitamin-D-deficiency rickets is rare, and an interesting comparison has been made in Salford[4] of two groups of children in their second year of life One group received regular cod-liver oil additions daily for at least six months before examination, but the other group had no cod-liver oil other than in dried milk or infant cereals There were no differences in bone growth or serum alkaline-phosphatase and no radiological evidence of rickets in either group There was a difference in body weight and height, probably reflecting the difference in care and diet It seems that the vitamin D added to dried milk and infant cereals is enough to prevent rickets at least in the first and second years in full-term children, and that when children are receiving the additional cod-liver oil, they may be having too much of the vitamin And this excess may be concerned in the production of hypercalcæmia and renal acidosis in infancy[5]

Bryant's investigation is a good example of the small yet pertinent comment on contemporary habits which this part of the National Health Service can readily make

VENO-OCCLUSIVE DISEASE OF THE LIVER

MOST cases of the rare Chiari's syndrome seen in this country are due to occlusion of the main hepatic veins or of the inferior vena cava at the level of the caval fossa[6] A much commoner form of the syndrome, however, has recently been reported from Jamaica as serous hepatosis,[7] or veno-occlusive disease of the liver[8]

Three stages of the disease can be fairly easily defined In the acute stage, occurring almost exclusively in children between 18 months and 3 years of age, the abdomen enlarges rapidly owing to hepatomegaly, with or without ascites Gastro-intestinal and other symptoms are mild, but liver-function tests are almost always abnormal Recovery is usually rapid, even without treatment, but in a few patients hepatomegaly persists, and recurrent ascites necessitates repeated paracenteses This is the subacute phase The third or final stage is seen in older children, and clinically is indistinguishable from hepatic cirrhosis with pronounced features of portal hypertension

The lesion underlying this variant of Chiari's syndrome is an occlusion of the hepatic veins, but the vessels involved are almost exclusively the sublobular and centrilobular veins, the larger branches being rarely affected The principal change is an obliterative endophlebitis, and thrombosis is not important The intima is at first greatly swollen by œdema, and then concentric fibrosis completely occludes the affected segment Intense hepatic congestion results and there is wide dilatation of the sinusoids and atrophy and necrosis of the parenchyma A progressive fibrosis replaces the destroyed liver cells The picture at this stage resembles cardiac cirrhosis Progression of the fibrosis, however, ultimately obliterates the normal lobular architecture, and the final picture closely resembles Laennec cirrhosis, except for the characteristic obliterative endophlebitis

Little definite is known of the cause of this important liver disease Malnutrition, of fundamental importance in other forms of liver injury, *does not seem to be primarily to* blame, and patients in the acute phase recover as readily on a high carbohydrate diet as on one rich in protein[8] This *suggests* that the benefit of hospital tre might be largely due to withdrawal from some agent in the ordinary environment Attention ha particularly drawn to the great popularity of bu in areas where veno occlusive disease is common of these vegetable infusions are probably harmle it is known that a condition closely resembling occlusive disease occurs in man following the acc consumption of senecio (ragwort)[9] Similar l *damage* has also been produced in laboratory a by senecio feeding or by injection of *retrorsine*, one alkaloids extracted from senecio by Davidson[10] i The possible toxicity of the bush teas is now being studied in many parts of the world If a poison is there should *follow* a highly rewarding chap preventive medicine

THYROID CANCER AFTER RADIOTHERAP

IN 1950 Duffy and Fitzgerald[11] investigated th history of 28 patients with thyroid cancer, all of were under the age of 18 They found that no les 10 of them had received X ray treatment, directed thymus, between the ages of 4 and 16 months Si and others[12] followed up 1400 children who had re X-ray therapy to the thymic region, and they foun the incidence of thyroid cancer was much higher treated group than in their untreated siblings C has now reported a further series of 13 childre thyroid cancer, seen in Chicago during the past 6 Every one had previously been treated with X either for thymic enlargement, cervical adenitis, en tonsils, bronchitis, or pertussis The interval be irradiation, and the diagnosis of thyroid cancer from 3 to 10 years, the *average* being 6 9 years tumours were all well differentiated, but all exce had spread outside the thyroid Buckwalter[14] r that 8 children under 15 with thyroid cancer wer at the University of Iowa Hospitals in the past fi and 3 of them had had irradiation for an enlarged in infancy

These reports appear to establish beyond able doubt that irradiation of the thyroid regio infancy can cause cancer in later childhood remarks on the recent big increase in reported thyroid cancer in children and suggests that it attributed to the great popularity of X ray tr to the neck and upper chest in infancy during th 1930–45 The principal indications for this tre were supposed thymic enlargement and cervical a This type of treatment was probably used less he in America, but nevertheless a survey of the situ *this country seems called for* Meanwhile, it sho emphasised that no infant ought to be expo therapeutic doses of X rays unless a malignant co is already present

In Clark's series the interval between irradiati the diagnosis of thyroid cancer was about 7 yea this relatively short "incubation period" can be a to adult patients with thyrotoxicosis treated with iodine, then it is encouraging to learn from Chapma Maloof's authoritative review[15] that no cases of t have as yet appeared following this treatment I iodine was first given therapeutically in 1941 an 1945 it was in wide use in the United States I treatment were as carcinogenic in adult life as X appear to be in infancy, then at *least* a few ca thyroid cancer following *radio* iodine-therapy should been reported by now

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4 Berry, W T C, Boyes K M B *Mon Bull Minist Hlth Lab Serv* 1955 14, 162

5 See *Lancet* 1954, ii, 127

6 *Ibid*, 1955, i, 710

7 Hill, K R Rhodes, K Stafford, J L, Aub R *Brit med J* 1953, i, 117

8 Jelliffe D B Bras, G Stuart, K L *Ann trop Med* 1954, 48, 386

9 Selzer G, Parker, R G F *Amer J Path* 1951, 27,

10 Davidson, J *J Path. Bact* 1935 40 285

11 Duffy B J jun, Fitzgerald P J *Cancer*, N Y 1950 3

12 Simpson C L, Hempelmann, L H, Fuller, L M *Ra* 1955 64, 840

13 Clark D E *J Amer med Ass* 1955, 159 1007

14 Buckwalter, J A *J clin Endocrin* 1955, 15 143

15 Chapman, E M, Maloof, F *Medicine* 1955 34 261

Special Articles

DOMICILIARY CONSULTATION IN PSYCHIATRIC PRACTICE

ANALYSIS OF 1000 VISITS

DENIS LEIGH
M D Manc., F R C.P
PHYSICIAN, BETHLEM ROYAL AND MAUDSLEY HOSPITALS
LONDON

THREE years ago I reported my experiences in the miciliary visiting of psychiatric patients (Leigh 1952) ce then I have completed my thousandth visit. In w of the somewhat uninformed enthusiasm over the Amsterdam experiment ' it is opportune to re examine findings in the light of greater experience Recapitu ing my earlier conclusions domiciliary visiting is an portant advance in three respects :

1 The patient is seen in his own social setting in a friendly, rmal atmosphere His fears and prejudices against hiatry and psychiatrists are allayed by this first contact the home, and in 90% of the patients treatment or advice ame possible on an entirely voluntary basis

2 The visit does much to bring the family doctor more ly into the hospital orbit, and at the same time help him field where his education has often been defective

3 The psychiatrist is brought sharply into a world of ctuality Practising a branch of medicine in which ecision is often curative and of less harm to the patient n decision, he is forced to decide certain issues there and n. His knowledge of general medicine is also tested for of the patients proved to be suffering primarily from ical disease.

rising from the domiciliary visit, a special relationship veloped with certain general practices The four rs of one of these practices collaborated in a further of the patterns of psychiatric illness in general e (Bodkin et al 1953) About 1 patient in every the list of this practice was referred to me over riod of a year but considering that in Fry s e neurosis was among the most frequent causes endance (Fry 1952) this proportion is reasonably

Amsterdam, what is essentially a domiciliary service een built up over the past twenty years under the ion of Prof A Querido (Querido 1935 1948 950). In 1954 through his kindness, I spent a time studying the work of the Amsterdam service nd hand The supporters of preventive psychiatry been quick to realise the potentialities of the erdam service, and much enthusiasm has been d , but, to the best of my knowledge, there is statistical information from this service I have fore analysed experiences of very similar work in and.

Technique of Domiciliary Consultation

perience has confirmed that a general practitioner rs to contact the consultant directly with a request visit rather than through a domiciliary bureau rical service dealing with requests for visits is ntial, so that adequate records may be kept and there little delay as possible between the request and the t. Practitioners do not always assess correctly the ncy of a patient's condition so if possible a visit is ed out on the day the request is received

r preference the patient is visited alone, the family tor being consulted before or after the visit. Psychia atients often reveal to the psychiatrist information ch they withhold from the family doctor

The ethics of the consultation, however differ in no other y from those of other consultations. The family doctor is ys regarded as the person in charge of the patient and no patient is seen except on his request In Amsterdam, on the other hand the visit may be made at the request of the police a neighbour or a member of the family, although it is said that the family physician is always informed

Full notes must be taken, and a special printed sheet has been devised to fit in with the hospital record system

Disposal of Patients

Suitable disposal is the keynote of successful domiciliary visiting and the physician making the visit must have both outpatient and inpatient facilities available to him

Table I shows the disposals of all cases during the past six years. The pattern varies little from year to year, and shows that about 90% of the patients were voluntary, and over 50% were treated as outpatients. If day hospital facilities had been available before 1954 and if our day hospital had been larger the proportion treated as outpatients, would be higher still.

TABLE I—NUMBER OF PATIENTS VISITED AND TREATMENT RECOMMENDED

Disposal	1949	1950	1951	1952	1953	1954	Total
Total	93	153	181	199	201	184†	1011
To observation ward	8	23	12	19	27	23	112 (*11%*)
Inpatient	31	*50*	60	59	41	38	279 (*28%*)
Outpatient	24	44	63	74	78	57	339 (*33%*)
Advice to G P or family	18	27	32	35	35	60	197 (*20%*)
To mental hospital as voluntary patient or to general hospital	9	9	15	12	20	10	75 (8%)
Treatment in day hospital						5	5 (*0 05%*)

Including 3 repeat visits
† Including 1 patient who died shortly after the visit.

During this period there was no successful suicide or an attempt seriously endangering life Perhaps this was due to the close contact between psychiatrist and family doctor, and the psychiatrist's control of hospital beds

In Holland, the family doctor cannot admit directly to a hospital; the intervention of the psychiatric service is always necessary and as the aim of the service is to keep patients out of hospital, this is indeed essential.

Diagnoses in these cases also show a remarkable uniformity from year to year (table II) I did not keep records in the years 1949–50 but there is no reason to believe that the pattern differed then

TABLE II—DIAGNOSES IN DOMICILIARY PSYCHIATRIC PRACTICE

Diagnosis	1951	1952	1953	1954	Totals (%)
Depressive reaction	67	65	64	69	34
Neurotic reaction	51	59	64	66	28
Organic reaction	21	42	42	28	19
Schizophrenic reaction	14	15	18	13	8
Senile reaction	13	21	13	12	8
Others	10	9	4	6	3

Studies by Watts and Watts (1952) and by Fry (1952) in their general practices confirm that the two most important psychiatric problems for the family doctor are depressions and neuroses. Watts and Watts analysed three years work in a Leicestershire practice and found that depressive reactions comprised 36 36 and 31% of the psychiatric patients during 1948 1949 and 1950 respectively Fry found that the majority of his psychiatric patients were ‘ involutional ” women.

Depression is so common, the suicidal threat so disturbing and the prognosis of a properly treated depression so good that the family doctor must be conversant with all aspects of this disorder

The neurotic disorders form a comparatively large proportion of “ acute ’ cases Psychiatrists recognise that special techniques and facilities are necessary to treat the neuroses effectively and general practice is not the milieu in which to practise psychotherapy, except through a benign, paternal relationship Adequate psychotherapeutic and other facilities must be available if neurotic patients are to be helped, and the development of outpatient and day-hospital services has been invaluable

Organic disorders comprise nearly a fifth of the cases, and the psychiatrist must have a sound training in general medicine, with a particular knowledge of neurology

The more uncommon effects of a cerebral vascular lesion, such as aphasia, are often misinterpreted as "hysteria," and even very experienced doctors may be misled by a physical condition presenting as a mental disturbance, this is particularly so with delirious reactions

Organic illness is often a particular problem for the psychiatrist When the family doctor calls for a domiciliary visit on a "hysterical" or "difficult" patient, and the psychiatrist diagnoses cerebral tumour, strong feelings are often evoked, and in some cases, the practitioner never calls out the psychiatrist again

General Practitioners Referring Patients

About half of the doctors referred only 1 patient a year, and most of the patients were referred by comparatively few practitioners (table III) Thus, I made 201 visits in 1953 and saw 160 new patients, who were referred by 38 of the 79 doctors who called me in consultation

TABLE III—NUMBER OF DOCTORS REFERRING PATIENTS

—	1949	1950	1951	1952	1953	1954
Total no of doctors referring	58	63	79	79	79	77
No of doctors referring						
1 patient	45	37	49	39	41	41
2–5 patients	11	22	23	33	31	30
5–10 patients	1	2	5	6	4	6
Over 10 patients	1	2	2	1	3	0

Blacker (1948) pointed out that between 1938 and 1942 there was an increase in the number of neurotic patients seen at 216 psychiatric clinics in England and Wales He felt that this was probably due to a growing use of the country's psychiatric facilities by the family doctor, and was somewhat alarmed at the prospect of "a descent in vast multitudes" of neurotic patients upon the psychiatric clinics should the family doctor become "psychiatry conscious." At the time of his survey, however, it was not possible to analyse the patterns of psychiatry in general practice Blacker has now analysed the referrals by general practitioners to the Maudsley Hospitals, and he finds that 42% of the doctors referring psychiatric patients sent only 1 patient annually to the hospital, and that half of our patients came from only 10% of the doctors (C P Blacker, personal communication)

My own outpatient work during 1952 confirms these findings Of 223 new patients 196 were referred by 90 doctors, the remaining 27 came from other sources

All these doctors were known to me, all patients were referred personally, and no other hospital was used by the doctors Yet a small proportion (15%) of the 90 referred about half the patients It is strange that out of a busy practice of 2000–4000 patients, only 1 patient per year reaches a psychiatric hospital, and it seems that the general practitioner himself deals with most of his psychiatric patients Fry (1952) saw 570 psychiatric patients during 1951, and Watts and Watts (1952) stated that 12% of their patients were "functionally ill"

Undergraduate and Postgraduate Teaching

I believe that these figures do not show that general practitioners are well skilled in psychiatry, but rather the reverse, and that they reflect inadequate teaching in the past, for which psychiatrists can only blame themselves The present generation of practitioners is almost entirely untrained in psychiatry, a visit to a mental hospital and six or so lectures on mental dis comprised his student education

What should our present and future students be taug and can the established practitioners be given furt teaching? Teaching should concentrate on the rec nition of common psychiatric conditions

Of every 3 psychiatric patients seen by family doctor has a depressive illness, and the recognition, co treatment of the various forms of such illness s emphasised again and again Nearly a third of the ps patients have neuroses, and it is important that the be recognised, as reactions to current stresses or di Finally, the organic reaction illnesses should be th taught

There is no reason why this teaching should available to both undergraduates and postgr Ill-advised teaching of highly controversial and stantiated psychiatric theory leads inevitably and faulty thinking, as I have previously em (Leigh 1952) the family doctor needs a psychiatr is medically oriented It is my experience that doctor is well advised to steer clear of psychot other than simple, supportive measures

Preventive Psychiatry

Is it possible to keep patients out of hospital, treat them in their own social setting?

It is interesting that in New York, the care of non psy patients in the home arose out of economic necessit stone 1954) Bluestone stated "The home care pro for which I was responsible started with the indigent no question of fee arose On a comparable basis, ho cost less than a quarter of the cost of maintaining a inside of the hospital"

The advantages of the home care of psychiatric p were emphasised by Querido (1948–49) and b (1954) Ling implied that mental health in Ams is better than that in London and suggested tha first class mental health service" in Amsterda something to do with this

Nothing, in my opinion, could be further fro truth than this statement Statistical informat difficult to obtain, and these criticisms can o answered by figures obtained by careful study, m work is an attempt to remedy this defect W needed is, first, a survey of all psychiatric patien whom admission is required by family doctors, secondly, a test of the belief that patients are treated at home

Ling (1954) wrote of Amsterdam "about 40 all adult psychiatric patients referred to the n health service are never admitted to hospital, respond with varying success to handling in hom factory" In my own series over 50% were not adm to hospital, while in 1954 the figure was over 60%

Conclusion

My experiences are probably being duplicated all the country The domiciliary service is a really impo advance in psychiatry, and it maintains the tradit link between consultant and practitioner

Apart from the theoretical benefits of treating pat in their own homes, there are the practical considerat of the shortage of hospital accommodation and me nurses, and the cost of inpatient treatment, any mea which prevents admission to hospital and yet offers same, if not better, patient care, is clearly worth w

The next step will be the establishment of a visit unit, which, with the coöperation of the family doc will treat the patient in his home environment.

I am grateful to the board of governors, the Bethlem Ro and Maudsley Hospitals for enabling me to visit Amsterd and to Prof A. Querido for allowing me to carry out domicil visiting there

References at foot of next column

OYAL COLLEGE OF SURGEONS

First Provincial Meeting

s sink of infamy and corruption—this receptacle
at is avaricious base worthless and detestable
rgical profession, like some other Augean stables,
the hour of its purification This broadside
The Lancet at the Royal College of Surgeons in
the interest of its members was on exhibition
entertainment of fellows and members at Man
on Dec 10 No one attending this first scientific
t provincial meeting ever held by the college
ave shared those sentiments The meeting drew
attendance of over 500 who were regaled with a
c exhibition to meet all tastes and interests, and
mptuous hospitality

e were 44 separate sections to the scientific
ion, set out and displayed to great advantage
ens set up in the outpatient and neurosurgical
nents of the Manchester Royal Infirmary The
g was devoted to this and to operating sessions
bjects for exhibition were widely ranged and
l almost every specialty including dentistry they
d the results of both clinical and research work
s the spirit of this exhibition is most aptly indicated
preface to John Woodall's book *The Surgeon's
f Military and Domestic Surgery* which was on
the fine collection of old books in the possession
Manchester Medical Society as a result of Dr
s Windsor's exertions at the end of the last
y:

> overing faithfully and plainly the method and order
> urgeon's chest, the uses of instruments, the virtues and
> ons of the medicines, with exact cures of wounds,
> nes, ulcers fistulas, fractures, dislocations, with the
> sy and safest ways of dismembering the cures of
> of the fluxes of the belly of the colic and the iliac
> of tenesmus and exitus ani together with a Treatise
> cure of the Plague

Malignant Disease

afternoon was devoted to a symposium on malig
disease, opened by Prof GEOFFREY HADFIELD
s concerned with hormone dependence This may
n any organ in which normal growth development,
nction are conditioned by an adequate supply of a
c hormone or hormones acting synergistically
nant disease in such organs may depend on the
e hormone or a synergistic group In the breast
growths prove to be independent, and of those
re dependent some ultimately become independent
ormones to which the growth may be subject are
the ovarian oestrogens the adrenal oestrogens, the
l steroids or those emanating from the pitui
Professor Hadfield drew attention to examples
ormone-dependent tumours in animals Foulds's
nary tumour in mice develops only during preg
y regresses completely afterwards, and recurs at
next pregnancy; Gardner's testicular tumour in
s induced by stilboestrol and maintained by
ogen withdrawal of which brings about regression
Experiments have also shown that prolactin, proges
terone and oestrone are synergists responsible for normal
duct alveolar and lobule development, while the
addition of corticotrophin or cortisone together with
growth hormone promotes lactation even in male rats
As regards malignancy, prolactin (a glycoprotein with a
molecular weight of 25 000 and thus excretable in the
urine) is important for it is probably identical with
urinary mammotrophin excreted in cases of breast
carcinoma alone, prolactin is responsible for the main
tenance of breast structure and experimentally it gains
the power to promote normal mammary growth only in
company with synergists Clinically mammotrophin
may prove of value in testing whether a particular growth
is hormone dependent or not since the quantity excreted
can be assessed

Prof IAN AIRD emphasised the importance of the five
year cure convention in assessing operable cancer he
also pointed to two defects arising since its introduction—
namely, that the emphasis laid upon technical operative
detail which characterised surgical discussions in the
era before its introduction is being overlooked and that
it has given rise to a competitive desire among individual
surgeons to produce ever better five-year results, which
accordingly are sometimes misleading He suggested
that there is no certain cure of cancer by radiotherapy
or chemotherapy, but only by surgery—and then only
in the early case Cancer of the skin and melanoma can
be cured only by early excision and though results of
radiotherapy for carcinoma of the tongue are reasonably
good there is always the prospect of recurrence since the
lesion has not been excised Stage 1 carcinoma of the
breast is best treated by a modified Halsted mastectomy,
which yields a 70–85% five year survival Here Professor
Aird sounded a note of warning: there is, he declared,
little to be gained by bigger operations designed to
increase the number of five-year survivors if thereby the
operative mortality and the surviving patients' disability
are increased There is a tendency to withdrawal of the
surgical offensive thoracic surgeons no longer regard
pneumonectomy as de rigueur for bronchial carcinoma,
and lobectomy is now considered adequate in certain
cases Professor Aird applauded this swing to con
servatism carcinoma of the stomach is a case in point,
for only a third of the patients come to operation in a
third of these resection is feasible and a third of these
survived for five years—a 3% five-year "cure." With
so little prospect of ultimate success it is wrong to do
total gastrectomy as a routine, since the operation is
bad for the patient Retreat is the order of the day
regarding the pancreas since total pancreatectomy
achieves so little indeed by contrast he has seen a
patient survive for six years after a palliative operation,
and another alive seventeen years after Mr Reginald
Vick had short-circuited the bile but had been unable
to make any attempt to eradicate the primary lesion and
its twelve hepatic metastases Professor Aird ended by
entering a caveat against gross operations for the removal
of growth, such as pelvic evisceration

Sir STANFORD CADE said that the phrase inoperable
cancer was to patient and relations the worst possible
verdict But this word "inoperable no longer carries
the notion that the patient is beyond treatment
survival can be prolonged There are no cures in
inoperable cancer, no estimations of five-year survivals
but only *control* of the disease and he wished to establish
a new concept—that cancer should be regarded as a
condition similar to diabetes rheumatism epilepsy, and
heart disease none of which can be cured but which are
well controlled by treatment Palliation of cancer
implies the control of the disease by ablation of the
symptoms and signs and a return to near normal life
If that also leads to a longer life then the sting is taken
out of the word inoperable We must now distinguish

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1 *Lancet* 1835–36 9 558

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the technically inoperable from the biologically so, and must base surgery, not on anatomy alone, but also on the natural history of the disease Surgery in the inoperable patient therefore is based on a different concept and has to be used in concert with radiotherapy, chemotherapy, and hormone treatment Nitrogen mustard has proved of value in Hodgkin's disease, 6-mercaptopurine and aminopterine in other reticuloses, and actinomycin in rhabdomyosarcoma and Wilms's tumour Hormonal treatment is of especial significance since this is the first attempt to alter the internal environment of a growth, rather than excise, burn, or otherwise destroy it, its mode of action is obscure since poison and antidote are the same Indeed the use of œstrogens or androgens may make a particular patient with carcinoma of the breast worse, and this can be regarded as a clinical test of the hormone dependence of the growth and an indication for hypophysectomy or adrenalectomy In Sweden, where all cancer is registered, 80% of cases *cannot* be controlled or cured by a surgical operation alone In England and Wales 80,000 die each year from cancer, and for every 1 that dies 3 remain alive with growth Sir Stanford Cade spoke of the improved chances of survival when radiation is added to orchidectomy for seminoma, of the complete relief of the distressing symptoms due to mediastinal obstruction when the neoplasm is irradiated with X rays, of the improved efficiency and less damaging effects of supervoltage X rays from a linear accelerator, and of the higher dosage now possible with radioactive cobalt Though condemning the crime of operating on the inoperable, he considered that pelvic evisceration is indicated in advanced carcinoma of the cervix, since only thus can a patient be relieved of the appalling symptoms arising from fistulation, and of pain Inoperable no longer meant hopeless

Dr DOUGLAS FRENCH spoke of the care of the cancer patient in general practice He sees 20–25 new cases each year, 0 4% of his patients have cancer The general practitioner is concerned with the beginning and the end of the disease Diagnosis is sometimes delayed through fear or ignorance on the part of the patient, who may not wish to disclose a swelling for fear that it may be cancer, or may believe that rectal bleeding only indicates piles, or vaginal bleeding the menses Delay occurs when the site of the growth is not obvious to the patient and the lesion is clinically silent A patient who constantly visits the surgery with trivial symptoms is his own worst enemy since symptoms signifying a neoplasm then tend to be overlooked He did not think that cancer education would have altered the outcome in the 23 patients he has seen this year, by bringing them any earlier to him A negative report from a specialist should be regarded with the same reserve as a negative report on sputum examined for tubercle bacilli, it indicates that a lesion has not been found—not that none is there In ten years he has seen 12 patients in whom the diagnosis was not established at the first hospital investigation, in 1 the lesion was in the brain, in another in the larynx, and in 10 in the alimentary tract When the diagnosis is made, should the patient be told? If the outlook is good he may be, but when operation is impossible much depends on the mentality and intelligence of the patient and his desire, or otherwise, to live Patients pass through three phases—optimism, doubt, and resignment The moment to tell the truth is when optimism becomes doubt Optimism and quiet of mind can be enhanced by giving dexamphetamine or amylobarbitone, and the patient should return to work He has found deep X-ray therapy lowering, partly because the patient considers that the lesion has not been removed, whereas even a palliative operation leaves the impression that the growth has been taken away and often the symptoms due to metastases are not related by the patient to the original lesion In the stages pains develop anywhere and must be give such as neuritis and rheumatism, and each a drug, so that the changes have to be rung bet many proprietary forms of codeine and its n pethidine, aspirin with amylobarbitone, chlorpr and morphine For severe pain Dr French g Brompton mixture containing morphine, her cocaine

Other Business

After the symposium Sir JOHN STOPFORD, F.R. chancellor of Manchester University, was adm honorary fellowship of the college The annual meeting then ensued, under the chairmanship HARRY PLATT, the president

HOMOSEXUALITY

A SPECIAL committee appointed by the counci British Medical Association has prepared a memo of evidence for submission to the Departmenta mittee on Homosexuality and Prostitution The fo are among the committee's conclusions

> The apparent increase in homosexual practices prostitution is attributable to weakening of the personal responsibility with regard to social and welfare in a significant proportion of the population.
>
> It is illogical that homosexual practices receive condemnation than promiscuous heterosexual interco
>
> With regard to imprisonment for homosexual offen committee suggests (1) that prison is not usually th suitable place for the punishment, deterrence, and refor of the homosexual offender, (2) that if homosexual are sent to prison their segregation is neither practica desirable, and (3) that if homosexuals are sent to efforts should be made to ensure that the period of de is effective and that they are deprived of opportunit homosexual activity
>
> Legislation should aim at preventing seduction and re homosexual activities which are an offence to public If the law were relaxed with the result that homo practices between consenting adults were no longer an o (*a*) the age of consent should be not less than 21 year (*b*) the law should provide adequate protection a seduction by adults of those under 21 years of age.

A NEW MEDICAL M P.

AT the by-election at Greenock, caused by the of Mr Hector McNeil, Dr J Dickson Mabon was ret as a Labour member

Dr Mabon is 30 years of age, but this is alread third Parliamentary contest When he was 18 he b work in the coalmines, and after 18 months he was released to serve in the Army With an ex Service bursary he began his medical studies at Glasgow University As a student he was chairman of Glasgow University Labour Club and the National Association of Labour Students, and president of the University Union He was one of the team of two who won the *Observer's* Students' debating competition last year, and he has led many student delegations to conferences abroad He graduated M B last year He has held a house appointment at a Glasg hospital, and spent a year in general practice At prese he is working in the public health and social medic department of Glasgow University

Public Health

THE PUBLIC HEALTH IN 1954

Chief Medical Officer's Report

In the introduction to his report [1] published last week r John Charles, chief medical officer of the Ministry Health refers to a year featuring full employment ustrial prosperity, better food, and frightful weather e readers may recognise 1954 The public health ered no sharp shocks last year; but parts of the lic conscience should feel distinctly uncomfortable en the report speaks about the increases in food oning and dysentery

VITAL STATISTICS

ir John notes the steady fall in the infant mortality e, which at 25·4 last year reached its lowest level . The neonatal death rate—deaths in the first month life—remained steady while deaths from tuber sis fell to the new low level of 178 per million popula n. The casualties of prematurity were the 'out nding subject' requiring investigation in the field maternity and child welfare. Of 46,118 premature ies born in 1954 there were 3773 who did not live re than 24 hours. Losses on that scale in practically other field would, Sir John feels, cause public cern.

There was another rise in cancer deaths, including g cancer despite the hope of the previous year that upward trend had been halted There was evidence t though the cancer mortality among males above age of 65 continued to increase the rates at ages ow 65 had become relatively stable There were 31 deaths in 1954 from cancer of the lung—a rise 182—and of these 13,095 were males.

FOOD POISONING

he number of food poisoning incidents in 1954 was more than in 1953 Sporadic cases increased by family outbreaks by 49%, and general outbreaks 1%. Whatever preventive measures have so far taken have been ineffective, the report says Once n the principal source of infection was the made up dish, which is dangerous because of the time which es between preparation and consumption Among organisms responsible for 250 outbreaks were ocella (18%), staphylococci (31%), and clostridia %). Assuming that salmonellæ needed safeguards were not yet capable of large-scale application, other two organisms mentioned were responsible early half the outbreaks and in their case practic- precautions could be taken. Rapid cooling followed proper refrigeration of meat dishes would almost ate food poisoning due to clostridia Similarly attention to minor injuries on the hands of food s and the use of "no-touch" technique in the ng of cooked meat dishes would prevent staphylo- food poisoning It could be as simple as that! ' ohn remarks. The report lets the offenders down y when it says 'From the continued high inci of food poisoning, however, it was evident that n caterers still found difficulty in applying these remedies.'

FLUORIDATION OF WATER-SUPPLIES

ring the year studies in readiness for the fluorida of certain water-supplies were undertaken The es of small quantities of fluorine in the drinking upon dental decay in children and in adults brought such supplies was very striking

smouth, where the water naturally contains 0·9 parts oride per million, 30% of a group of school-children the ages of 11 and 16 living in the area since birth completely free from dental decay; others, who were born in the area but had lived there from the age of one or more *did not show such good results, only* 12% *being* free from dental decay It seems that fluoride exercises its greatest benefit on the teeth while they are in the stage of early *development*

Referring to surveys which have already been carried out Sir John says that one of the main objects was to attempt to correlate the degree of mottling of the teeth with the amount of fluoride present in the water In the case of children born and reared at Slough enamel opacities which would be noticed by the average intelligent parent occurred in not more than 1% moreover teeth were exceptionally well formed and there was remarkable freedom from decay

NUTRITION

The report sounds a cautionary note The freedom of choice now that rationing had ended, and the improvement of supplies, had led to an increase in the consumption of sugar and fats at the expense of protective and tissue-building foods This change might not be of great significance to adults but it might be harmful to children by displacing from their diet the constituents necessary for healthy growth "This tendency *seems to be* particularly characteristic of family catering where the average protein intake expressed as a percentage of requirements *is in an inverse* ratio to the number of children While accepting that we must not be too rigidly bound by theoretical standards of dietary sufficiency it would be prudent to scrutinise closely the growth of children over the next few years for early indication of the effects of unbalanced nutrition so that timely measures may be taken to counteract it."

Referring to infant foods fortified by vitamin D, and the possibility of 'virtual poisoning by vitamin D," the report says that an inquiry into the prevalence of this condition has been started

SUDDEN DEATH IN INFANCY

Every year a number of babies are found dead unexpectedly in circumstances suggesting accidental suffocation Death was usually recorded as from asphyxia, but increasing doubt has been thrown on this by findings both in the United States and in this country of evidence of pulmonary disease in some cases To gain more exact information, the Public Health Laboratory Service agreed to coöperate in an inquiry with anatomists and social workers; and at Colindale, Cambridge, and Peterborough (and independently at the Hospital for Sick Children, Great Ormond Street) pathological and bacteriological examinations are now being made on babies dying suddenly without any obvious cause The possibility of various infections, as well as of bacterial infections of the lung is being borne in mind, but the investigation has not yet proceeded far enough to justify the drawing of any conclusions.

N H S PRESCRIPTIONS

National Health Service statistics on prescribing show that in a sample of 127,809 prescriptions for drugs dispensed in the general practitioner service in January, 1953 cough mixtures accounted for over 17% of the total, and medicaments for external use for another 11%. Laxatives and purgatives accounted for over 10% 'This is the range of homely remedies which used to be characteristic of the domestic medicine chest before the National Health Service came into being There is no change of emphasis, but only of the providing pocket

BLOOD-TRANSFUSION

The report refers to what appears to be an extravagant use of blood in modern hospital practice It is suggested that much of the excessive use is due to a failure to appreciate the limitations of blood transfusion and to lack of knowledge of the clearly defined indications for its use The ratio of 24 5 bottles of blood issued for every bottle of dried plasma gave a pointer to a way in which a very considerable economy could be made In certain conditions and circumstances dried plasma might satisfactorily replace whole blood and might even be preferable to it. Greater use of plasma would have the effect of making it more certain that patients who must have whole blood would not be deprived of it

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[1] port of the Ministry of Health for the year ended Dec 31 1954 Part II. On the State of the Public Health H.M. tionery Office Pp 2?4. 8s 0d

STAFFING THE LABORATORIES

There are serious difficulties in getting suitable men to join the technical staffs of the hospital pathology service Things are worse in some regions than in others , in highly industrialised regions, such as Manchester, the situation is particularly bad A subcommittee appointed by the central pathology committee has been considering the problem The report mentions some of its recommendations

“ Leaving aside the economic aspect of this problem, which is by far the most important one, there are some things which could be done to make the service more attractive to the youths selecting a career The age entry for the first technical examination—the Intermediate Diploma of the I.M L T —could be reduced from 20 to 19 years and it should be made possible for the bright boy to qualify sooner than his less gifted colleague The apprenticeship of the student should be spent in a laboratory or group of laboratories giving a wide range of technical experience, and exploitation of the trainee by using him as a ‘ pair of hands ’ for dull repetitive low grade work should be stopped ”

INFECTIOUS DISEASES

Tuberculosis

In the past six years mortality from tuberculosis has fallen by 64%, but the decline in the number of notifications of respiratory tuberculosis has not been nearly so great Notifications in 1954 were only 14% less than the 1949 total Better results are seen in non-respiratory tuberculosis, notifications of which fell by more than 50% between 1942 and 1954 The number of contacts examined continued to increase, though the number of new cases so diagnosed was now only about 2% The waiting-list for institutional treatment fell by over a half in the past twelve months, the report records, and the situation should continue to improve until there will be no delay in providing accommodation at once for all patients who need it

Smallpox

England and Wales had no case of smallpox in 1954, but Sir John again expresses concern at the low vaccination-rate among infants. For adequate protection at least 75% of infants should be vaccinated and a revaccination rate of about the same figure is desirable In the year ending June 30, 1954, the infant-vaccination “ acceptance rate ” was 34 5% for the whole of England and Wales , the corresponding figure for 1953 was 34 2% Acceptance rates vary widely in different parts of the country among the 49 English counties the 1954 rate varied from 5 8% in Derbyshire to 63 5% in East Sussex, and among the 79 English county boroughs from 1 9% in Leicester to 66% in Canterbury

Diphtheria

In 1954, for the first time on record, the number of deaths from diphtheria reached a single figure There were no deaths in children who had been immunised within five years of contracting the disease Diphtheria is now less prevalent in the age group 10–24 than it was in 1949, suggesting that effective immunisation is now better than it was at these ages Estimates of the proportion of children under 5 who are now protected against diphtheria are as follows under 1 37%, 1–2 56%, 2–3 64%, 3–4 70%, and 4–5 63% These figures, the report says, are a tribute to the attention given by local health authorities to diphtheria prevention , but it seems that still higher percentages must be attained if the amount of the disease is to be reduced or, better still, eliminated in the younger age groups

Dysentery

In contrast to typhoid fever, which had virtually ceased to be a public health problem in this country, dysentery took another “ huge bound ” in 1954, and at 31,858 notified cases was over 1½ times higher than in 1953 and the highest on record. Fortunately, it was not very severe, and the ratio of deaths to notifications (0 1%) was the lowest yet recorded Nearly three-quarters of the notifications related to children under the age of 15, and of this group those of 4 and under were twice as liable to the disease as their elders There was evidence that the infection was largely transmitted directly from person to person and not by contaminated food “ Avoidance of spread involves cleanliness of body and clothing and, above all, thorough washing of the hands after each visit to the toilet ”

NOR ANY DROP TO DRINK?

If one of the larger atomic-weapons were expl
a populated area, the survivors would have thr
needs—shelter, food, and water As a protection
the fall-out of radioactive products of an expl
roof would be the vital necessity , and a start h
made in assessing the available cover—not only
but churches, barns, and byres—from Corn
Caithness As regards food, large and dispersed
are promised, and many people are devoting lon
to training in the tasks of feeding a homeless mu
But has the same attention, we wonder, been paid
supply of drinking water free from radioactiv
tamination ? No part of these islands would be “
and after even one single explosion all the expose
over an area of perhaps a thousand square miles
receive lethal doses of radioactive dust Some
is soluble , and, though it may be detected, its r
from the water on any large scale is probab
feasible

How much water would be required after
catastrophe ? The population, we may assum
be scattered, partly by design and partly in pan
in any rural area it may be greatly above the n
For everybody life will be as hard as that of a sol
the field, or harder , but one can hardly hope that
and frightened civilians of all ages will display
military virtues The soldier has often existed on
gallon a day , but, taking into account the dehyd
of radiation sickness, 4 gallons seem a more reas
figure for the civilian need

The only water likely to escape radioactive
tamination from the air is that which comes from
and covered springs In areas where most public su
are drawn from deep wells, the demand should be sat
so long as pumps and pipes escape damage. But
towns and villages, and almost all our large cities, d
their water from rivers or lakes or from gathering gro
in the hills To devise any protection for these is be
human wit, and alternative supplies are essential. S
amounts of water can be moved by tanker vehicles,
the problem is too large for that solution We mu
prepared, therefore, to use every source, however s
which will yield water safe to drink Almost all ove
country there are small supplies, public and pri
whose waters are not exposed Many farms have so
sufficient for themselves, their cottages, and livest
Old houses, both in town and country, almost al
have wells some are in use but some have been forgo
since a main supply was provided Many ancient to
have disused springs which watered the citizens unt
hundred years ago The railways and industry own m
large supplies unknown to outsiders Whether all th
would suffice to supply people's needs after an ato
explosion we cannot tell, but we believe that an import
part of the preparations against such a disaster is t
every supply in every district should be sought
inspected, and catalogued In many country distr
much of this information is already in the hands of
sanitary authority, but much remains to be done U
the location of a relatively safe water supply should dep
all the plans for succouring the victims of atomic war

Many of these smaller water supplies do not reach
accepted levels of bacterial purity , but if one w
faced with a choice of evils the rose spots of ente
fever would seem no more than cosmetic defects co
pared with the effects of internal beta radiation Besi
the Army School of Hygiene has long experience
rendering the most dubious waters safe to drink,
methods which are neither expensive nor exacting
time or intelligence Similarly the school should ma
available its knowledge of how to dispose of excreta
the field In all the talk of Civil Defence we do n
remember hearing this problem mentioned

Smog in the North-West

A report by the medical officer of health for Man ester, Dr C Metcalfe Brown, says that the climatic nditions during last month s severe fog[1] were similar those responsible for the London fog in 1952—namely, anticyclone with practically no wind, a lower tempera re and higher humidity than usual, and a cold layer air overlaid by a warmer layer The fog developed on v 16 and became more dense on the next two days ereafter it cleared, recurring in some districts from e to time, though not so densely until the end of vember The number of deaths on Nov 18 was about 2 times the daily average for Manchester in Nov ber A high proportion of the additional deaths were e to bronchitis In Liverpool on the other hand, it is ported that during the three foggy weeks there were er deaths than during the same period last year

In Salford, Dr J L Burn, medical officer of health ported that several hourly readings on Nov 17 and revealed a higher concentration of smoke and sulphur oxide than at any time during the London smog of 52 During November, however the total number of aths registered in the city of Salford was 157, compared th 159 in November 1954 Deaths from heart and piratory diseases did, however, increase from 91 in 54 to 99 in 1955 It is estimated that there were less an a dozen deaths in Salford which could be ascribed the smog On the other hand, morbidity was doubtedly greater, and practitioners often had 20 tra calls to make daily There were exacerbations of onic bronchitis several days after the smog Though re were few deaths, many patients with existing onic respiratory disease became very ill. Asthmatics ally fared better than bronchitics There was much chitis and minor respiratory infection not all of ich could be ascribed to the smog The number of claims for sickness benefit increased significantly ding from attendances at schools and nurseries the ff were much more affected than the children Many people were able to stay in bed or in the house during worst 48 hours If the smog had lasted longer ny of them would have had to go out for shopping so on and they might have suffered much more.

Report on Factories

In 1954 the number of people employed in factories reased to a new peace-time record This increase is ected in an increase of accidents—from 158 507 in 53 to 161 458 in 1954 in factories only and from 010 to 23 700 in other places covered by the Factories ts. These figures are recorded by Sir George Barnett, ef inspector of factories, in his annual report.[2] The ort shows that the accident-rate in 1954 was 22·4 per 00 workers in factories, compared with 22·7 in 1953 d 22·5 in 1952 The accident-frequency rate (calculated m information provided by 2300 factories) was 1·62 r 100 000 man hours compared with 1·60 in 1953 d 1·61 in 1952 In 1954 there were 9522 accidents to s and 3166 accidents to girls—increases on the 1953 ures of 288 and 117 Accidents to workers aged 60 over numbered 13,552 in 1954, compared with 12 940 1953; but for the third year in succession the accident es for people aged 60 or over employed in factories re lower than the rates for those in the prime of life.

Chiropody Service in London

At a meeting on Dec 6 the London County Council pted a recommendation of its health committee that e Minister of Health be asked to receive a deputation m the council to press for the development of the ropody service provided by the council under the tional Health Service Act. Previous deputations in ril, 1952, and July 1954 were unsuccessful, but the mmittee are impressed by the continuing and growing d for development of this service, which can do much keep old people active and forestall trouble for the ng. What the committee want is to provide 21 new clinics and 78 extra sessions to start with these uld give a service in those boroughs at present without 2 more clinics and 96 extra sessions would follow r to fill gaps in the service elsewhere The estimated t is £10,370 in the first year and £5570 a year thereafter g to £11 100 ultimately

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[1] See *Lancet* Nov 26 1955 p 1142.

[2] Cmd 9605 H.M Stationery Office

Parliament

QUESTION TIME

Frontal Leucotomy Operations

Dr **Donald Johnson** asked the Minister of Health if he would state the number of operations for frontal leucotomy performed on involuntary patients in mental hospitals in England and Wales during 1952 and 1953 and in view of the personality changes caused by such operations, what formalities were necessary for permission for such operations to be performed beyond the decision of the physician superintendent of the hospital.—Mr **Iain Macleod** replied: Figures of leucotomy operations are not available for 1953 and those for previous years include voluntary as well as certified and temporary patients. In 1952 the number of operations performed was 1355 The decision to perform any operation on a mental patient under detention is one for the medical practitioner concerned having regard to his duty to preserve the patient s life and health It is normal practice for the consent of the nearest relative to be obtained if possible and it is also customary for more than one doctor to be concerned in the decision as to this operation.

Dr **Johnson** Is the Minister aware of the warnings concerning the results of this operation issued recently by prominent specialists and research workers in mental illness? Can the Minister ensure that wherever possible the consent of the patient is obtained for an operation like this, for even though certified and in involuntary detention he is in many cases a person enjoying free will and the powers of decision?—Mr **Macleod** I am well aware of those reports and of the anxieties which have perhaps given rise to this question I am arranging—indeed we have already embarked on—a follow up review within my department of cases of leucotomy

Dr **Edith Summerskill**: Is it not a fact that in the Maudsley Hospital a board of doctors considers cases where frontal leucotomy is proposed? Would the Minister not advise other hospitals where possible to arrange for a number of doctors to consider these cases?—Mr **Macleod**: I am not aware of the steps taken in the Maudsley Hospital in the consideration of these cases We have regulations on these matters available on request to doctors which have been drawn up by my Board of Control to meet these difficult circumstances I should be glad to consider whether these rules—or advice is the better term—should be circulated to doctors

Mr J B **Hynd**: Is the Minister aware of the very considerable concern caused by Press articles alleging that in an unnamed hospital in England experiments are being carried out for sheer experimental purposes on these patients? Can the Minister make any statement that will dispel that misgiving?—Mr **Macleod**: I have seen those reports. In relation to the reference by certain papers to an experiment carried out by Dr Sherwood, which was referred to in a paper before the Royal Society of Medicine I am assured that the consent either of the patient or of relatives is always obtained in such cases.

Diet of Old age Pensioners

Replying to a question Mr **Macleod** said that according to the National Food Survey the diet of old-age-pensioner households as a group for the first half of 1955 in comparison with the scales of requirements adopted by the British Medical Association committee on nutrition, was adequate for all nutrients except perhaps iron where it was 92% Except for vitamin C where the difference was largely seasonal, the levels were all higher than in 1950

Nursing Courses for National Servicemen

Mr **Stanley Awbery** asked the Minister of Labour if in view of the shortage of male nurses for mental hospitals steps would be taken to bring to the notice of young men due for call-up that if they wished to take nursing examination courses they could obtain deferment of National Service for this purpose and that there was a training allowance for each of the three years of training for them and their dependants.—Mr **Harold Watkinson** parliamentary secretary to the Ministry replied: I would like this to be as widely known as possible and also the fact that the men who have trained as nurses will be able to continue nursing during their National Service Special posters have been provided for exhibition at employment exchanges, particularly on days when men register for National Service and leaflets giving full details about allowances during training are also available

Myxomatosis

Replying to a question, Mr **Heathcoat Amory**, Minister of Agriculture, said that, apart from small areas in the Midlands and the North, the whole of England and Wales had been largely denuded of wild rabbits as a result of myxomatosis Examination of surviving rabbits suggested that the number that had acquired immunity was less than 1% of the former rabbit population.

Heroin

In the House of Commons Mrs **Lena Jeger** asked if the Home Secretary could say why, in view of the figures which had been published of the extent of heroin addiction in the United States, he imagined that the proposed ban would have any effect on addiction in this country —Major **Lloyd-George** replied I am simple enough to believe that, if large numbers of countries think that to ban heroin is a good thing to get rid of this appalling scourge, the contribution made by this country would help in some way towards it The fact that the figures for the United States are as high as they are does not seem to me to be a reason why we should not join with other countries

Sir **Robert Grimston** Will the Home Secretary make it clear, in any statement or white paper that he issues, that this ban will not prevent the use of existing stocks of heroin ? Will there not therefore be an intervening period when tests can be made and medical opinion crystallised ? Will the Home Secretary give an undertaking that the Government will keep a close watch upon the matter, so that if the fears of a very large proportion of the medical profession prove to be right—and there is no proper alternative—the ban may be rescinded before the stocks of heroin have been exhausted ? —Major **Lloyd George** Under the Dangerous Drugs Act the manufacture, import, and export of dangerous drugs can be carried out only by licence of the Secretary of State This ban simply means that the manufacture, import, and export of heroin will cease, and that is all it means

Replying to a further question Major **Lloyd George** said that the quantity of heroin produced in this country in 1952 was 3104 oz , in 1953, 3845 oz , and in 1954, 4233 oz

Drug Traffic

Replying to a question Major **Lloyd George** said that during 1954 there was 1 conviction under the Dangerous Drugs Act, 1951, for offering to supply drugs There were 218 other convictions under the Act, the majority of which were for unlawful possession of drugs, but it was not possible to say in how many of these cases the drugs would have been sold to another person

Mr **H M King** Is the Minister aware that although the figures he has given show that the main ravages of the drug menace are outside this country, many of us are behind him and the Government in their linking up with other nations in a universal effort to stamp out this evil ?—Major **Lloyd George** Whilst I have no evidence of any serious increase in illegal traffic in or use of drugs in this country there has been some increase in the traffic in Indian hemp, and I am watching this development closely

Replying to a question asking what representations had been received from the World Health Organisation about the advisability of banning other drugs in addition to heroin, Major **Lloyd George** said that the 18th session of the Economic and Social Council, which recommended the banning of heroin, also urged governments to prohibit the manufacture, import, and export of ketobemidone, and urged countries in which cannabis preparations were still being used to explore the possibility of discontinuing their use as rapidly as possible Ketobemidone, which he was informed was an exceptionally addicting synthetic drug, had never been used in this country, and he did not propose to licence its import or manufacture here unless it was required for scientific purposes Cannabis was used in small quantities as colouring matter in corn plasters and corn paints He was informed that its use was on the wane He did not propose to take any action at present to prevent its use

Poliomyelitis Vaccine

Replying to a question, Mr **Macleod** said that no antivirus infection vaccine was being used in the National Health Service on contacts with cases of poliomyelitis, but some was being made of gamma globulin derived from human-blood plasma

In England Now

A Running Commentary by Peripatetic Corresp

It's a pretty hopeless task to keep up with the lit these days, but what one misses in the journals ca be picked up from unlikely sources Last wee farming notes in our local rag reminded me th Smithfield Show of 1952 provided one of the most ficant clues for preventive medicine The animals affected during the Great Smog were cattle housed the most hygienic conditions, whereas the pigs a sheep, which were not so assiduously toileted, e ill health Apparently the ammonia produced neut the noxious acids in the air I was sorry to miss m a relative ammonia-assessment at Earls Court this for we usually run up to Town in December to off the Christmas shopping, and alleviate any feel homesickness by slipping into the show to see w winning the Angus v Shorthorn battle But I was in 1952, and Earls Court was certainly pretty fruit fact we located the entrance by airborne scent th the gloom in spite of our own nasal congestion

The cattle were tethered with only a southern a for the visitors, so that sentimental television vi would not block the telephone lines with offers of tion, and so jeopardise the nation's meat supply C quently the natural modesty of the herdsmen led to rush around with pails and brooms Sheep and were much more discreet, and anyway most spect had become hardened to Nature by the time they rea that section of the show The ammonia content o air withered the medicated packing of our pocket inhaler The cilia on our turbinates lashed thems into ecstasy Our sinuses were supercharged with precious vapour We staggered back through the s drawing life from ethmoidal NH_3 till we reached Fu By Bletchley the litmus was just turning We saved

The moral is clear Back to the middensteads! T damned reformers never know where to draw the Who ever heard of smog deaths in Ireland ? The gintleman does more than pay the rent, he's far m efficient than all your fancy smog masks, and who eating fried smog masks anyway ? Back to the day Gardy Loo, and open up the River Fleet. What we one way we shall gain another I don't say we sho go as far as the monastic cult of self-induced ketosis, the odour of sanctity kept away more than the Dev our agricultural correspondent is right

* * *

The other day I went to the R.S M *to cons* classical work on *Tumours of the Breast* This great b of some thousand pages was the fruit, as its distingu authors, one English and one American, say in preface, of thirty-five years' intensive study catalogue number was 618 10 006, but the shelf empty I asked one of the assistants to help me In fullness of time she located it—in the basement st And the date of this sometime Last Word on the Malte —1931

* * *

Eskilstuna is often called the Sheffield of Sweden, admittedly it is a centre of the steel industry, renow for its cutlery and silverware But there the resembla ends It has a population of about 60,000 people and a clean, pleasant place, charmingly situated on banks of the River Hjelmar It has many houses character, good shops and hotels, and attractive op spaces by the waterside But the hospital has to be se to be believed Though it is a typical Swedish count hospital, its furnishings and equipment are enough to ma any British provincial consultant's mouth water Ga decorated waiting-rooms with comfortable easy-chai occasional tables, and glossy magazines, are provided outpatients Attractive modern paintings are on th walls everywhere—in the X-ray rooms, and in "our litt heart station, which is now after five years rather old And the gardens are nearly perfect, with fountains play among smooth lawns surrounded by masses of flowe Flowers indeed are everywhere in Sweden; hardly house is without them, and the window boxes in eve flat are ablaze with colour

As I walked through this scene of delight towards the in entrance of the hospital I was unexpectedly accosted a young man in white trousers and tunic His perfect nglish was not unusual in Scandinavia; but fixing s eye on my tie, he greeted me as a fellow graduate here are, it seems, too few doctors in Sweden particu rly in some specialties and when a post as anæsthetist s advertised in the English journals my compatriot plied for the post. He has married a Swedish wife d loves the country of his adoption

* * *

It was with some excitement that I saw in *The Times* photograph over the caption The Queen looking at a se undergoing an X ray and cardiograph test after ening the University's new veterinary school at ambridge yesterday In the interests of veterinary ence it is much to be hoped that there are also avail le as controls, records of the X ray and cardiograph ts done on the horse before he carried out this for m, doubtless novel and possibly somewhat arduous emony

* * *

Our Greek patient did not understand much English, d conversation with her was limited In an awkward use I asked her what she understood by Enosis. "Enosis?" she said in all innocence, "they are fruit its."

* * *

I had been warned about the strain to which my mentary canal would be subjected in Moscow One hority advised the preliminary ingestion of blotting per and although I did not accept this procedure ally, I had pondered the possibility of an appropriate stitute in the form of some modern pharmacological eparation

So when I was led to the long table of what I supposed be the appetisers, I restricted myself to a slice of oked salmon and a saltspoonful of caviare: not cause I like the stuff, but because it seemed a pity to lect the opportunity With self complacency and descending smile I stood back and watched the young hletes as they fell, like vultures or ravening wolves the hard boiled eggs, the cold meats, the fishes and r less definable comestibles Ha ha my dear boys d girls, thought I Nemesis awaits you How will u fare later: what space will you have left when u are called upon to toss down glass after glass of y Vodka, and since you may not offend your hosts refusal anaconda like, attempt to dispose of a long cession of dishes? But with the passage of time a wing suspicion developed into certainty when dis ral of the assembled was obvious in its implication w back to the trestle board but there was left not so h as would have sustained a tiny sparrow

nd so I repaired to bed nibbling chocolate with which d provided myself before leaving England. Here at t I had shown some sense for a bar of chocolate ts 18 roubles or about 32s 0d

* * *

The Minister of Health's appeals for economy in the tional Health Service are making an impression—at st on the general public

xaminer (showing an Esmarch's bandage): "Do you w what this is?"
irst-aid candidate "A rubber bandage"
"Quite right what is it used for?"
"To stop bleeding in limbs"
"Yes, how long would you leave it on?"
"I don't know"
"Well would you leave it on a week?"
"Oh no"
"Why not?"
"The rubber would perish."

* * *

ews from school—Science this term did not exist until week ago when the first class was held In accordance th this there is nothing much to be said The top form d not make fireworks with Mr J—— as they had hoped term and they also did not manage to make a thermo er since the mercury had not come at the time But ll they have been going on with their experiments some h an successful and others not

Letters to the Editor

HEALTH CENTRE OR GROUP PRACTICE?

SIR,—We have read with great interest the description of the Harlow health centres (Oct 22)—a most impressive demonstration of health-centre organisation and medical coöperation For us however, this splendid example of good general practice is "too expensive" We are writing to show that such expenditure is not necessary for good general practice and health service coöperation There is real danger that such a magnificent and elaborate set up may discourage practitioners from setting up "good general practice" on a less ambitious scale To encourage them we wish to make a few points which we have learned during the growth and organisation of our own practice, a group partnership of six in a semi industrial suburban practice within a new housing area

Among the "unique features" of the Harlow centres, there are some which we consider undesirable and others not unique Efficiency and great economy is claimed In our experience it is possible to achieve a design at least as efficient and certainly less expensive

(1) The consulting room need not be as large as at Harlow In suites where there are two or more consulting rooms an examination room can be shared by more than one consulting room and thus reduce the cost of building (The cost of an examination room is calculated at £180)

(2) The consulting room with examination room, can be used for many purposes—antenatal clinic, baby clinic, conferences—which again reduces building cost

(3) A specimen testing room is a luxury Any flat-bottomed sink installed either in the nurse's room, lavatory or consulting room will solve this problem A sluice room again seems unnecessary to "wash soiled mackintoshes and kidney dishes" these can easily be dealt with in this sink This saves a further room Fewer rooms in the building means less walking and cleaning and reduces both running costs and capital outlay The introduction of such highly specialised rooms into general practice planning however desirable in hospital outpatient departments seems uneconomic and really unnecessary

(4) Local regulations may not permit a shelter for prams in front of a dwelling house; the most that can be hoped for is a suitable space But hundreds of child welfare centres have worked for years without a covered in pram space This is a desirable luxury unobtainable in most areas.

(5) Record keeping for any practice with three quarters full lists or more takes more than a receptionist-secretary if it is not to take an undue share of the practitioner's time particularly where there are morning, afternoon, and evening surgeries six days a week

(6) Record keeping of the National Health Service records in any new housing area is quite easily under-estimated The amount of coming and going among the residents is quite remarkable We find that a vast amount of time of our three secretaries is spent on these administrative efforts. It might be of interest that 86 ft of shelves are needed to store the N.H.S records of our patients.

(7) Coöperation with local authorities does not depend on buildings. It depends on the willingness to coöperate by both sides Health visitors, tuberculosis health visitors district nurses, and district midwives are frequent regular and welcome colleagues in our practice

(8) To have the dentist in the same building is by no means essential to good relations.

(9) Electricity as a means of heating is a mistake, as we have found The additional capital cost of an automatic gas or oil controlled central heating might well have been more practicable and cost saving than the pram shelter

(10) What has been described as unique and a special problem at Harlow holds good all over the country wherever there are new housing estates with their high rents, few shops and other facilities, increased distances from work and school and the wide-open door to the high powered hire purchase salesman Though Dr Stephen Taylor and his colleagues describe their capital expenditure as modest the sums involved seem hopelessly unrealistic; and our experience demonstrates that much less than £1 per patient is possible as capital expenditure for a general practice unit if the work

is so organised that the maximum use is made of all available space In our experience the *capital expenditure on buildings* and all accessories was 13*s* 3*d* per patient This includes the capital cost of adapting two neighbouring buildings and purchasing one, and building and *furnishing a third premises* completely, to include multiple consulting rooms with examination rooms, waiting rooms, and record space, and space for the all-important member of our team, the nurse

(11) In employing two full time nurses at the surgeries, we find they make a fundamental contribution to good general practice, particularly in a new *housing area where these* nurses run a minor outpatient department

(12) Industrial health is also part of our practice, in our area there are five major industrial undertakings, of which two are visited regularly by two of us, whilst two others have other general practitioners attending and advising them One of the factory ambulance rooms is linked with our automatic internal telephone system, which serves all our premises and rooms

In conclusion, we would like to make it clear that our discussion of the Harlow health centres is not meant in any way to detract from their value, but we hope that other general practitioners may realise what can be done without large capital sums

C E MUNRO
E V KUENSSBERG
A R LAURENCE
G MACNAUGHTAN
A H D LARGE
Edinburgh G IRVINE

SLUICE-ROOMS

SIR,—In a number of hospitals that I have visited recently I have noticed what I consider to be a dirty and dangerous practice—dangerous particularly in children's hospitals Fouled mackintoshes, urine bottles, and other infected vessels are washed out in the sluice-room in a sink which is also used for cleaning and filling patients' wash-bowls It may well be that the contamination of the wash-bowls in this way is small, but it is certainly an unpleasant practice Another sink should be provided somewhere (not necessarily in the sluice-room) where bowls can be washed, filled for serving, and stored nearby

It would be a good thing if doctors would take notice of the processes that go on in sluice rooms and not ignore the doubtful hygienic practices in some of them It may be found that the nurses' techniques are unsound, but it is more than likely that faults would be attributable to lack of space, inadequate equipment, and insufficient interest on the doctor's part in applied bacteriology for the *whole* of his department

London, W 1 HUGH GAINSBOROUGH

POSITIVE OR NEGATIVE ?

SIR,—From time to time discussion arises about the *reproduction of radiographs for publication* Is it better to have a positive print (in which the radio opaque areas, such as bones and barium filled stomach are black) or a negative print which looks the same as the original film ? I favour the positive print At each stage in the transition from what is visible to the radiologist to what the reader sees in the textbook or journal, there is *inevitably some loss of definition*, but the last stage (positive to negative print) is avoidable and should not, I think, be used Moreover, it costs twice as much to reproduce a radiograph when this extra processing is involved

It is hard to see what advantages there are in presenting radiographs as negative prints The chief advantage of a *negative is its translucency*, and this is lost when it is reproduced on paper For viewing the original films, transmitted light is used, and the luminosity of the *transparent areas is so great* that they stand out as solid objects No reproduction can give this brilliance and solidity For the same reason, a picture of a stained glass window never has the life of the original But the radiograph gives a sense of solid bones and soli *opaque material in the viscera that the negati* can

Radiologists are accustomed to both sorts of but for the ordinary reader it would surely be b have a uniform method of reproduction which g clearest result—namely, a positive print M such a print accords with the accepted photo rule—a negative to look *through* and a positive to

London, S W 10 A P BERTWI

ECLAMPSIA

SIR,—Dr Salzmann (Nov 5) states that a diet first class protein may prevent toxæmia of preg while carbohydrates undermine the resistance expectant mother to invasion by fœtal hormones, male or female

It is true that Hamlin,[1] after he began putt patients on a diet, found that eclampsia had disap from his clinic But Hamlin is still, in his own observing many cases of mild toxæmia

In 1938 a countryman of Hamlin, Dr Arthur Wi Melbourne, spoke on eclampsia in Amsterdam, at the national Congress of Obstetrics and Gynæcology I bourne from 1910 to 1937 severe eclampsia was very co In Dr Wilson's opinion this high frequency might be ass with the high meat consumption in Australia—the hig the world, according to the League of Nations (annu sumption 107 2 kg per head, compared with 62 England and 42 5 kg in Holland)

In 1950 Hamlin stated that in Sydney eclampsia w a much feared complication of pregnancy, wherea disease is unknown in the Javanese population of Indonesia, as many Dutch observers have remarked.

I note that Hamlin's diet includes *much meat an* pints of milk daily, but only three ounces of bread

The diet of the population of Holland during th was quite different some kind of whole wheat b potatoes, vegetables, cereals, a little meat, 2 butter once weekly, and far less dairy products people here are used to Expectant mothers also rec some milk powder During this period eclampsia be very rare and mild toxæmia disappeared, and thi the experience in most European countries During last months of the war many had to live under condi of semi-starvation, and when the people received food eclampsia again became common

The opposite observation has been made in sheep by Pa who induced toxæmia of pregnancy by feeding these an large quantities of hay and green fodder and putting thereafter on a starvation diet (chiefly mangolds) Tox of pregnancy in sheep is very similar to that in man, altho there are clinical differences In toxæmia of sheep the adr cortex/thyroid ratio is doubled, probably through enlarge of the adrenal cortex, which in starvation becomes hy plastic [4]

It seems to me worth while to try for pregnant wo a diet somewhat resembling that in Holland during war, with more bread, vegetables, cereals, potatoes, less meat and fat, and no dairy products *at all*, McCa and Widdowson [5] have described their experiences w such a diet, without meat, *in an orphanage*, and on whole these have been favourable (The Javanese no dairy products, but cover their need of fat with coc oil, and whereas toxæmia is unknown among them occurs among Europeans in Indonesia, who mostly European food)

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1 Hamlin R H J *Lancet*, 1952, i, 64
2 Hamlin, R. H J *Proc R. Soc Med* 1953 46, 303
3 Parry H B J *Physiol* 1954, 126, 40P Parry, H B., Tay W H *Ibid*, 1955, 127, 54P
4 Hottinger, A, Gsell O, *Uhlinger*, E Hungerkrankheit Ba 1948
5 McCance, R A Widdowson, E M *Lancet*, July 30, 1955 p

r Salmann's suggestion that fœtal gonadal hormones esponsible for the appearance of œdema in pregnancy nds me of the work of Taylor et al.[1] who were of the nion that œstrone, progesterone, and testosterone, ulating in the mother's blood caused retention of ium, but this was before it was known that cortical enal hormones such as aldosterone, are strong eralocorticoids. To me it seems that fœtal hormones only augment the quantity of the circulating maternal rmones from which they are not different in any pect. An allergic reaction is in my opinion improbable.

msterdam. R. SCHUURMANS

STAFFING LABORATORIES

SIR,—We are very much in agreement with Mr. Snow d his colleagues whose letter appeared last week. The oposed grading of laboratory technologists is most desirable.

Under these proposals many senior and experienced en will not be eligible for the higher scales of pay ere remuneration is to be related not to the skill and perience of the technologist concerned, but to the mbers of staff employed in the laboratory or division. This particularly concerns the histology section where must be rare for a staff of four to be employed in any t the largest laboratories whereas in bacteriology is almost the rule to have at least this many.

The effect will be felt most in the smaller laboratories ere it is essential to have good senior men; present aff may well leave for better paid posts in larger boratories and future applicants be wanting.

More realistic salary-scales are needed in the present lor grades possibly with an extra allowance for special ponsibility but without introducing new categories ong the grades.

County Hospital,
Hereford.

W. H. J. BAKER
D. R. CHRISTIE

AN INTRACTABLE FOLEY CATHETER

SIR,—Like your peripatetic correspondent (Nov. 5) I s recently faced with the problem of a Foley catheter e bulb of which could not be deflated by opening the e tube or aspiration through it.

The patient was referred from another hospital where the theter had been inserted to relieve an attack of acute urinary ention. A cystoscopic examination was planned to decide the best type of prostatic surgery when this technical ch was encountered.

After a workmanlike pull on the catheter had failed to duce the desired effect a cystoscope was passed into the dder alongside the catheter. An attempt was made to t the bulb with a pair of cystoscopic scissors, but the rubber ved too tough. The cystoscopic biopsy forceps could not made to grasp the tense bulb. Both the coagulating and ting diathermy was next tried with the result anticipated your correspondent.

The catheter was labelled "5 cc" (indicating the capacity the bulb) and it was decided to further inflate the bulb try and burst it. Finally fully 140 c.cm. was injected; except for the appearance of suprapubic swelling nothing ppened. No doubt the bladder wall protected the bulb to e extent.

Suprapubic exploration was being seriously considered. cystoscope was passed again as a final effort and advanced te vigorously after it had engaged the prostatic urethra. dull "pop" was heard, the suprapubic tumour disappeared d the catheter floated out. Unfortunately with the explo n the bulb had come off completely and was still in the dder. It took a few more minutes to catch this evasive t of rubber floating in the air bubble with a biopsy forceps.

On one or two previous occasions I have found with s type of catheter that, although fluid or air can be ected into the bulb it will not deflate; possibly the mmunicating channel is very small in parts or acquires a valve-like defect during the manufacturing process. A preliminary test of these bulbs would appear to be a good routine—to test not only the integrity of the bulb but also whether it will deflate normally. If a 5 c.cm. bulb holds up to 140 c.cm. a liberal safety margin can be assumed.

Edendale Non-European Hospital,
Pietermaritzburg,
Natal, South Africa.

THEUNIS COETZEE

IN THE MENTAL HOSPITAL

SIR,—There is one common factor underlying the complaints of recent writers on this topic. It is the strange twilight state of being poised unhappily between the old "asylum" and the at times astonishingly artificial world of the modern mental hospital.

One of the difficulties with the "lunacy reformer" as referred to by Dr. Yellowlees (Dec. 3) is his energetic and sometimes thoughtless drive away from the old abuses straight through to the new ones. It is axiomatic that our big problem has always been and still is the chronic psychotic. Psychiatrists appear to be in danger of spontaneous subdivision into what may be termed "psychotic psychiatrists" and "neurotic psychiatrists"—according to predominant interest. There is often something approaching fear and distrust between the "psychotics" and "neurotics" on a hospital staff. A preference for the psychotic patient and the standard range of physical treatments often goes with the urge to change everything and create the new artificial world of the mental hospital which threatens to outdo the old asylum in rendering people permanently unfit for the normal rigours and frustrations of any natural society.

Perhaps Dr. Bickford's picture (Dec. 3) of the older psychiatrists hardened and brutalised by "daily acquaintance with dreadful things" is exaggerated. It is surprising the amount of turmoil the young enthusiast can create in a mental hospital before he recognises his common human limitations and his specific personal ones. Surely psychiatry is one discipline where experience, maturity, and wisdom count for something!

The status of occupational therapy nowadays appears to vary in direct proportion to its lack of practical usefulness.

In line with current artificiality the more remote the occupation from the kind of things that would occupy and interest the patient in the real world outside the better. Hobbies and handcrafts of various kinds have their place but should not—as is the tendency in some quarters—completely replace more vigorous and muscular activities that improve appetite and sleep and reduce the need for nocturnal sedation. Opposition comes from many quarters because such activity may be called "work" rather than occupation and be associated with the patient helping to keep his current house and garden in order. The opponents of such useful activities have different reasons for their opposition and usually make uneasy bedfellows.

This abuse of occupation to the minimising or exclusion of useful activities is another example of the chronic "over-correction"—possible exploitation of patients in the past now tending towards an unconsidered and emotional ban on all domestic, agricultural and horticultural activities. There seems no good reason for ensuring that the patient's activities in hospital are as remote as possible from his or her normal interests and work in the real world outside the hospital.

This aspect of the great artificiality applies more particularly to the younger, short-stay, and newly admitted patient. Too often he gladly falls in with the new philosophy and so prolongs his unfitness for the necessities of the real world, and in being so encouraged is often contributing to his readmission or series of readmissions.

I agree with Dr. Martin (Dec. 3) that the doctor is inclined to hide behind his white coat and all that it implies. One of the better modern trends is the improvement in interpersonal relations between nursing staff and doctors This could be further promoted by the doctor hanging up his white coat more often and mixing with his patients and nursing staff on more or less equal terms Something on these lines was referred to by Dr Maxwell Jones in a recent talk on his approach to those most *difficult people called psychopaths* It is part of the laudable tendency to approach the whole problem of mental illness in terms of socialised and socialising groups, with medical and nursing staff as integral parts of those groups I find that the "*neurotic psychiatrist*" (of my terminology above) is more inclined to develop along these lines than the "psychotic psychiatrist," who tends to cling to his white coat, his air of scientific mysticism, and his impersonal dealings with patients almost exclusively through the media of his physical therapeutic agents Useful and essential as they are, they are but a part of treatment and possibly by no means the greater part

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[1] Taylor, H. C. jun., Warner, R. C., Welsh, C. A. *Amer. J. Obstet.* ynec. 1943, 45, 547.

If, as Dr Martin points out, the nursing staff should be far more au fait with the intricacies of interpersonal relations, how much more the doctor ? Perhaps for both too much stress is laid on physical psychiatry in training, and the inevitable and permanent human factor is apt to be mislaid—sometimes along with common sense and the maintenance of a firm, conscious appreciation of the issues and values of the real world outside the increasingly artificial milieu of the mental hospital

After the beneficent reforms that have come about we should be on guard against the "lunacy reformer" with his strange and fatal tendency to substitute new abuses for old The chief danger is the creation of an artificial environment within the mental hospital that threatens to resemble some appalling synthetic society of the future as imagined by our more pessimistic novelists—thus retarding rather than accelerating the patient's return to a real world outside the gates of the hospital

Coton Hill Hospital,
Stafford

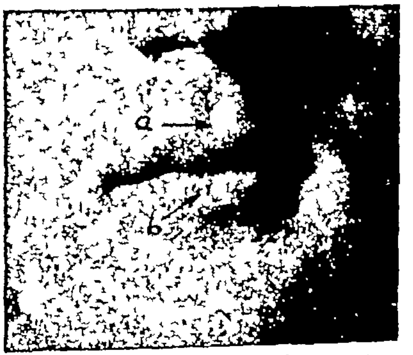
H M FLANAGAN

COMMISSURE IN LOWER LIP

SIR,—The orbicularis oris is a compound muscle which originates from separate muscular units These units, four in number, are located in pairs in the upper and lower lip In the course of development the median parts of the upper and lower quadrants join in the angle of the mouth

The junction of the two upper quadrants may be incomplete, as is normal in cattle, or complete but complicated by the formation of the philtrum, a shallow groove in the upper lip, as it is in man

The lower lip is smooth and its morphological deviations are usually expressed in the formation of the groove or even a sulcus in the middle part of the lip In rare cases the junction of two lower quadrants may be marked by the development of a distinct commissure The persistence of the commissure between the lower quadrants of orbicularis oris in the adult male is shown in the accompanying figure A commissure is regularly shaped and extended through the whole width of the lower lip According to the information obtainable, two other members of the same both females, have a similar shape of the lower li



a, philtrum , *b*, commissure between two lower quadrants of orbicularis oris.

Thus the persistence of the commissure betwe lower quadrants of orbicularis oris may be an exp of hereditary genetic constitution, and could be observations related to the human constitutio human genetics

Department of Anatomy and Parasitology,
University of Queensland, Brisbane

R TUC

NEW SHORT-ACTING THIO-BARBITURA

SIR,—I was much interested in the letter b Shegog Ruddell in your issue of Nov 26 A few m ago a clinical trial of sodium 5 allyl 5 isobutylth biturate (thialbutone sodium) was undertaken at Farm Hospital and I set out[1] the results of a series, to which Dr Ruddell refers These conf the claims of the German workers Weese and Koss Dietman[3] regarding the rapid recovery of consciou and striking absence of postoperative drowsines confusion Since then a further series of 43 pa has been studied, allowing a more critical assessme the drug

The preparation used in this series was supplied by & Baker Ltd under the non proprietary name of thialb sodium.

The patients' ages ranged from 13 to 80 They divided into two groups according to whether premedic with an opiate was given or not

Group 1 included 18 patients, 14 had no premedic and 4 had atropine (gr $^1/_{100}$) only 11 of them were patients and the operations included orthopædic manipulat incision of abscesses, and reduction of simple fractures. dose of thialbutone ranged from 0 25 g to 1 4 g, suppleme in some cases by nitrous oxide A few patients were given succinylcholine

Group 2 included 25 inpatients premedicated witl opiate and atropine or scopolamine The operations mostly herniorraphies and varicose vein ligations, there 2 hysterectomies and a partial gastrectomy Supplemen nitrous oxide/oxygen and relaxants were used as requ Total dosage of *thialbutone varied* from 0·45 g to given mostly as intermittent injections following an induc dose of 0 5 g In 3 cases the induction dose was follo by continuous intravenous infusion of the drug as 0·6% solu in normal saline

Duration of unconsciousness was judged by the time ta to register complete awareness of surroundings in respons *questioning* The duration of postoperative drowsin blood pressure readings, and the time taken by the pat to sit or walk unaided were noted as far as possible.

Side effects

Several side-effects and sequelæ were noted which had been evident in the original small series The number in e group was as follows

	Group 1	*Gro*
Nausea and vomiting	9	4
Drowsiness lasting 1 hour after operation	5	1
Drowsiness lasting more than 6 hours	0	3
Hiccough	5	[illegible]
Clonus and trismus	2	[illegible]
Marked fall in blood pressure	0	[illegible]
Postoperative headache	1	[illegible]
Retrograde amnesia	0	4

Postoperative drowsiness was not usually severe but it much commoner when the patient had had premedication.

In 2 cases in group 2 where the drug was given by t "drip" method a severe fall in blood pressure follow induction These patients had 1 7 g and 1 58 g respectivel and each showed postoperative somnolence for about 24 hour It is noteworthy that 5 unpremedicated outpatients were drowsy and unable to look after themselves at the end of hour, though each had less than 1 0 g This contrasted wi the other 13 unpremedicated patients, who awoke within few minutes of induction, had little or no residual drowsine and were fit to return home within $^1/_2$ hour

Hypotension was severe in 3 normotensive middle-age females 2 had intravenous thialbutone before hysterectom had total doses of 1 58 g and 1 7 g respectively The ad only 1·0 g. before dilatation and curettage

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[1] Nobes, P *Lancet* 1955, i, 797
[2] Weese H., Koss F H *Dtsch med Wschr* 1954, 79 601
[3] Dietman K *Chirurg* 1954 25 185

ds drug is much superior to either of the thio dturates thiopentone and thialbarbitone (' Komi '), as regards rapid recovery of consciousness ght for weight it is less potent than either, and a of at least 0 5 g is necessary to maintain adequate sthesia in outpatients even during operations lasting 10 minutes.

elayed recovery however, is a drawback and therefore drug cannot I think, be unreservedly recommended routine use even in carefully prepared outpatients the other hand if thialbutone sodium is used purely induction in such cases and if full use is made of plementary nitrous-oxide/oxygen maintenance, then mooth and rapid recovery can be predicted far more fidently than with other intravenous agents used in same way

urning to some of the points in Dr Ruddell s letter, ever noted wretching in any patient during induction, a few patients vomited during the recovery phase, but one had had opiate premedication In the unpre dicated adult, if the maximum dose is confined to 1 0 g n 4½-5 minutes is perhaps an unnecessarily long time giving the dose

y thanks are due to Dr P W S Gray and Dr D Zuch their help and encouragement Messrs. Bayer of Lever n kindly supplied their drug (Baytonal) used in the t series, and I am grateful to May & Baker Ltd for the albutone sodium ('Transithal') used in the second series.

ondon, N 10 PETER NOBES

HYDROCORTISONE IN PAINFUL SHOULDER

ir,—I have read with interest the correspondence ing from the article by Mr Murnaghan and Mr cIntosh (Oct. 15)

I had been using procaine 1% in these cases for some e, but when hydrocortisone appeared on the market changed to this For a long time now I have been the opinion that the results were not significantly ferent I have found that if the patient has not efited from the injection of local anæsthetic he is likely to derive relief from the introduction of hydro rtisone at the same site The most important point ems to be to deposit the solution at the ' correct site ' e addition of hyaluronidase to the solution of local sthetic does not seem to lessen the importance this

More Saskatchewan,
Canada.

M GLASSMAN

CHEST PHYSICIANS

Sir,—In their letter of Nov 5 Dr Hendry and Dr tterall spoke of the grading committees harsh treatment of some former members of the tuberculosis service ere is no doubt that gross injustices were done to ior physicians in charge of chest clinics (of whom I one) at the time of the inception of the National lth Service and since in that few of them were raised onsultant status although their long experience in special branch of clinical medicine entitled them to o elevated; and there is equally no doubt that the onal hospital boards the selection committees, and Ministry of Health remain quite unconcerned at the ht of so many skilled and experienced physicians.

he Royal Colleges of Physicians and Surgeons have ablished such a stranglehold upon the profession that ually nobody can hope to be appointed to a con lant post unless he holds the membership or fellow p and I believe that in ninety nine cases out of a dred the colleges direct the policy of the regions and selection committees

The medical profession in this country is bedevilled h a variety of registrable and unregistrable diplomas such as exist I believe in no other country in the world, and I am not aware that we are the better doctors for them a man is known by the quality of his work, not by the diploma he holds

NON HABET

A REPORT FROM HOSPITAL

SIR,—I note from Mr Gruber's letter (Dec 3) that in trying to achieve brevity I have fallen into obscurity

I should perhaps have made it clear that when I wrote to the surgeon asking for information about one of his patients he replied giving me precisely the information I wanted but asked me to write to the administrative chief of the hospital for an official report The report I eventually had from the house surgeon via the administrator was equally courteous but in no way more informative than the letter I had already had from the senior surgeon

I entirely agree with Mr Gruber that consultants are almost always glad to inform and advise about their patients, and the present consultant was no exception The administrative merry go round in this case was, however new to me

London N 1 R E. W FISHER.

PROTOPHRENIA

SIR —Dr Bourne's article of Dec 3 brings to the notice of all who work in the psychiatric field with children a very important problem which I think many of us have been aware of for years This statistical study, coming from an institution dealing with young grossly mentally deficient children, pinpoints the importance of nurture in achieving full potential development Nevertheless I think Dr Bourne does less than justice to the problem of vulnerability He points the analogy with the tubercle bacillus whose pathogenicity none would question though the vast majority infected with it are not ill. ' This does not in any way answer the question why some are and others are not and in making a similar study of family case histories, some of them pursued over years, it has seemed to me that the very striking absence of affected siblings does suggest that the piling up of difficulties plus some unknown source of vulnerability to such difficulties, may be sufficient to turn what could have been a normal development into a severely distorted one

It has been my custom to regard most of these children as psychotic prefacing any remarks I may make about them with a clear statement that in this context we hardly know what psychotic means Dr Bourne regards it as a condition which may be treatable if taken in the early stages, and quotes the therapeutic work of Rank in Boston Even with intensive psychotherapy, however many such children do not come back to a wholly normal course of development and some have to be regarded as permanently atypical ' and ultimately are often lost sight of as members of the mentally defective population Perhaps the most important point that he makes is the real need in building up ego function that adjustments and associations should be made at the stage of development to which they normally belong However successful therapy is in retracing the steps and in re forming sounder relationships a good deal of evidence is accumulating that it is only rarely possible for these children to make a full return to normal

Reverting to Dr Bourne s rejection of the term psychotic ' surely a child makes some kind of ego organisation at however primitive a level from the time that he begins his separate existence ? Disintegration occurring at a very early age prevents many further integrations from taking place and I would have thought the concept of ego disintegration was valid provided we are able to establish at least some very early normal function It is characteristic of some of these histories that they include abnormal maternal attitudes which are emotionally damaging, although not based on the gross, almost perverse, deviations referred to by Dr Bourne Nevertheless, we need to remember that these children, with their aloofness and inability to respond, almost could be said to exact from their parents a corresponding quality of aloofness in order to come to any sort of terms with the child's peculiar way of functioning

Department of Psychological Medicine,
The Hospital for Sick Children,
Great Ormond Street,
London, W C 1

E M Creak

Sir,—It is most stimulating to find that there are people like Dr Bourne who are not content to leave the poor mental defectives in statu quo, even though I am not sure that I can agree with all he says

I am not certain to which group his article refers, for if one removes the "organics" from institutional defectives one is left with the so called "primary aments" and also the "psychotics" This latter group comprises the children who show psychiatric symptoms over and above mental defect If the very small group of Dr Bourne's "residuals" refers to the latter, I hope that it will promote renewed investigations in child psychiatry and also in mental hygiene If the small group refers to the "primary aments" I feel that some of the conclusions are wide of the mark, for in my experience of some seven years with defective children these "primary aments" are not only mental dwarfs but also in many cases physically dwarfed without there being any definite organic lesion to account for it Here we find this group a most interesting group for study, and we hope one day to be able to replace the term "primary ament" with some more exact diagnosis, for this term at its best is a confession of ignorance and at its worst tends to be a bar to further investigation, since it suggests that nothing can be done

Our impression here is that the whole organism is striving to develop in the face of some disorder of the *milieu intérieur* Modern research shows that this is not such a wild idea as at first it seems to be One has only to think of the errors of carbohydrate metabolism such as sucrosuria and galactosuria to realise that irregular metabolism of some simple factor in the diet can completely upset the "works" Error of metabolism of one amino-acid such as occurs in phenylpyruvic amentia can have very far reaching effects, as is well known These are but two of the simpler types of metabolic disorder that spring to mind

If one postulates that the cause of some cases of "primary amentia" is metabolic, then one is faced with a problem like searching for the proverbial needle in the haystack However, the needle seems to me to be there, and we hope to continue our search amongst a few blades of straw in spite of Dr Bourne's findings

Botleys Park Hospital,
Chertsey, Surrey

Gordon Dutton

RESISTANT TUBERCLE BACILLI

Sir,—Further to the letter of Dr Murdoch and Dr Grant in your issue of Oct 8, we can now report on tests carried out to ascertain whether the isoniazid resistant organisms from the case which these workers reported earlier (Sept 17) were *Mycobacterium tuberculosis*

Following the suggestion of Dr Mitchison and Dr Selkon (Sept 24) we have tested for cord formation, catalase production, growth at room temperature, and Mantoux conversion in guineapigs The culture from this patient showed cord formation, was weakly catalase positive, and did not grow on agar medium or egg glycerin medium at room temperature Two guineapigs, which were Mantoux-negative before inoculation with the culture, both had an area of induration 14 mm in diameter when tested with 1/100 Old Tuberculin five weeks later

All of these tests give variable results both with true tubercle bacilli and with saprophytic organisms, but we feel that the consistency of the results with this together with the supporting clinical evidence, leav doubt that the case is one of pulmonary tuber due to an isoniazid resistant strain of *M tuber*

Department of Tuberculosis,
University of Edinburgh

Sheila M Stev
A T Wallace.

THE RING AND THE SWOLLEN FINGE

Sir,—Removal of a ring from a swollen finge injection of hyaluronidase, which Dr Ryder de (Nov 26), has been previously reported by Birc an annotation last year [2] you referred to the red of paraphimosis by means of local injection of hyal dase

London, S W 10

F Ernest We

ADRENAL HÆMORRHAGE

Sir,—Your annotation of Oct 22 prompts me to the following case of suprarenal hæmorrhage

The patient, who, when he died earlier this yea 53 years old, had had a long and varied history of ill In 1943 he was in hospital for investigation of chronic of the legs The cause was found to be low plasma-p due to jejuno ileal insufficiency resulting from old tuber peritonitis In 1946 visual difficulty due to a pituitary t developed At craniotomy a chromophobe adenoma pituitary was removed In February, 1955, he was ad to hospital on account of colicky abdominal pain, and recent constipation

On examination the patient was pale and ill, with wh respirations and massive œdema of the legs and lower abd There was some generalised abdominal tenderness. Tem ture 97°F, pulse-rate 64 per min., respirations 24 per

Treatment and course—Intestinal obstruction was tively diagnosed, but the patient was treated conserva owing to his poor general condition. During the nex days his condition changed little On the third day he taking solid food but was still complaining of abdominal and his pulse rate had risen to 80–100 per min Late afternoon of that day he suddenly became unconscious, convulsions, and frothed at the mouth The pulse be weak and the pupils pin point, and he died

Necropsy—There was severe œdema of the legs, hyperkeratosis of the skin The lungs were œdematous congested, and both pleural sacs contained much clear st coloured effusion. The peritoneal cavity was a mas widespread dense fibrous adhesions, involving principally jejunum and ileum There was no evidence of intes obstruction The mesentery contained some hard fib areas Both suprarenal glands were enlarged and firm section the medulla was distended with recent blood-clot, cortex forming a thin outer boundary to the areas of hæ rhage The pituitary was replaced by soft yellow grey tis filling an enlarged pituitary fossa and extending upw around the optic chiasma

Microscopic examination—The pituitary tumour was chromophobe adenoma In the suprarenals the medulla distended by recent hæmorrhage, and the cortex inclu widespread areas of necrosis There were occasional gro of polymorphs beneath the capsule Some extracaps veins were occluded by thrombus, showing no evidence organisation No organisms were demonstrable by stain and there was no evidence of tuberculosis The appeara suggested that the hæmorrhage was secondary to thromb of the suprarenal veins, but no changes were present in th walls The mesenteric lymph node examined showed gr increase in fibrous tissue between the follicles.

This case illustrates a rare, fatal condition diagnosed in life, it should be treated by administrati of noradrenaline [3]

Thanks are due to Dr C Pike, consultant morbid anatomis and to Mr T G E Loosemore, consultant surgeon at th Peace Memorial Hospital, for permission to publish this cas and for their help and advice

Peace Memorial Hospital,
Watford Herts

O P Galpin

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1 Birch, C A *Brit med J* 1954, ii, 595
2 *Lancet* 1954 ii, 180
3 Millard A H *Postgrad med J* 1954, 30 493

CONSULTANTS IN DERMATOLOGY

Sir,—Venereologists in general fully endorse the otest made by Dr Ingram (Nov 20) against the niting of the specialties of dermatology and venereo gy

In the pre-arsenical era syphilis undoubtedly presented a skin manifestation in many instances The changing aracteristics of the disease in the past twenty years throw emphasis more especially on the cardio scular and nervous systems

At the beginning of the late war the Army system of ermatologists" who practised both skin and venereal eases still existed and many eminent men from both ecialties were enlisted in the dual capacity The ergence of the two groups of diseases was soon appre ated and the necessity for consultants in each distinct anch accepted, from War Office level downwards

During the war and since, the teaching of potential nsultants for each specialty has continued to remain art and there are no young trainees qualified to practise th adequately

Dermatology and venereology each has its own prob ms, and dermatologists are quite untrained to cope th the epidemiological aspect of venereal disease the dern clinical manifestations of syphilis, and the atest problem of venereology today—non-specific thritis with its peculiar complications—any more than a venereologist is trained to cope with the complex pect of modern dermatology

The V D scheme so well established in our country ovides the highest standard of treatment and confidence our patients The dual appointments now contem ated by the administrators can only destroy the ectiveness of the V D system and must surely prove rimental to dermatology as well

heffield. DOUGLAS J CAMPBELL

SIR,—It must be recognised that while in certain ajor centres of population the constant presence of a ereologist might be amply rewarded by the prevention the maladies with which he is concerned there would rcely be enough skin disease to sustain the interest of ully trained dermatologist—who would know only too ll that efficient and progressive dermatology requires a e, active and well-equipped clinic

In a substantial proportion of cases a skin disease is merely a local disorder reversible by the application lotion or ointment but a symptom of profound ily illness often emotional and it may be said on half of the patient that if he cannot be sent to such a tre where he can be listened to thoroughly and itively investigated or admitted forthwith as an atient should he happen to need it it is probably ter for his health that he should not see a specialist all. Yet more than half the patients attending hos als for skin trouble in the North west are disposed of the rate of 20–30 attendances per hour by a consultant king alone: indeed in one region the *average* number which it was proposed that sessions should be based 10 !

It cannot be denied that patients and their family tors seem to be perfectly satisfied with this sort of ng moreover, those who take seriously their designa n as consultants and who prefer to use the traditional thod of history taking thorough examination and lmation are given fewer sessions and are held in less teem by the authorities, who, relying on the twin pular beliefs that skin diseases are produced by dust, ods, and vapour and are to be cured by ringing the anges on lotion, ointment and wigs naturally regard matter in terms of production' ll the dispensary technique demanded by the public d its medical advisers of first instance) is truly the t for its health then it is clear that those trained and highly qualified young men should, for the sake of their own happiness seek some other use for their capabilities If, however, it is considered that the patient is entitled, whether he demands it or not, to a thoughtful considera tion of his case then there is plenty of work for them as consultants in certain big centres to which they can perhaps no longer be attracted as registrars

Manchester J H TWISTON DAVIES

HEROIN

SIR,—As the Minister seems to be using the annotation and special article in your issue of Dec 3 as justification for his attitude towards the ban on heroin it is only right that you should be criticised for this

In my opinion, you are guilty of special pleading of the worst order, and I am shocked that what I have always considered to be a leading scientific journal in medicine should stoop to such an unscientific method of presentation of the case My fear is that similar such argu ments will be used in the future when, for *some political reason*, any drug (such as pethidine) may be banned for medical use in this country

Let us face the issues fairly and squarely

(1) You admit (although only in brackets) that this step is something never done before that it is "important," but in spite of the fact that the whole of the British Medical Association is clearly against the ban, you state that this idea of democracy is limited to those who think in terms of majorities and mandates. Later on in your annotation you state that on pure principle no answer is possible to the argument that heroin must not be banned so long as there is a single doctor in Britain who wants to use it

Surely Sir you must be suffering from schizophrenia ? You cannot as the editor of a responsible medical journal, whose opinion is quoted in the House of Commons go on from the above statements to say that we should keep the ban because if 10% of our fellow citizens become heroin addicts (something which is medically absurd) a practitioner might no longer be allowed to prescribe heroin. Medicine would soon be in a sorry state if the right of doctors to prescribe what they thought fit were given up *This ban is bad It is wrong* I treat heroin addicts. I also treat alcoholics. On your arguments I should petition for a ban on alcohol I must point out that, so far as addiction is concerned alcoholics are a far greater menace to public life than heroin addicts Such a pussy footed argument regarding a ban on alcohol would be derided by the august columns of your journal

(2) We all know that the banning of heroin production will make addicts ten times worse The Americans have proved it. My own addicts are assured by peddlers that they will be able to obtain their supplies of heroin after Dec 31 (at a price) Ipso facto banning is the wrong method of stopping heroin addiction Have we as doctors, got to suppport the wrong method of tackling a medical problem because the Home Secretary and the Minister of Health are in a political jam ?

American doctors are petitioning for the removal of the ban in America Why should we not support them instead of W.H.O ?

(3) To turn to the article Doing Without Heroin" I could also pick a lot of unconnected statements (out of context) from medical books and journals and make a case for the use or abuse of any drug in any disease if my time were not limited by treating patients For example Hillis[1] pointed out that codeine is of no value *whatsoever* in cough. The Science Committee of the B M A and the Council, as recently as 1954 stated unequivocally that heroin was indispensable. A matter of opinion ? Maybe but where does that get your article ?

To return to your annotation I understood that it was the British Medical Association who was protesting against the ban and said so at its Council meeting on Nov 4 Backed up by the Fellowship for Freedom in Medicine on the following day Can you honestly main tain in view of this, that you agree with the banning

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1 Hillis B R *Lancet* 1954 i 1230

or rationing of drugs to doctors for medical purposes on any grounds ?

Finally, do you really believe that the patient in pain who needs heroin and cannot manage on the "Lancet Cocktails" cares whether the human community ends on the Cliffs of Dover or not ?

J L McCallum
Member of council, British Medical Association, assistant hon secretary, Fellowship for Freedom in Medicine

London, W C 1

THE RARITY OF FATTY LIVER IN AFRICAN BANTU ALCOHOLICS

Sir,—In the South African Bantu adult population there is a high prevalence of hepatic fibrosis and cirrhosis, yet "alcoholic cirrhosis," with the associated fatty change, is virtually absent Thus, Dr J Higginson, of this institute, in several hundred necropsies and liver biopsies, has noted obvious fat deposition in the liver in 4 out of 55 patients with severe cirrhosis, but none at all in biopsy specimens of liver from 15 hard-drinking pellagrins These findings confirm earlier observations by Gillman and Gillman [1] on the very low prevalence of fatty liver in Bantu adults

Concerning the alcohol intake of these people, according to our calculations fermented cereal foodstuffs, which are consumed habitually in large volumes, may provide a mean daily intake of alcohol probably reaching or exceeding the mean intake of the drinking population of the United States—i e, about 30 ml [2] But quite apart from the consumption of these foodstuffs (which are slowly imbibed often throughout the day), in the large centres of population there is a tremendous consumption of illegal, highly intoxicating drinks by a somewhat restricted group of Bantu adults A special branch of the police force is required to deal with this illicit liquor production

Sinclair [3] states that evidence indicates that alcoholic cirrhosis is caused by a deficiency of lipotropic substances, that in the early stages fatty infiltration is completely reversible, but if not treated leads to fibrotic changes, further, that alcohol has no direct effect on liver cells in producing cirrhosis From our knowledge of local food habits, we very much doubt whether the diet consumed by Bantu alcoholics is richer in lipotropic substances than that of similar Europeans—rather the reverse Under conditions, therefore, when one would expect to find fatty liver to be common, this is not so The question arises is it possible that an *endogenous* lipotropic agent is involved, whose presence and activity are characteristic of the Bantu though not of Europeans ?

Lansing,[4] of Washington University Medical School, fed rabbits with purina rabbit chow including 0 3 g cholesterol per diem—a diet which produces fatty livers and aortic atheromatosis in almost all animals after six weeks' feeding The treated animals received daily doses of pancreatic elastase simultaneously with the cholesterol, the controls received no elastase The administration of elastase resulted in almost complete inhibition of fatty livers After six weeks there was a clear reduction of prevalence and severity of atherosclerosis, which was not as complete as the effect on the fatty livers The implication is that elastase, in addition to affecting elastic tissue, is lipotropic Lansing considered that it was most unlikely that results were due to proteolytic liberation of methionine in the intestinal tract By analogy, therefore, is it at all possible that pancreatic elastase plays a part in protecting Bantu alcoholics against the development of fatty liver ?

Balo and Banga, of Budapest, have produced evidence suggesting that there is little elastase present in the pancreas of adults who die from coronary artery disease, in contrast to the far larger amount in the same organs of those who die young or relatively free from atl tous lesions [5]

Turning back to the Bantu, Dr Higginson ɛ Pepler,[6] of this institute, have shown that from na assessment the severer complications of atheroscle the Bantu are only about a tenth as common as corresponding Europeans In relation, specific aortic lesions, we have almost completed analy large series of total aortæ from Bantu and Eu patients, from youth to old age. Results indicat speaking generally, in relation to fatty degenerati aortæ of even elderly Bantu do not become "older" than those of young Europeans

It therefore seems reasonable to expect to find level of elastase in the pancreas of Bantu adults. I would expect to find a low level in the pancreas of c with kwashiorkor (among whom fatty liver and dentally, pancreatic lesions and dysfunction are characteristic), in contrast to a high level in healthy and European young children

We would, of course, gladly put these speculati the test, but unfortunately we cannot secure pancreases within an hour or so of death, after elastase activity rapidly decreases We therefor that other research workers dwelling among primitive peoples may be able to determine the panc elastase activity in the groups cited

Should our speculations be valid, the unexpected of fatty liver in Bantu alcoholics may be linked wi relatively low degree of fatty atheromatous lesions blood-vessels, and both phenomena may be asso with, or promoted by, a high level of pancreatic-el activity

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Human Biochemistry Research Unit South African Institute for Medical Research, Johannesburg, and South African Council for Scientific and Industrial Research.

Alexander R P Wa
Marianne Andersso

THE FORGOTTEN PATIENT

Sir,—Dr Bickford stands, I think, in no great of a champion, but you yourself might like perha know that there is at least a minority movement has looked at his articles with a different eye

I, Sir, am responsible for what goes on in one o mental hospitals of which Dr Bickford writes, an on a previous occasion, we are circulating his provoc articles among our nursing staff The initiative this at least came from the Chief Male Nurse, who wit felt that they might well be used to strike spark any of us who are too well used to or satisfied things as they are

This is a hospital which I shall hope to show to Bickford some day, and I think that even at presen might escape classification among the worst three in country, but to suggest that nothing of what he to say could have relevance for us would be a path admission of lack of insight This word "insight," which we are so devoted, is the touchstone Gen hospitals or even orthopædic hospitals may know h of mental mechanisms, but who are we to reveal obviously that Dr Bickford flicks us on the raw !

As one of your respected correspondents reminds there have been lunacy reformers *before*. Before Lon there was James Birch Sharpe and his select co mission of 1815, and before him Pinel. Dr Bickfo will not expect immediate canonisation But a ma reach should exceed his grasp, or what's a retirem pension waiting for ?

F J Napier
Medical Superintendent

Hellesdon Hospital,
Norwich

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1 Gillman, J Gillman T Perspectives in Human Malnutrition New York 1951 p 242
2 Jellinek, E M. *Proc Nutr Soc* 1955, **14**, 93
3 Sinclair H M *Ibid* p 107
4 Lansing, A Symposium on Atherosclerosis Publication no 338, National Research Council, Washington, 1954, p 50
5 See *Brit med J* July 2, 1955, p 34
6 Higginson, J, Pepler W J *J clin Invest* 1954 33, 136

INSTITUTIONALISATION

SIR,—With reference to Dr Martin's most pertinent article on Institutionalisation (Dec 3), one basic remedy would be to break up the large mental hospital into smaller units and to bear this in mind when planning future institutions This seems self-evident to most who work in this field but it is apparently less obvious to the planning authorities The second most important aspect in this problem is that of medical and nursing traditional routine, which may need revision Last but not least—and despite many changes—there is still sometimes a tendency to forget that the hospital administration exists to serve the patient and not vice versa.

Department of Psychology
The Fountain Hospital
London, S W 17

LYDIA MUNDY

SIR,—Is the introductionalisation of the word 'institutionalisation' (Dec 3 p 1188) really essentialisational?

Newcastle upon Tyne

M H ARMSTRONG DAVISON

*** Perhaps not But can Dr Armstrong Davison suggest any other single word or even two or three words, with the same signification?—ED L

CHOLERAGENIC AND NON-CHOLERAGENIC VIBRIOS

SIR,—It is common in the literature on cholera to find the terms 'choleragenic' and 'non-choleragenic' applied to vibrios, and sometimes they are given more meaning than they really deserve

The division of vibrios into these two classes was a corollary to the definition of *Vibrio choleræ* by Gardner and Venkatraman.[1] The background to this work was the impossibility of deciding the pathogenicity of a vibrio by experimental means. A working hypothesis was needed for the ætiological agent of cholera and also a means of identifying it by a practical laboratory procedure so as to simplify the application of public health measures. Attention was therefore directed to identifying the vibrio associated with the majority of cases which the clinician's judgment led him to believe were true cholera and not severe diarrhœa.

The laboratory tests finally evolved by Gardner and Venkatraman had no rational connection with any possible pathogenesis, and were based on serological and hæmolytic properties, so combined as to distinguish the desired vibrio Although this definition has served well as a working hypothesis, the problem of cholera remains serious, as the mortality figures show It is also hard for epidemiologists to discover the reservoir of *V choleræ* to which epidemics can be traced[2] As a result, some epidemiologists[3] challenge the contention that *V choleræ*, as defined by Gardner and Venkatraman, is the only class of vibrios known for certain to cause epidemic cholera. Because 'non agglutinating' vibrios alone could be isolated from some patients showing the clinical features of cholera, they maintain that except for a preconceived notion about the exclusive character of *V choleræ* there was no reason for rejecting the 'non agglutinable' vibrio as a causal agent

One possible reason is implied by Taylor[4] If all the vibrios other than *V choleræ* which are found in rice water stools are considered as causal agents, they form a great many serological groups, and the serologist feels that the cause of cholera must lie in one or at most a few serological groups The epidemiologist, on the other hand, thinks that the vibrio undergoes quick serological changes, so that potentially all vibrios are dangerous. This is the view that my hypothesis[5-7] of cholera pathogenesis also leads to

According to this hypothesis, certain extracellular hydrolases of all vibrios can act on the constituents of the intestines and blood vessels, and can increase the permeability of these membranes. Diarrhœal organisms like *V metchnikovi* and *Pseudomonas pyocyanea* also give rise to such enzymes

The mortality due to diarrhœas in the recorded vital statistics of India is sometimes as high as that due to cholera If we readjust our view of the ætiological agent of cholera it is quite likely that some of the diarrhœal deaths may come over to the cholera columns

The term 'non choleragenic' seems most unhappy when applied to the El Tor vibrios of Gardner and Venkatraman's O subgroup I To reject the enzyme hypothesis means reviving the old "endotoxic" view If we believe in the chemical basis of the immunological reactions the O substance of both *V choleræ* and the El Tor vibrio (of this group) must be the same or at least have much in common, and hence must contain the same endotoxin What then is the mechanism by which the El Tor vibrio loses its pathogenicity?

Central Research Institute
Kasauli India

E K NARAYANAN

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[1] Gardner A. D., Venkatraman, K. V. *J Hyg., Camb* 1935 35 262.
[2] Seal, S C *Indian med Gaz* 1945 80 411
[3] *World Hlth Org Spec. Rep Ser* 1952 no. 52 p 5
[4] Taylor J Cholera Research in India 1934–40 (Indian Research Fund Association) Kanpur India 1941
[5] Narayanan, E. K. Biochemical Activities of *V Choleræ* and Related Organisms University of Madras PH D Thesis 1954
[6] Narayanan, E. K., Menon, P S *Nature Lond* 1952 170 691
[7] Narayanan, E. K., Devi P Menon P S *Indian J med Res* 1953 41 295

ANTISEPTIC LOZENGES

SIR,—As general practitioner and as bacteriologist we have both been impressed by the possible value of the quaternary ammonium compound cetyl pyridinium chloride against bacterial infections of the throat or mouth This substance a cationic detergent freely soluble in water has been used occasionally for many years for disinfection of skin and mucous membrane, but may, we believe, deserve more attention

One of us (J D B) has determined the germicidal activity of cetyl pyridinium chloride in vitro against recently isolated strains of *Streptococcus hæmolyticus Staphylococcus aureus*, and *Bact coli communis*

The dilutions of cetyl pyridinium chloride were made with physiological saline; the tubes were kept at 37°C; and the time the organism was exposed to the action of the antiseptic was 10 minutes At the end of that time 0·25 ml of a 0 01% solution of sodium stearate was added to the tubes to inactivate the cetyl pyridinium chloride and subcultures were made on blood-agar The dilutions necessary to kill the test organisms in 10 minutes at 37°C with comparative tests under exactly similar conditions using phenol, were

	Cetyl pyridinium chloride	*Phenol*
Strep hæmolyticus	1 in 120 000	1 in 190
Staph. aureus	1 in 80 000	1 in 90
Bact coli	1 in 50 000	1 in 120

In vivo tests on throat lozenges containing cetyl pyridinium chloride* were made using the following technique

The mouth and pharynx were washed with a quantity of sterile water for a standard time The sterile water was expectorated into a sterile tube and a standard quantity withdrawn and spread on to blood agar plates and incubated for 24 hours at 37°C After this preliminary washing the lozenge under test was allowed to dissolve in the mouth, after which the mouth and throat were again washed with a standard quantity of sterile water which was again expectorated and an identical amount of the expectorated fluid was withdrawn and spread over a second agar plate This process was repeated for a succession of the lozenges under test

Using this technique the following kinds of lozenge were examined.

A Formaldehyde *B.P C*
B Penicillin *B.P*
C. Tyrothricin, 1 mg ; benzocaine 5 mg
D Domiphen bromide, 0·5 mg
E. Chloroxylenol 0·055% benzylphenol 0 014% black currant juice, 7·0%
F Bacitracin 50 units tyrothricin, 1 mg benzocaine 5 mg
G Cetyl pyridinium chloride 4 mg sodium propionate 100 mg benzocaine 5 mg

In order to avoid any carry-over of the active ingredient on to the culture plate the vessel into which the subject expectorated contained in each case a suitable inhibiting agent—e g , in the case of a penicillin lozenge penicillinase was used, and in the case of lozenges containing quaternary ammonium salts the inhibiting agent was sodium stearate

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* Manufactured under the name of 'Procidets' by Messrs Harker Stagg

With lozenges A to F, countless colonies were regularly grown from the fluid expectorated after dissolving four lozenges in the mouth With lozenge G, on the other hand the counts were reduced by 55%, 75%, 83%, and 90% after using one, two, three, or four lozenges respectively In tests on 50 people, four of these lozenges reduced the oral flora, on the average, by 90% In a further series of tests on 6 persons with hæmolytic strains of streptococci in the mouth it was shown that these strains were killed by the first lozenge

In general practice, trials of lozenge G, in about 200 cases of stomatitis, oral ulcers, tonsillitis, pharyngitis, and glossitis, have produced what seemed to be unusually beneficial results, the infection usually clearing within two days

London, N 9 N B BENJAFIELD

London, W 1 J D BENJAFIELD

AN INCOMPLETE VICTORY

SIR,—At this stage of the battle against tuberculosis empty beds do not mean victory they mean that the unknown casualties have been left neglected on the battlefield by a health service which has failed to find them The policy of the tuberculosis service should be "find and heal" These two objectives should have equal emphasis

At present we are ignorant of the basic facts necessary to the design of a rational programme of tuberculosis control—namely, the prevalence of unknown cases in different areas and their distribution by age and sex These facts should be found by a survey of a random sample of the population by the mass radiography units [1]

If we are to find the bulk of unknown infectors with our present poor resources the mass radiography units must cease to offer an ideal personal-protection service to a few regular patrons and try to break new ground by examining people whose chests have never been radiographed before To persuade the unexamined segments of the population to come forward for examination would probably require a campaign on a national scale The health-service administration is unwilling to launch such publicity, for fear that the existing token mass radiography service would be swamped I believe that (apart from maid-of all-work duties such as providing general practitioners with unlimited facilities, examining works contacts, and doing miscellaneous operational research jobs) the mass radiography units should, with Government aided publicity, make a supreme effort to examine as many as possible of the male population over 45 years of age who have never been examined radiographically This would have a massive effect on the volume of free floating tuberculous infection, because it would drain the unknown infector pool of most of its long-term members The male over 45 should be our target for three important reasons (1) this group has the highest prevalence of tuberculosis in those of its members who have not been examined radiographically , (2) these are the really long-duration infectors, many of whom could have been diagnosed twenty years ago , (3) this group has a low radiographic attack-rate—i e , in comparatively few men over 45 will a new lesion develop after they have once been found to be radiographically clear The clearance effect of examining this group (i e , the persistence of effect of lowering the number of unknown infectors) will be maximal

Mass X ray Service for
South West London
Grove Hospital London S W 17

F A NASH
Medical director

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[1] Nash, F A *N A P T Bull* April 1954

NITROGEN MUSTARD IN NERVOUS DISE

SIR,—In 1949 I recorded [1] some of my exp with nitrogen mustard in the treatment of bone t losis, and I should like to add some new fac clinics in Poland and elsewhere confirming th inflammatory and anti allergic action of this sul

Secco et al [2] found that paralyses in children with lous meningitis disappeared more quickly after strep plus nitrogen mustard than after streptomycin alone observations were made in the Warsaw University children's diseases by Professor Michalowicz and his col

These properties of nitrogen mustard produced a d response in paralyses caused by pressure of inflam exudate on nerve trunks, as well as in vascular and neural lesions These findings were confirmed in series described by Klimkova Deutschova,[3] from P Henner's clinic in Prague, and by the findings of P Jakimowicz, Horodyński, Jarema, Kiczak, and others in

With Professor Wilczek, of Krakow, I have o particular benefit in some patients with the clinical p optic atrophy, which had resisted other treatment true that we obtained positive results in only abo of cases, but the very fact that sensitivity to light re followed by marginal sight, in refractory cases is a ther success In a few cases of optic atrophy the resul very successful

Our empirical observations have found an experi basis It was believed that nitrogen mustard ac a "stressor" causing an increase in the blood le endogenous cortisone The work of Romero [4] showed that nitrogen mustard induced in the supr cortex similar changes to corticotrophin Recent re of the successful use of cortisone in strokes and nervous disorders confirm our empirical observatio

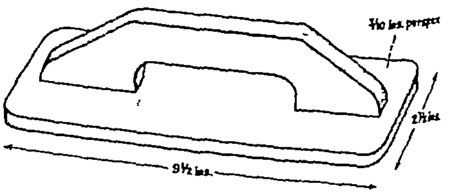
Nitrogen mustard has been given in doses ten smaller than usually used for tumours—namely, 0 daily, repeated 5–10 times A further 5–10 doses given if necessary after an interval of three weeks

III Internal Clinic,
Medical Academy,
Krakow, Poland

J ALEKSANDROW

PREVENTION OF BLEEDING DURING VEIN-STRIPPING

SIR,—When stripping the internal saphenous ve is well recognised that it is of the utmost impor that no hæmatomas should occur For this reason surgeons operate on the empty vein, in the high Trend burg position Even so, immediately after the avul hæmorrhage may occur in the thigh, and pressur five minutes is all important Usually the assi supplies this with his hand, but even so there ma some bruising of the thigh During the past few mo however, we have tried the effects of pressure ap by means of a plastic strip (see accompanying fig Since using this method of compression the amo of bruising has been extremely slight



Even though this instrument is so simple, by proper use a troublesome complication can be avoi

R ROWDEN FOOT
MARCUS FREDMAN

London, W 1

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1 Aleksandrowicz J *Lancet* 1949 i, 547
2 Secco, C , Benini, S , Vittone A *Policlinico*, 1951, sez. P 58, 1537
3 Klimkova Deutschova, E *Čas Lék. čes* 1950 89, 57
4 Romero, E *Rev clin esp* 1952 47
5 Russek, H L, Russek, A S , Zohman, B L *J Amer med.* 1955, 159, 102

Notes and News

CLINICAL RESEARCH MADE EASIER

Now more than two years old, the Institute of Clinical earch at 40 Hanson Street London W 1 has been ely equipped for investigations by members of the senior aff of the Middlesex Hospital and by juniors whose work y sponsor As it could be a prototype for institutes at ther teaching hospitals, its progress will be followed with atten ion; and the exhibition arranged on Dec 6 was encouraging arly the opportunities for experimental observations on imals are valued highly by surgeons and others who do t readily find such facilities and under the administrative ection of Prof Alan Kekwick, the institute is providing more and more solid work by a greater variety of workers Subjects under study include the substitution of aorta or Orlon tubes for œsophageal segments (Mr D H Patey) ne growth and repair (Mr Philip Wiles and Mr K Dawson) ual replacement of the common bile-duct (Mr Vaughan udson and Mr F A Henley) and the effect of cortisone d X-ray damage in cancer of the lung (Mr Holmes Sellors d Dr J B Walter) Professor Kekwick is studying with r G. Pawan, the effect of altering the proportions of carbo ydrate, fat and protein in isocaloric diets and with Dr R Mowbray the relation of dietary fat to serum lipids and poproteins. Dr Evan Bedford and Dr Short had some fine st-mortem radiographs displaying the blood vessel appear nces characteristic of various forms of pulmonary hyper sion Dr Lawson Macdonald illustrated renal and vascular nges caused by hypotensive therapy Dr A J Hewer d Dr P Coles are investigating induced hypotension; r. D H. P Cope and Dr D E Argent are examining the ology and treatment of cerebral anoxia; and Mr L P Quesne and Dr M. Hobsley use Evans blue extraction estimating blood volume. Dr B A Sellick showed paratus for hypothermia and Mr R Mowlem and Mr D ockett are studying œdema fluids. The Middlesex Hos tal's reputation in endocrinology was upheld by several ibits of work by Sir Charles Dodds F.R.S Prof J E berts Dr J D Nabarro Dr Oliver Garrod Mrs S A. pson, Dr J F Tait, Miss A Moxham Dr G Walker and Pawan. Dr H. L. Marriott and Dr D G James had a nstration of sarcoidosis Dr Ray Bottley and Dr E A rburn of malignant lymphomata of the skin, and Prof B Ascroft of the late effects of Thorotrast On the rderline between radiology and neurology Miss Diana k and Mr F L. Davies are examining the effects of rohl on the nervous system and Prof B Windeyer with A. M Jelliffe and Mr Davies, those of pituitary ation (in the dog) by injection of radioactive substances. e other exhibits included one on the toxic effects of tricresyl osphate which Dr F Hobbiger has demonstrated by ucing demyelination in hens.

SUPERANNUATION FOR THE GENERAL PRACTITIONER

The regulations governing the National Health Service are many and so complex that doctors cannot be blamed for norance of most of them The superannuation regulations general practitioners are explained by Mr Hugh Barry in inexpensive booklet[1] which covers all aspects, including example, the provision for dependants if the doctor dies ddenly what money he can expect if he is permanently capacitated, and the size of his pension.

NATIONAL INSURANCE AND TRADE UNIONS

Local tribunals are set up under the National Insurance t to hear appeals against decisions given by insurance kers. Under new regulations[2] which came into force on e 2 an association of employed persons such as a trade ion, now has a right of direct appeal to the National urance Commissioner from a decision of a local tribunal en the association is acting on behalf of the next of kin of deceased member on a claim for benefit arising from the mber's insurance Such associations already have this ht where acting on a member's behalf

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[1] uperannuation for the General Medical Practitioner in the National Health Service. London Heinemann 1955 Pp 21 2s. 6d

[2] National Insurance (Determination of Claims and Questions) Amendment Regulations 1955 (S I 1955 no 1788). H.M. Stationery Office 3d

APPROVED NAMES FOR DRUGS

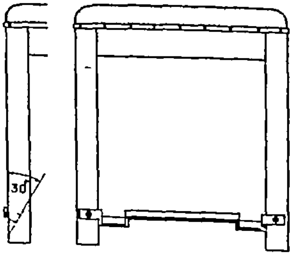
The British Pharmacopœia Commission has issued the following new supplementary list of approved names:

Approved name	*Other names*
Acetazolamide	2 Acetamido 1.3 4 thiadiazole-5-sulphonamide Diamox
Aminometradine	1 Allyl 6-amino-3-ethyl 1 2 : 3 4 tetrahydropyrimidine 2 4-dione Mictine
Benactyzine	2 Diethylaminoethyl benzilate Suavitil is the hydrochloride
Chlorpheniramine	1 *p* Chlorophenyl 3-dimethylamino 1 2′ pyridylpropane Chlorprophenpyridamine Chlor Trimeton is the hydrogen maleate; Piriton is the hydrogen maleate
Dipipanone	4 4 Diphenyl 6-piperidinoheptan 3-one Pipadone is the hydrochloride
Phenoxymethylpenicillin	A biosynthetic penicillin formed by fermentation with suitable precursors of *Penicillium notatum* Penicillin V Distaquaine V
Piperoxan	2 Piperidinomethylbenzo-1 4-dioxan
Prednisolone	Δ¹-dehydro hydrocortisone Pregna 1 4-diene-11β 17α 21 triol 3 20-dione Metacortandralone Delta-Cortef, Delta-Cortril Delta-stab Hydeltra Meticortelone
Prednisone	Δ¹-dehydrocortisone Pregna 1 : 4-diene-17α : 21-diol 3 : 11 20 trione Metacortandracin DeCortisyl; Deltasone Deltra Meticorten
Streptoduocin	A mixture of equal parts of Dihydrostreptomycin Sulphate and Streptomycin Sulphate Mixtamycin

FOOT BRACING BARS FOR TRACTION COUCHES

Dr J B Jessiman writes ' In reducing cervical-disc lesions, a considerable pull has to be exerted and its efficacy and safety depend largely on the security of the manipulator's foothold; a foothold against a highly varnished or tubular steel leg of a traction-couch is awkward insecure and not without danger

I have designed a stirrup type foot stop or bracing bar which can be fixed to the traction couch easily and quickly by means of two screws at a height from the floor suitable to receive the shoe instep (3¹/₂–3¹/₄ in) Tubular steel legs would of course require holes and bolts for fixing The bar made of toughened steel strip 1 by ¹/₈ in., is cranked or stirruped and angled to 30 degrees to hold the instep of the manipulator's shoe close to the inside of the couch legs (see accompanying figure) An alternative type has adjustable stirrups which are made in two pieces, secured by thumb-screw bolts.



Both types of apparatus are obtainable from Messrs Allen & Hanburys 48 Wigmore Street, London, W 1

FILM ON BLOOD TRANSFUSION

A film on blood transfusion (16 mm sound colour 24 minutes) has been made by Cyril Jenkins in collaboration with the North London Blood Transfusion Service The first part deals with the hazards of transfusion, listing the risks arising from the donor the stored blood, the laboratory the transfusion itself and the patient. This is an unsatisfactory section for some twenty hazards are listed against a diagrammatic background, and the reading of them becomes tedious Indeed the information could be presented more conveniently and cheaply in a printed leaflet The larger section of the film is devoted to a brief review of giving sets in use or planned for use in Great Britain and a detailed demonstration of the procedure of putting up a transfusion with the needle piercing set Although at present in use in two regions, this set is not (nor is it likely to become) generally available and it would have been preferable to demonstrate a standard giving-set The film ends with suggested sites for transfusion (including the arm, ankle sternum, and, in babies, scalp veins) and a summary The colour photography and the exposition are of a high standard, and some valuable sequences are included. The film may be borrowed free of charge from the I C.I Film Library, Imperial Chemical House, Millbank, London, S W 1

DOCTOR AND ADMINISTRATOR

IN 1924 Duke Alberto Denti di Pirajno began his work in the Italian North African colonies by opening a dispensary at Buerat el Hsun, the small outpost in Tripolitania to which he had accompanied the exiled Duke of Aosta as physician As his book shows, Denti proved himself an enterprising doctor, well able to deal with his varied and unorthodox patients. He was equally at home, and equally welcome, in a pasha's palace, a bedouin tent, and a Tunisian harem, and his case histories would make any respectable card-index curl up in amazement But, through his knowledge of the desert peoples, he was increasingly and unwillingly drawn into the work of administering the colony, and we leave him in a sad chapter as governor of Tripoli surrendering the city to General Montgomery

University of London

Mr Ralph Shackman, senior lecturer at the Postgraduate Medical School of London, has been appointed to the university readership in surgery at that school

Mr Shackman qualified from St Bartholomew's Hospital in 1933, taking the M B Lond the following year and his F R.C S in 1936 Meanwhile he held house-appointments at the Metropolitan Hospital, London, and the Royal Infirmary, Sheffield, where he later became R.S O He returned to London as first assistant in the department of surgery at the British Postgraduate Medical School He also held a clinical assistantship at St Peter's Hospital for Stone During the late war he served as a surgical specialist with the R.A F medical service with the rank of wing-commander Mr Shackman is surgeon and urologist to Hammersmith Hospital and his publications include a paper on bladder cancer

Royal College of Surgeons of England

At a meeting of the council on Dec 8, with Sir Harry Platt, the president, in the chair, Mr E C B Butler and Mr S H Wass were admitted to the court of examiners

The following lecturers were appointed for 1956 Dr William Brockbank, Thomas Vicary lecturer, Mr S A S Malkin, Robert Jones lecturer, Mr B W Fickling, Charles Tomes lecturer

Prof A E W Miles was appointed hon curator of the odontological museum

Diplomas of fellowship were granted to the following

Philip Henson H B Wright, W de M Kellock, L F Levy, R. H B Mills, P P Philip R R Davis R R L Pryer D J Cowan, Frank Ashton, Werner Stern, † D F N Harrison, Bernard Lytton, J J B Hobbs, M P Ward, B O Smith, J C N Wakeley, A E Wheatley, D R Sweetnam, J A Williams, S A Seligman, J W Bradbeer, J G Roberts, David Tanne, James Watt Montague Modlin, Shakuntala Prem Chandra Bernard Cashman E R Price, Johannes Christiaan Kotzé, Himangsu Sekhar Lahiri, * E M L Evans, B B Hall, P B Lacy, D A Larnder Krishnadas Ray, D C D'Netto J L Hayward, E G G Jonas * B R Jones, † G E Mann, F O W Wilkinson, J J Connors † R P Freeman, P H Lord, R D Marshall, T W Milliken, J E Mitchell P W Mitchell, R B J Peiris, * Dhanwant Singh E A Allcock, N C Azizkhan S L Barron, F G Bell, W L Elrick, A R Epstein, J B Fethers, D E Gunatilleke, Neil Johnson, Daniel Lenaghan Leslie Linder I F McNeill J A Muscat, David Roux, Ary Blesovsky Miles Fox, Joseph Hon Yin Fung, J H Heslop, Sibendra Mohon Lahiri, K J McCarthy, W B Maguire I N Nunn B M O'Brien R C Shepherd F I Bishop, Ronald Dee A J Duke, A F Masson R W D Middleton J M Niold K B Orr, B S Purssey, W W Richardson P R Robertson, Thamotheram pillai Kangesan Shakespeare, Hiran Sirikantha Kirthi Singha, C O Wiggishoff, J D N Yelland, Kaivumali Abbasbhai Anjarwalla, R L B Beare R G Burwell, P S Reay Young R G Rushworth, F C Walker

* In ophthalmology
† In otolaryngology

Royal College of Physicians of Ireland

On Dec 2 the following were admitted licentiates in medicine and midwifery

Lomboye Adenla Ayorinde, Dorothea L Baxter P J Bugler F G Connolly L M Cusack Hareeduth Ghoorah Adisa Rahman Jinādu R E Knight Hana L Malbsha, J S Mills, Marcus Molony, Terence MacMahon W V O Grady Rosemary W Orr Pamela M Fox Russell Oscar Singer C F Dundas

Royal College of Surgeons in Ireland

At recent examinations the following were successful

D C H—N J Choksey, Marie T Hyde Mary P Kent, A J M. X Kerrigan, M L Magotra, Elinor D U Powell

D.A—P Coleman, W W Deacon, N Mark G A Walsh, M W Abrams, J B La Grange

University of Dublin

On Dec 8 at the School of Physic, Trinity Colle following medical degrees were conferred

M B, B Ch, B.A O—Dolapo Ayinla Akisanya B C An R I Clingen, E H Crennell, D W D Evans Gordon F N H Fletcher, J T Gaston, C W J Hart, J J Hazlet Higgins, J L Hyslop, D L Kelly, J R Marshall, J B W M Nissim Armando Nassim Patricia E O'Neill, C G C Petit Reidy I B Sangmuah, Monica W Taylor, J A C Torrv, L Warko

British Association of Otolaryngologists

At the annual general meeting held on Dec 2, the foll were elected officers of the association Mr I Simson president, Mr V E Negus, immediate past president C Gill Carey, vice president, Mr J C Hogg, hon. trea Mr Myles L Formby, hon. secretary

Public Relations

The Central Council for Health Education is to b seminar on this subject for medical officers of heal St John House, London, S W 7, from Feb 28 to Mar The programme will cover relations with the Press, co with local organisations, and the free flow of informati health matters to the public A study will also be made o use of reports, handbooks, and exhibitions Further par lars may be had from the council, Tavistock House, W C

Volume 3 of the Collected Papers published by the Labor Animals Bureau contains the proceedings of a symposium, he London last May, on the Breeding of Laboratory Animals. C (7*s* 6*d*) may be had from the bureau, M.R C Laboratories, Hill, London, N W 3

Diary of the Week

DEC 18 TO 24

Monday, 19th

HUNTERIAN SOCIETY
8 30 P M (Talbot Restaurant London Wall E C 2) Dr E Bedford and Mr T Holmes Sellors Scope of Car Surgery

Tuesday, 20th

INSTITUTE OF NEUROLOGY, National Hospital, Queen Square W
5 30 P.M Prof David Slome Physiology of Pain.
INSTITUTE OF DERMATOLOGY, Lisle Street W C 2
5 30 P M Dr H T H Wilson The Erythrodermias.
ROYAL ARMY MEDICAL COLLEGE Millbank S W 1
5 P.M Dr D P Cuthbertson Food and the Future

Wednesday, 21st

ROYAL SOCIETY OF MEDICINE, 1 Wimpole Street, W 1
8 15 P.M *General Practice* Dr Leonard Roodyn and Dr M Barber Staphylococcal Infection.
INSTITUTE OF DERMATOLOGY
5 30 P.M Dr Henry Haber Reticulosis

Appointments

GIBSON R. V, M B. Camb M R.C P asst cardiologist Hospita for Diseases of the Chest London

KNIGHT, G W, M.D Leeds, D.P.H deputy county M O and dep principal school M O Bucks

MILLER, H G, M D Durh, M.R.C P D P.M physician in neurol Royal Victoria Infirmary, Newcastle upon Tyne

SHARP, MARY K, M.R C.S asst county and school M.O., W Riding of Yorks

THOMPSON, MALCOLM M D Durh, M.R.C.P physician in phys medicine, United Newcastle upon Tyne Hospitals

TURNEY, J P, M.B Lond F.R C.S whole time senior cas officer, S E Northumberland H.M C

TYNER, R M. C M.B Dubl, D.P H senior M O for mental hea Derbyshire

VAUGHAN B F, M B Brist D M R D asst radiologist Roy Perth Hospital, Perth, Western Australia

WALKER R B, M R C.S D.P H M O H and asst county M.O Kingsbridge and Salcombe U.D.S and Kingsbridge an Plympton R D S

The Hospital for Sick Children, Great Ormond Street, London:

SUTCLIFFE JOHN M.B Camb, M R.C.P, F.F R. D.M.R.D part-tim deputy director of the department of diagnostic radiology

PAMPIGLIONE GUISEPPE M D Rome part time consulta physician in charge of the electro-encephalography department

Births, Marriages, and Deaths

MARRIAGES

VAUGHAN—AINSBURY—On Dec 1 at St. Mary's Church, Chead Cheshire Dr Bernard Francis Vaughan to Barbara Ainsbury,

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1 A Cure for Serpents Alberto Denti di Pirajno London Deutsch 1955 Pp 203 16*s*

THE SEAT OF CONSCIOUSNESS

ERIC TURNER
M.B Glasg., F.R.C.S
SSISTANT NEUROSURGEON QUEEN ELIZABETH HOSPITAL
BIRMINGHAM

> Or like stout Cortex who with regal I
> Stared at the non-specific—and his random
> Spikes set up a synchronitic cry
> Aghast upon a new Symposium

The time seems appropriate for someone to take up pen in defence of the cerebral cortex before it suffers f further derogation for we are witnessing a phase scientific thought in which it appears in danger of ng relegated to a place of secondary importance ne of a generation brought up on the neat little areas Campbell, Brodmann, von Economo, and the Vogts nd this disturbing It is true that the integration ween these neat parcels each with its discrete function t always yet allocated), was by no means clear ; for hough there were connections between them the sion as to what parcel would be attended to or con lled belonged to the will and where the will resided d how it exerted its influence were relegated with other timate mysteries to the hinterland that lay between nce and religion

Progress of Neurophysiology

ne of the first discoveries that led ultimately to the w way of thinking about the physiology of the brain s that of Forbes and Morison (1930), who found that, ter anaesthesia a stimulus applied to the sciatic nerve duced not only a specific cortical response in the propriate projection area but also after a latent iod, a secondary discharge which was a diffuse response the whole cortex.

The work that followed grew slowly at first until last y the Council for International Organisations of dical Sciences produced a symposium entitled at first the Laurentian Symposium on the Electrical Activity the Cortex as Affected by the Brain Stem Reticular tem in Relation to States of Consciousness, and later ly Brain Mechanisms and Consciousness. The ghts of progress up to this point are familiar to most ers in neurophysiology

e Morisons and Dempsey (1941) had found that this ndary response of Forbes and Morison could be ned by stimulating brain-stem structures and their very of a 'recruiting response on stimulation of laminar nuclei of the thalamus made Morison and psey (1942) suggest that there might be a non ific thalamocortical system with diffuse connections system was named the thalamic reticular system by per (1949) who found that stimulation of it had a trolling effect on spontaneous' cortical activity oruzzi and Magoun (1940) and many collaborators e shown that a reticular activating system exists in brain stem and that on stimulation of it a desyn onisation of electro encephalographic potentials s place with arousal of the animal Destruction of reticular formation lowers the level of consciousness a state resembling permanent sleep

he upward prolongation of the reticular formation the stem is still in doubt Similar electrical responses a similar arousal have been elicited by stimulation of thalamic structures but stimulation of the diffuse ection-system of the thalamus while altering the tro-encephalographic patterns has had contradictory ts on the state of wakefulness of the animal.

eanwhile the cortical projections from specific relay association thalamic nuclei have been meticulously ped out and Bailey and von Bonin (1951) demonstrated that the maps of these cortical projections corre nded to constant histological zones in the cortex They depicted a simpler cortical map than the previous ones, with transitional zones between the broadly differentiated areas Simple cortex appeared at the base, lying posteriorly in the frontal lobe and medially along the temporal base This they called allocortex and it was found to form an interconnected structure with pronounced vegetative functions, the vascular and respiratory systems being affected by stimulation of it

The stage was set generally for relegating the cortex to an inferior rôle in cerebral integration, and Penfield (1952) postulated on philosophic grounds, a centrencephalon, whose detailed anatomy was not formulated but whose function was to act as the highest level of functional integration" Such, he said could not take place in the cortex and he embraced in the centrencephalon all those parts of the higher brain stem which had symmetrical connections with both hemispheres

Definitions of Consciousness

Much discussion has taken place about the significance of these new ideas in relation to consciousness In a search for the seat of consciousness much of the argument depends on the definition of consciousness Definitions of it are numerous. They incorporate such ideas as awareness of external and internal environment ; awareness of the awareness of environment integration of sensory stimuli with selective attention to some of them abstraction of the integration comparison of the present sensory pattern with memory traces of past ones the occupation of the conscious awareness with a grossly limited number of 'impressions at a time, continuity of successive impressions' in time either by reason of successive external sensory stimuli or by internal forces of association of fortuitous memory or abstractive logic and the direction of successive 'impressions" by forces at least partly emotional in origin It must be admitted that all these properties are necessary for the most generalised description of human consciousness, yet wide though the definition may seem, if it is adhered to it will prevent such confusion as arises when the intelligent reaction of an animal, either whole or maimed to its environment is mistakenly taken as having any bearing on consciousness, as here defined, which must necessarily by the laws of empirical science be a human characteristic

In an excellent discussion of such problems Fessard (1954) concludes that the phenomenon of consciousness can be succinctly defined as experienced integration ' He suggests that the locus of such experienced integration may be one of three sites the brain as a whole, the cortex as a whole or a specific region of the brain the other parts of the brain participating only in the form of unconscious operations

The only other suggestion is one derived from William James (1890) It has been referred to by Sherrington (1906) as well as Fessard but though oft quoted it is so quotable that I bow to these masters and repeat the reference to the privileged integrating neurone one ultimate pontifical cell

At this point Fessard begins to show serious consideration for the third view and for one possible region of experienced integration goes down (or as Penfield (1954a) might say up) to the brain stem and the reticular substance Fessard's reasons for doing so are interesting they include reports of experiments on animals (always a trap in relation to consciousness) and of the physiological as well as the anatomical results of these

Lashley's (1950) work is cited for he found that cortex isolated from surrounding parts of the grey matter could still allow intelligent response by an animal to sensory stimuli This led to the conception of ' isopotentiality of cortex ' which was thought to play a relatively non specific rôle in relation to the diencephalon

Magoun's (1954) results are also taken as pointing towards the reticulum as a possible major integrative structure Both Lashley and Magoun seem to be less impressed than others by this interpretation of their own work Magoun expresses doubt about it; Lashley says flatly that he does not see any reason to believe it The reticulum does not yet seem to have been shown to possess either the quality of patterning or the correct anatomical connections for such a job—indeed its connections are too numerous and diffuse rather than too few

Language is inseparable from the demonstration in others of fully developed consciousness, and no brain stem preparation, whether human or animal, can give this demonstration (Penfield (1954b) admits that cortex is necessary as a kind of appendage to the centrencephalon) Furthermore, if equipotentiality of cortex has some meaning for crude experiments on immature animals, it does not have the same meaning for the cortex of adult human beings, as I, as a neurosurgeon, know to my cost

However, it may be preferable to look at the problem in a positive way instead of dwelling on the insufficiencies of the reticular substance as a net "to catch a soul in "

Criteria of Consciousness

If we analyse the phenomena that have been described we see that three criteria are necessary to comprehend full consciousness with the attributes that have been outlined above

Vegetative Consciousness

(1) The first criterion might be called vegetative consciousness—the *fact that the person* must be awake at the time For this the brain stem, complete with reticulum, is necessary, as has been experimentally proved not only in animals but also clinically in man At first sight this may seem no more significant than saying that to do well in an *examination it is preferable for the candidate* not to be under a general anæsthetic at the time There is, however, more to the subject than that, for the descending projections to the reticulum have yet to be worked out and are certainly of importance, for the significance *as well as the strength of stimuli* contributes to their arousal value, as when a person awakens in response to his own whispered name or to the whimper of a sick child

Empirical Consciousness

(2) The second criterion represents the integrative level of thought and might be called empirical consciousness The word "empirical" applies in both its active and its passive senses, for it is the level at which the environment is dealt with on an empirical basis and at which an observer can become convinced that some of the phenomena of consciousness are occurring by reason of empirical data, particularly in the sphere of language Memory is necessary at this level, together with direction of attention and of the sequence of thought The integrative locus must therefore be *subject to* incoming stimuli, must have available memory traces, and must be capable of influence by directive forces, including emotional ones

It has long been thought that the association-area of cortex in the temporo parietal lobe of the dominant hemisphere fulfils the criteria demanded for empirical consciousness It meets the demands that Fessard made for a region of experienced integration, and it is known that even the simple sensory projection areas of cortex show experimentally all the properties required for this integrative function It also possesses the unity required to ensure that only one dominant pattern can occupy it at any one moment, with a very few secondary patterns reaching subliminal values In the closely adjacent temporal areas auditory sensory association cortex has to translate temporal sequences into spatial ones to find significance in them, so it is natural that
experimental demonstration by temporal st
functions of memory should be most easily demo
here, though it is probable that other sensory n
have their own less overt properties of memory
in direct continuity with the cortical area in qu

Abstractive Consciousness

(3) The third criterion for full consciousness is
order of integration representing abstractions l
the data of the "empirical area" This might i
abstractive consciousness, and here the difficult
arisen The frontal cortex has strong claims to
sidered the main cortical area subserving abs
functions, but how is attention widened at t
include its *abstractive activity*, and how at oth
is it narrowed to exclude this second order of integ

> "When one is acting in an extreme *emergenc*
> Lashley, "there is consciousness confined almost en
> the environment"

If the function of abstractive areas may be co
with the frequency analyser on an electro-enc
graph, *which can act only on the wave forms prod*
the other channels, and only if it is connecte
channel and switched on, may we look in the bra
connector and switch?

Up to now such a search would be considered fa
but let us examine the discoveries that have led
recent change in views The reticular substance a
diffuse and specific projection systems of the th
represent suitable effector mechanisms whereb
dominant associative area of cortex could influen
rest, *provided it could get the appropriate m*
through to them There must be a directive force a
as a directive pathway, and this brings our attent
the medial structures of the temporal lobe

Medial Structures of Temporal Lobe

The current theories about these do not appear
of much help

Papez (1937) thought that the figure-of-eight circ
hippocampus, fornix, mammillary bodies, anterior nucl
thalamus, and cingulate gyrus represented a system f
"prolongation of emotional states"

MacLean (1952) sees in the hippocampus and the ove
cortex parts of a "*visceral* brain" He claims th
modalities of sensation enter it, and it is therefore ca
of being a centre of major importance in the system of
tative control that he describes Unfortunately, cutting
fornix has been singularly disappointing in producing tem
mental changes in animals, and Pribram and Fulton (
say that removal of the hippocampus *fares* no better

What does produce a gross change in temperame
either removal of the *temporal* lobe cortex bilate
or else destruction of other pathways passing fro
towards the brain stem The hippocampus and fo
if they are freed from direct vegetative *projection*,
eminently capable of fulfilling a more subtle functi
Herrick (1933) set this particular ball rolling with
suggestion that the rhinencephalon might have ta
over the function of a non specific activator of all cort
activity, "lowering its *threshold*, or increasing
sensitivity, or exerting inhibitory influences. Thus
might influence behaviour in the form of learn
capacity, memory, &c, as a differential influence u
cortical and subcortical functions Having no locali
pattern of its own it *may* yet act on systems wh
have" Prophetic words

Green and Arduini (1954) put another fragment i
the jigsaw puzzle They found *that* stimulation of
ascending reticular substance caused electro-enceph
graphic *changes* in the hippocampus, but when
isocortex was desynchronised by this means the hip
campus was synchronised at 5–7 cycles per second (t
closest correspondence *to* α rhythm that an anim
possesses) and vice versa This explains the appare

e afferent system of the hippocampus which is ecific and reaches the hippocampus in retrograde n via the fornix, most of whose fibres pass towards ypothalamus.

Conclusion

en, with all this in our minds we look down into ep cleft of a surgical exposure of the temporal horn e ventricle, perhaps we do not now see the hippo as looking so much like a sea horse as it once did till we dam the rising tide of cerebrospinal fluid and side the choroidal seaweed, and then we have been o expect the hippocampus like Proteus, to take t any animate guise. Yet it may be just as much to the keyboard of an instrument as to a fish d one stretch the metaphor to include the hippo al gyrus sitting on a stool before that keyboard ng messages prompted by the neighbouring con tions ! One could imagine the orders coming through : peat till memorised ' ' Concentrate *please !* , u may stop your abstract thinking now a bomb has dropped through the roof "

ut let us not stretch a figure of speech beyond the ts of its usefulness Let us not toy with such ideas hat ' silent ' areas are not really silent but only bidextrous let us not speculate on whether disturb e of such a system of internal communication on a ctional or an organic basis might lead to a state mbling schizophrenia and let us not picture the rateur using the abstractive areas of his temporal tex when he uses language to convey emotional xpressibles If we refrain from these temptations we y be spared the necessity of explaining away bilateral trophy of the basal temporal lobes for the anterior missure and the others available seem inadequate for nt to-point projection and could carry only a brief mary across the midline Perhaps the messages are ked so simple that a greetings telegram would suffice However, any alternative would take us back to the tectum of the brain stem , so we should perhaps take dignified silence

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I regard it as desirable that men should enjoy an creasing flow of goods ; I am far more doubtful about cessive reduction in hours of work. When prophets future speak of a thirty two hour week, to be followed by a twenty four hour week I wonder whether they missing the main point No man can desire the ion of his working week to thirty two and then to four hours unless he dislikes his work. No scientist ake kindly to the suggestion that he may spend only two and then twenty four hours in his laboratory then points out to us what I regard as the real problem future : to make work enjoyable Would that not be ater contribution to man s happiness than to whittle the hours ? In fact this whittling down is called for only work is not enjoyed and no man can be called happy is not happy in his work —BERTRAND DE JOUVENEL, er Dec. 15 1955 p 1032

INGUINAL HERNIORRAPHY *

F S A. DORAN
M D Camb , F R C.S
SURGEON, MID WORCESTERSHIRE HOSPITALS

DESPITE an ever growing volume of criticism most inguinal herniæ are still repaired by techniques with a central common factor—the rearrangement of the lower border of the conjoint tendon (inguinal aponeurotic falx) This rearrangement is of two types : the lower border of the conjoint tendon is sewn either to the inner surface of Poupart's (inguinal) ligament or to Cooper s (pectineal) ligament which is attached to the pecten pubis and arcuate line The success of this kind of herniorraphy presumably depends on achieving a secure permanent union between the conjoint tendon and the ligament to which it has been sutured

It is a surgical axiom that tissues sewn together under tension are unlikely to remain permanently united because the sutures will cut out, or the scar forming the union will weaken and stretch Fifty years ago Halsted (1903) suspected that the degree of tension needed to bring the conjoint tendon into contact with Poupart's ligament was dangerously high and a cause of failure after this type of operation That this suspicion was well founded is supported by the fact that, when a recurrence is explored the conjoint tendon is no longer attached to the ligament upon which it had been sutured down

Gallie and Le Mesurier (1921 1924) reporting observations on a large number of recurrences following Bassini s operation stated that in every instance the aponeurotic structures that had been sutured to the ligament had returned to their normal positions

Workers from Fergusson (1907) to Mair (1945) have expressed the opinion that, if an appreciable amount of tension is present when the conjoint tendon is sewn to the ligament, a sound permanent union is unlikely and there will probably be a recurrence

Indeed it has been demonstrated by means of radio opaque markers inserted into the conjoint tendon above and into either Poupart s or Cooper s ligament below that these structures resumed their preoperative relationship within six months in 90% of the cases tested (Doran and Lonsdale 1949)

That the degree of tension present when the conjoint tendon is sewn down on to either Poupart's or Cooper's ligament, may be dangerously high is surprising because the integrity of the inguinal canal is supposed to depend partly on the conjoint tendon descending ' shutter like ' to lie pressed against and flush with Poupart's ligament, thus closing the inguinal gap ' (Keith 1924) In other words, when the muscles of the abdominal wall contract, it is natural ' for the conjoint tendon to lie in apposition with Poupart s ligament The notion of strengthening the inguinal canal by maintaining the ' shutter in the closed position therefore seems to possess anatomical and physiological sanction but as a matter of fact this concept of the part played by the conjoint tendon in supporting the integrity of the inguinal canal is incorrect

' Shutter ' Action of Conjoint Tendon a Myth

The inability of the conjoint tendon to act like a shutter in the way described by Keith (1924) has been pointed out by several surgeons (Cole 1941 Brandon 1946 Patey 1949) The anatomy of that part of the anterior abdominal wall (below the level of the anterior superior iliac spines) in which the inguinal canals lie leaves little doubt that in most instances, the conjoint tendon cannot act like a shutter or be approximated passively to either Poupart s or Cooper s ligament without tension The evidence supporting this statement is both anatomical and experimental

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* Based on a paper read to the Anatomical Society of Great Britain and Ireland on April 22, 1955

Anatomical Evidence

The "arch" described by the lower border of the internal oblique muscle and the conjoint tendon (inguinal aponeurotic falx) over the inguinal canal is fixed laterally to the outer half of the inguinal ligament, from which the internal oblique muscle arises, and medially to the crest of the os pubis and the pecten pubis, into which the conjoint tendon is inserted This "arch" is not an independent structure but is the lower edge of a musculo aponeurotic sheet which forms a layer of the anterior abdominal wall

In a normal person, on coughing or straining, the anterior abdominal wall (both sides acting in unison) contracts, thereby constricting the abdominal cavity Since the contraction of the muscles in the right half of the abdominal wall is balanced by that of the muscles in the left half, the linea alba, into which the two internal oblique muscles are principally inserted, remains in the midline Therefore the point on the linea alba (at the level of the anterior superior iliac spines) into which the internal oblique muscle runs horizontally from that bony origin must remain equidistant from the right and left anterior superior spines Moreover, with a person standing upright, the attachments of the linea alba remain the same distance apart when the abdominal wall contracts The point on the linea alba opposite the anterior superior spines therefore does not move up or down Since this point (X in fig 1) does not move in the coronal plane it has been called the primary fixed point

For all practical purposes, therefore, that part of the anterior abdominal wall distal to a line joining the anterior superior spines can be regarded as consisting of two inelastic triangles (XYZ and XWZ in fig 1) each containing an inguinal canal Fig 1 shows that the centre of the "arch" (B and B¹) can only touch the opposite point on the inguinal ligament (C and C¹) under two conditions (1) where the tissue between the "arch" and the linea alba is elastic, and (2) where contraction of the muscles on one side of the linea alba is associated with relaxation of those on the other, allowing the linea alba to be pulled away from the midline Neither of these two conditions existed in any of the patients tested, in spite of the fact that the tissue joining the "arch" to the linea alba contains elastic fibres (Lunn 1948)

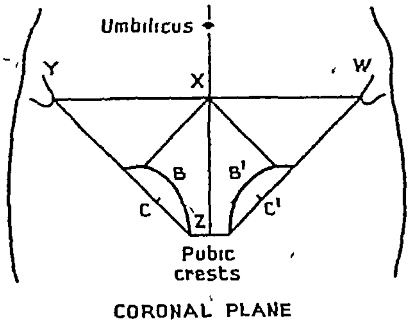


Fig 1—The point X on the linea alba being fixed in both planes by the opposing contractions of the horizontal fibres of the internal oblique muscles, YX and WX, it is impossible for the points B and B¹ on the "arches" to descend on to C and C¹ on Poupart's ligament, particularly since the tissue between the linea alba and B and B¹ is inelastic.

On anatomical grounds the conclusion is inescapa that the "arch" of the internal oblique aponeuros the conjoint tendon over the inguinal canal is inel and plays no part in maintaining the integrity of canal

Experimental Evidence

(1) Patey (1949) described the direction in which the fibres of the internal oblique muscle that arise from the outer half of the inguinal ligament *pull as they cont* He observed that, when stimulated electrically, fibres of the internal oblique muscle which had reached top of the "arch" pulled in a line parallel to the ing ligament, and that there was no "shutter" action the conjoint tendon. In 25 patients with inguinal he I repeated this experiment and confirmed Patey' observation in each case

(2) Six patients operated on for hydrocele had a opaque marker inserted in the centre of the "arc another marker in the inguinal ligament directly o to it At a later date these patients were radiog first with the abdominal muscles relaxed and the the muscles contracted The markers did not together in any of the six patients tested.

These observations confirm the conclusion rea anatomical grounds that the "shutter" action internal oblique aponeurosis and the conjoint ten to the inguinal ligament is a myth

Halsted-Tanner Relaxing Incision

The inflexible tissue which maintains the " formed over the inguinal canal by the internal o muscle and the conjoint tendon and opposes the a tion of the "arch" to Poupart's ligament is the neurotic sheet which is divided by the Halsted T relaxing incision (fig 2) This incision effectively comes the passive resistance to the proposed su apposition of the internal oblique tendon and conjoint tendon either to Poupart's or to Co ligament and allows that step in the operation effected virtually without any tension if the "arc being sewn to Poupart's ligament, but often w little tension when it is sutured to Cooper's ligamen

The relaxing incision does more than overcom passive resistance of that part of the internal obliqu transversalis aponeurosis which is inserted into the alba from the pubis to the umbilicus, it protect union of the internal oblique aponeurosis and the con tendon with Poupart's ligament from the relentle of that portion of the internal oblique and transve muscles which arises from the anterior superior on the opposite side

When the "arch" is sewn down either to Poupart to Cooper's ligament without the relaxing incision, junction is achieved by stretching the muscle fibre the internal oblique and transversalis muscles w arise from the anterior superior spine on the opp side, the remaining tissues between the "arch," w the surgeon intends to displace, and the opposite inte

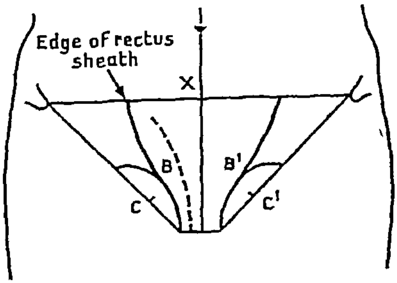


Fig 2—Relaxing incision through the rectus sheath divides the inelastic tissue by which the "arch" is attached to the linea alba.

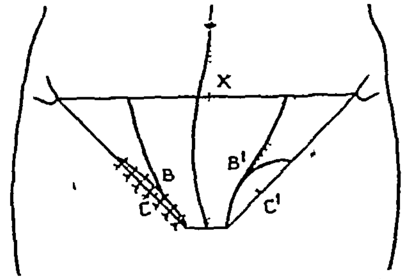


Fig 3—If the "arch" is drawn down on to Poupart's ligament, without the relaxing incision, the linea alba is displaced to that side

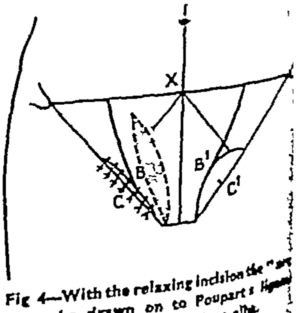
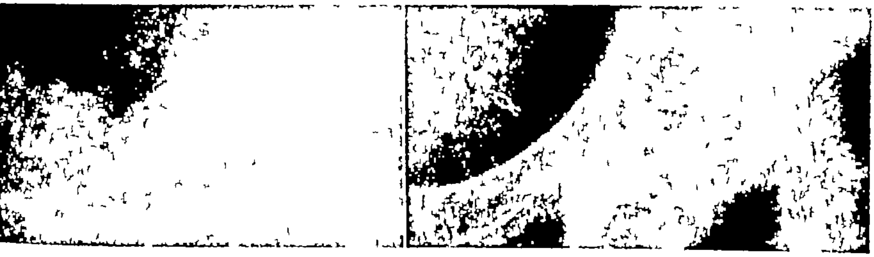
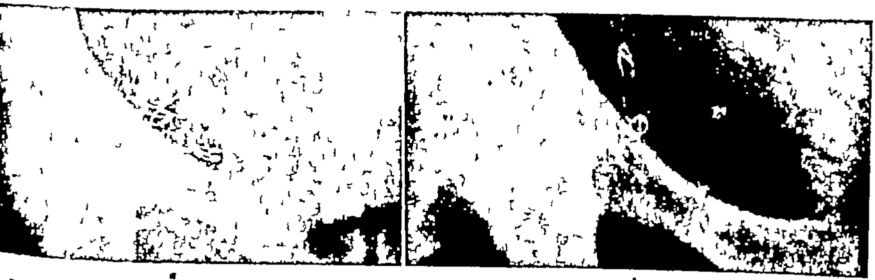


Fig 4—With the relaxing incision the "ar can be drawn on to Poupart's ligam without displacing the linea alba.



—Positions of markers in "arch" and in Poupart's ligament: a a week after operation; b a year after operation (inner pair have spread widely apart)



—Positions of markers in "arch" and in Cooper's ligament: a a week after operation; b a year after operation (outer pair have separated widely)

ue muscle being aponeurotic and inflexible It will
ted that the linea alba is displaced towards the side
e herniorraphy (fig 3)

e operator tends to be deceived by the ease with
h the conjoint tendon is often pulled down on to
of the ligaments; this absence of tension is due to
anæsthesia, which has relaxed the muscles on the
site side of the anterior abdominal wall. An attempt
o the herniorraphy with the muscles of the anterior
minal wall contracted and tense is salutary

s soon as the anæsthesia has worn off the appropriate
s of the opposite internal oblique and transversalis
les begin their almost ceaseless attempt to restore
inea alba to the midline if they succeed they will do
robably at the expense of the herniorraphy If the
xing incision has been made however the linea alba
ot displaced at the time of the operation and the
cles on the opposite side have lost the continuity of
inelastic aponeurosis through which by a relentless
they could pull the internal oblique aponeurosis and
conjoint tendon away from either Poupart's or
per's ligament (fig 4)

heoretically therefore the Halsted Tanner relaxing
sion is an essential step in promoting a permanent
n between the internal oblique aponeurosis and the
joint tendon and the ligament to which they have
n sewn.

ical Test

o find out whether the Halsted Tanner relaxing
sion was as effective in practice as the foregoing
oretical considerations suggest in a series of operations
o radio-opaque markers were inserted into the lower
der of the internal oblique aponeurosis and the con
t tendon and two similar markers were inserted into
er Poupart's or Cooper's ligament in each case These
kers were radiographed in the immediate postopera
e period and a year later This test was made on 37 herniorraphies in 25 cases the "arch" was sutured to Poupart's ligament and in 12 cases to Cooper's ligament.

It is disappointing to find that the relaxing incision cannot ensure a sound permanent union between the "arch" and the ligament upon which it has been drawn down of the 25 cases in which the union had been to Poupart's ligament 9 had separated by the end of the first postoperative year and of the 12 cases in which the union had been to Cooper's ligament 3 had separated at the end of the first year 22 cases were radiographed again at the end of the second year, but in all of them the film showed no alteration from the position (either apposition or separation) which existed when the previous radiograph was taken It therefore seems that success or failure with regard to the union between the "arch" and the ligament, is decided in the first year after operation Fig 5 illustrates the separation of the conjoint tendon from Poupart's ligament, and fig 6 its separation from Cooper's

Conclusions

The "shutter" action of the internal oblique aponeurosis and the conjoint tendon is a myth

The notion of maintaining the "shutter" in the 'closed' position is theoretically an unsound basis for a herniorraphy

The object of maintaining the 'shutter' in the 'closed' position is difficult to achieve in practice because even the Halsted Tanner relaxing incision cannot ensure a firm permanent union between the conjoint tendon and the ligament either Poupart's or Cooper's, to which it has been sewn

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PROLONGED CHEMOTHERAPY IN PULMONARY TUBERCULOSIS

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In this country the treatment of pulmonary tuberculosis with antibacterial drugs is based upon the trials of the Medical Research Council These trials demonstrated the relative efficiency of different combinations and schemes of dosage of the three drugs in common use at the present time streptomycin, isoniazid, and sodium *p*-aminosalicylate (P A S) Also they forecast the risks to be expected from the emergence of insusceptible organisms and showed that some combinations of drugs are more hazardous than others in this respect Although the periods of treatment used by the Medical Research Council increased from six weeks to six months they were limited by the need for achieving results in a reasonably short time The most effective duration of treatment was not investigated

We describe here the results in 142 patients treated by chemotherapy for nine months or longer and discuss the factors on which the duration of treatment should depend

Present Investigation

142 patients with pulmonary tuberculosis who had been in our care since 1950 received chemotherapy for nine months or more No patient who completed nine months' treatment was excluded 63 were observed for at least a year after the completion of treatment At first prolonged treatment was given only to patients with advanced tuberculosis that could not be dealt with in any other way, later we began to use it as a routine for nearly all types of tuberculosis

Prolonged chemotherapy was given for the following reasons

(1) Relapse after previous treatment (57 patients)

(2) Combined with collapse treatment or resection when all disease had not been controlled (43 patients)

(3) As an alternative to surgical treatment when this was refused or was impracticable because of the situation of the disease or the age or personality of the patient (34 patients)

(4) When other treatment was impossible because of the extent of the disease or the inadequacy of the respiratory reserve (51 patients)

Some patients appear under more than one heading Groups 3 and 4 include patients for one reason or anothe unsuitable for any other form of treatment Those in group 4 are separated from those in group 3 because they had the most severe and extensive tuberculosis The numbers in each category are analysed in table according to the extent of the tuberculosis (see below).

Classification and Extent of Disease

The classification of the patients was based upon the radiographic appearances and followed that used by Foster-Carter et al (1952)

Class I not more than one zone in one lung involved.
Class II unilateral or bilateral disease involving two or three zones
Class III bilateral disease affecting four or more zones.

There were 23 patients in class I, 73 in class II, in class III (table II) There were more males than in the ratio of 4 3 in the series as a whole T dominance was entirely in class III, where ther more than twice as many men as women (tab The mean age of the men was 37 in class I, 38 in c and 41 in class III, and of the women 27, 30, respectively

Tuberculosis with Cavitation

Cavities were graded according to their g diameter as follows small cavities 1 0–1 5 cm, m cavities 1 6–2 5 cm, large cavities 2 6–4 0 cm very large cavities over 4 0 cm If more than one c was present, the largest was used as the measure. of the 142 patients had cavities, 27 small, 25 med 16 large, and 24 very large

TABLE I—REASONS FOR PROLONGED CHEMOTHERAPY 142 PATIENTS

Reason	No of patient		
	Class I	Class II	Class III
Relapse after previous treatment			
With either collapse treatment or resection	—	14	8
Chemotherapy alone	3	17	15
Combined with either collapse treatment or resection	8	19	16
Alternative to surgery	8	23	3
Other treatment impracticable	4	20	27

Treatment

All the patients were treated with a combinatio two of the three drugs streptomycin sulphate, P. and isoniazid, 2 patients had viomycin late in treatment when organisms resistant to the other d were found in their sputum, and a few other pati had dihydrostreptomycin for a time soon after it c into use

The usual treatment for the first six to twelve we was intramuscular streptomycin sulphate 1 g da with either P A S 16–20 g daily in four doses or isoni 100 mg twelve hourly by mouth Patients weigh less than 9 st were allowed to take P A S 12 g da but as a rule a larger dose was accepted

When the cavities closed and sputum became f from *Mycobacterium tuberculosis*, the dose of strep mycin was reduced to 1 g two or three times weel

TABLE II—EXTENT OF PULMONARY TUBERCULOSIS IN PATIENTS TREATED BY PROLONGED CHEMOTHERAPY

Class	No of patients	Number of zones affected					
		1	2	3	4	5	6
I	23	23	—	—	—	—	—
II	73	—	32	41	—	—	—
III	46	—	—	—	24	11	11

bined with P.A.S daily The change was usually le after three or four months treatment This regime then continued throughout the period of treatment

3 patients had from nine to twelve months treatment, had from twelve to eighteen months, 31 had from teen months to two years, and 12 had more than ears (table IV) Most patients rested in bed for the three to six months, except that they were allowed go to the lavatory once a day They then had sana um treatment for another three to six months Many ents were at home for part of the time spent in bed ecially when this exceeded three or four months

LE III—AGE AND SEX OF 142 PATIENTS TREATED BY PROLONGED CHEMOTHERAPY

ass	Males			Females		
	No	Age (yr)		No	Age (yr)	
		Range	Mean		Range	Mean
I	13	16–61	37	10	14–30	27
II	36	15–62	39	37	13–57	30
III	32	25–60	41	14	17–46	29
al	81			61		

ose with medium or large cavities were nursed in spital with the cavity dependent to facilitate closure.

Of the 142 patients 101 were treated solely by rest and emotherapy The remaining 41 were treated in other ys as well (table V) some form of resection was done 16, thoracoplasty in 8 extrafascial pneumolysis and mbage in 6 artificial pneumothorax in 7 and pneumo ritoneum in 4

thods of Assessment

The traditional criteria of improvement—abatement fever gain in weight a fall in the erythrocyte mentation rate control of cough and reduction of quantity of sputum were not used. Some are difficult estimate accurately and others closely accompany and pend on the dwindling population of *M tuberculosis*

LE IV—DURATION OF CHEMOTHERAPY IN 142 PATIENTS

Class	No of patients	Weeks therapy			
		38–51	52–78	79–104	More than 104
I	23	8	10	4	1
II	73	11	45	14	3
III	46	4	21	13	8
al	142	23	76	31	12

the lungs, the absorption of inflammatory exudate the closure of cavities. These three features are the st direct guides to progress.

Improvement was therefore measured mainly by teriological and radiographic methods Sputum centrates were examined monthly and cultures de Radiographic changes were followed with monthly tero-anterior films and the closure of cavities with ograms. In addition the final results of treatment e judged by the ability of the patients to resume continue their ordinary lives

Results

DURING TREATMENT

ration of Radiographic Change

The radiographs of the 142 patients were examined determine after what period of treatment there no further alteration in the shadows in the lung se changes comprised clearance of shadows the stitution of linear for more diffuse shadows and evidence of contraction of parts of the lung The closure of cavities is considered separately The results are shown in table VI The radiographic appearances remained unchanged in 13 (9%) of the 142 patients throughout the period of treatment All the others improved: 18 (13%) for three months only, 38 (27%) for six months; 40 (35%) for nine months 20 (14%) for one year and 4 (2%) for more than one year A third of the patients in class I, half of those in class II and two thirds of those in class III continued to improve radiographically after six months

TABLE V—TREATMENT OF 142 PATIENTS WITH PULMONARY TUBERCULOSIS

Treatment	No of patients	Class I	Class II	Class III
Prolonged chemotherapy alone	101	15	58	28
Prolonged chemotherapy combined with				
Resection of				
Lung	2	—	—	2
Lobe	7	1	4	2
Segment	7	4	3	—
Thoracoplasty	8	1	2	5
Plombage	6	—	2	4
Artificial pneumothorax	7	2	2	3
Pneumoperitoneum	4	—	2	2
Total no receiving combined therapy	41	8	15	18

TABLE VI—DURATION OF RADIOLOGICAL IMPROVEMENT IN 142 PATIENTS TREATED BY PROLONGED CHEMOTHERAPY

Class	No of patients	Unimproved	Duration of improvement				
			3 mos	6 mos	9 mos.	1 yr	More than 1 yr
I	23	4	6	5	7	1	0
II	73	6	10	31	24	10	2
III	46	3	2	12	18	9	2
Total	142	13	18	38	40	20	4

Closure of Cavities

Of the 142 patients 92 had cavities more than 1 cm in diameter Either these were closed, or the portion of lung containing them was removed, in all the patients except 5 1 of these 5 patients refused operation and the 4 others were unfitted for it. 23 patients required either surgical collapse treatment or resection 4 had small cavities 3 medium, 7 large and 9 very large cavities. Of the 7 small or medium cavities which did not close with chemotherapy alone 5 were several years old and

TABLE VII—92 PATIENTS WITH CAVITIES TREATED BY PROLONGED CHEMOTHERAPY CLOSURE OF CAVITIES

Diameter of cavity (cm)	No. of patients with cavities	No of patients with cavities closed by either collapse or resection	No of patients treated with chemotherapy alone							Cavities persisting
			Time of closure of cavities							
			Undetermined	3 mos.	4 mos.	6 mos	9 mos	1 yr	Later than 1 yr	
Small 1·0–1·5	27	4	7	8	4	3	1	—	—	—
Medium, 1·6–2·5	25	3	4	5	5	6	1	—	—	1 (refused operation)
Large 2·6–4·0	16	7	1	1	3	3	1	—	—	—
Very large, >4·0	24	9	1	1	2	2	2	3	—	4
Total	92	23	13	15	14	14	5	3	—	5

lay among dense shadows which were unaffected by chemotherapy , their walls were thick and clearly defined in tomograms suggesting that they were fibrotic The 2 other cavities were excavated "tuberculomas" with thick irregular walls

In 64 of the 92 patients (69 5%) with excavated lesions the cavities were closed by chemotherapy alone (table VII) 23 of 27 small cavities, 21 of 25 medium, 9 of 16 large, and 11 of 24 very large cavities In 19 of these 64 patients either collapse treatment or resection was done after the cavities had closed , they were either patients seen early in the series before the risk of relapse after chemotherapy could be estimated or else they were thought to have a special risk of relapse

Bacteriological Results

In 111 of the 142 patients *M tuberculosis* was seen in smears or isolated on culture before treatment The number of instances in which tubercle bacilli were either seen on direct examination of the sputum or grown on culture rapidly diminished during treatment After three months' treatment they were found in 29 (26% of the original 111), after six months in 18 (16%), after nine months in only 9 (8%), after one year in 9, and subsequently in 6

With 3 exceptions the isolation of *M tuberculosis* after six months' treatment was always associated with easily demonstrable cavities (15 in 18)

After nine months' treatment 9 patients had *M tuberculosis* on either smear or culture , all of them still had cavities which had been more than 3 5 cm in diameter before treatment However, not all the patients with persistent cavities continued necessarily to excrete tubercle bacilli at nine months 13 still had cavities, but *M tuberculosis* was isolated from only the 9 already mentioned, despite repeated attempts

The susceptibility of *M tuberculosis* to the drugs was tested in 8 of the 18 patients from whom tubercle bacilli were isolated at six months From only 2 patients were tubercle bacilli found which were insusceptible to streptomycin 1 of those patients deteriorated at this time and was given viomycin and treated surgically , the other continued to improve , and subsequently it was impossible to obtain *M tuberculosis* from either of them

M tuberculosis was grown regularly from the sputum of 9 patients after a year's treatment , in 4 of them a few tubercle bacilli were found in sputum on direct examination Subsequently the cavities of 4 of these patients were either removed or obliterated by surgery, and their sputum became sterile Of the remaining 5 patients 3 continue to excrete *M tuberculosis*, which can be grown on culture but is not present on direct smear These are patients too old or too breathless for surgery in whom cavities are still present Tubercle bacilli resistant to streptomycin and P A S 5 µg per ml. in the medium were found at some time in all 9 patients from whom *M tuberculosis* was isolated after a year's treatment Only 3 of these 9 patients produced tubercle bacilli insensitive to isoniazid 1 µg per ml , and these 3 were the only ones of this group who had been given isoniazid for longer than the initial three months' treatment In 2 other patients tubercle bacilli resistant to streptomycin but not to P A S were isolated after six months' treatment In 1 their presence coincided with radiographic and clinical deterioration With this exception none of the patients in whom resistant tubercle bacilli were discovered has so far deteriorated from the state of maximal improvement earlier achieved 6 have had chemotherapy for more than three years, and 2 for more than two years , the 9th died after a second operation designed to control an unclosed cavity and persistently positive sputum

Toxic Effects of Prolonged Chemotherapy

Nausea ascribed to P A S was common and was associated with persistent vomiting in 5 patients, diarrhœa in 3, and dyspepsia in 5 2 patients develo symptoms after a year's treatment, which was stopped , 4 were given isoniazid instead o and the others lost their symptoms after the P A S was reduced to 12 g daily 6 patients had a rash, and enlarged lymph nodes due to either mycin or P A S desensitisation was successful unsuccessful in the 2 others, who then contin treatment with streptomycin and isoniazid 7 had fairly severe aural disturbances 3 beca from dihydrostreptomycin, 2 permanently , troublesome giddiness, 1 for a year after stop drug All these 7 patients were aged more tha were treated before the efficiency of combined tr with isoniazid and P A S was recognised , all class III Since chemotherapy offered the sole arresting their tuberculosis, streptomycin was co but the dose was reduced to 2 g a week 7 patie within twelve hours of their injections, un reactions, including headaches, sweating, trem persistent pain at the injection site 2 were des successfully , in the 5 others the symptoms w enough to be tolerated when streptomycin wa only twice weekly 3 patients showed some ment of the thyroid gland caused by P A S , but no in treatment was necessary

AFTER TREATMENT

Present State of 142 Patients (table VIII)

4 patients died 1 from disseminated lupus ery tosus, which she had before chemotherapy was 1 after an operation for acute intestinal obstr and 2 from their tuberculosis (1 after thoracoplast

Of the remaining 138 none relapsed while treatment All became well and resumed work, soon after leaving the sanatorium and before com their chemotherapy 3 of them still have *M culosis* in their sputum , these patients had large before treatment and are unsuited for surgical trea They are still under treatment by chemotherap so far have not relapsed

2 patients have relapsed after stopping treat 1, a man with very extensive disease initiall pneumoconiosis, developed tuberculosis anew reopened cavity within a month after continuous therapy for two years Sensitive tubercle bacilli found in his sputum In the other, a woman w tuberculosis in both lungs when first treated, cavity reopened, but she is well and symptomless

In 134 patients either there is no sputum or little there is does not contain *M tuberculosis* are leading their ordinary lives with full activity 10 others are crippled to some extent by breathles a legacy of extensive tuberculosis 41 had either co treatment or resection as well as prolonged chemothe comprising 8 of 23 in class I, 15 of 73 in class II 18 of 46 in class III Prolonged chemotherapy alon therefore successful in 101 of 142 patients, or ro half of class III and three quarters of classes I a taken together

TABLE VIII—FOLLOW UP OF 142 PATIENTS AFTER PROLO CHEMOTHERAPY

Class	No of patients	No of deaths		Follow up of 138 surviving patients					
		Not due to tuberculosis	Due to tuberculosis	Up to 6 mos	6–9 mos	9 mos to 1 yr	1–1½ yr	1½–2 yr	More than 2 yr
I	23	1	—	5	1	1	7	[illegible]	6
II	73	1	—	35	5	4	15	[illegible]	6
III	46	—	2	21	1	2	6	11	3
Total	142	2	2	61	7	7	28	40	15

ration of Observation after Treatment

p to June 1955 78 patients had been observed for months or longer and 63 for more than a year after completion of treatment 2 relapsed as recorded ve All the others maintained their progress and are ork as at the end of treatment

Discussion

he value of antibacterial drugs in the treatment of monary tuberculosis is now firmly established on dence from therapeutic trials. These trials have been erned mainly with short periods of treatment in ients with acute forms of the disease They have attempted to show for what length of time treat nt may safely be continued and they have not own any light on the optimal duration of treatment on whether this may vary for different types of erculosis On the answers to these questions, how r, depends the most effective use of chemotherapy

he rate of relapse was considerable among patients ated in the early trials of the Medical Research Council ox et al. 1954) and although there were other reasons this besides the short duration of treatment the quency of relapse has emphasised the need for longer atment Moreover relapses occur mainly within two ars of apparent healing in most forms of pulmonary berculosis hence treatment should be designed to tect the patient during this vulnerable time A guide the magnitude of the risk would be given by the rate relapse among patients treated for a short period with mbined chemotherapy as well as by conventional rest atorium treatment and such other measures as were ught to be necessary

A. F Foster Carter (personal communication) has lysed the figures for patients at Frimley Sanatorium 1950 a group comparable with the present series regards age, sex and social background The extent disease and the proportion with cavities were also ilar Of his 90 patients 81 had chemotherapy for ee months or less and the remainder for four to six nths. All of them had routine rest in bed followed by ded exercise and in addition 61 had other forms of atment 52 collapse treatment of some kind includ 8 treated surgically and a further 9 resection these 90 patients 1 died 7 relapsed within a year of ving the sanatorium and 4 others relapsed in the owing two years—a total relapse rate of 12% in ee years from the completion of treatment These res show that there is still a significant rate of relapse n present resources are used including chemotherapy short periods It is therefore important to know ther prolonged chemotherapy is more effective and what extent it can either supersede or supplement er collapse treatment or resection

During the past five years we have used prolonged motherapy as a routine combining it when necessary h either collapse treatment or resection (41 in 142) the patients were rested in bed and subsequently ir activity was gradually increased In 101 prolonged motherapy was the only additional treatment Our erience is that the use of antibacterial drugs in this y is practicable and safe

19 patients were treated continuously for more than ear 12 of them for more than two years Minor ptoms nausea especially were common although y were rarely persistent and could usually be over e Vertigo in older patients and reactions caused drug sensitivity were more important but severe turbance was exceptional Such symptoms were lly got rid of by changing the drugs or by desensitisa . Only 3 patients were left with a disability from motherapy: deafness in 2 from dihydrostreptomycin vertigo in 1 from streptomycin These 3 patients e treated at a time when isoniazid was not available It is evident that the risk of serious toxicity is slight and does not increase materially with the length of time for which antibacterial drugs are given

The immediate effects of prolonged treatment were shown by the length of time for which the tuberculous lesions continued to resolve and heal and by the frequency with which cavities were closed and sputum was converted In 73 of the 142 patients radiographic improvement continued during treatment for more than six months and in 24 of these for a year or longer (table VI) The period of improvement increased with the extent of disease a third of the patients in class I half of those in class II and two thirds of those in class III improved radiographically for more than six months 11 of 46 patients in class III improved for a year or longer These results show that tuberculosis often improves radiographically when chemotherapy is continued well beyond the usual time and that patients with advanced tuberculosis benefit especially

Cavities were closed by rest and prolonged chemotherapy alone in 64 of 92 patients (69 5%) The proportion was greatest for small or medium cavities (23 in 27 and 21 in 25 respectively) but considerable even for large and very large ones (9 in 16 and 11 in 24 respectively) Most cavities were obliterated during the first six months treatment though a few large and very large cavities (6 in 20) did not close until later (table VII) As expected the age of cavities and fibrosis around them appeared to affect the chances of closure by chemotherapy in the present series most of the cavities which did not close had been present for several years and were situated in the midst of dense shadows which were unaltered by the drugs Another less common type of cavity seen in isolated solid lesions (3 in this series) also did not respond to chemotherapy alone Those cavities which had not closed after six months chemotherapy often required either collapse treatment or resection It is however worth emphasising that if surgery is impossible further chemotherapy may still be successful

The closure of cavities is an important factor in deciding the bacteriology of the sputum during prolonged chemotherapy The sputum was converted in three months in 74% of 111 patients with *M tuberculosis* present initially in six months in 84% and in nine months in 92% After six months' treatment the presence of *M tuberculosis* in the sputum was almost always associated with obvious cavities in the lung (in 15 of 18) The risk that such cavities may not be closed by chemotherapy alone has already been emphasised After nine months treatment the few patients with *M tuberculosis* still present usually retained them unless the cavities could be dealt with surgically; moreover the tubercle bacilli were usually insusceptible to the drugs. However sputum from 4 of 13 patients who had persistent cavities after nine months treatment did not grow *M tuberculosis* despite repeated attempts

There were 2 deaths from tuberculosis and 2 not caused by tuberculosis. Both patients who died from tuberculosis had extensive lesions; 1 of them died soon after a thoracoplasty 10 patients are respiratory cripples and 2 others have relapsed all but 1 of these had very advanced tuberculosis before treatment. The remaining 126 patients are at present well and at work and lead their ordinary lives. Most of them resumed work some time before their chemotherapy was stopped In 134 of the 138 survivors either there is no sputum or the little remaining sputum is free from *M tuberculosis* 101 were treated with prolonged chemotherapy alone about three-quarters of those in classes I and II and half of those in class III The results at a year or longer from the termination of treatment confirm these favourable figures 61 of 63 patients remain well and show no evidence of relapse

These results of prolonged chemotherapy make it a direct competitor with treatment by surgical resection of a lobe or a segment when the tuberculosis is localised (classes I and II), especially since the mortality among patients treated by chemotherapy is insignificant In a preliminary report on the recent national survey (British Tuberculosis Association 1955) the mortality among 3183 patients was 1 3% for segmental resection, 2% for thoracoplasty, and twice this figure for lobectomy Contralateral spread of disease occurred in 2 9% after thoracoplasty, and in 2 4% after lobectomy, and 4% of resections were followed by a bronchopleural fistula It therefore seems that prolonged chemotherapy is the treatment of choice for most patients A minority of those with localised tuberculosis in whom this fails or who subsequently relapse require either collapse treatment or resection In this way the risk of complications which arise from surgical treatment can be confined to those few patients for whom such treatment is essential after the failure of chemotherapy

Patients with recent and very extensive tuberculosis unsuitable for surgical treatment can sometimes be brought to a state of fitness for surgery by prolonged chemotherapy when this controls disease outside the field of operation In our experience it is impossible at the outset to estimate the enormous improvement which such patients may show after chemotherapy for nine months or longer

The main limitation of prolonged chemotherapy is in patients with fibrotic tuberculous lesions and large cavities who are too old or too breathless ever to be likely to be fit for surgery Indeed it may be doubted whether antibacterial drugs should be used for this kind of tuberculosis, because of the risk that eventually sputum may persist containing bacilli resistant to the drugs Patients who are temperamentally unstable and incapable of education in the care of sputum (they are very few) must be regarded as unsuitable because of the danger to those in contact with them But experience with the present series shows that, though resistant tubercle bacilli have developed in about the same proportion of patients as in the series reported by the Medical Research Council, except for 1 patient there has been no corresponding halt to clinical or radiographic progress The explanation for this as Mitchison (1954) has emphasised, is that the tubercle bacilli resistant to streptomycin in a given sputum specimen are different ones from those resistant to isoniazid or to P A S Thus, if the drugs are combined and given continuously, neither resistant strain can flourish, and the mathematical chances of mutations arising in such a way as to produce tubercle bacilli resistant to two drugs are very small indeed This agrees with our experience and minimises the significance of the appearance of tubercle bacilli resistant to single drugs

The results in the present series show that there are many patients with extensive fibrotic cavitated tuberculosis and illness of long duration to whom prolonged chemotherapy restores the ability to live useful and satisfactory lives Moreover the arrest of much active tuberculosis and the improvement in health which follows may still allow either surgical collapse or resection of cavitated lung when the cavities have not closed In the present series there were 9 such patients in whom an apparently hopeless situation was improved to a point where surgery could complete the process of sputum conversion and cavity closure

Finally, it should be emphasised that, although the period of drug treatment is long, most patients return to work during this time, and the length of time spent in hospital and sanatorium is no longer than with other methods of treatment Indeed one question for the future, especially for some limited forms of the disease, is whether the period of rest can be very considerably reduced when prolonged chemotherapy is undertaken

Conclusions

Prolonged chemotherapy for pulmonary tuberc is practicable and safe

142 patients were treated by chemotherapy for months or more, 119 of them for a year or more

134 are well, their cavities are closed, and *tuberculosis* cannot be recovered from them, 126 of are leading normal lives, but 10 are restricte breathlessness

These results were achieved solely by chemoth and rest in 101 patients, 41 other patients req surgery or other collapse measures in addition

92 patients had cavities, in 64 the cavities *closed without the aid of surgery or collapse treatme*

63 patients have been followed for a year afte end of chemotherapy, only 2 relapsed

Radiographic clearing was still taking place bet the sixth and ninth month of treatment in 51%, up to a year in 14%

Cavities not closed within six months are less l to close subsequently on chemotherapy alone and often associated with resistant *M tuberculosi* the sputum They require either surgical resectio collapse treatment when possible in addition to fu chemotherapy

Prolonged chemotherapy is often an effective t ment for advanced chronic tuberculosis or may i *possible otherwise impracticable surgical treatment*

We are much indebted to Dr A F Foster Carter fo analysis of the results at Frimley Sanatorium, and t medical committee of Brompton Hospital for permiss quote them One of us (J D) was in receipt of a pe grant from the research fund of Brompton Hospital

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A DUODENAL-ULCER FAMILY

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MANY "ulcer families" have been described since beginning of the century All members of the fa described here have been personally investigated, we have listened to brothers and sisters arguing am themselves as to why some of them have escaped hav ulcers 2 patients had operations at other hospitals the surgeons concerned kindly wrote to confirm diagnosis

Aird et al (1953, 1954) have shown that patients w group O blood are more liable to peptic ulcer than th of group A, who are more liable to gastric carcinom There is evidence (Clarke 1955, Westlund and Her 1955) that the increased liability of group O patien applies to duodenal and not to gastric ulcers, and Ko et al (1955) have shown that group O is associated wi higher gastric acidity than group A

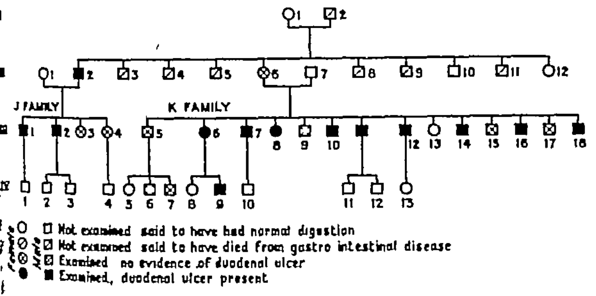
1
2
1
2
3
4
5
6
7
8
9
10
11
12
J FAMILY
K FAMILY
1
2
3
4
5
6
7
8
9
10
12
13
14
15
16
17
18
1
2
3
4
5
6
7
8
9
10
11
12
13
Female
Male
Not examined said to have had normal digestion
Not examined said to have died from gastro intestinal disease
Examined no evidence of duodenal ulcer
Examined, duodenal ulcer present

Fig 1—Families K and J

Family History

The two branches of the family (fig 1) are first sins The "K" branch presumably inherited its er tendency through the mother (II 6) The father 7) had a good digestion he died from influenza the 1918 epidemic The mother has also always had a d digestion. She does not remember her own mother 1) complaining of indigestion; but her father (I 2) d from 'abdominal trouble' at the age of 46 and y 1 of her 8 brothers is completely free from the picion of gastro intestinal disease The eldest brother 2) had a gastro enterostomy at the London Hospital 1912 his 4 children are the "J" family As rds the others, II 3 had an operation for ulcer, II 4 8 are said to have had cancer of the stomach (? pyloric stenosis) II 9 and II 11 had "trouble with the gullet"; and II 5 had cancer of the throat The only sister (II 12) had a normal digestion

Apart from a tendency to contract duodenal ulcer the "K" family is healthy The mother married in 1893 at the age of 19 came from Cornwall to London in 1898 and has since lived in the East End Between 1895 and 1917 she had 14 children and 2 miscarriages All the children except III 13 who died from influenza at the age of 7, are still living 7 had 'pneumonia' but were otherwise healthy, and nothing in childhood explains what happened later They all left school at the age of 14 and with the exception of III 8 and III 14 went to work in a local sugar refinery Their subsequent occupations differ, but all except III 12 who was in a reserved occupation served in the 1914–18 or 1939–45 war Their statures are slight—only III 11 and III 18 ever exceeded 10 st in weight—but they have been interested in sport, and several have excelled at soccer and cricket There is some slight tendency to sciatica and hæmorrhoids and III 11 was investigated in 1942 for an upper motor neurone lesion; this has got no worse and he still does a full day's manual work

32 members of the fourth generation are living but only those over the age of 20 are shown in fig 1 Of the 2 patients over 30 1 (IV 6) has had discomfort for many

TABLE I—DETAILS OF "K" AND "J" FAMILIES

family	Sex	Year of birth	Age at marriage (yr)	No of children	Alcohol	Tobacco	Age (yr) at which dentures fitted	X ray findings*†	Comment
THE "J" FAMILY									
[illegible]	M	1858	?	4	?	?	54		Onset of indigestion as seaman aged 34 Gastro-enterostomy for ? gastric ulcer aged 54
[illegible]	M	1900	25	1	+	±	53	+	Onset of symptoms aged 30 two years after getting naval commission Partial gastrectomy aged 49
[illegible]	M	1902	25	2	+	+	16	+	Frequent mild attacks of indigestion since age of 25 Clerical work except for 1939–45 (Army sergeant)
[illegible]	F	1906	Single		±	−		−	No indigestion apart from 'waterbrash' and discomfort at age 18–21, soon after starting work as typist
[illegible]	F	1913	23	3	±	−		−	Frequent bilious attacks since appendix abscess in childhood More prolonged indigestion since 1951 Housewife
THE "K" FAMILY									
[illegible]	F	1874	19	14	−	−			No indigestion. Housewife
5	M	1895	25	3	++	++	28	±	Indigestion while in the trenches in France aged 21 First bad attack in 1919–20 after return to the sugar refinery
6	F	1898	24	2	−	−	42	+	Severe attacks of diarrhœa and vomiting as a child Indigestion since 16 when she changed from sugar refinery to rubber factory
7	M	1899	28	2	±	++	53	+	Onset of symptoms at 21 soon after demobilisation and return to sugar refinery
8	F	1900	Single		±	−	53	+	Bad attack of indigestion in 1940 when a municipal employee Only mild attacks since
9	M	1902	2?	1	±	+	52	±	Mild attacks of indigestion at age 33–37 while working in paper mill No trouble in the Army (1940–45) or since going back to paper mill
10	M	1903	31	1	±	+	31	+	Indigestion for most of working life (sugar refinery) First bad attack at 50
11	M	1904	25	4	+	+	21	+	Indigestion since marriage at 25 First bad attack 5 years later in 1934 Work in sugar refinery except for war service in the Pioneer Corps
12	M	1907	23	[illegible]	±	+	33	+	Onset of symptoms at 21 after breaking jaw and transferring from sugar refinery to aluminium works Partial gastrectomy in 1949
14	M	1911	35	[illegible]	±	+		+	Mild attacks of indigestion since 1944 Clerical work all life except 1940–45 (R.A.F drill instructor)
15	M	1912	30	1	+	++	31	−	Never any indigestion Sugar refinery work all his life except for 1940–46 (Army P T instructor)
16	M	1913	35	1	++	+			First attack of indigestion in 1952 at 39 Garage work since 1945 (previously Royal Navy)
17	M	1914	30	[illegible]	++	++		−	Gingivitis followed by bad indigestion in 1946 while on the Control Commission in Germany Suspected carcinoma of the stomach; little trouble since Army since age 19
18	M	1917	25	1	−	+		+	First attack of indigestion at 36 soon after becoming insurance agent Previously at sugar refinery except 1941–46 (R.A.F ground crew)
9	M	1930	Single		−	+		+	Onset of symptoms at 15 Discharged from army in 1948 after 14 days service No settled work

er to duodenal cap only † Under X ray findings + = definite evidence of ulcer ± = doubtful ulcer − = no evidence of ulcer years , but his stomach and duodenum appeared normal on radiography, and the discomfort probably originates in the colon 1 (IV 9) of the 11 aged 20–29 has ulcer symptoms , these started at the age of 15, and now at the age of 25 his duodenum is badly scarred

Further details about both branches of the family are given in table I

Fig 2 shows tracings from the radiographs , no radiographs were available for patients III 1 and III 12, who were operated on at other hospitals

Table II shows the blood groups and the threshold of taste to phenylthiourea (P T C) The method of Harris and Kalmus (1949) was used, and those patients unable to taste concentrations weaker than 81 25 mg per litre are termed " non tasters "

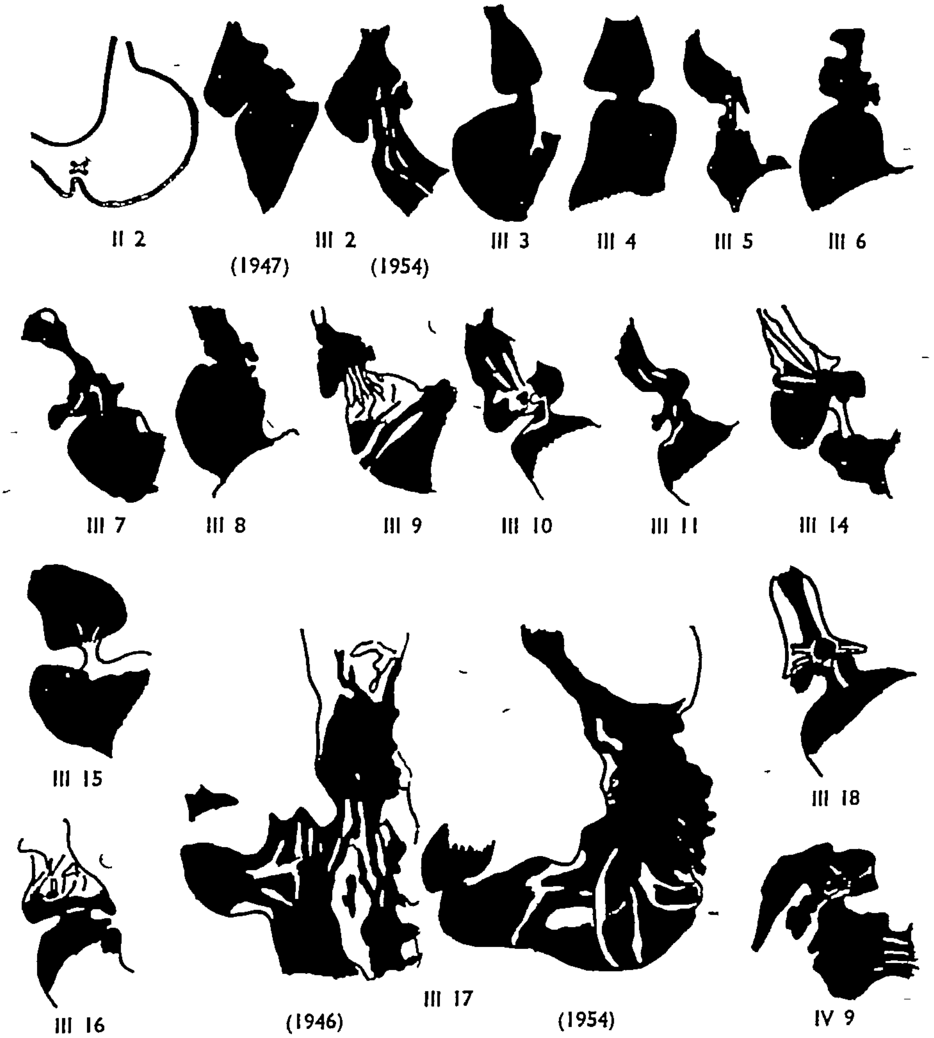

Fig 2—Tracings of radiographs in families " K " and " J '

II 2 Tracing of operation sketch in 1912 X = site of ulcer
III 2 (1947 and 1954) "saddleback" scar Note similar deformity in cousins III 6 and III 8
III 3 Normal duodenal cap
III 4 Normal duodenal cap
III 5 Doubtful deformity
III 6 " Saddleback " ulcer or scar
III 7 Considerable scarring with posterior-wall crater
III 8 " Saddleback " scar Deformity of medial basal angle as in patient III 6
III 9 Pyloric prolapse Minimal " hour glass " deformity
III 10 Little distortion but definite ulcer crater
III 11 Considerable scarring Dubious ulcer crater
III 14 " Saddleback " crater
III 15 Slight pyloric prolapse
III 16 Minimal deformity The posterior wall crater was constant in all serial films.
III 17 (1946 and 1954) " Giant " gastritis Normal duodenal cap
III 18 Considerable scarring and ulcer crater
IV 9 Considerable scarring

Discussion

Doll and Kellock (1951) appear to have proved the tendency to contract duodenal ulcers is inhe There has been a considerable increase in the inci of duodenal ulcers during this century , and i harmful genes have accumulated at an improbabl the cause must be something harmful in the en ment If this is so, it would be very surprising if genetic strains were not more sensitive than c (Jennings 1940) The sensitivity of animals to p or deficient diets varies, and by inbreeding it is po to produce strains of high and low sensitivity (see R 1955)

It is interesting that one generation of this f was so severely affected It is difficult to be sure how members of the prec generation had duo ulcers, but the f generation seems so f be relatively immune we assume that all m bers of the " K " br had an increased sus tibility to duodenal ul differences in their b grounds might explain some have had n trouble than others fact, no such explana emerged They were brought up under co tions of hardship financial stress, and rou inquiries into possi harmful stresses gave ne tive results

Sugar and Dental Deca

There is evidence (Ha 1935) that excess su predisposes to instabi of the autonomic nerv system, and many pers have less indigestion or cured by a sugar free di But sugar does not appe to be an important fact in this family, becau patients III 8 and 14, t only 2 members of t family who never worked the sugar refinery, ha ulcers Only 1 broth (III 15) attributed e dental decay to his access to sugar but he not develop an ulc whereas the members the family with ulc usually retained their te until long after the onset symptoms 1 excepti patient III 5, had indu tion from 1916 to 1920 a lost all his teeth in 19 He never wore dentures f eating, but had lit trouble in the next thi years and now has only minimal deformity of th duodenal cap

Tobacco and Alcohol

All the men of the " K branch have smoke

TABLE II—BLOOD-GROUPS AND TASTE SENSATIONS TO PHENYLTHIOUREA

Place in family	Blood-groups								Blood antigen in saliva	Phenylthiourea taste threshold		Duodenal ulcer
	ABO	MNS	P	Rhesus	Kell	a Duffy	a Lutheran	a Lewis		Conc. (mg per litre)	Interpretation	
III.1	B			CDe/cde								+
III.2	B	MN.S	−	CDe/cde		−	−	+	ns	650	nt	
III.3	B	MN S	−	CDe/cde		+	−	−	s	< 81 25	T	
III.4	O	MN.S	−	cde/cde		+	−	−	s	> 81 25	nt	−
II 6	O	NsNs	−	cde/cde		−	−	−	s	325	nt	−
III.5	O	MN.S	+	cde/cde	−	−	−	+	ns	>1300	nt	−
III 6	O	NsNs	−	cDE/cde	−	−	−	−	s	>1300	nt	+
III.7	O	NsNs	−	cDE/cde	−	+	−	+	ns	1300	nt	+
III.8	O	MN.S		cDE/cde	−	−	−	−	s	650	nt	+
III.9	O	MN.S	+	cde/cde	−				ns	>1300	nt	+
III.10	O	MN.S	−	cDE/cde	−		−	+	ns	1300	nt	+
III.11	O	NsNs	−	cDE/cde	−	+		−	s	>1300	nt	+
III.12	O	NsNs	+	cDE/cde	−	+	−	+	ns	1300	nt	+
III.14	O	MN.S	−	cDE/cde		+	−	−	s	20 31	T	+
III.15	O	MN.S	+	cde/cde	−			−	s	650	nt	−
III.16	O	MN.S	−	cDE/cde	−	−	−	−	s	1300	nt	+
III.17	O	MN.S	+	cDE/cde	−	−		−	s	5·08	T	−
III.18	O	NsNs	+	cde/cde	−	+	−	−	s	81 25	T	−
IV.9	O									1300	nt	+

T = "taster" nt = "non taster" s = secretor ns = non-secretor

vily but the 2 without ulcers are said to have smoked n more heavily and the 2 sisters with ulcers have never oked On the other hand patient III 7 stopped smoking 1951 and has since had no serious indigestion, and ent III 12 who stopped smoking from 1944 to 1945 considerably improved

brothers admitted to fairly heavy alcohol consumption me time or another 2 of them (III 11 and 10) have ers, and 2 (III 15 and 17) have not The 5th (III 5) y have had an ulcer; he has had mild symptoms and radiographs are not completely normal

The mystery stomach in the family is that of ient III.17 (fig 2) The diagnosis of "giant gastritis" made by one of us (D J) in fewer than 1 in 2000 ium meal examinations and this was a particularly d example. His symptoms followed a period of re oral sepsis with overindulgence in both alcohol tobacco In 1946 and 1954 the duodenal cap was iographically normal

Nothing is known about the ætiology of "giant gastritis" ... (1943) mentions alcohol and sepsis, but there is much ubt as to whether there is such a disease as chronic alcoholic ritis (Palmer 1954)

al and Psychological Factors

It is fashionable to link duodenal ulcers with deep ted emotions. These are influenced by place in the ily Kellock (1951) showed however, that place in family had no detectable influence on ulcer incidence. at marriage and number of children must also be ed with character, but the relation to indigestion is plicated Indigestion is sometimes given as a reason marriage; the patient feels that it is time he settled n. Others insist that their symptoms started soon r marriage or after setting up a home In this family onset of symptoms seems to be only loosely linked h marriage In patients III 5 12, and 14 symptoms ted three to four years before marriage and in ents III 9 and 16 within four years after marriage only in patient III 11 did the first attack of indigestion ur in the year of marriage

n some of those affected (III 5 6 7 12, and 18) r symptoms appear to be related to change in occupa . As in the case of marriage it is difficult to dis uish between cause and effect but in those patients 6 and 7) where change of occupation was presumably untary this was possibly a factor

No deep search was made for psychological causes h the exception of 1 member of the fourth genera n (patient IV 9) who is mildly psychopathic the family es the impression of being essentially normal

The 'J' family was smaller and their upbringing was different but nevertheless the 2 men in generation III both have ulcers and the 2 women despite negative radiographic findings have had suspicious symptoms Their mother (II 1) was apparently unaffected, but their father (II 2) is said to have had a "gastric" ulcer, although there is some doubt about this The operation sketch (fig 2) shows the ulcer near the pylorus, but mistakes in localising pyloric ulcers have always been common.

Radiography

The radiographic appearance of the gut, particularly the outline of the stomach and the splenic flexure of the colon was much the same in all the 'K' siblings. The shape of the duodenal cap varied widely but in 2 sisters (III 6 and 8) there was an identical hook like projection at the base of the cap on the side of the lesser curve and 2 of the men (III 5 and his cousin III 2) had a lesser degree of the same deformity (fig 2)

In several cases it was impossible to get good films because the duodenal loop was relatively small, and the third part of the duodenum which lay behind the cap tended to remain filled with barium

Blood-groups and Taste Sensation

The blood group results are ambiguous All members of the 'K' family whether they have an ulcer or not are group O but the cousins III.1 and III 2 who have ulcers are group B (table II) The subsidiary blood groups and ability to secrete blood group antigens in the saliva are not correlated with the presence or absence of ulcers We used the relationship between the presence in the blood of the Lewis antigen and failure to secrete blood-antigen to confirm whether group-O patients were 'secretors' or 'non secretors.'

Taste testing with P T C showed that although about two thirds of healthy people are 'tasters' 10 out of 13 of the 'K' siblings were 'non tasters' and the only unequivocal 'taster' (patient III 17) had a normal duodenum

Summary

A family ('K') is described in which 9 out of 13 living siblings have duodenal ulcers In 2 there was some evidence of past ulceration and in only 2 was the duodenal cap radiographically normal 1 of these 2 had "giant gastritis." Of 4 cousins (the 'J' family) 2 have duodenal ulcers

There is no evidence that psychological factors or anything in the mode of life determined which members of the family developed ulcers

All members of the 'K' family belong to blood group O 2 affected members of the 'J' family belong

to group B Nearly all the members of the "K" family are "non-tasters" of phenylthiourea, and the only member who is an unequivocal "taster" has no duodenal ulcer

We thank Mr D M Cooper and Mr J D Younghusband for the operation reports of patients III 12 and III 1, and Prof Clifford Wilson and Dr H Harris for advice We are grateful to the family for their willing coöperation

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THALASSÆMIA IN A SCOTTISH FAMILY

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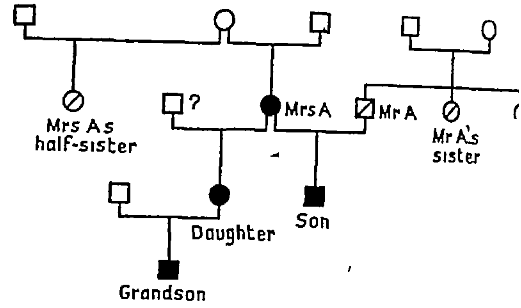
IN 1925, Cooley and Lee described an anæmia in children characterised by jaundice, splenomegaly, a "peculiar mongoloid appearance," reticulocytosis, and normoblasts in the peripheral blood Additional features of the disease were radiographic signs of skeletal changes and decreased erythrocyte osmotic fragility Then, 2 years later, they reported with Witwer seven cases of which two patients were Italian, one Greek, one Syrian, one Mulatto, and one English (Cooley et al 1927) The last two were later withdrawn from the series (Cooley and Lee 1932) The disease was subsequently reported in Italians, Greeks, Armenians, and Syrians The striking geographical incidence was responsible for the name "Mediterranean anæmia" or thalassæmia which was given to this hæmolytic anæmia (Whipple and Bradford 1932) But as the hereditary pattern of the disease became known and milder forms were recognised, it became increasingly evident that it was not limited to people of Mediterranean extraction

Evidence rapidly accumulated that this disease is widely distributed geographically, and that many ethnic groups are affected though it is, of course, difficult to rule out any remote Mediterranean ancestry Thalassæmia has been reported in those of Turkish descent (Saracoglu 1943), in Chinese and Mexicans (Silver 1950), in Egyptians (Diwani 1944), amongst Bucharan and Kurdistan Jews (Schieber 1945, Matoth et al 1955), in Negroes (Schwartz and Mason 1949), as well as in patients from India (Dhayagude 1944), Thailand (Minnich et al 1954), and possibly in an American Indian (Prouty 1950) Included in the few cases which have been found amongst Northern Europeans are two children probably of German stock (Freudenberg and Esser 1942), a 10 year old English girl reported by Bywaters (1938), and a 9 year-old boy of Anglo-Irish parentage by Grinnan (1935), although little evidence was given in this case to support the diagnosis Cooley et al (1927) recorded the disease in an English girl aged 3, but this case was later removed from the series Because of the rarity of this type of hæmolytic anæmia in the British Isles, we record the occur thalassæmia in a Scottish family



The A family A solid square indicates an affected male, a s an affected female. The symbols crossed by diagonal lines bers of the family found to be normal, while the members re by open symbols were not examined

The accompanying figure indicates the pat inheritance in this family Both parents (Mr and were born in Scotland, in Dundee, and none c ancestors are known to have originated outside Sc The paternity of the daughter is uncertain Al acknowledged as the child of Mr and Mrs A, Bl grouping showed that it was impossible for Mr A her father This is additional evidence that the p of inheritance is through Mrs A to both children a grandson

Case-reports

Normal Members of the Family

Mr A—Blood groups A$_1$, M+, N+, P+, C c–, D+, E–, K–, Le(a–), Fy(a–) Aged 53 Born in D as were both his parents who still live there He has serious illnesses, and has been well all his life No p abnormalities were found, and the results of labo investigations were normal

Mr A's sister—Blood groups A$_1$, M+, N–, P+ C^w–, c+, D+, E–; K–, Le(a–), Fy(a–) Aged 55 A h woman with no physical abnormalities

Mrs A's half sister—Aged 38 There were no abn physical or hæmatological findings

Affected Members of the Family

Mrs A—Blood groups A$_1$, M+, N+, P+, C c+, D+, E+, e+, K–, Le(a+), Fy(a+) Aged 5 in Dundee, as were both her parents. She had been "anæmic" and "jaundiced" since childhood, but received no treatment She knew of no one else in the f other than her children who was similarly affected. Her f had died at 60 of carcinoma of the stomach, her mother of diabetes mellitus She was a middle-aged woman slight jaundice of the skin and scleræ She had a mong appearance, with epicanthic folds Her spleen was palp 4 cm below the left costal margin, and the liver 2 cm. b the right costal margin

The son—Blood groups A$_1$, M+, N+, P+, C+, D+, E+, e+, K–, Le(a+), Fy(a+) Aged 14 He taken to a doctor at the age of 6 because of jaundice, and found to have anæmia and a large spleen. His jaun persisted and became severe on occasions Iron and l therapy was given without effect, and in August, 195 was admitted to hospital for splenectomy The only abnor findings were jaundice, and a spleen palpable 4 cm. below left costal margin The accompanying table shows the p operative laboratory findings

The spleen weighed 363 g and measured 15 × 10 × 6 c The cut surface was a normal dark red and not abnormal soft or pulpy The malpighian bodies and fibrous trabec were normal and so was the general anatomy of the spl and its cell population No hyperplasia of the reticulum hæmopoiesis were evident, and no erythrophagocytosis seen The supporting and littoral cells contained a moder amount of hæmosiderin

Splenectomy had little effect on the anæmia or the jaund and he was again admitted to hospital in October, 195 He blood transfusion It was then that we first saw him. He an intelligent boy who did well at school and, despite anæmia, led a fairly normal life He was heavily freckled, his skin had a yellow pallor The bridge of his nose was fl re were striking epicanthic folds and puffiness under his s The hæmatological findings are in the table, which shows ncrease in the number of circulating normoblasts in the ipheral blood following splenectomy There was consider e normoblastic hyperplasia of the bone marrow Radio phs of the skull and hands showed no abnormalities. The cells did not 'sickle' in a sodium metabisulphite paration.

The daughter.—Blood groups: A_1; M+ N+; P+ C– c+ D+ E– K–; Le(a+); Fy(a+) Aged 25 She d had jaundice and anæmia for which she had received rious hæmatinics with no benefit since birth Her ndice became intense during her pregnancy in 1953 and e was admitted to hospital where she was found to have icterus index of 100 a red blood-count of 2 4 million per mm., of which 12% were reticulocytes; there were 14 rmoblasts per 100 white cells Numerous target-cells were n in the smear She received six pints of blood, and was ivered of a full term infant 2 months later When seen by e of us in October 1954, she bore a striking resemblance to r mother and brother She was slightly jaundiced and the canthic folds and the puffiness beneath the eyes gave her a ngoloid appearance Her spleen was palpable 2 cm below left costal margin. A sodium metabisulphite sickle-cell t was negative

The grandson.—Aged 2 An apparently healthy child who s had no serious illnesses. He resembled the other members the family in his mongoloid appearance and epicanthic folds d he was not jaundiced. His spleen was not palpable

Hæmoglobin Investigations

The hæmoglobin of members of the family was mined with respect to alkali resistance, electro pretic mobility and solubility Parallel tests were done normal adult and umbilical cord blood

li-resistant Hæmoglobin (Hæmoglobin F or Fœtal Hæmo- bin)

his was measured both by the method of White et al 50) and by the method of Singer et al. (1951) The two hods gave almost identical values; the results of the er method are given in the table The normal adult value hæmoglobin F is under 2% and results for all the normal mbers of the family were below this figure The affected mbers had hæmoglobin F levels of 11% 12%, and 18%

trophoretic Mobility

lutions of hæmoglobin suitable for paper electrophoresis e prepared from citrated blood Red cells were washed e times with 0·9% saline and hæmolysed by shaking with equal volume of distilled water and 0 4 volume of toluene er centrifuging, the concentrations of the clear hæmoglobin tions determined by spectrophotometry varied from 11 g. per 100 ml.

Shandon vertical paper electrophoresis apparatus was . Strips of Whatman no 1 filter paper 36 × 5 cm. were suspended in the tank and allowed to moisten by capillary action for 2 hours in a veronal buffer of pH 8 6 Two µl. each of the test sample normal adult and cord blood hæmoglobin solutions were next placed on three equally spaced points at the centre of the strip After waiting 3 hours to allow the system to come to equilibrium a potential of 175 volts supplying 0 12 mA per cm width of paper was applied.

The chromatograms showed a greater mobility for normal adult than for fœtal hæmoglobin while test samples from the affected members of the family behaved like the normal adult pigment This was expected, because in this condition the ratio of hæmoglobin F to adult hæmoglobin is about 1 to 8

The separation of mixtures of adult and fœtal hæmoglobins by electrophoresis is difficult Waris (1954) was unable to separate these two hæmoglobins by this method, and found that the mixture behaved as adult hæmoglobin

Solubility

The solubility of the reduced forms of the hæmoglobins in strong phosphate buffer solutions was determined by the method of Itano (1953) In a series of normal adults we found the solubility of reduced hæmoglobin in 2 58*M* phosphate buffer at 25 C to range from 1 28 to 1 52 g per litre, with a mean value of 1 43 g per litre and using cord blood the range of solubility was 2 31 to 2 93 g per litre with a mean value of 2 50 g per litre Itano found the solubility of adult hæmoglobin under similar conditions to be 1 39 ± 0 15 g per litre. The table shows that whereas the result of hæmoglobin solubility for the mother is within the normal adult range those for her children were both raised Itano's values in thalassæmia minor and major are 1 54 g per litre and 2 30 g per litre respectively

Discussion

The clinical manifestations of thalassæmia in this family included anæmia, mongoloid facies epicanthic folds, jaundice, and enlargement of the spleen The red cells showed poikilocytosis, polychromasia micro cytosis macrocytosis target-cells, and basophilic stippling Nucleated red cells were found in the blood of the three affected members of the family, and the osmotic fragility of the red cells was reduced both before and after incubation The mean corpuscular volume was either within the normal range or increased but Matoth et al (1955) found a high M.C.V. in thalassæmia amongst Kurdistan Jews and suggested that the large flat cell might be characteristic of this racial group An analogous situation may exist in this family In the son there was a striking increase in the number of circulating normoblasts after splenectomy as has been repeatedly observed in thalassæmia.

Alkali resistant hæmoglobin, presumably identical with hæmoglobin F, was demonstrated in the blood of

HÆMATOLOGICAL INVESTIGATIONS

—	Affected members					Normal members		
	Mrs A	Son		Daughter	Grandson	Mr A	Mrs A's sister	Mrs A's half sister
		Before splenectomy	After splenectomy					
(millions per c.mm.)	3 85	2 8	3 23	3 9		5 18	4 1	5·03
per 100 ml.)	0 5	7 0	7 9	10 1	1• 5	15 8	12 8	13 5
ocrit (%)	34	24	30	35		49		45
(c.µ.)	85	85	93	89		89		00
(µµg.)	24	•5	•1	26		28	21	27
(%)	28	20	26	•8		3•		30
ocytes (%)	5 2		10 2	2 6	6·0	0 1		0 8
blasts (per 100 W.B.C.)	•	19	260	14	0	0	0	0
(thousands per c.mm.)	5 2	5 8	12	8 2	19 3	8 4	5 5	9 1
ts (thousand per c.mm.)	448	5•3	1881	308		548	320	550
s index	15	20	30	30		5	5	5
tic fragility (% saline):								
t incubated	0 30–0 20		0 38–0 •0	0 45–0·20		0 45–0 33		
ubated	0 39–0 20		0 48–0 20			0 57–0 33	0 63–0 42	
cytes	+ +		+ + +	+ +	+	–	–	–
cytes	+ + +		+ + +	+ + +	+ +	–	–	–
romasia	+ +		+ +	+ +	+	–	–	–
et-cells	+		+ + +	+	+ +	–	–	–
philic stippling			+	+	+	–	–	–
globin F (%)	12		11	15		1 8	0 8	1 1
ubility (g. per litre)	1 42		1 75	1 74		1 49		

patients with thalassæmia by Singer et al (1951) Its presence is not specific for this disease as it has also been reported in sickle cell anæmia and (in very low concentrations) in hereditary spherocytosis, aplastic anæmia, pernicious anæmia, leukæmia, and myelophthisic anæmia It has also been described in less well-defined hæmolytic states (Lorber 1955) The concentration of hæmoglobin F varies with the type and severity of the thalassæmia, values ranging from 40 to 100% being reported in thalassæmia major and lesser amounts in thalassæmia minor (Terry et al 1954) Electrophoretic mobility, solubility, and sickle cell preparation tests, were done to exclude other abnormal hæmoglobin constituents

It is generally believed that the disease is inherited as a simple dominant and that the severe form, or thalassæmia major, is homozygous, while the milder form, thalassæmia minor, is heterozygous This classification is arbitrary, for transitional forms of the disease are found in both groups, ranging from morphological changes in the red cells only to the most severe hæmolytic syndrome, resulting in death within the first few years of life All the affected members of this family fit best, from their clinical and hæmatological findings, into the thalassæmia minor group The pattern of inheritance in this family is through the mother to her son and daughter and her grandson, all four being presumably heterozygous in respect to the thalassæmia gene Although there is no known mixture with Mediterranean stock, a long-forgotten Mediterranean ancestor cannot be excluded This is suggested by the occurrence of the Rh chromosome cDe or Ro, which is relatively rare in most Europeans, somewhat more common in Mediterranean areas, and frequent in many African populations

This hæmolytic syndrome is most often called Mediterranean anæmia Though most reported patients were of Mediterranean ancestry, enough have been reported in other peoples to make this name inappropriate As long as it is considered a disease existing only in people of Mediterranean extraction, the possibility of it occurring in other racial groups will be overlooked It must be considered in the differential diagnosis of any hereditary hæmolytic anæmia Thalassæmia, though referring to the sea, puts no specific geographical boundaries on the disease (Dameshek 1955), and would seem to be the best term to use for the present

Summary

A Scottish family, with no known Mediterranean ancestors, contained four members with clinical, hæmatological, and biochemical manifestations of thalassæmia

We are indebted to Dr Bruce Chown for the blood grouping and his many valuable suggestions, to Dr F D White for his interest and coöperation, to Dr G C Stevens for permission to study his patients, and to Mrs Lillian McLennan and Miss Audrey Kerr for technical assistance

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URETERIC CATHETERISATIO

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Plastic and nylon ureteric catheters which
available have the advantage over the gum el
that they can be sterilised by boiling Cat
cystoscopes that are boilable can also be obtai
the following procedures ureteric catheters can
aseptically

Method

Ureteric catheters should be stored by being
straight on the tray of a formalin cabinet Fr
catheter is taken out and passed through a piece
Penrose tube (made of soft latex rubber)
should be a little longer than the catheter and
both ends The catheter, covered by the tube,
for five minutes The two are then taken f
steriliser and placed on the sterile table. The
tube, with the catheter inside, is placed over th
nipple of the cystoscope and the catheter
through it for a few centimetres The end of the
tube is then drawn over the rubber nipple

The patient, with the knees supported, lies on a
table, or better still on a cystoscopic X ray tab
legs are covered with sterile leggings, and a steri
is spread over the lower abdomen The external
meatus is cleaned with boric acid lotion (isotonic
consisting of gr 8 to the fluid ounce) In the case
a dry swab is left on the scrotum under the pe
women a dry swab is left between the labia

The cystoscope is passed and the bladder ex
If the cystoscope is of the Brown Buerger ty
examining telescope is withdrawn and the
emptied A sterile towel is then placed und
buttocks The catheterising part—trailing the
catheter covered by the rubber tube—is insert
the sheath of the cystoscope and the bladder
with water

The ureteric catheter can be easily grippe
manipulated through the rubber After passing
centimetres of catheter it is necessary to pull ba
rubber tube, which gets rucked up near the nipp
this way the ureteric catheter can be passed witho
operator touching it and without it touching an
The rubber tube is taken off when the tip of the ca
is correctly sited—for a pyelogram just inside the
of the ureter, or for a ureterogram just engaged
ureteric orifice (Tresidder 1954) A renal specim
urine can be collected and then the radio opaque so
injected for the radiographic examination

If the collection of renal urines is incidental t
investigation and unlikely to be of diagnostic impor
a short course of sulphonamide tablets and c
mixture may be begun the day before the instrum
investigation If urinalysis, culture, and animal ino
tion are included in the investigation, the course s
be begun immediately after instrumentation

Even if this procedure is not adopted routinely f
ureteric catheterisations, I strongly recommend it
in the investigation of hydronephrotic and non func
ing kidneys In these cases of obstruction, unless
special precautions are taken, the renal pool of re
urine is likely to become infected as a result of ure
catheterisation (Tresidder 1954)

By this aseptic method of ureteric catheterisat
together with the sulphonamide and citrate thera
it may be possible to lessen the incidence and seve
of subsequent reactions and infections

ADDENDUM

I have lately used the same method for sterilising
passing urethral catheters of rubber or plastic

he urethral catheter is inserted into half a length of . Penrose tube The two are placed in the steriliser l boiled for five minutes, after making sure that there ater but no air, inside the catheter and between it l the Penrose tubing

ext the hands are washed the external urinary atus is cleaned with boric acid lotion and a sterile el is placed over and between the thighs In men y lubricant or anæsthetic is squeezed out from its e into the urethra The catheter inside the Penrose e is then picked up and passed into the urethra

The Penrose tube is thin enough to allow the fingers get the feel of the catheter and no difficulty has been countered as a result of having the catheter covered

thank Miss P Bretten, S.R.N for her help and advice

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RUPTURED UMBILICAL HERNIA

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RUPTURE is an extremely rare complication of umbilical nia a relatively common tropical condition The case ported here is unusual in the apparent absence of any cipitating cause

Case report

An African woman of the Ewe tribe aged 30 and 7 months gnant with her fifth child, attended hospital in British oland complaining that some tissue had been protruding m her umbilicus for the past 12 hours She had first noticed protrusion after feeling some irritation in the region of the bilicus There was no pain and to her knowledge she had d no previous lesion such as a boil or ulceration at that site e denied any coughing or straining and said she was not re of ever having had an umbilical hernia

A narrow tail of omentum 2 in long projected from a small ice about $^{1}/_{4}$ in. in diameter at the edge of the umbilicus. e was otherwise healthy and about 30 weeks pregnant mperature 99 F pulse 92 per min

The soiled omental tag was excised and a Mayo repair ried out under general anæsthesia Her progress was eventful, and, ignoring advice to be confined under super ion, she delivered normally at home 2 months later

Discussion

Five cases of ruptured umbilical hernia have been rded. McGrath (1918) reported the case of an old lady who, while straining at stool, ruptured a hernia which had had for 40 years, and which had recently enlarged nziker (1946) noted a similar case in which the rupture urred during an epileptic fit MacLean (1950) ribed an infant aged 3 months in whom rupture owed a severe bout of crying and Ninh and Hoanh l) reported a similar case in a malnourished infant of days, whose cord had separated on the 12th day after th Lastly Rupnik and Brown (1953) described the ture of a long standing umbilical hernia in a man of with cirrhosis of the liver and ascites admitted to pital for the treatment of diarrhœa

The patient removed his abdominal binder and rose from with consequent rupture of the hernia the escape of h ascitic fluid, and the protrusion of an omental tag e broken skin showed signs of gangrene Rupnik and wn suggested the rupture may have been due to pressure ress from the binder local venous engorgement (caput usæ) or raised intra-abdominal pressure due to the ascites the rise from bed

Umbilical herniæ are common in West African children spontaneous improvement or cure often occurs eful examination of the umbilical scar however etimes shows a residual weakness or bulging of which patient may be unaware such a defect was probably present in my patient Treatment is seldom undertaken because complications such as strangulation are rare and the mothers will not strap their children's abdomens for the prolonged period necessary I have, however seen extensive ulceration of the thin skin overlying a large umbilical hernia which ruptured with fatal results in an elderly African woman .

In the case described there was probably an unrecognised hernial defect, but the absence of any precipitating strain which may be blamed for the ruptures in the other cases cited, is an unusual feature

I am indebted to Dr F Akwei, chief medical officer of the Ministry of Health Gold Coast for permission to publish this paper and to Dr P H Canham of the Medical Field Units, for assistance at the operation

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CEREBRAL CŒNURIASIS IN MAN

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CEREBRAL cœnuriasis is caused by infestation of the brain by larvæ (*Cœnurus cerebralis*) of the tapeworm *Multiceps multiceps* The adult worm is 40–60 cm long and it has a scolex with an armed rostellum The gravid uterus contains 18–26 branched lateral arms on each side of the main stem The usual definitive host is the dog but wolves are also affected The intermediate hosts are sheep goats and cattle and the central nervous system is usually involved

Only a very few cases of the larvæ affecting man have been recorded

The first appears to be that of a Parisian who died in 1911 (Craig and Faust 1943) Necropsy showed the cœnurus, or bladder worm, in the brain

Cluver (1940) recorded the disease in a Bantu the diagnosis being confirmed at necropsy Clapham (1941) found the condition in a British sailor who died in coma Buckley (1947) recorded the disease in a girl with paraplegia and Johnstone and Jones (1950) cited a further example with involvement of the pons medulla and interpeduncular space in a child aged 2

Becker and Jacobson (1951a) described 3 cases, and later (Becker and Jacobson 1951b) a 4th case All 4 patients came into contact with sheep in their work The diagnosis in each case was made at operation and all 4 patients recovered

We report here 2 cases of cerebral cœnuriasis in man

Case-reports

Case 1 —A Bantu woman, aged 32 was admitted to Edendale Hospital on Feb 22 1955 with a three month history of headache The headache was generalised but occasionally it was more pronounced in the frontal region For three weeks before admission she had had intermittent attacks of stiffness of the neck muscles, with pain in both legs and general malaise and weakness The headache was getting worse There was no history of any visual upset

On examination she looked ill her temperature was 99°F, and her pulse rate was 74 per min There was some neck retraction, but Kernig's and Brudzinski's signs were negative. There were no localising signs of a lesion in any part of the central nervous system. The reflexes were normal and there were no motor or sensory changes The retinæ and optic discs were normal and there were no visual field defects.

Investigations —Lumbar puncture on the day of admission yielded clear cerebrospinal fluid (C S F) under normal pressure The protein content was 20 mg per 100 ml , and the sugar and chloride levels were normal , the cell count was less than 1 per c mm. The blood and C S F Wassermann tests were negative Blood-urea level was 30 mg per 100 ml Hæmoglobin level and total white cell count were within normal limits Radiographs of the skull and chest were normal

Progress —The patient remained in hospital for four weeks, and during this time she improved considerably, with some relief of her headache and neck stiffness But on March 26 she suddenly collapsed and died

Necropsy —The cerebral convolutions were considerably flattened, and the sulci obliterated There was pronounced upward bulging of the tentorium cerebelli, and severe internal hydrocephalus with a large rupture of the floor of the third ventricle The right cerebellar hemisphere was greatly enlarged by a cystic tumour which invaded the cerebellar tissue and projected from the surface of the cerebellum The surface of this tumour consisted of grape like processes Histological examination of the cerebellum showed numerous cysts typical of those found in infestation with *Cœnurus cerebralis* Many of the cysts were sterile (this seems to be characteristic of the condition)

Case 2 —A Bantu man, aged 33, was admitted to hospital and died in coma No history was available

Necropsy showed a cystic mass, destroying the left occipital lobe and projecting from the surface of the brain The mass was about 1 in in circumference A similar, but smaller, cystic lesion was present in the right occipital lobe, and a third collection of small grape like cysts was present in the right temporal lobe The cysts contained a scolex and hooklets typical of *Multiceps multiceps* There were no lesions below the tentorium cerebelli

Discussion

These cases of cerebral cœnuriasis are recorded because the condition may be commoner than is realised, especially in sheep-raising areas where there are many dogs Operation is often successful in this disease, and all 4 cases reported by Becker and Jacobson (1951a and b) recovered after operation

In most of the previously reported cases there have been changes in the C S F , with a rise in the pressure and protein level, and lymphocytosis In our first patient the C S F was normal on admission and also four days later In view of the necropsy findings, it is probable that the absence of abnormalities in the C S F was due to complete obstruction of the foramina of the fourth ventricle

The relation of the lesions to the C S F pathways and the localisation in the posterior fossa appear to be characteristic of cerebral cœnuriasis Becker and Jacobson (1951a) said that *Cœnurus cerebralis* is usually responsible for parasitic infestation, especially of the racemose type, of the posterior fossa They found papillœdema in all of their 4 cases, but it was absent from our first patient This sign, reflecting increased intracranial pressure, may appear late

Cerebral cœnuriasis can be diagnosed during life only at operation, because the clinical picture is one of increased intracranial tension only Becker and Jacobson (1951a) found the hydatid complement-fixation test positive in 2 cases, presumably because the two parasites share a common antigen This test, therefore, will not distinguish cœnuriasis from cysticercosis

We thank Dr R E Stevenson, director of the provincial medical and health services, Natal, for permission to publish this paper, Dr J D Woods for access to the clinical notes, and Dr G Roach for the histological report

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Medical Societies

AMERICAN ASSOCIATION FOR THE OF LIVER DISEASES

THE association met at the University of Chicago, on Nov 3

At the clinicopathological conference in the Dr **SHEILA SHERLOCK** (London), the guest emphasised the importance of careful attention t assessment Dr **HANS POPPER** (Chicago) dem the pathological sequence of portal cirrhos lithiasis, and pancreatitis which was respon complex clinical findings

Prof **R M KARK** (Chicago), the chairman, in the speakers for the afternoon and evening sess

Glucose Metabolism

The central position of the liver in carbohydrate me and the importance of the hexose-monophosphate sh discussed by Dr **P K BONDY** (Yale) Although m maintenance of blood glucose, slow clearing of e glucose, and reduced availability of metabolites r anticipated in liver disease, a glucose tolerance cu mild diabetic type and possibly poor tissue repair ribose deficiency were the only objective finding *hypoglycæmia was surprisingly rare*

Protein Metabolism

Dr **C S DAVIDSON** (Harvard) suggested that deficiency was the most important factor in the malnutrition of alcoholic liver disease Pancreatic might be a contributory factor, but *amino acidu* rarely of *significance* Recovery was slow owing to t disease, and improvement in hepatic function treatment was reflected by increased albumin synthesi

Ammonia and Coma

Dr **L T WEBSTER** (Harvard and Cleveland) had that acetazolamide ('Diamox ') *caused an* " endog rise in blood *ammonia* levels, and that ammonia was li from the brain under such circumstances In cont relative uptake of ammonia occurred in the brain wh protein, intravenous urea or ammonium chloride were to one patient *During impending* hepatic coma and patients with an exogenous source of nitrogen (protein, gastro intestinal bleeding, or elevated *bloo* protein nitrogen) *showed an uptake of ammonia* in the whereas those in " *endogenous* " coma did not By sa from abdominal wall vessels, Dr Webster had found a rise in portal vein ammonia levels within two *hour* protein meal Further investigation *suggested* that the of this ammonia was *glutamine*

From London Dr **SHERLOCK** (S Sherlock, E A Phe *Ruebner*, and W H J Summerskill) reported that o methionine might precipitate impending *hepatic co* patients with liver disease without *alteration* in t ammonia levels, and that this *effect* could be prevented b *simultaneous administration* of aureomycin

Dr **W W FALOON**, together with Dr **J AUCHINC** Dr **E HOWLAND**, and Dr **R GILBERT** (New York), *conc* from venous catheterisation studies *that peripheral-* ammonia was largely derived *from* portal blood follo portacaval *anastomosis* They considered that *conside* uptake of ammonia by the tissues occurred *in the* cirrh patient, and postulated that the lungs *might* be a sour ammonia since arterial *levels were* higher than those in right auricle

The co enzyme *factor*, thioctic (lipoic) acid, had exhibited in hepatic coma by Dr **P LISAN**, *together* Dr **J M GAMBESCIA**, Dr **C M THOMPSON**, and Dr **M F** (Philadelphia) with apparently favourable *effect* in three five patients *Blood* levels of pyruvate and *lactate fell* administration of the drug

Dr **SUMMERSKILL** (London and *Harvard*) with **SHERLOCK** and Dr **E A DAVIDSON** showed that drome of hepatic coma was occasionally a chronic neuro chiatric disorder in patients with cirrhosis and an extensive tal collateral circulation and that restriction of dietary otein resulted in dramatic improvement

In the discussion Dr Sherlock emphasised her opinion at elevated blood ammonia levels after portacaval anasto ses were due to the coincident liver disease together with e deviation of portal blood

Dr W Volwiler (Seattle) commented that a group in eaver had succeeded in reproducing the characteristic atures of impending hepatic coma by the intravenous infusion f large amounts of ammonium chloride in subjects without ver disease

Dr P Young (Cincinnati) had found that blood introduced to the stomach thus reproducing the effect of gastro testinal bleeding produced abnormal blood ammonia urves in patients with liver disease

Some other Communications

Dr L B Brick and Dr L Kyle (Washington) had investi ated the effect of methyltestosterone in patients with liver sease Despite the recognised hazard of testosterone jaundice re was no change in liver function tests or hepatic tology in their patients.

The application of needle biopsy to the diagnosis of primary r secondary malignant hepatic lesions was described by r M. Stauffer (Mayo Clinic) who had found that 83% neoplasms were revealed by this method These results owever were achieved by taking multiple biopsies often om a prominent tumour and with the help of frozen tions.

The possibility that the recently described syndrome of onic idiopathic jaundice with unidentified pigment in the er cells might be relatively common was raised by Dr M ansell (Minnesota) Together with Dr J Cor and F W Hoffbauer he reported three instances of this dition all were in elderly men, one of whom had retinitis mentosa.

Another congenital disorder of uncertain aetiology had been ibed by Dr L M Rosenthal and Dr H. J Zimmerman hicago) who described the onset of jaundice with tremor xia, and scanning speech during childhood As in cases ported earlier liver biopsy was normal and it was con ded that this non hæmolytic non-obstructive icterus s due to an inability of the liver cells to excrete irubin.

Dr A L. Scherbel (Cleveland) described a patient with ercholesteræmic xanthomatosis hepatic fibrosis, and lmonary cholesterolosis Xanthomatous deposits had caused picarditis and polyarthritis.

Dr L A Schaffer (Atlanta) and his colleagues (H F Eichen ld, J Mosely J I Karush T A. Asher M. L Candler and R. Cooper) reported findings from an epidemic of infectious atitis in Kentucky There was a high incidence of lgia (56% of patients) and backache (36%) in the acute ode and the persistence of symptoms or signs (52%) abnormal laboratory findings (36%) a year after apparent overy was of interest

Radioactive rose bengal using ^{131}I had been applied to study of liver function by Dr C H Brown (Cleveland) e uptake was recorded by a scintillator over the liver hepatic disease the uptake was reduced and excretion was ayed but similar findings in obstructive jaundice reduced e diagnostic value of the test

Dr D Molander and Dr M A Payne (New York) nd elevated levels of S G O transaminase in patients with compensated cirrhosis and abnormally high values also curred in hepatitis and biliary cirrhosis.

Dr A G Bearn (New York) discussed the place of dimer rol (BAL) in the treatment of Wilson s disease Some ients showed a good response, and when the result was satisfactory he advocated a trial of larger doses continued r a long period

Dr P L. Iber, Dr L L. Uzman Dr M Knowlton and T C Chalmers (Washington) considered that the affinity the liver for copper in Wilson s disease was due to an electro emically distinct factor which they had demonstrated. ey were unable however to identify this factor with ruloplasmin.

Reviews of Books

Subphrenic Abscess

H R S Harley F R C S consultant thoracic surgeon to the United Cardiff Hospitals Oxford Blackwell Scientific Publications 1955 Pp 216 35s

Based on 188 cases of subphrenic abscess from hos pitals in or near London, this book examines the condition from all angles

The anatomy of the subphrenic region is discussed, and five intraperitoneal and two extraperitoneal spaces are described This involves a clarification of the arrangement of the ligaments attached to the liver and their behaviour if the liver is separated from its normal relations by air or fluid Most subphrenic abscesses occur on the right, and nearly all are intraperitoneal involving one space

90% of the abscesses were secondary ; perforated peptic ulcers, appendicitis, or abdominal operations were associated with two thirds The bacteriological investigations gave equal proportions of pure and mixed infection and less than 10% were sterile *Staphylococcus aureus* and strepto-cocci were responsible for pure infections, and in ' mixed infections, *Escherichia coli* was invariably present as well Mr Harley holds that infection spreads by a direct intra peritoneal route and not by lymphatics, and he discusses the various changes in intraperitoneal pressures that occur in different postures and during respiration Pleural effusion was recorded in 26% of the 188 cases, and is regarded as analogous to œdema found in relation to an inflammatory focus.

Among the clinical features high fever tachycardia leuco cytosis and anæmia were common, but where the abscess was chronic one or more of these signs was absent The radiological signs included immobility of the diaphragm often associated with elevation and sometimes with gas below it

Drainage of the abscess should always be undertaken so as to avoid the pleural cavity and prevent collapse of the lung and total pleural infection The incision differs according to the location of the abscess and the space involved, and once drainage has been established the control of healing should be observed by injection of lipiodol and radiography so that the tube is not removed prematurely

The over all mortality in the 188 cases was 40%—an alarmingly high figure Earlier diagnosis followed by chemo therapy and adequate drainage now offers better prospects

Mr Harley has written a classic on the subject. The case analysis is detailed, the bibliography carefully considered, and the opinions soundly based It will be surprising if many of his views do not find a permanent place in the textbooks of the future

Asclepiades, his Life and Writings

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Translated by the late Robert Montraville Green M D emeritus professor of anatomy Harvard Medical School New Haven, Connecticut : Elizabeth Licht 1955 Pp 167 $6

Asclepiades, who practised medicine in Rome in the golden age of Cicero Horace, and Virgil was the most important physician between Hippocrates and Galen yet singularly little is known about him Unhappily almost all his works have perished except for a few fragments from which Dr Antonio Cocchi wrote a biography that was indifferently translated into English in 1762 The first part of this book consists of a new translation of this work. Thirty years later Christian Gottlieb Gumpert collected fragments of the writings of Asclepiades and published them with his comments in Weimar Only one copy is extant and from it the present translation has been made

Many innovations have been attributed to Asclepiades. He was the first to associate hydrophobia with the bite of rabid animals. He advocated walking in sand for paralysis, gave specific prescriptions of music for the mentally ill and used massage for muscle spasm as well as dry steam and radiant heat

The translator a gentle scholar,' did his work well Here is an excerpt :

> The chief value of music according to the opinion of Asclepiades, is to be found in those diseases in which the mind

is affected Hence the minds of phrenitics, disturbed by disease, are often restored to their own nature by a symphony In the same way he teaches that a song should be employed in the treatment of mania Cælius speaks thus ' they use also madrigals of pipes with varied modulations one of these is gay and excites those known to be insane from sorrow, another is serious, injecting sternness, as in war, in those who are affected with laughter or girlish giggling ' "

Clinical Papers and Essays on Psychoanalysis

KARL ABRAHAM, M D Translators Hilda C Abraham, M D , D R Ellison, M A London Hogarth Press and Institute of Psychoanalysis 1955 Pp 336 25s

IN 1927 when Karl Abraham's Selected Papers were published as a volume in the International Psycho-analytical Library, Dr Ernest Jones said that the book contained the whole of Abraham's more important psycho-analytical work, except Traum und Mythus, and the study of Amenhotep IV In the ensuing quarter of a century Abraham's reputation has increased, his pupils have in their turn become prominent psycho-analytical teachers and theorists (though in the process they have diverged widely from one another), and it has been for some time obvious that psycho-analysts unable to read German needed a satisfactory translation of those papers

Though less influential and important than those selected in 1927, the papers nevertheless contain clinical observations, applications of psycho analysis to biography and mythology, and some polemical or expository writings which are all of value to students of this subject It is fortunate that his daughter, herself a psychiatrist well versed in psycho analysis, has been able to translate and edit these essays and articles Among the more elaborate studies are the anthropologically ingenuous but psycho analytically original and inventive monograph on Dreams and Myths (previously translated in the Nervous and Mental Disease Monograph Series), and Abraham's sympathetic and penetrating effort to understand the psychology of the painter Giovanni Segantini

Abraham's intellectual integrity and singlemindedness are plain in these as well as in the other writings presented in this volume The translation is clear and straightforward, though a few German idioms have been retained

Über den Einfluss der Schwangerschaft auf die Lungentuberkulose

Dr med KLAUS OBMANN, Erfurt Leipzig Georg Thieme 1955 Pp 142 DM 25

THE influence of pregnancy on tuberculosis is a subject of lasting interest This well-produced book records experience at the clinic for the town and county of Jena in Eastern Germany

The greater part is occupied by the case histories of 347 women with pulmonary tuberculosis during 531 pregnancies between 1930 and 1952 Many of the histories are illustrated by the graphic method of Brauening and by radiographs Relapse in the tuberculosis was commonest in the postpartum period, though it was by no means uncommon in the first months of pregnancy Patients who aborted spontaneously or whose pregnancies were terminated did better On the other hand, suckling was thought to be beneficial

As for treatment, collapse therapy receives more emphasis than chemotherapy The author feels that termination of pregnancy is not really treatment, and he favours strictly limited indications for interference, though he is not against it altogether

Despite its satisfactory presentation of a great deal of material, the book seems outdated because it does not take fully into account the great changes that chemotherapy has produced

Classics of Biology

AUGUST PI SUÑER London Pitman 1955 Pp 337 35s

IT was an excellent idea to sketch the evolution of several broad facets of biology and to illustrate them with important milestones (reprints of original articles from Aristotle to the present day)

The subjects discussed are matter and energy in life, cell theory, stimulus and excitation, biocatalysts, metabolism, growth and reproduction, germ cells and soma, form and dynamics of reproduction, heredity, individual and species, preformation and epigenesis, life on earth, geography and palæontology, causation and design, reflexes, consciousness, and will, and, finally, the whole and its parts (holism, &c).

The reader obtains a bird's-eye view of an extensive field of evolution together with a running comm on the philosophic implications

Cardiac Auscultation

Including Audio visual Principles J SCOTT B WORTH, M D , associate professor of medicine, Ne University Post Graduate Medical School, MAU CHASSIN, M D , assistant professor of clinical me ROBERT MCGRATH, M D , associate professor of medicine at the school New York and London & Stratton. 1955 Pp 105 $4 50

WELL illustrated, written, and produced, this describes and demonstrates with clarity the findi auscultation The phonocardiograms are pe satisfactory This should be a very valuable meth teaching and is of course already used, in a less co way, by many clinicians, but, though in princip book is excellent, it cannot escape some criticism

The outlook is rather too anatomical and would su much improved for teaching purposes if there were hæmodynamic principles For example, it would be l to explain the gap between the second heart-sound a onset of a mitral diastolic murmur The current view auricular and third heart-sounds are " filling sounds " mentioned, and gallop rhythm is said to occur almost i ably with heart rates of 100 or more, so that by this defi only summation gallop can be considered Not many clin would agree that an early diastolic murmur indicate monary incompetence, rather than aortic incompeten there is no waterhammer pulse, and the second sou atrial septal defect is described as accentuated. Ear progress in auscultation since Laènnec is largely ignored the monaural wooden stethoscope is said to be still in co use in Europe

Each illustration is a single phonocardiogram without marker or reference tracing This aids clarity, but valuable clinical points are missed The aortic and pulm components of the second sound cannot be identified there is no description of the wide splitting of the se sound in the pulmonary area which is so useful in the diag of atrial septal defect and bundle branch block There mention of the retention of a normal aortic component w delayed or absent pulmonary component, in pulmo stenosis

The clinical side is therefore rather disappointing the discussion of the principles of hearing and stethoscope is excellent

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Cardiovascular Surgery (Philadelphia and Lond W B Saunders 1955 Pp 543 89s)—The proceed of the international symposium on this subject held at Henry Ford Hospital, Detroit, last March, have been publis under the editorship of Dr Conrad R Lam. Those tak part included Sir Russell Brock, Dr Ian McMillan and P C G Rob

Mechanisms of Microbial Pathogenicity (Cambrid University Press for the Society for General Microbiolo Pp 333 25s)—On April 19 and 20, 1955, the Socie General Microbiology held its fifth symposium in Lond and this is a record of the sixteen contributions. A bo of this kind can be neither complete nor homogeneou for some contributors take the opportunity to develop th own views, while others give a well balanced review in whi their own work can be seen in proper perspective T solution might be to give a general review of each aspect the subject under discussion, and then to let the specialis with divergent views have their say Unfortunately the tim limit on most symposia forbids such comprehensive tre ment As this book was published before the symposiu was held, the discussion could not be included, and contr versial views must go unchallenged The difficulty, therefor for the general reader is to know what can be accepted a reasonably established and what is still hotly contested but the specialist will find much that is stimulating

THE LANCET

LONDON SATURDAY, DEC 24 1955

Continuous Chemotherapy of Tuberculosis

THERE have been no striking additions to the antituberculous drugs since isoniazid appeared three years ago But an important change has come about in the way they are used, and surprisingly little has been said about it The chemotherapy of tuberculosis has evolved in this country largely from the foundations laid by the Medical Research Council s clinical trials, in which the duration of treatment was limited for the purposes of the experiment to periods of a few months only The facts discovered were very valuable but more has been inferred from them than is justified, for the investigations were not designed to answer the question how long antibacterial drugs can safely and usefully be given. At first streptomycin was scarce and rationed and by the time it became freely available and the addition of *p*-aminosalicylic acid (P A S) had reduced he fear of resistance, treatment by conservative ourses of chemotherapy was already well established n the United States chemotherapy developed under uite different circumstances and both in clinical rials and everyday practice it appears to have been sed in a much more adventurous way In 1953 we ggested[1] that the risk of bacterial resistance may ave been exaggerated and that continued, even fe-long antibacterial treatment might sometimes e justified, and last year we noted[2] that there emed to be much less opposition to long courses f treatment. On an earlier page of this issue we ublish the first full report in this country of the sults of such treatment

Since 1950 Dr HOYLE and his colleagues have eated 142 patients for nine months or longer and they ave observed 63 of them for more than a year after eatment was stopped 46 had bilateral disease ffecting four or more zones and 92 had cavities in e lungs. All received combinations of two of the ree drugs streptomycin, P A.S and isoniazid d in most of them the streptomycin was given daily r the first three or four months 119 have been eated for longer than a year and 12 for longer than o years. All but 41 received no other treatment an rest drugs, and convalescence of the 41 ection was done in 16 and some form of lung collapse 25 The results were excellent Radiographic provement continued for considerably longer than might have been expected, for half the patients kept on improving after the first six months, which was the longest period of treatment used in the M.R C trials In 64 of the 92 patients with lung cavities, the cavities closed without further treatment Tubercle bacilli were isolated before treatment in 111, after a year they were found in only 9 Bacilli resistant to streptomycin and P A.S were grown at some time from all sputum positive patients, but only 1 patient in whom resistant strains have been detected has so far deteriorated 4 patients have died, but death was due to other diseases in 2, and 1 died after a thoracoplasty 126 patients are leading their normal lives and only 3 are known to be infectious The most important observations were that no patient has relapsed while under treatment and that some have relapsed since it was stopped

STEININGER and HOWARD, in the United States, report similar striking results with long continued treatment of patients with less favourable prospects[3] They treated 300 with rest and chemotherapy for more than a year Two thirds had far advanced bilateral disease and slightly less than half were unsuitable for any more radical treatment By the twelfth month 77% had consistently negative sputum cultures Only 1 (with long standing pulmonary fibrosis and emphysema) died while taking the drugs and 1 died two months after refusing further treatment DOONEIEF and HITE, of the Montefiore Hospital, New York, who first reported their experience with long continued chemotherapy in 1954,[4] say in their second report[5] that tuberculosis of the lung is the most insidious of the relapsing infections ' 15% of those discharged from their hospital in 1951 relapsed in the next three years Dr HOYLE and his colleagues mention that 12% of 90 patients discharged from Frimley Sanatorium in 1950 who had received less than seven months' chemotherapy relapsed within three years, although 61 had been treated with collapse or ablation as well DOONEIEF et al go further than recommending long periods of treatment as relapse is so rare while treatment continues, and as it is impossible to predict which patients are going to relapse when it is stopped, they believe that treatment should be continued indefinitely or until some reliable guides to the best length of treatment have been discovered. They have treated 101 patients with pulmonary tuberculosis for periods of twelve to forty five months 23 of them for more than three years 31 had a resection Only 1 patient (with a manic-depressive psychosis) relapsed under treatment and in that case the lung cavities had not closed But 2 others relapsed after stopping the drugs against advice Chemotherapy is continued at home and at work and some patients have even been taught to inject streptomycin themselves Toxic effects have not been troublesome, and DOONEIEF et al say that patient acceptance is good " Nor have Dr HOYLE and his colleagues found it hard to persuade their patients to take the drugs continuously for long periods They say that the results make continuous chemotherapy a direct competitor to surgical resection. As we suggested a few months ago,[6] it is a pity that this method of treatment is not being more closely investigated in this country by controlled clinical trials The rapidly accumulating evidence, mainly unpublished, of the safety and efficacy of long-continued rational chemotherapy with proven combinations of drugs may make such a trial more acceptable Three years ago, when isoniazid arrived, the idea of using drugs for as long as an artificial pneumothorax would have been much frowned on in this country "physician acceptance" may now be better

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[1] *Lancet* 1953, ii 337

[2] *Ibid* 1954 ii 691

[3] Steininger W J Howard W L *Dis Chest* 1955 28 177

[4] Dooneief A S Hite K E *Amer Rev Tuberc* 1954 70 219

[5] Dooneief A S Hite K E Bloch R G *Arch intern Med* 1955 96 470

[6] *Lancet*, Aug 13 1955 p 330

Reserpine and the Nervous System

RESERPINE, which first aroused interest as a remedy for hypertension, is now increasingly used in psychiatry In several disorders, notably schizophrenia, it is widely credited with valued tranquillising effects, but a few controlled studies [1] [2] induce a more critical attitude towards its usefulness in psychoneuroses Research is proceeding along two parallel paths On the one hand, clinicians are learning to define more precisely the effects of the drug, and to decide what type of patient will respond favourably At the same time, experimental pharmacologists have been studying its intimate actions on nervous structures, and their findings not only help us to understand its actions but lead to new ideas about organisation within the nervous system [3]

Many of the effects of reserpine—hypotension, bradycardia, diarrhœa, miosis—suggest an action in the autonomic nervous system, and BEIN [4] first put forward the view that the drug depressed the central control of the sympathetic outflow in the hypothalamus An extension of this concept by SCHNEIDER [5] indicated that the prime action was not direct sympathetic depression, but rather blockade of those afferent impulses which otherwise provoked efferent sympathetic discharge The tranquillising effect of reserpine, and the development of parkinsonism after large doses, suggested an additional site of action outside the autonomic nervous system BEIN failed to demonstrate any effect of reserpine on peripheral nervous structures, but SCHNEIDER gave very large doses of reserpine to cats (doses comparable to those which induce parkinsonism in man) and succeeded in showing that such doses increased the knee-jerk response [6] This effect was due to facilitation of the passage of impulses across monosynaptic pathways in the spinal cord Further evidence that reserpine acts in other parts of the nervous system came from the demonstration [7] that it could lower the threshold to convulsive seizures in mice stimulated by electricity More information about the ability of reserpine to facilitate nervous processes emerged from a study of its characteristic sedative or tranquillising property Though reserpine usually causes drowsiness, it does not induce narcosis, and persons apparently asleep under its influence can be easily roused Electroencephalographic records in rabbits,[8] monkeys,[9] and man [10] showed that sleep patterns did not ap the tracing after full doses of reserpine Th sharp contrast to the changes induced by barbi In the normal animal, tactile or auditory applied during sleep produced characteristic c in the electro-encephalogram This "arousal pa could also be induced by electrical stimulation medullary reticular formation In the cu rabbit [8] asleep under the influence of barbit progressively stronger tactile and auditory stim electrical stimulation of the reticular formatio required to produce arousal changes in the e encephalogram, and the pattern so induced wa abnormal After reserpine in doses up to 1 mg the "sleep pattern" was not seen, but the a response was produced more easily than in sleep, and the threshold of electrical stimulation reticular formation was lowered With larger of reserpine the electrographic pattern of ale was continuously present, replacing the normal rh Thus reserpine facilitated the brain stem a mechanism Although these findings do not e why reserpine causes drowsiness, they demon how the sedative effect of reserpine differs from of barbiturates It is also known that elec stimulation of the brain-stem reticular formati animals can produce a rhythmically alternating t which is abolished by atropine [11] RINALDI HIMWICH [8] suggest that the capacity of reserpi stimulate the reticular formation may underli parkinsonism produced in man The facilitati convulsions [7] is another indication for care in use of reserpine, and increased frequency of sei has been noted in epileptics treated with the dr Reserpine competitively antagonises phenytoin [13] the two drugs should not be given together ticular care is also needed when patients under t ment with reserpine are given electroconvul therapy

The physician treating hypertensive patients relatively small doses of reserpine will be concer about the mental side-effects of the treatment [14] mechanism of this effect can still only be guessed in terms of facilitation of nervous transmission wit the central nervous system More clinical informat is now available [15–19] Serious mental effects likely in about 5% of patients under treatment w doses of the order of 1–2 mg of reserpine daily, equivalent amounts of whole root preparations seems that treatment must last two months or m before the effects appear Patients previously in go mental health can be affected but mental changes commoner in those who were previously unstable Recovery is the rule but is often slow The pote tialities for good and for ill of rauwolfia alkaloids ha not yet been fully explored, and much remains to learned about what reserpine does in the nervou system

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Annotations

INCREASED GROWTH RATES IN CHILDREN

One of the most consistent and astonishing biological trends of our time is the tendency to reach physical maturity earlier and earlier: children, it seems, are getting older every year. The age at first menstruation, the criterion of maturity which has been most thoroughly investigated, and the results of these studies, reviewed in detail recently by Tanner,[1] leave no doubt that the age of menarche has advanced quite regularly in Western Europe and America for the last hundred years at the almost spectacular rate of four to six months per decade. The average age of menarche in Norway, for example, was about 17 0 in 1850; in 1950 it was 13 5, the same as in England at that time. The maturing process has accelerated at all ages, so that by the age of 5 children today are already much bigger than they were, say, twenty-five years ago. The Swedish data quoted by Tanner show that school-children measured in 1939 were the same size as children eighteen months older in 1883. American, Scandinavian, and British data all give secular trends of very similar magnitude—about 1 5 cm and 1 lb per decade at ages 5 to 7, increasing to about 2 cm and 3 lb per decade during adolescence.

The trend is still, it seems, in full swing, and the latest contribution to its study comes from the records of the London County Council.[2] This is a report of the heights and weights of a sample of 20 000 children aged 5 to 16 measured in 1954; these figures are compared with the corresponding ones for 1948 and show increases precisely consistent with the previous trend. The L.C.C. do admirably to plan a series of cross-section surveys of this sort from time to time, but they would be more valuable if the methods used were more in line with the newer standards of technique as illustrated, for example, in the studies of Krogman.[3] In the L.C.C. survey children were weighed "in ordinary indoor clothing but without footwear," but no indication is given of the weight of the clothes, although the weights were recorded to the nearest 0 1 kg. This procedure is justified on the grounds that this was what was done in 1948 and comparison with those results was the objective; but it would perhaps have been better to measure a sample of the children clothed and unclothed so that the change from one technique to another could have been made with accuracy. Heights were also measured, but in what way is not stated; the height-scales attached to most weighing machines are grossly inaccurate and never as satisfactory as the old book-on-the-head standing-against-the-wall technique.

The L.C.C. investigators also asked the girls whether they had started to menstruate or not, but they did not treat the resulting data by the method of probits so as to obtain a valid figure for the average age of menarche. The figure they give, which is the age by which half the girls interrogated had reached menarche, is 13 years, but this rather underestimates the mean since the sample lacks an adequate number of those aged 15 and 16 and there were no older girls, some of whom must constitute the older end of the non-menstruating group. Nevertheless, the true average figure can scarcely be more than 13 25 years, and this figure receives some support from the very careful and extensive study of children's measurements recently reported by Provis and Ellis.[4] In a random sample of Edinburgh children of all social classes, they found a mean menarche age (by probit fitting) of 13 36 years. Furthermore the Edinburgh children are lighter and shorter than London children at all ages from 5 to 14 and perhaps later (the sampling of both studies at older ages becomes suspect). The differences are quite considerable—roughly about 1 inch in height and 1 lb in weight. It may be that London children are more mature than Edinburgh ones; or perhaps the final adult size is greater in London. Only studies of bone age could distinguish these alternatives. However this may be, both the London and Edinburgh reports give further evidence that this trend is a real one. Choirmasters, we understand, were not in doubt, for they have for some time been finding it increasingly difficult to get enough soprano choirboys.

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IDIOPATHIC HYPERCALCÆMIA

In 1952 Lightwood drew attention[1,2] to a disease of infants in which failure to thrive, vomiting, constipation, and hypotonia are associated with a raised serum-calcium level. The prognosis is fairly good, and it seems that these cases of "idiopathic hypercalcæmia" should be distinguished[3] from a more grave condition described by Fanconi et al.[4] in which serum-calcium is also raised but in addition there is mental retardation, a particular facies, and osteosclerosis. In both conditions the mechanism by which the serum calcium rises is obscure, but the resemblance between the milder disease and intoxication with vitamin D[5] was soon apparent.[6] Even the usual intake of vitamin D may be well above the ideal level: the optimum has been placed as low as 500 i.u. daily,[7] and artificially fed infants can easily be given too much in fortified foods and cod-liver oil. The response to vitamin D and the need for it probably do vary widely, from oversensitivity[8] to resistance.[9] Furthermore artificially fed infants may be getting a lot of calcium because the cow's milk contains four times as much calcium as breast milk.

Bonham Carter and his colleagues[10] have recently published observations begun in 1952 which greatly help our understanding of the idiopathic hypercalcæmia of Lightwood. They studied a nine-month-old boy in whom the diagnosis was first suspected when a loud systolic murmur was heard. These murmurs have been heard in the more severe disease described by Fanconi et al.[4] but it is clear that they may be present in the milder disease as well. Calcification of the valve cusps[11] has been given as an explanation. Bonham Carter et al. felt justified in finding out whether vitamin D did in fact influence the boy's condition—a matter of importance in deciding his subsequent treatment. For ten days, at a time when his disease was in remission, he was given 10 000 i.u. daily of vitamin D, and this made him worse. Although 10 000 units is a large dose for a child without rickets, one would not expect it to produce any ill effects in a normal child. They then gave him a constant diet containing very little vitamin D, and varied the calcium content of the diet from none at all to 610 mg daily. On the calcium-free diet the plasma-calcium fell to normal and the boy's symptoms rapidly diminished; others have made the same observation.[12] On the diet containing calcium the plasma-calcium rose again and the symptoms returned. The boy absorbed an abnormally large propor

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8. Thatcher L. *Ibid* 1936 i 20
9. Jonxis J H P *Helv pædiat acta* 1955 10 245
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12. Ferguson A W McGowan G K *Lancet* 1954 i 1272 *Ibid* 1954 ii 817

tion of the dietary calcium from the gut and the urinary excretion of calcium was high He was later given a small intake of vitamin D and calcium , and eventually he was able to tolerate a normal diet What happened to the systolic murmur is not recorded These findings make it very likely that an increased sensitivity to vitamin D, with consequent increased absorption of calcium from the gut, explains at least some of the cases of the milder disease

Anderson et al[13] described an abnormal sensitivity to vitamin D in sarcoidosis, explaining the raised plasma-calcium sometimes encountered in this condition by excessive intestinal absorption After cortisone the response to vitamin D became more normal No one has yet studied the absorption of calcium in infants with idiopathic hypercalcæmia treated with cortisone, but it may help them too by reducing calcium absorption, for some of these infants have improved on cortisone[14 15]

There is still much to be learned about the disease, in particular to what extent an apparent sensitivity to vitamin D depends on the intake of calcium Meanwhile, treatment with a diet low in calcium and vitamin D, quite apart from the possible use of cortisone, seems generally successful , and it is obviously important above all not to treat undiagnosed cases of " marasmus " with additional vitamin D on the assumption that there may be a lack of it an excess is nowadays at least as likely

SPORADIC CRETINISM WITH GOITRE

CRETINISM with goitre is well known in areas where adult goitre is endemic Elsewhere, cretins usually have atrophic thyroids, generally explained as a failure of development of the gland But goitrous cretins are occasionally found in districts where the incidence of ordinary goitre is low Several of these have now been intensively studied by means of radioactive iodine, with interesting results In all the reported instances there was a definite tendency for several members of a family to be affected

The results of these observations show that there are two distinct types of biochemical defect There are the cases investigated by Stanbury in Boston[16–18] here radio-iodine studies showed that the thyroid could scarcely metabolise iodide at all It was concentrated in the thyroid in inorganic form and could be washed out of the gland by giving the patient thiocyanate This type of defect may be explained as a failure of the enzyme which oxidises iodide to iodine and enables it to combine with protein in the form of diiodotyrosine radicles Later these diiodotyrosine radicles may be presumed to fuse to form thyroxine On the other hand, Stanbury and his associates[18–19] have also been investigating two further families of goitrous cretins—one in Boston, the other in Leiden In these cases the thyroid rapidly oxidised and bound iodide, as shown by the failure of thiocyanate to reduce the radioactivity of the gland Subsequently mono and di-iodotyrosine were identified in the blood by chromatography, together with small quantities of thyroxine and tri iodothyronine The excised goitre also contained large amounts of mono- and di iodotyrosine, but only a little thyroxine and tri-iodothyronine In these cases it is clear that the first step in hormone synthesis is taken normally, for administered tracer iodide is freely oxidised and bound to protein in the form of iodinated tyrosine radicles But these radicles it seems can be coupled only with difficulty, so that there is a deficiency of active hormones It seems likely that the patients studied earlier by Hubl Derbyshire and McGirr and Hutchison in Glasgow belong to the same group

The accumulated evidence allows us to suppo two distinct biochemical defects can be found thyroid The fact that these lesions are congen appear in families strongly suggests that th genetically determined The simplest hypothesis be that the absence of a single gene is in eac associated with the absence of a single thyroid e It is to be hoped that more of these cases will be id and studied in the hope of confirming this att explanation At the same time, it must be sa these new observations do not alter the treatme cretin (goitrous or otherwise) thyroid extract m started as soon as the diagnosis is made and con throughout life with the minimum of interruption

MALADJUSTED CHILDREN

THE report[22] on maladjusted children whic just been issued by the Ministry of Education important and sympathetically written survey existing medical, social, and educational services able for unhappy and emotionally handicapped chi It covers all the services, and concludes with n than 97 conclusions and recommendations for the f development and deployment of the various ag and organisations at present seeking to cope wit problem

Maladjustment is a concept with hazy definitions has on occasion been used to connote eccentrici outlook or oddness of behaviour The report see define it in relation to the normal, and a whole ch is in fact devoted to a description of normal ps logical development in childhood and adolesce Normal behaviour is not always socially accept behaviour It is behaviour that expresses develo independence and self control, making for responsib and decision as opposed to impulse and whim I within limits, appropriate behaviour, falling within norms, and relative to a particular pattern of cult background Maladjustment reveals itself by emoti insecurity, unhappiness (however masked by aggres and bravado), and failure in personal relationships an habits of hard work and reliability The maladjus child is an unhappy and an inefficient child—a misfit

Though the worst effects of maladjustment are s in youth and later life, it is really a problem of infan and childhood The final answer is clearly to prev it arising in childhood by making sure that children a all who have to deal with them are trained in the kno principles of mental health At the same time, ste must be taken to deal with emotional difficulties at t earliest possible stage This is a task for school teache and parents, who should be able to detect sympto of disturbance and know where to turn for gu ance Unfortunately there are at present all too fe child guidance clinics available for consultation a treatment There are not enough special schools, eith residential or day, and there are not enough psychiatr or psychiatric social workers to staff new units T report estimates that some 400 more psychiatric soci workers are needed during the next ten years, togeth with 140 new psychiatrists to man the child guidan service alone If these are to be provided, more cand dates of the right kind will have to be found a encouraged to undertake training As Woodger[23] h lately re-emphasised, little time is given in most Brit medical schools to child or any other psychology T

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13 Anderson J , Dent, C E Harper, C , Philpot, G R *Ibid*, 1954, ii 720
14 Creery, R. D G , Neill, D W *Ibid*, p 110
15 Fanconi G , Spahr, A *Helv pædiat acta*, 1955, 10, 156
16 Stanbury, J B , Hedge A N *J clin Endocrin* 1950, 10, 1471
17 Stanbury, J B *Ibid*, 1951, 11, 740
18 Stanbury, J B , Ohela K Pitt Rivers R *Ibid*, 1955, 15, 54
19 *Ibid*, p 1216

20 Hubble, D *Lancet*, 1953, i, 1112
21 McGirr E M., Hutchison J H *Ibid*, p 1117
22 Report of the Committee on *Maladjusted Children* H
Stationery Office Pp 180 6s
23 Woodger, J H *Lancet*, Aug 27 1955, p 419

edical student is seldom aware of the need for this ork or of the rich opportunities that await those who ll do it and the report recommends that all medical udents should receive such instruction and should ttend a child psychiatric department for practical aining All medical schools should have links with a ild guidance clinic This is of course being done in a umber of schools to very great advantage and the actice if extended and made universal might go a ng way to stimulating likely candidates to prepare hemselves for a career in psychological medicine

The report also has important things to say about he training of teachers and the development of ante ntal and child welfare centres in an all out campaign o rouse public interest and teach the importance of ental health In the main it concentrates on suggesting ays in which existing services could be adapted and xpanded rather than recommending radical changes nd the establishing of new services The report illustrates he shift of emphasis in medicine from cure to prevention nd this involves a realisation that mental health is not erely the absence of mental illness In encouraging his change of outlook, sociologists, educators doctors nd parents can all help to promote the environment nd attitudes of mind necessary for the healthy mental evelopment of children

VITAMINS IN REVERSE

THE existence of antivitamins is now generally cknowledged Even in 1948 enough was known of their ction to provide material for an international conference hich was held at Lyons Subsequent research has vealed the importance of these substances in both the ausation and the treatment of disease The wealth of nowledge now at our disposal has been reviewed at a nference held in New York under the auspices of the ational Vitamin Foundation[1]

An antivitamin' may be defined as a physiologically ert or useless substance which chemically resembles a rticular vitamin and which can obstruct the vitamin usurping its place in biochemical systems On this ies the sulphonamide drugs are presumed to act by terfering with the metabolism of *p* aminobenzoic acid a disturbance which affects the invading bacteria more an the host The insecticide gamma benzene hexa hloride (Gammexane) is held to compete with inositol hich has much the same structure but with the chlorine oms replaced by hydroxyl groups The same principle plies however not only to inhibitors of these two pseudo' vitamins but also to inhibitors of true tamins such as aneurine and riboflavine, and of sub nces which are not vitamins such as methionine and rines. The concept of antivitamins' therefore rges into that of antimetabolites in general

The action of vitamins may be opposed in other ways an by competition Thus substances which in chemical ructure do not resemble the vitamins may interfere by using their destruction or by acting in the reverse rection One example is the destruction of vitamin B_1 an enzyme present in raw fish which has caused rious losses to American fur farms. A similar enzyme s been found responsible for bracken poisoning' ong farm stock in Wales. Rancid fats can cause the struction of vitamins A and E or may oppose their tion and so give rise to conditioned deficiencies of se vitamins

At the New York meeting K P Link spoke on tamin K and the 4 hydroxy-coumarin anticoagulants this field we have an example of vitamin inhibition ch was first revealed by the hæmorrhagic symptoms duced in farm animals, but which was later success y applied to the treatment of thrombosis J H Burchenall discussed folic acid antagonists, which have been used in the treatment of leukæmia in children Considerable clinical benefits have been observed at the start of such therapy but with the development of resistance to the antagonist the dose has eventually to be raised to a toxic level W W Umbreit dealt with research on antagonists to vitamin B_6 which in R S Goodheart s opinion had led to the recognition of deficiency of this vitamin as the cause of a convulsive disorder in infants fed on a certain proprietary food L R Cerecedo J P Lambooy O D Bird and G H Hitchings reviewed antagonists to vitamin B_1 riboflavine pantothenic acid and purine derivatives

A fascinating story was told by D W Wooley, who related canine hysteria to a disease of tobacco plants known as wildfire The tobacco leaves become infected with *Pseudomonas tabaci*, which produces a toxin that causes wilting Wooley isolated this toxin and elucidated its constitution For its first four carbon atoms its structure was the same as that of methionine which is the substance in flour that produces the poisonous sulphoximine on treatment with agene Wooley conceived that both the toxin and the sulphoximine may act as antimetabolites to methionine In support of this view the sulphoximine was found to cause wilting when placed on tobacco leaves, although less intensely than the natural toxin In cultures of chlorella antagonism between the tobacco toxin and methionine was clearly shown, but methionine did not protect the wilting leaf So far no evidence has been presented on the crucial question whether the wildfire toxin can produce hysteria in dogs

Anti vitamin E stress factors, and their relation to lipid peroxides were discussed by E L Hove The vitamin E antagonists, which cannot be regarded as antivitamins in the strict sense, include such widely assorted substances as unsaturated fats *o* cresyl esters carbon tetrachloride pyridine, sulphathiazole, and sodium sulphite. In contrast to the anti oxidant activity of vitamin E these antagonists act as pro oxidants, and promote the formation of lipid peroxides in the tissues. The oxidised lipids are believed to cause the various pathological states associated with vitamin E deficiency by reacting in turn on sulphydryl sensitive enzyme systems hence the liver necrosis in rats or pigs which have been given diets deficient both in the sulphur containing cystine and in vitamin E An alarming practical demonstration of vitamin E antagonism in man was seen in an outbreak of ginger paralysis' caused by drinking an alcoholic extract of Jamaican ginger root containing *o*-cresol

The power of vitamin antagonists both for good and for evil has been amply confirmed In this field great successes doubtless remain to be won particularly through attacking diseases refractory to conventional methods of treatment

HEROIN

BY his misgivings about the legality of their method of stopping any further manufacture of heroin in this country Lord Jowitt has obliged the Government to confine their present action to prohibiting export of the drug Even those of us who think that, because of this country's international obligations, the Government were right in deciding to ban the drug altogether must be glad that this decision cannot take effect immediately, at a time when so many people believe it to be wrong With fuller information and quiet discussion of the issues there may well be more agreement on what ought to be done

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Dr T B DAVIE principal and vice-chancellor of the University of Cape Town, and formerly Holt professor of pathology in the University of Liverpool, died in London on Dec 14 at the age of 60

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[1] Amer J clin Nutr 1955 3 271

Special Articles

STRAINED RELATIONS

R M ELLISON
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> "All adversity finds ease in complaining"
> —ISIDORE, quoted by Robert Burton, *Anatomy of Melancholy*

THOSE treating the physically or mentally ill have long realised that the judicious management of the patient's relatives is important, particularly perhaps in hospitals From the young sick child and his relatively young parents to the senile case and his relatively old children, this is true Most relatives are cooperative and grateful, and appreciate all that the doctor tries to do—be it to heal, to relieve, or only to comfort

It is right and proper that relatives who are not satisfied with the medical arrangements should have their complaints investigated and any defects remedied Other than those with genuine grievances, however, there remain a few relatives who can never be satisfied, and are accorded a disproportionate amount of attention from the medical and nursing staff What is the cause of this unwarranted dissatisfaction ? I shall consider this question with special regard to patients in hospital, but much of what follows will apply also to patients who are being treated in their own homes

The largest group of the dissatisfied is met among the relatives of chronic or senile patients, who do not need any special treatment but only constant care and attention The relatives appreciate how little treatment is needed and is being given in hospital and they know that they themselves could provide it at home Often this would be inconvenient and would impose on them many distasteful tasks To convince themselves, the patient, and the medical staff of their love and solicitude, they feel compelled to be perpetually dissatisfied and critical of the treatment and the wards in the hospital By their complaining they seek to prove their concern and interest, it is their way of doing something for the patient—compensating for the guilt they feel that the patient is in hospital and not being looked after by them at home They believe that, in the eyes of the world, their interest in the patient's welfare will be in direct proportion to the agitation they cause when visiting the hospital

The number of chronic and senile patients is increasing, largely because of man's greater expectation of life Previously, with larger homes, bigger families, and more domestic help, these patients could be adequately cared for at home With modern conditions of smaller houses and families, many of them today cannot be kept at home But there still remain some who need not be in hospital, if the younger members of the family regarded their care as a duty With the introduction of the National Health Service the unworthy but powerful deterrent of having to pay directly for a hospital bed has been removed However, patients are happier and better treated in hospital than in a home where they are not wanted and made to feel a burden

Another group of relatives who complain are those who feel that they are the cause of the patient's illness and that through their neglect or failure to summon medical help earlier, the patient became so ill as to need admission to hospital Their feelings of guilt and frustration are expressed either as remorse or, taking a more active and outward form, as aggression towards the hospital authorities

A third group of relatives adopt an aggressive attitude because they fear the disease or, what seems to them, inevitable death Their aggression is an attempt to fight the illness in the one they love, or to ward it off fro themselves

In a family the stress of illness, especially a long o that needs admission to hospital, may put an emotion and financial strain on the relatives As a result, th may develop an anxiety state of which tension a irritability may be the outstanding symptoms Suc symptoms may be exaggerated or less controlled whe visiting the hospital and lead to discontented behaviou In cases of mental illness this may be more obviou for relatives of these patients may have an inherite mental instability, which makes adaption to environmental stress difficult

SUMMARY

Among the relatives of patients, a small proportio are chronically and irrationally dissatisfied with th medical services provided, the main causes of the discontent are a compensatory aggression for feelings of guilt and frustration or a fear of the illness Many relatives show symptoms of an anxiety state, while others are constitutionally mentally unstable

Understanding of the causes of dissatisfaction may help to mollify the strained relations that sometimes exist between doctors and unhappy relatives

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FURTHER HEALTH CENTRE IN ESSEX

OPENING a health centre on the Aveley Housing Estate at Thurrock, Essex, on Dec 16, Mr Iain Macleod, the Minister of Health, said that probably new towns and new estates would continue for some years to be the laboratory in which health centre experiments would be devised and observed He went on to say that probably we can look forward to no large increase of health centres in the near future, but meanwhile we should be gaining knowledge of their working, learning to improve them, and perhaps learning lessons that could be applied in other fields Mr Macleod pointed out that health centres did not provide new services they brought together services that otherwise would be separately housed Almost all the services that could go into a centre existed separately in some degree in most areas "The health service can never afford and probably will never be able to afford to pull down what is already good in order to put up something that is perhaps only a little better" Even if that were economic it would not be possible to bring about arbitrarily a change in the local customs and practices of the patients and of the professions which served them Mr Macleod hoped that as time went on there would be more experiments in different parts of the country If there were to be more it would be because local people wanted them

The Aveley Estate, covering 1200 acres, is being developed as a result of a decision by London County Council in 1947, in accordance with the Greater London plan put forward by Sir Patrick Abercrombie in 19[illegible] to deal with the problems arising from the increased population of the London area The cost of development is estimated at nearly £9 million, and allowance has been made for over 5000 houses and flats which are now nearly all completed A special group of single storey dwellings together with recreation-rooms, has been built for old people

The new health centre is generally similar to Essex County Council's first centre at Harold Hill[1], but several minor improvements have been incorporated As at Harold Hill the building consists of a two storey wing on the main frontage with a single storey wing running towards the rear There are two entrances on the main frontage One of these entrances leads to the rooms, occupied by the general medical services, which make it a self contained unit occupying the whole of the ground floor of this wing This suite of rooms includes four consulting rooms with examination rooms waiting rooms a minor-operations room, a clinical side room, and a small inquiry office where the main telephone switchboard has been placed The other entrance on the main frontage leads to the part of the building occupied by the county-council's clinic services the regional hospital board's specialist services, and the general dental services To the right of the clinic entrance is a pram shelter which has a separate covered access to the main vestibule where the inquiry office is situated and to the waiting hall, where provision is made for the sale of welfare foods and the supply of light refreshments to those attending the centre The remainder of the single storey wing is taken up by a minor ailments clinic weighing room consulting room dressing rooms a large orthopædic room and a kitchen On the first floor over the general medical services wing are a health visitors room an eye-testing room a second waiting room and the dental suite comprising two dental surgeries recovery room dark room and dental workshop There is also a caretaker's flat on this floor

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[1] See *Lancet* 1954 ii, 866

KING EDWARD'S HOSPITAL FUND

PRESIDING over the general council of King Edward's Hospital Fund for London on Dec 14 the Duke of GLOUCESTER referred to the Hospital Administrative Staff College established by the Fund and he said it was hoped that a Government scheme would shortly be launched for the selective recruitment and training of hospital administrative staff on a national basis The intention would be to help to provide the hospital service with well trained administrators who would be competent to fill the senior administrative posts in years to come. The Fund's staff college was expected to play an important part in the training of these student administrators who would be selected from promising younger officers in the hospital service and from university graduates and other entrants with professional qualifications Subject to the consideration of certain points still to be settled the Fund would be happy to use the resources of the Hospital Administrative Staff College to assist the scheme, and the Duke felt confident that the college would be able to play a useful part in the light of the experience it had gained since it was opened in 1951

Dr G P ABERCROMBIE chairman of the Emergency Bed Service committee, traced the development of the service since the time, in 1938 when general practitioners in London received a neat card to say that if they would ring a certain number and give details, a new department of the King's Fund would help them to get their urgent cases into hospital The idea was so successful that ten years later the service was dealing with about 13 000 applications a year Today it was open day and night and it dealt with its 500,000th application last January it expected to receive about 65 000 applications each year

Eighteen months ago the head office and its four outlying branches were brought together in specially designed accommodation in Fielden House London Bridge Street On an average it took 27 minutes to see a successful admission through from the general practitioner's call to the E B.S's request for an ambulance In summer the weekly total of patients was below 800 but in winter and particularly during an epidemic the total would be twice or even three times that of summer and as the hospitals filled the admission rate tended to fall

The E.B.S had two methods of meeting crises Firstly any individual patient for whom no bed could be found might be submitted through a medical officer appointed by the regional hospital boards, to the medical referee of that patient's hospital management committee for immediate admission Dr Abercrombie emphasised that every patient represented was in urgent need of treatment which could be obtained only in hospital was admitted Secondly there was an elaborate warning system calculated from the weekly total and based upon the percentage of success in securing beds If this fell below 85% a white warning was sent to all hospitals This said in effect 'E B S is hard pressed and may be in serious difficulties in a day or two' If success fell below 80% the warning was yellow and if below 75% red These were urgent calls for help and meant The situation is serious The resources of the service are rapidly being exhausted, and for one patient in five—or even for one in four—no bed can be found On receipt of these warnings, hospitals took their pre arranged action to provide more beds and as a result of this coöperation the admission rate had not fallen below 80% since the influenza epidemic in February 1953

The Emergency Bed Service originally designed simply to save the time of the busy general practitioner and to direct his patient to an appropriate hospital had now become Dr Abercrombie declared, an absolutely indispensable link between the two great partners in the medical service of the city Moreover the changing weekly total was considered by experts at the Ministry of Health to be the most sensitive index they had of the rise or fall of sickness among the people of London, and so the Emergency Bed Service had acquired a new function—namely to give the medical administrator timely warning of trouble ahead

Sir ARCHIBALD GRAY chairman of the distribution committee referred to the Fund's system of hospital visiting When the National Health Service began the Fund's maintenance grants ceased, except to a few disclaimed hospitals and annual visiting also ceased It soon became evident, however that any help the Fund could give to hospitals including visits, would be welcomed The number of hospitals on the Fund's list had almost doubled and it was clear that they would have to be visited as groups and not as individual hospitals Already some 60 groups and teaching hospitals had been visited and the remainder would be visited in the coming year The visits were of great value to the Fund in keeping in touch with the progress of hospital development

TRAINING THE DISTRICT NURSE

THE annual meeting of the Queen's Institute of District Nursing was held in London on Nov 29 Discussing the report of the Working Party on the Training of District Nurses,[1] Mr A H M WEDDERBURN, chairman of the general executive committee explained that there was general agreement among the working party about the content of district-nurse training—and the content agreed was identical with the existing Queen's Institute syllabus and practice There were however, three main points of difference between the majority and the minority reports:

1 The majority believed that the training could be given *in four months to state-registered nurses and three months to S.R.N.s with certain additional qualifications* while the minority view was that not less than six and four months respectively were needed

2 The minority did not think that the proposed central committee should be obliged to issue a syllabus for the four month and three-month periods, no more and no less. They believed these shorter periods, if adopted at all should be a minimum training thus conforming to all other branches of nursing training

3 The minority pointed out that despite its important functions, this central committee might very easily have on it not even one professional district nurse training expert if the composition suggested by the majority report were adopted

Why did the majority of the working party insist on cutting down the training period? How could a syllabus be devised which would carry out what they recommended? Mr Wedderburn invited answers to these questions, but no-one from the audience of more than 500 spoke in support of the majority report.

Dr E. C H HUDDY, county medical officer of health for Berkshire thought that the majority report was against the weight of evidence against the opinion of the nurses concerned, and against the opinion of most general practitioners

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[1] See *Lancet* Sept 10, 1955 p 543

Dr GEOFFREY HALE held that the majority report showed little appreciation of the difference between district nursing and hospital nursing The technique and the approach were very different, and the differences took time to learn and to practise It was remarkable that the basic six months' district-nurse training had not been increased over the years, and, as a general practitioner, he would not be confident that his patients were properly cared for if the *district-nurse training* were not at least as long as at present

Mrs HENRY BROOKE said that, owing to the increasing cost of hospital beds, a more speedy discharge of patients from hospital was desirable, and it was therefore very *important that the nursing care in their own homes* should be of the very best

Points of View

REMEMBERING AND FORGETTING

ALAN MCGLASHAN
M C , B.A Camb , M R C S , D P M

MEMORY, the psychologists briskly tell us, has two *main aspects* *The first is reproduction—not necessarily* exact, as they concede with the naïveté which is the birthright of academic psychologists The second is recognition—that rainbow bridge flung in a magical instant between the present and the past Recognition is the core of memory and of mental life Without it nothing could be experienced, neither love nor hate, hope nor fear, beauty nor ugliness , and a merely vegetative existence would remain Hardly even this perhaps , for as the physical world is held in being by the all pervasive, unobtrusive force of friction, so without remembering the entire architecture of the psychic world might disintegrate Memory is, in fact, the mortar *between all events—a veritable glutinum mundi*

This basic function apart, memory has other and more equivocal uses It is, for instance, the *guardian of* self love, interposing between past and present an invisible web, through which only selected and fondly edited items can pass into the specious records of the conscious mind Memory has *its graces too, storing* sharp images of happiness and grief, laying a soft patina on the past, giving to the unripe act of living what autumn's gold gives to the mellowing peach

But if remembering is a vital function, so also is forgetting To forget is essential to sanity Recalled in their entirety, the huge inchoate body of past events would suffocate our mental life If all things were clearly remembered, experience would lack its chiaroscuro, and history's canvas would have the maddening *facial* iteration of a mammoth end of-term school photograph Man owes more than he guesses to oblivion Through forgetting comes much beauty into life, much richness and strangeness

* * *

Since man must remember if he is not to become meaningless, and must forget if he is *not to go* mad, what shall he do ? The dilemma, not logically resolvable, has been subtly resolved Within *man the past is* perfectly contained—but he is allowed to live as if it were lost He is tolerantly permitted to taste a naïve pride of discovery as when William Harvey staggered the 17th century world by his discovery of the circulation of the blood—in which he had been anticipated by Hwang Ti, Emperor of China in 2650 B C , who noted that " all the blood in the body is under the control of the heart the blood current flows continuously in a circle and never stops "

Yet the pristine *forms* of knowledge are not wholly forgotten Mixed always with the joy of new discovery is a shadow of disquiet, a teasing half recollection of things *long past*—the secret penetration of the archaic into th present, of the timeless into the *temporal*. *To* th percepts of the conscious mind are added intimation from a distant and forgotten past, still alive in the depth of the psyche Nowhere is this more clear than in ou enjoyment of myth and parable and fairy-tale Good stories are very rare, and these are the three forms i which they are most often *contained* The best of them have indeed been told countless times through history and prehistory This would be intolerable were it not for the *grace of half forgetting, as* children do, which allows us to receive with a fresh delight tales first heard, perhaps, in some lake village of the Neolithic age Like *fascinated* children, *open-mouthed* and a little frightened, we listen to our songs and stories echoing faintly back from the walls of eternity

The *tragedy* is that it is *fatally* easy to lose the precarious balance of these opposing and compensating functions of remembering and forgetting, whereby the imaginations of men are grouped and regrouped in endless intricate patterns of wisdom and folly, kindness, and cruelty, insight and illusion It is so hard to grasp this *reciprocal movement*, which *alone creates the* lovely iridescence on the surface of life, the fathomless in its depth Genius has sometimes known this, an life *sub specie aeternitatis* is no new thing In h *Cumaean Gates* Jackson Knight *suggested* that the of genius " consists in the power to find contacts back in time beyond the reach of others, and to *latent stores of feeling and of meaning* in the col mind of the present "

* * *

Genius is not the only guide The evidence ab for it is inherent in all things Even in the daily that faithful mirror of disintegrated existence, intimations can be *caught* by *an attentive* ear what distant sources, and through what indef media, have lingered on such bucolic fancies, a fresh earth from the *grave of a baptised infant* will the blossoms of a plant larger and more hand that the cuckoo changes into a hawk at *the* e summer , *that driving rusty* nails into a barren tree will cause it to bear fruit ? All these, with many have been seriously advanced within the last two by correspondents to the English national newspap

There is a type of mind, otherwise intelligent, reacts with a sort of snorting fury to these naïve b that feels outraged if they are not *instantly* dism with an impatient shrug For many purposes, of co they must be so dismissed science has built its roads of fact and reason only by *resolutely* ignoring *wayward blossoms* of the countryside But life constructed that resolutely to ignore a thing is *to* e being eventually tripped up by it *One* of the ga saddest sights on earth is to see the good nag Rosin carrying the scientific world on its back and confide cantering along to its ultimate *quod erat demonstran* suddenly put its foot in a *quod est absurdum*, and thro illustrious burden gay, because it is *pleasant to se* rationalist with his heels higher *than* his fastidious no once , and sad, because he learns so little from his tum

In medicine alone there have been many *such* em rassing faux pas Not so *long ago* the doctors loftily amused to hear of an old country woman used to treat dropsy with decoctions of *foxglove* fr her garden—and who was *finally proved to have* b dispensing a hitherto unknown drug called digit And only yesterday the mould on damp cheeses, kept many a farmhouse scullery *in* our great grandfathe time to make a rude plaster for infected wounds, shown to be the source of penicillin *In* the count they know that things are *only* half discovered—and ha remembered The *precarious* balance is unconscious preserved, and with it the secret of the *crude* country life let the scientific mind blandly ignores these constant posures of its own limitations Like Theseus it ' never r believe these antique fables, nor these fairy toys ndom proof however startling of the practical wisdom dden in simple hearts seems only to serve as the origin fresh distortions. With indecent haste the thought eparated, fatally, from the feeling that was its partner d from the human context in which they quietly xisted.

For the essence of this earthy wisdom lies precisely its slow, centuried synthesis of thinking with feeling remembering with forgetting It cannot be invented new minted from any single mind but forms itself ysteriously with the imperceptible accretions of a alactite in the ombrous caverns of the collective mind nd we do wrong if we dismiss this process as merely sive Such silent patient waiting for truth as mone Weil has said is an activity more intense than y searching

The products of this activity are unlike the clear cepts of the classroom and the laboratory It is ither difficult nor clever to prove them logically absurd any case being a human process it is as fallible as all ings human But empty of value as many of these untry tales undoubtedly are childishly ridiculous as ey all appear they deserve gentle and perceptive ndling in virtue of the mystery of their origin They long not to the everyday world but to the timeless radoxical world of myth and fairy tale of fantasy and eam a world where startling absurdities and glaring consistencies are but secret signals to the instructed nd bidding it note the crossing of an invisible frontier

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It would be well if man could recapture this richer der mode of response to existence wholly lost to us the last three hundred years which recognised that the al secrets of life may often be reached less by what we arn than by what we half remember What is needed is extension of contemporary consciousness to include hat can perhaps be defined as the translucent quality in l things—the quality by which an object or an event seen not only as a thing in itself but also as a membrane rough which can dimly be discerned the stirring of a fferent order of experience

This once caught, even for a moment transforms the sible universe, investing all objects with a sharp larity of being The seeming solid world grows rmeable, beginning to transmit not merely to reflect e light The quality of translucence is the key a golden y that is the careless plaything of all children, and e conscious instrument of a few geniuses. In excep onal moments of their lives ordinary men and women ay fleetingly hold it : in the first days of overwhelming ve, in moments of overwhelming peril in the presence new life and sometimes on the unheralded news of ath.

At such moments a man stands on tiptoe, and may tch a startled glimpse of another level of being where values are changed, and everything is understood fferently the level of which Chekhov dreamed where erything is forgiven and it would be strange not to rgive ; that Goethe experienced when he murmured his friend That fig tree this little snake the cocoon my window sill quietly awaiting its future—all these momentous signatures the level touched in the rables in the sixth book of the *Aeneid* in the *Ode to a ghtingale* and anonymously and perhaps incompar ly in the mysterious golden light that shines through yth and fairy tale the level of the kingdom of aven that is within It is a quality often missing in rks of loftiest genius. Milton, for all the splendour of planned achievement and all the wealth of his well wn mythological themes, had not a trace of it ; nor ver despite his earnest preoccupation with eternity

To become aware of this translucent quality in all things is no vague romantic goal It is a sharply defined, delicately poised effort of mental vision, a state of harmonious balance of forces in the Pythagorean sense born of the union of many opposites of remembering with forgetting, of thinking with feeling of the temporal with the eternal of personal conscious perceptions with faint echoes from the remotest regions of the archaic psyche It is the basis of all true science, the essence of ritual the constant attribute of wisdom It may be the nearest that human minds can reach to the meaning of meaning

Parliament

Heroin Ban Postponed

IN the House of Lords on Dec 13 EARL JOWITT moved :

> That in the opinion of this House in view of the apparent conflict of expert medical opinion on the banning of the manufacture of heroin in this country the period of the present licences to manufacture should be extended pending the institution of further inquiries

He fully realised that the Government had propounded the ban on the manufacture of heroin from the highest motives, but he thought that a pronouncement by the House of Lords might help to retrieve what he believed to be a grievous mistake After summarising the circumstances which had led to the ban and the medical advice which had and had not been sought he thankfully left what he described as ' the sea of medicine " for an island of the firm ground of the law There was, he suggested (and did not think the Lord Chancellor would disagree), serious reason to doubt whether the Minister had any right to use his powers under the Dangerous Drugs Act to ban the manufacture of heroin

CONTROL OR PROHIBITION

The granting of licences for the manufacture of heroin was, he thought an incident to the general power of controlling manufacture ; and the power to control manufacture was for the purpose of preventing the improper use of heroin The Home Secretary had in effect said ' No particular individual can manufacture heroin unless he is licensed to do so Therefore if I announce in advance that I shall license nobody I can indirectly ban the manufacture of heroin The control of manufacture as a means of preventing improper use could be compared, Lord Jowitt suggested to the control of a horse or a dog or a child by shooting it through the heart

He maintained that the Home Secretary's action was outside his powers, and he begged the Government to consider the position If they intended for the first time to ban a drug which many doctors thought to be of the first importance, this ought to have been done by a Bill and not by the indirect method of trying to use the Dangerous Drugs Act. The Minister should be scrupulously careful not to take a step which the courts might declare to be outside the law If there could be no restraint through the courts this would be a good matter to refer to the Committee on Ministerial Powers which was now sitting

A CONTROLLED INQUIRY

Lord Jowitt then left his "little rock and plunged again into the ocean of medical details Having spoken of the weight of opinion against the ban he said that if the Government were going to incur the responsibility of banning heroin they must, in his view show who was going to gain They must for instance, explain how it would avoid the problem in the United States. In the six years 1040–51 the total of illicit heroin seized in Britain was 11 grammes In the rest of Europe in 1951 02 711 grammes were seized, and in North America 28 870 grammes He asked the Government to postpone the ban and constitute an ad hoc committee of eminent doctors to see whether the conflict could be resolved

Lord MANCROFT under-secretary of State for the Home Department said that the Government would have to look carefully at the legal point Earl Jowitt had raised He agreed that there was no serious addiction problem in this country, but there was such a problem in other countries Most addicts got heroin through the black market which was international A few months ago three large seizures of heroin, amounting to over 80 lb of the drug (enough for 2,250,000 doses), were made in American and Canadian ports It was the considered view of all these countries that the difficulty of controlling the illicit traffic was increased by the existence of lawful manufacture and trade such as our own If the manufacture of heroin were made illegal the task of suppressing the illicit traffic would be made much easier Only 4 countries now opposed the ban More than 50 countries had banned the use of heroin and in all of them the doctors had found satisfactory substitutes for use in medical practice Without the assurance that the substitutes were reliable the Government would never have taken the decision to impose a ban We were the largest manufacturer of heroin and were we not to agree with the United Nations' request to ban heroin we should lay ourselves open to the charge that we disregarded the fine example we had set in the past and had obstructed international measures to stamp out the traffic

The restriction, he added, would not mean that supplies would cease as soon as the ban became effective Stocks were sufficient almost for two or three years at the present rate of consumption and the interim period would give doctors an opportunity to gain experience in the use of alternative drugs The Government would keep the restriction under searching review

Lord **Moran** believed that the Minister of Health had been unfairly criticised He had consulted the only body which was set up by statute to advise him, and he could not have done anything else If the Minister's professional advisers who earlier supported the ban now led a crusade against it, surely there must be an end of all confidence between the Minister and his advisers It was upon the smooth working between the two that so much of the efficiency of the National Health Service depended

From the division of medical opinion it was obvious how difficult it was to say whether there was an adequate substitute for heroin There were almost insuperable difficulties in the way of a controlled inquiry Indeed the measurement of pain almost defied an inquiry of this kind What was the scientific value of the letters in the *Times*? They said, what we already knew, that heroin is an effective drug, but they did not compare it with other combinations of drugs and in that sense their observations were uncontrolled Again some of the letters seemed to Lord Moran emotional rather than scientific The doctor who was deprived of a drug was naturally aggrieved he was even more aggrieved when he attributed this deprivation to the Minister of Health who, he thought, should not come between him and his patient To this attitude of mind Lord Moran added the influence of habit If a drug was effective, the doctor was inclined to go on using it to the exclusion of others

But if a controlled inquiry was difficult, and if expressions of opinion were not real comparisons, was there nothing else to help us? Lord Moran suggested that there was a great deal of circumstantial evidence at our disposal In the 54 countries where heroin was banned the doctors seemed to get on quite well without it, and to a certain extent it appeared that substitutes had been found satisfactory A former president of the American Medical Association had cabled him

> "American experience—nobody objects to ban on heroin except the addicts Medical substitutes entirely satisfactory"

Again there were many hospitals in this country where heroin was used sparingly The average consumption of heroin in ten teaching hospitals in 1953 was 432 grains In a debate at the Royal Society of Medicine on the treatment of inoperable cancer, heroin was not mentioned There were important textbooks, in common use by students, in which heroin was not mentioned We should not ignore this body of evidence from those who did not use heroin

Turning to another point, Lord Moran said that nobody would interfere between a patient and his doctor without good reason, but surely this freedom of the doct
never be absolute Surely we must not push a
beyond the point of common sense Surely the
of a doctor carried with it also responsibilities a
recognition of what was due to the communit
centuries we in this country had lived an isolated
life, enjoying the benefits of national sovereignt
hydrogen bomb had put an end to that We we
in the future with grim alternatives Anybod
see that there was no hope in the world unle
could be a measure of understanding among the
—some degree of common action Lord Mora
the House to take a step towards that goal, and
a contribution, however small, to the far-off idea
brotherhood of nations

ENGLISH METHODS

Lord **Webb-Johnson** maintained that the Gove
had not yet had expert advice on the value of
as a therapeutic agent He took the opportu
point out that provision was included in the N
Health Service Act to prevent the Central Coun
the Advisory Committee from being used as s
bodies for giving advice on medical matters
foreseen that the representative bodies of the pro
might be short-circuited and ultimately supersed
the British Medical Association and the Royal C
were to be supplanted, and if advice on medi
general was to be sought from the Ministry's st
medical advisory committee, serious notice must be
by the profession of the improper use of that com
Meantime, he suggested that such advice as had
given and received might be withdrawn until co
tions had been held with those who had the nec
experience to qualify them to advise. In futu
advisory committee would be wise to refuse to
on matters which ought to be referred to represen
bodies of the profession, while in matters which re
expert investigation they should appoint a subcom
to report. We in this country had been wonde
successful in preventing addiction to habit-forming
Let other countries follow our methods Shoul
other countries sometimes follow Britain? But d
let us follow along the path of prohibition—a ba
dangerous way, the tragedy of which he saw with h

Lord **Waverley** had always regarded medical pr
as a highly individual activity, and for a Govern
to deprive an able, responsible, and conscientious m
man of the opportunity of prescribing what he genu
believed was necessary in the best interests of his pa
was, in his view, indefensible in the absence of the
cogent and compelling reasons He wondered
possible good the prohibition of the manufactu
heroin in this country was going to do to any
country The proper course, he suggested, would
prohibit the export of heroin and accompany that
hibition by the most complete control of manufactur

Lord **Haden-Guest**, on the other hand, held th
narrow view must not be taken just because he
addiction was not a problem in this country For
years, fed by widespread international illicit traff
had been a grave social danger in the United States
Canada It was the United States which was askin
now to join her in making this a universal ban
struggle against narcotic drugs was an internati
problem and could not be solved at the national le
Lord **Amulree** regretted that the Minister had not
back to the Standing Medical Advisory Committee a
he had received the deputation from the B M A in
so that the committee could consider the objections

THE GOVERNMENT'S REPLY

Viscount **Woolton**, Chancellor of the Duchy
Lancaster, replying to the debate pointed out that
medical committee which advised the Government
sisted of people of extraordinary diversity In it th
was a great central body of opinion of the Royal Colle
the General Medical Council, the British Medical As
ciation, and from these people they had received a cl
answer He doubted whether clinical experiments
the use of heroin would be useful It was difficult
the use of heroin would be useful It was difficult
prove a negative They would be trying to prove th
they could do without heroin, and surely the

difficulty was that pain was not a measurable thing But if the House thought that it would be a good thing the Government were prepared to take early advice from the Medical Research Council as to whether it would be practicable to arrange a special series of scientific trials But surely there was some clinical evidence on which they could form some judgment There were many doctors in the country who did not use heroin, which suggested that other drugs could be effective

He thought that in medicine during the past few years there had grown up a body of people who thought it necessary in the interest of their profession to seek to protect themselves against incursion by the State into their affairs. But when an individual found himself opposed to the scientific thought of his profession Lord Woolton could not admit that he should be left as a law to himself Prescription was obviously the duty of the doctor; but permission to trade in dangerous goods was the duty of the Government The two factors must be balanced.

On the legal issue raised by Lord Jowitt, Lord Woolton suggested that the House would be well advised to suspend judgment until the publication of the Government's white-paper Meanwhile he could say that the ban on heroin would not be imposed by the Government unless and until it was clearly established that such action could be legally taken In order to give ample time for full and careful consideration on this matter the Government would not impose the ban on Dec 31 Of course it would be for the Government to consider what the next step should be if the legal issue put forward by Lord Jowitt proved to be well founded

After some discussion the MARQUESS of SALISBURY gave Lord Jowitt an assurance that licences for manufacture would be granted for the year 1956

In announcing the postponement of the ban in the House of Commons on Dec 16, Major GWILYM LLOYD GEORGE, the Home Secretary, said that the only doubt that had arisen was on the legality of prohibiting manufacture of the drug There was no doubt about the power to prohibit its import or export and no licences to import or export would be issued after Dec 31

Sir ROBERT BOOTHBY Will the Home Secretary give an assurance that before any final decision is taken he will have further consultation with the B.M.A and the M R C., and that the House will be given an opportunity of debating the matter?—Major LLOYD GEORGE It is not going to be easy to find something better than a representative committee to give advice to Ministers We cannot consult the whole medical profession, and it is not a profession from which you get complete unanimity But the point is surely that it is accepted on all sides that the proper bodies to confer on technical matters with the Minister are those representative of the particular profession or industry with which they have to deal. Otherwise consultation is utterly impossible This committee has given two Ministers of Health advice on this matter and I still cannot see what better representative committee one could get

Dr REGINALD BENNETT: Under his powers can the Home Secretary restrict the amount produced in the coming year to that needed here by the profession taking account of existing stocks?—Major LLOYD-GEORGE Yes

QUESTION TIME

Single handed Practices

In answer to a question Miss PATRICIA HORNSBY SMITH Parliamentary secretary to the Ministry of Health said that single practices fell vacant during 1954 and 134 of these were filled on the same basis.

Deaths from Pulmonary Tuberculosis

In answer to questions Mr IAIN MACLEOD said that the number of deaths from respiratory tuberculosis in England and Wales fell from 19 088 in 1948 to 7069 in 1954

Student Mental Nurses

In answer to a question Mr MACLEOD said that the rate of wastage of student mental nurses was estimated in an investigation covering the years 1948 to 1953 to be about 60%

Drunkenness among Young People

Replying to a question, Major LLOYD GEORGE said that in 1954 there were 124 convictions for drunkenness among 000 males, and 12 offences among 830 000 females under seventeen; and 315 offences among 1 041 000 males aged seventeen and under twenty one and 209 offences among 1,107 000 females aged seventeen and under twenty-one The police he was informed had no reason to think that the figures indicated any tendency for juvenile drunkenness to assume serious proportions

Medicine and the Law

Attempted Suicide not a Serious Crime

A 36 year old labourer was seen by a police constable to steal a spare wheel and tyre from a motor van He was arrested and that night in his cell he broke the window, cut his neck on both sides with the glass, and called the gaoler He was convicted of larceny and attempted suicide and as he had a large number of previous convictions for various offences, including many for drunkenness the magistrate who convicted him sent him to Stoke-on Trent borough quarter sessions for sentence At quarter sessions while a probation officer was giving evidence the recorder intervened and said:

May I be allowed to put the problem as it presents itself to me? Self murder is one of the most serious crimes in our calendar An attempt thereat therefore, is a very serious crime indeed ' He went on to say that he was minded to treat the attempt as a frivolous one but that the evidence had proved that it was a serious sane attempt on the part of this labourer to take his life, how could he take that lightly? The recorder imposed sentences of two years' imprisonment for the larceny and two years imprisonment for the attempted suicide, to run consecutively The labourer appealed against the latter sentence

The LORD CHIEF JUSTICE giving the judgment of the court said that never in his life had he heard of a sentence of two years' imprisonment for attempted suicide The labourer was obviously of a somewhat unstable disposition there seemed to have been some doubt whether his attempt was serious or not, though the doctor thought that it might have been a genuine attempt at suicide and not a piece of exhibitionism It would not be right to say that attempted suicide was a trivial thing, but these attempts were made by unbalanced people. It was the first time that his Lordship had heard that suicide was one of the most serious offences known and that attempted suicide was a very serious crime indeed Suicide had been regarded by the spiritual courts as a crime and had been made a crime at common law to enable the Crown in the old days to obtain forfeiture of the suicide's goods since anyone who committed suicide was supposed to have committed murder Therefore it was a source of revenue to the Crown but it was not a very serious crime and to say that it was showed a lack of proportion A short sentence was often imposed by the courts to protect a man against himself Nowadays prosecutions for attempted suicide were rare and it was absurd to say that a sentence of two years imprisonment ought to be passed The court could not possibly allow such a sentence to stand and would substitute a nominal one of one month's imprisonment to run concurrently with the other sentence against which no appeal had been made, of two years' imprisonment for larceny

Regina v French—*Court of Criminal Appeal*: Lord Goddard C.J Hallett and Pearson JJ: Dec 12 1955

E M WELLWOOD
Barrister-at Law

Hospital authority Documents

There has been an unexpected sequel to a case in which the St. Albans coroner wrote to the Mid Herts Group Hospital Management Committee recommending an inquiry into the medical treatment of a woman who was admitted to hospital with aspirin poisoning and who subsequently died [1]

The management committee adopted a report of the medical advisory committee [1] and the gist of the report was conveyed to the coroner in a letter from the secretary of the management committee. This summary was perhaps rather terse At all events, the coroner did not see the full observations until he saw them reprinted, together with his own letter, in a local newspaper[2]

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[1] See *Lancet* Nov 26 1955 p 1132

The coroner thereupon wrote to the management committee complaining that they had not sought his permission to give his letter to the press "Quite apart from breach of copyright," wrote the coroner, "I should have thought that if you wished my letter published, you would at least have had the common courtesy to ask me first, or at the very least, inform me of your proposals" The secretary replied that the press had been present "as usual" at the meeting of the management committee This provoked a lengthy reply from the coroner in which he said

> "What I complain of is that when I write you a letter drawing attention to certain matters which seem to me to require further examination from a medical aspect, you take it upon *yourself without any prior reference to me to have* a copy made and pass it to the Press with the agenda of your committee What right have you to publish correspondence without first obtaining the author's consent? To do so is an infringement of copyright "

The coroner's claim that his letter was protected by copyright raises important issues It is true that prima facie the author of any letter has the benefit of copyright since it is an "original literary work", the fact that the letter may be quite worthless as literature is irrelevant But it is by no means certain that copyright can be claimed for a letter written to a public body such as a hospital management committee Regional boards and management committees exercise their functions on behalf of the Minister of Health, and it may therefore be that in matters of copyright they have the privileges of a Government department Even if a management committee does not have these privileges, there is a further consideration to be taken into account it is customary (though not obligatory) for management committees to invite the press to their meetings, and it may follow from this that anyone who writes a letter to a management committee gives an implied licence to the committee to allow the press to have it with the agenda

In any event, it would surely be unfortunate if the advancement of purely technical claims to copyright were to discourage regional boards and management committees from inviting the press to their meetings

Doctor Acquitted on Abortion Charges

At the Old Bailey recently a 37-year old doctor was acquitted on six charges of illegally using an instrument with intent to procure a miscarriage[3]

In a statement to the police, the doctor is alleged to have said "I have not made a business of this My motives have been altruistic rather than selfish, but to some extent it has derived from the difficulty I have in supporting my family I am confident that these women would not inform on me I presume your *informant is* "

One of the women concerned, Mrs H said that she saw the doctor at his surgery in 1953 when she was *three months* pregnant The doctor asked her if she had brought any money She gave him £15 and a further £10 when he had performed the operation. She had a miscarriage the following day She could not remember telling the doctor that the only way out for her was to commit suicide, but she had contemplated suicide

Miss W, a medical student, said that after she became pregnant she made an appointment to see the doctor at his surgery An operation was performed for which she paid £25 She said that she could not remember whether she had told the doctor that her mind had got into a state in which she could not work or study At the time she was upset and depressed

Another woman, Mrs W, said that the doctor performed an operation on her when she was four months pregnant, for which she paid £25 She was not very well at the time One of her troubles was that her boy, aged 4, was very difficult to manage, and she also had a baby six months old

In his own evidence, the doctor said "I *formed* in each of the cases before the court that it was nece the health, both *physical and mental*, of the patient operation should be performed"

The doctor was asked by defending counsel whethe ever done any of these operations where he felt it w a case of the girl or woman wishing to get rid of the b for no medical reason The doctor replied "*There w* a medical reason which satisfied me that there wa *reason from the medical* point of view

After considering their verdict for two hours, found the doctor "Not guilty"

Wrong Finger Amputated

Giving judgment for the plaintiff in an act negligence against the Birmingham Regional I Board, Mr Justice Stable suggested that there be fewer actions for negligence against hosp patients were informed of what had happene *have had reason," said his Lordship, "to depl* number of actions which I feel are wholly ill f claims against surgeons and doctors for negl But neither the patient nor his relations reall what goes on inside the hospital There cannot p be a bad mistake made which everyone in the h does not know about, and if the patient were in it is likely that it would put a stop to the ill f claims Otherwise the patient and his relations hear the facts until they are brought out in court

Mrs Lily Patten, a factory operative, was injure a power press suddenly descended and caught her righ An orthopædic surgeon at a hospital advised that part middle finger should be amputated The operatio carried out by a house surgeon, who by mistake re the top of the little finger It appears also that an op for the suture of a severed tendon *in the injured* fing performed too late and all three middle fingers wer in towards the palm Nineteen months after the ac the whole of the middle finger was amputated

Mrs Patten sued her employers for negligence and of statutory duty in respect of the fencing of the press also sued the Birmingham Regional Hospital Boar orthopædic surgeon, and *the house* surgeon The surgeon admitted liability and paid into court the s £500, but the board and the consultant *denied* lia During the course of the hearing, however, the proce against the consultant were discontinued

In evidence, Mrs Patten said that the house-surgeo told her that the first operation was a "*terrible* mis She had another *operation after* which she was told th attempt had been made to save her middle finger Since she had been unable to unclench *the injured* hand and had to pay a series of visits to the hospital physiothe department She could not use her hand, *and* since accident she had had dizzy turns, blackouts, and spel trembling

An independent surgeon said that an exploratory oper should have been carried out to ascertain whether *a te* was divided when Mrs *Patten* first arrived at the hosp The doctor on the spot was in the best position to de what should be done, but the casualty *officer*, being a y man, should have sought a senior's advice

Giving judgment, Mr Justice Stable *said that* the hosp board "are liable with the surgeon who made the g blunder, for substantially the whole of the *present* cond of Mrs *Patten's hand*" He was surprised and not a l shocked, that the board did not express great *regret* accept full responsibility *for the* consequential damage Lordship awarded £2500 damages against the board fr which the £500 paid in by the house surgeon would deducted Mrs Patten also succeeded in her action against employers, who were ordered to pay £459 *1s* in damage

This case perhaps lends point to the corresponde in which contributors have suggested a standard syste for the identification of fingers[2]

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[2] *Herts Advertiser* Nov 18, 1955

[3] *Kentish Independent*, Dec. 2, 1955

[1] *Manchester Guardian*, Nov 26, 29, 30, 1955, *Birmingha Post*, Nov 26, 30, 1955

[2] Forbes R. *Lancet*, Oct 1, 1955 p 721 *French A Ibid*. Oct. 1955, p 774 Loxton G E *Ibid* Savle-Creer, W *Ib* Oct 15, 1955, p 824

In England Now

Running Commentary by Peripatetic Correspondents

OUR youngest burst into the bedroom last Sunday orning "Quick, Daddy! Come and look. Father Christmas is here!" I groaned out of the second stage nd murmured disbelief It was no use the casement as flung wide open and only a piercing arctic blast eemed to be holding a pair of small pyjama legs from omplete extrusion I was on the point of an explosive ssertion that Father Christmas could do as he so-and-so lked about premature arrival at the big stores in October, ut we preferred him to go to full term in this household According to my reckoning he had a few days still to go. A crashing noise in the garden wrecked that line of argument, so I heaved out of a nice warm bed and peered into the dawn I rubbed my eyes standing on the lawn was a large antlered beast idly pulling down the rhododendrons. My mumbled soliloquy as to what in heaven or earth it might be was answered scornfully from the window Reindeer, silly!

At half past seven on a dark winter morning cerebration is not too brisk There was considerable difficulty in correlating the Christmas myth with the reported location of the nearest herd of reindeer in Britain They were several hundred miles away at Rothiemurchus when we last had news. The creature ambled across the shaft of light from the window It was a red stag Now red deer have a deplorable reputation as gardeners so I pulled on some trousers and a pair of gumboots and rushed ululating into the dawn Apart from tripping over the shrubbery, the manœuvre was a great success The stag leaped over the wall and cantered away towards the farm. The victor of the campaign red faced and crowned with laurel, returned in triumph But Senate and populace were ever fickle; imperium was left in the porch, weeping and wailing and gnashing of teeth within I had driven Father Christmas away It took the jingle of many pennies to recapture the magic of sleigh bells and I doubt if I shall be completely forgiven until the stockings provide more convincing proof

* * *

An experienced family doctor once claimed that he knew the seasons of the year by the prevalence of certain diseases. Instead of the season of mists and mellow fruitfulness he recognised a time of colds and frothy hestiness, and when others were declaiming

"That the lowest boughs and the brushwood sheaf
Round the elm tree bole are in tiny leaf

he realised that once again the season of hay fever would be upon him So it is with the anxieties of the mothers who attend the child welfare clinics At present we are at the height of the mythology season. Should I tell my child that Father Christmas isn't real, or may I mislead him with just a little white one'?

Alas, in these days, to maintain the myth a good deal imagination and foresight rather than just a little hite one' are needed No longer is it enough to dispatch a letter up the chimney in early December and then ke no further action until an early hour on Christmas orning when the stockings are filled There is the oblem in the modern house of finding space in which to llect and hide the presents, the problem of the cynical, perior elder brother and of course that well known ndrome of insomnia santaclausia. At school the child ets a variety of related myths all of which must be conciled In the world at large from early November ther Christmas seems to be ubiquitous. To explain omnipresence, desperate parents have to invent spaceps far excelling the magic carpet of old, and if these l to convince then relations and deputies of the real an are introduced Meanwhile the shops seem to go all t to fool Dad as they invent Uncle Holly Mr Mistletoe d others. Recently a sincere and earnest parent, fore entering a store explained that Mr Mistletoe who s in attendance inside looked after Father Christmas's ndeer but when the child tried to check this information he got nowhere. Now I am told that the child lieves still in Father Christmas but not in Father

* * *

The family seems to be accident-prone and there is always at least one member with at least one bandage Third Child falls downstairs pretty often, but so far has only got a large bump on her forehead which responds well to chocolate and masterly inactivity The other day she fell all the way downstairs at the same moment that Second Child fell off our 6-foot wall into the next garden Neither was seriously damaged but Second Child then had two bandages, one on a septic leg from a previous abrasion, and one on an elbow after this unhappy landing off the wall. Next day he cut his toe at the paddling pool, so that was three dressings to do more or less continuously as one was always sandy or loose Now we have a first-aid tin in a prominent place in the kitchen—labelled "Biscuits" I admit, but with a crooked red paper cross stuck on the lid by First Child—containing most of the things one needs for this sort of caper I'm thinking of including a tourniquet, as only last week Third Child, who is one and a half and full of folly, climbed on to the cold frame and attempted to walk up the midrib Much bright red blood and broken glass, but only three cuts and no stitches needed Great pieces of glass were protruding through her jersey under the arms, and neither frame nor jersey will ever recover

As there are six grazeable knees at risk now, I never seem to put on a clean frock without getting blood on it so I either go out bloodstained or with huge wet patches where removal with cold water has been ineffectually tried But in 25 years we shall have more medical help in the family at times of crisis, for Third Child is obviously going to be a pathologist. She spent a long time eviscerating a stuffed black and white bear with great concentration, finally shelling out a mobile, walnut-sized tumour—his erstwhile squeak. This she bore away in triumph, leaving the body abandoned and spreadeagled on the mat, displaying that intense interest in the specimen and disregard for the patient's comfort that I associate with my husband's branch of medicine

* * *

Dr Quatermass III writes: 'I fear many of your more gullible readers may have been misled by my well intentioned but somewhat naive terrestial colleague[1] He is doubtless familiar with the theories of Galileo and possibly those of Isaac Newton, but before offering advice to space-age students, I feel he should study Einstein's theory of relativity

The 84th precept of this exercise may be translated as when mass approaches speed of light mass approaches infinity; when mass approaches infinity time becomes zero

'Einstein has not followed this to its logical conclusion so it is left to me to point out that time having become zero distance acquires a similar value Thus a consultant leaving Earth for Sirius II to deal with a case, say, of antennitis sinister tertius superior (acute) would arrive at his destination while still attending his previous patient without any distance being recorded on his milometer Any mileage claim for the vast distances you imply in your article will be countered by the regional board on the ground that the shortest distance between two points is through hyper-space which takes less than no time and relatively little petrol '

* * *

Milk? ' said the astonished wine steward on the *Silver Javelin* Do you mean to drink?' "Yes," said I looking at the minute apology for a ham sandwich which they had served, 'to help this down.' When he had recovered from his shock he explained that he couldn't possibly spare any of the stuff because he was only allowed 14 pints for the whole day 'Don't you ever get asked for milk?' I asked 'Oh no,' he said looking at me disapprovingly 'except very occasionally for very young children It is time you grew up my friend he seemed to say I had to content myself with a glass of milk stout which I enjoyed as I always do but on this occasion I did want milk.

As I drank my stout I pondered on the reason for this reluctance to serve milk as a drink on trains and often too in restaurants It seldom if ever, figures on the menus When I ask for it I am met with a look of amazement and often, indeed of mild horror I feel as if I had been guilty of some misdemeanour Is it effeminate to ask for milk? Is there some sinister Freudian implication in a fondness for this drink which so aptly accom panies the noontide sandwich American navvies and stevedores ask for it without a blush and receive it, already chilled in cartons, in the toughest of "joints" If one is lucky enough to find milk in an English restaurant it is usually served in a glass at room-temperature with a decided sense of personal obligement "In case they are short for the teas, I didn't ask—I just took it out of the jug," is the sort of story one receives along with the milk.

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[1] *Lancet* Nov 26 1955 p 1136

A cheery-looking girl in a roll-top sweater tells us in the Underground and on the hoardings to drink more milk I hope she will read this and be able to help me I should so like to drink more milk, on trains and in lots of other places too Could she discuss my request with British Railways and the Pullman Company? If she is successful, as I know she will be, will she see that milk is specifically mentioned on the menus like this "Milk, chilled (1/2 pint), served in carton"? Then travellers will know that it can be asked for with impunity and it no longer will lurk in the non-listed class of contraband drinks

* * *

A PÆDIATRIC BABY

I am a pædiatric baby My life started rather early, 7 months or thereabouts, when I found myself breathing oxygen in my prem. unit to keep down my mortality-rate It was there I first met the pædiatric man He was so nice, and after a little while he introduced me to my mother and told me I was no longer a neonate and deserved a health visitor to help my G.P (whatever that was) He said the M O H had a nice one, so I thanked him kindly

One day she came to see me and I was sick—eating the paint off my cot I expect—so she took me to the clinic where I saw a man who wasn't the pædiatric man but who said I should see the pædiatric man, so I went to see another man I hadn't seen before He said I wasn't very sick but he supposed the health visitor and the other man were right and I'd better see the pædiatric man, so if I went home he'd fetch him to see how sick I was Well, I must have been, for in no time at all I was in a glass box called a cubicle in a pædiatric ward in a pædiatric unit with a pædiatric nurse and a pædiatric registrar I felt very important Then joy of joys, in came the pædiatric man leading the pædiatric surgeon, and my head really began to swell

It was all over in a trice and I was home again and sad, pining for my pædiatric man My mother didn't understand and took me to the man who knew the pædiatric man, but he didn't understand either The health visitor was worried and took me to the clinic man, and I hated him because he wasn't the pædiatric man He murmured "maladjusted" and might have sent me to a special clinic man but my mother was frightened and took me home, and I pined some more The man who didn't seem to be anybody in particular came to see me and promised to call the pædiatric man again, so I stopped pining and got better, but I was learning about things now, so I pretended not to be better and the pædiatric man was very nice and took me back into my glass box and told me stories about a place far, far away called London where there were lots of other pædiatric men but not very many pædiatric babies I was happy again and felt very important and my head swelled some more Lots of people came to see me and said how interesting I was, and they were shown how I worked and I realised I was more important than I'd thought, especially after I'd been screened by the pædiatric radiologist

Then one day the most wonderful thing of all happened The pædiatric man came in and whispered that he'd netted me a real American pædiatric man, and he had too, especially for me I was terribly proud and my head swelled like anything, till they looked at me in a funny way and talked about special research which sounded the most important thing of all Now would you believe it, next day five people called consultants came to see me about my swollen head and made the most exciting plans If only I had been able to keep calm, if only I hadn't been so worked up about it all, perhaps everything would have been well, but my tummy began doing strange things, terrible things, the five wise men withdrew, and I was bundled up and carried away to a place called an isolation hospital where there were lots of other people, and there I forgot the pædiatric man till I was better

I don't pine any more now I'm a happy pædiatric baby and I just don't know what I'll do when I have to grow up But I'm still only 3

Letters to the Editor

THE FORGOTTEN PATIENT

Sir,—Having carefully studied Dr Bickford's of Oct 29 and Nov 5 and the subsequent corresp it seems very desirable that you and your reader be *directly informed* of the relatives' reactio believe that our views are representative of a fa section of opinion of close relatives of *mentally ill* since the 560 members of our association consist entirely of such people

We have to say at *once that in our judgm* Bickford has, by exposing (in his latest articles earlier one [1]) the extremely serious shortcoming undoubtedly exist in many of our mental h rendered *invaluable service not only to the pat* question and their relatives but to the commun whole

It is incomprehensible to us that some of his sional colleagues should have challenged the funda *accuracy of his description of mental hospital co* generally, for it must be within their knowledg whilst there are some "progressive" hospitals, th far outnumbered by the "non progressive" kind recent independent findings of the *Daily Express* i gator Mr Merrick Winn cannot be dismissed s as Dr Duncan (Nov 12) would have us think

We ourselves have for some time been gravel cerned by practically all the matters *to whi* Bickford has *referred and* have by various including the submission of evidence to the Commission and of memoranda to certain Memb Parliament and others, sought to bring *these* things out into the *light of day*

In our opinion, it is essential *that not only* relatives l public generally should be made aware of "what go in our mental hospitals—how else can we gain the support which time and again we are *told is a prerequ* the remedial measures so urgently required? As t need for public support, may we recall the final remarks Parliamentary Secretary to the Ministry of Health replying on behalf of the Government in the debate of F 1954 'I am sure it [the motion] will make a great con tion to the support we must have from public opinion *country in solving* the problems of mental health", also the view of Dr Edith Summerskill, stated in *the* on May 4 last, "that whilst there are in mental hos *these appalling* conditions of overcrowding there pressure group on behalf of mental patients." We obser following comment in an article in the *New Statesman Nation* of Nov 26 "*only* as a result of a public outcr the considerable sums needed for capital developme prised out of the Treasury" Furthermore, in your le article of Oct 15 you *submit* that more publicity *is* req for the work and needs of mental hospitals than of any kind of hospital, and you conclude by *claiming* "Illu tion of the whole scene *is necessary* first because the p is entitled to know what is, and is not, being *done in its* and secondly because conditions cannot be *greatly* impr until many more people *accept* a share of the responsi and decide to help"

If then we accept that the Government *cannot* or will move without more support *or pressure* from the public, not reasonable to suppose that regional boards *and man* ment committees, with their everlasting *plea* of fina restrictions, should be only *too ready* to publicise problems in every possible way? Instead we *find that* Sargood (Nov 26) and his fellow *administrators* have ele to draw a veil over the *grim state* of affairs which Dr Bick so forcefully and accurately *described* ? The *reasons for* attitude are said to be that to do otherwise would (1) de nursing recruitment, and (2) *discourage* the voluntary patie However, we now note the following editorial *opinion in* autumn number of *Mental Health* "We believe *that* b dangers exist, but that nevertheless it is even more *importa* that a true picture should be presented to the *public*, for is way alone will they become more educated and strong nded and more ready to accept their own responsibility the care of the sick—mental as well as physical" Some dditional, though qualified support of this view is contained the *New Statesman and Nation* article of Nov 26

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[1] Bickford, J A R *Lancet* 1954, i, 924

Mr Sargood also says he knows that Dr Bickford's statement "psychiatrists have failed to cure and discharge their atients" *could* cause concern and distress to the relatives s he really so naive as to believe that relatives of the so-called "chronic" patients are so lacking in perception as not to be ware that at least in some hospitals such patients remain "medically uninteresting" and their relatives are accordingly dready consumed with anxiety? The present policy of the ospital authorities of failing to make the facts widely known—f indeed not deliberately hiding them—represents, in our ubmission a completely misguided outlook for we are convinced that until this policy is reversed there is little prospect of enlisting public sympathy for the reforms which are so vitally necessary

Dr Bickford's articles are of course directed towards the stimulation of hope for the "chronic"—a motive which we should have thought to be deserving of the highest praise and utmost support of each and every one We consider it lamentable that several of Dr Bickford's colleagues do not apparently share this view

If on no other count Dr Bickford's critics must concede that he is right in saying: "far too little thought is being given, surely, to the vast residual problem of the patients whose active treatment has been abandoned and who are medically forgotten. It is abundantly clear to us that this is a statement of sober fact Bitter experience also dictates that we emphasise the truth of Dr Bickford's reminder that once a person becomes a chronic patient nobody will be interested in him. The plight of the "chronic" is indeed grievous in the extreme

Where then can the relative turn for even a glimmer of hope? Only to the advancement of research we believe; but here again Dr Bickford has confirmed our own conclusion that the position in this respect is one of shocking neglect Further substantiation of this is also provided by the *New Statesman* article which alleges that "The neglect of psychiatric research by the Medical Research Council is scandalous and it has been left to a private charity ... to sponsor projects for which public finance should certainly be provided"

Most assuredly the present conditions cannot be tolerated much longer and we wholeheartedly endorse the four reasons which Dr Bickford has stated in his convincing reply as having prompted him to write his articles.

Friends of Menston Hospital
Leeds.

W CARTER
President
O M CRIPPS
Secretary

IN THE MENTAL HOSPITAL

SIR,—Some of those who have written under this heading show a very poor acquaintance with the history of mental hospitals Dr Houston for instance writes (Nov 26)

> Many of our mental hospitals are a hundred years old and belong to the custodial period of psychiatry If a schizophrenic entered a mental hospital it was intended that he should remain there for the rest of his life locked up in a ward of 60–80 patients in dull monotony relieved by an occasional walk round the prison like concrete courtyard.

The use of the passive voice absolves Dr Houston from the obligation to tell us in whose minds such an "intention" may be supposed to have existed The "intention" is certainly not shown in any of the writings of the period not only did the psychiatrists of the 1840s and 1850s intend to cure their patients, but they were confident that they could do it Thus Arlidge in his well known work on *The State of Lunacy* (1859):

> Were we at all singular in the assertion of the curability of insanity we should endeavour to establish it by an appeal to the statistics of recoveries among recent cases in the different English asylums; but instead of advancing a novel opinion we are only bearing witness to a well recognized fact substantiated by general experience

Asylum recovery rates collected by Thurnam (*Statistics of Insanity*, 1845) ranged from 33 to 60% of direct admissions Going further back, the Hanwell Committee in 1830 proclaimed that their asylum was "strictly and literally a Hospital ... as much a hospital as St George's or St Bartholomew's" and in 1837 Sir William Ellis of the same asylum was planning the aftercare of discharged patients

Subsequent frustrations from many causes—official parsimony inordinate growth of the asylums, retention of early cases in workhouses, defective numbers and quality of staff disappointing results of promising lines of treatment, and others—form a complicated story from which many lessons can be learnt but there is no evidence that the function of the mental hospital as a place of treatment was ever forgotten

Cane Hill Hospital
Coulsdon Surrey

ALEXANDER WALK

CHILDREN IN HOSPITAL

SIR—The following experience may be of interest to your readers in connection with last week's article by Professor Illingworth and Dr Holt

Our three daughters have all had the tonsil and adenoid operation. A was 7 years old B 5½ years old, and C 6 years old

A was a confident self-assured girl who accepted the necessity of the operation, and made the most of her stay in hospital. She did not enjoy it but knew it had to be We had no bad after-effects with her We wrote every day so that she knew we were keeping contact with her but I was not allowed to visit

The second daughter B who went in at 5½ was a sensitive child. We built up the idea of the hospital beforehand so she was looking forward to hearing that a bed was available We told her it had come about half an hour before she was due in the hospital She was very glad to go packed her case and took crayons and colouring books She settled down happily did not mind my leaving her and was chatting to an older girl in the room with her

Unfortunately the older girl had a temperature and had to be sent home so our daughter was in a room quite by herself Had I known this I should have asked to be allowed to see her but no visiting was the rule We wrote every day and sent little parcels. When I fetched her she hugged me and said she was glad to have had some peace and quiet by herself The sister said she had been a model patient I think she was too frightened to be anything else and bottled it all up inside

For weeks, even months, afterwards she woke every night several times screaming I slept in the same room with her so that I might just speak quietly when she woke She did not seem to hear me and would look right past me and cry and cry Very very gradually it got better but even at 9 years old she occasionally wakes crying with that strange far away look we had for so long after her stay in hospital I was not allowed to visit her

The third daughter C was of rather the same sensitive temperament not wanting to leave me, especially for a night though we had given her that experience by staying with my mother for a few nights We prepared her in the same way as B She went off happily and settled down with the other children. I was allowed to see her for a quarter of an hour the day after the operation I shall never forget it She saw me in the corridor and held out her arms. I went to her and bent down. Her arm came round my neck and she pulled me down on to the pillow "I've wanted you so much I think they should have beds here for the mummies—it's dreadful without you" We stayed like that for a few minutes, quite content Then she showed me her letters and cards told me she had tried not to cry but anyway had not cried so much as the big girl Then it was time to go She blinked very hard but I was able to say: "I'm coming to see you tomorrow" I gave her a little parcel to open as soon as I had gone.

The next day I spent an hour and a half with her We did all kinds of things—colouring reading, and so on My husband saw her that evening for a quarter of an hour and the following day I brought her home She could not get out quickly enough She had been very good—so very sensible for a small person

The first night at home she woke a lot and did not want me to leave her once We put her bed in our room so that I could be near and reassure her when she woke She cried a lot the first week, but it grew less After a fortnight she was ready to go back to her own room, and now sleeps quietly and soundly But much less serious have been the effects on her, because I went to see her

In addition to the matter of parents visiting, I would like to mention that in all these cases the anæsthetic was not given until the child had been taken into the operating-theatre Just think of the young child's feelings on seeing the strange white gowned figures—no familiar faces—and feeling very frightened and alone Is it not possible to give the anæsthetic before leaving the ward, so that the child goes to sleep in bed and wakes up with it all over ?

A MOTHER

MANAGEMENT OF RESPIRATORY PARALYSIS

SIR,—Two accessories designed primarily to aid the management of respiratory paralysis have recently been made by Capt G T Smith-Clarke, of Coventry

Foot-operated Suction Apparatus

The obvious advantages of a foot operated sucker are extreme portability, independence of a source of power (electricity, compressed gas, or water pressure), and cheapness It should, therefore, be ideal for occasional or intermittent use in a hospital ward, a house, or an ambulance The new sucker (fig 1) was powerful and reliable when solely employed during a period of weeks for aspirating the air passages of a patient with respiratory paralysis and a tracheotomy

It consists, principally, of a spring return foot pump of about 100 mm. diameter and about 750 c cm capacity, and a unidirectional valve mounted on the lid of a suction bottle The bottle sits in a deep recess which gives protection, and the whole apparatus is robust though light (12 lb 2 oz, weighed without pressure tubing) On testing it by pumping up a column of water the sucker easily produces a partial vacuum of a half atmosphere (about 15 in. Hg) and can in fact suck almost an atmosphere if the suction catheter is blocked The surprising power of this pump is due to its comparatively large bore which is a special feature

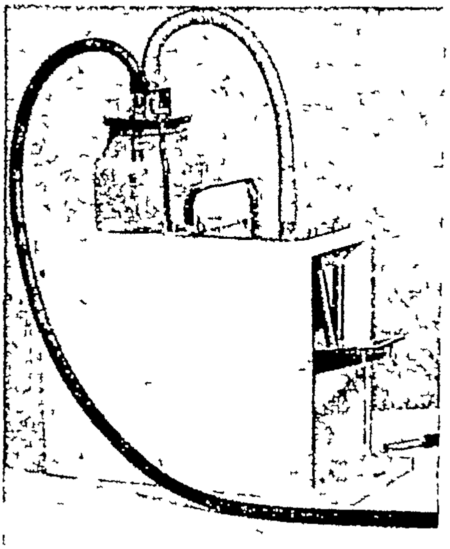

Fig 1—Foot-operated suction apparatus

As suction is only exerted on the down stroke of the foot the effect is discontinuous This lessens the possibility of the suction catheter producing an undesirable degree of partial vacuum in the bronchi At the same time nothing is lost in efficiency since with each stroke the build up of suction is virtually instantaneous The degree of suction can be varied at will If considerable resistance to suction suddenly develops, as it may if the eye of the catheter becomes jammed against the mucous membrane, it is immediately reflected in the resistance of the pedal, release of which abolishes suction and prevents drag on the tissues

Valve Assembly for Use with a Spirometer

In the management of respiratory paralysis, frequent estimates of tidal air, minute volume, and vital capacity must supplement clinical assessment of respiratory insufficiency, to measure the ventilation achieved with a respirator or to f progress in the recovery period[1 2]

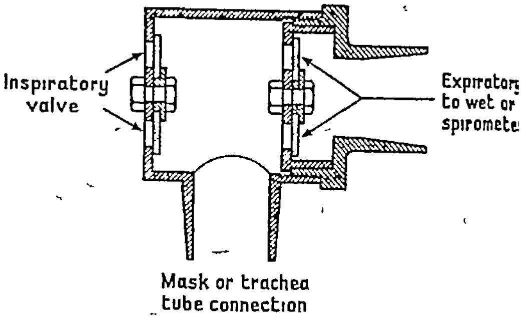

Fig 2—Breathing meter valve for measurement of vital ca maximum breathing capacity, or tidal air

Such measurements can be made by leading the ex air to a dry or a water breathing meter and observing a of breaths In doing this it is inconvenient and inaccura have to displace, during inspiration, the face mask or connection to a cuffed endotracheal or tracheostomy Though the difficulty is not present when an inspira expiratory valve with a single expiratory vent is in opera it is there at other times The present device meets problem by means of a pair of low resistance inspira and expiratory valves arranged to allow inspiration only air and expiration only into the spirometer (fig 2)

We are indebted to Capt G T Smith Clarke, chair Group 20 Hospital Management Committee, Birming Regional Hospital Board, for much technical and other ad

J F GALPIN
COLM BRADY

Whitley Hospital, Coventry

CANCER OF THE FEMALE BREAST

SIR,—In his article (Nov 26) Dr McKenzie comp the 5 year survival rates of patients of very differ age groups But should not the difference betw survival rate of these age groups in the population a whole be taken into account ? It seems to me that, instance the quotients of "normal" and patien survival rate would be a better basis for compariso and assessment on this basis leads to conclusions ot than those reached by Dr McKenzie

F P HOLTZER

The Hague, Holland

STAFFING LABORATORIES

SIR,—The consternation expressed by Mr Sn and his colleagues (Dec 10) is shared by others. T proposed new grading and salary scales will incre the difficulty of staffing laboratories in the small specialised hospitals To attain the higher category the senior-technologist grade, the technologist of a hospital will presumably have to transfer to a labo tory with a larger staff Replacement will be virtu impossible Even within the laboratory, the propo scale may mean that a technologist of average abilit but with sufficient juniors working under him, will paid more than a technologist of first-class abil in whose "division" the number of juniors is le Such a system smacks of the Civil Service at its worst

Remuneration in the higher grades of technolog should depend on individual merit Recommendati for the higher categories should be the prerogative of th pathologist in charge An arbitrary formula, as in th new proposals, will lessen the responsibility of the path logist and lead to discontent amongst his technica staff

CLAUD W TAYLOR

Women's and Maternity Hospitals,
United Birmingham Hospitals

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1 Dail, C W Acute Phase of Poliomyelitis Baltimore 19 p 164

2 Smith A C, Spalding, J M K, Russell W R. *Lancet* 19 1, 939

WHO ARE THE INFECTORS ?

Sir,—During 1953 there were 7913 deaths from spiratory tuberculosis in England and Wales, and 1751 these occurred in persons who were not notified as ses of tuberculosis during life In other words, parently 1 in 5 of the persons who died from tubercu sis were not discovered in time to offer them proper eatment With a falling mortality due to therapeutic dvances, the *proportion* of cases dying unnotified has en rising since 1945 and it is surely among these nfortunate people that many of "the infectors" are to e found

Let it be recognised that although more tuberculous rsons are surviving than ever before this disease is still the utstanding killer of all the communicable diseases in this ountry and that more persons die of tuberculosis each year an contract poliomyelitis. Our accepted standards of case nding need critical re-examination

Case-finding is the horse that pulls the cart of the whole berculosis programme and Dr Arblaster (Dec 10) raises n interesting question whether the general practitioner fers enough patients for radiography Usually this depends n the facilities at his disposal because he often has to ersuade his patient to be examined radiographically It is a asonable target for any chest clinic to seek to have at least % of the population it serves referred for radiography every ar In those clinics which have a camera unit or a general actitioner X ray service on the lines pioneered by Toussaint d Pritchard, this proportion of referrals is easily attained

I share Dr Barrow's scepticism (Dec 10) about the known fectious tuberculous patient not being a risk to the com unity This view has too long been accepted without allenge Once the home and family contacts of such a case ve been examined how can one be confident that the tient is not in fact a source of casual infection to acquaintces who may be unaware of his condition ? The usual heme of examining household contacts of tuberculous rsons needs to be widely extended to include wherever ssible close relatives living elsewhere, and other people in sceptible age-groups who are contacts at work or leisure suits.

One wonders, too how many people are drawing National sistance or a Service pension for tuberculosis without their ndition being known to the medical officer of health Is it t carrying professional secrecy to excess that these great ganisations do not bring such cases formally to the notice the M.O.H. ? It seems odd that when every diagnosis of berculosis by mass radiography costs over £100 such xpensive sources of case-finding remain untapped

A further group of the community that merits scrutiny is e aged. It is probable that, as tuberculosis mortality falls e infector pool will be driven into the older age-groups—pecially older males Those people seem to be inaccessible survey by mass radiography but how many patients in iatric wards have had a chest radiograph since admission, d how many are tuberculin negative—perhaps in close ntact with a sputum positive case of supposed chronic nchitis ? Outside hospital the difficult task of per ading grandad with his old smoker's cough to have his chest amined falls on the general practitioner ; but it is no easy k to lead an elderly horse to water let alone make him nk.

In your leading article (Nov 26) you seem to accept an dable narrowing of the field that remains to be explored mass miniature radiography Now is this right ? Surely situation is that M.M.R. is threatening to settle into a middle d routine when it is only a teen ager in our medical mentarium. For instance, is it really not possible for y unit to examine 80 000 persons annually instead of 00 ? Are units sufficiently mobile to tackle immediately l surveys and the epidemiological problems arising from ly discovered cases ? What can be done to enlarge the e of M.M.R. examinees—at present too predominantly men women who go out to work rather than old age pensioners housewives who stay at home ?

Dr Parker (Oct 20) has suggested that there is ing magical about the epidemiology of tuberculosis, that the practice of local authorities in respect of r notifiable disease can efficiently be applied to erculosis I agree but I suggest that if there were 7000 deaths per annum in this country from some of the communicable diseases that Dr Parker mentions—for instance smallpox—questions would be asked in Parliament and many medical officers of health would have some sleepless nights Our complacency in respect of tuberculosis is utterly amazing

Bournemouth Chest Clinic W H TATTERSALL.

Sir,—Your leading article does not mention the great strides that have already been made in finding some of the few highly infectious people who appear to be mainly responsible for the spread of tuberculosis.

Routine radiographic examination of special groups is invaluable, but the great help to general practitioners of "X ray only" sessions must not be forgotten Such sessions are a fruitful source of new cases of tuberculosis

In this area it is believed that as a result of these daily sessions there has been a great drop in the infector pool Thus during the last eighteen months 750 children under the age of 15 have been tuberculin tested with the Heaf multiple puncture instrument when attending the children's "X ray only" sessions The following are the numbers tested (which do not include any known contacts) and the percentage found to be tuberculin positive :

Age (yr)	*No tuberculin tested*	*% positive*
0–4	106	3.8
5–9	348	6.0
10–14	336	8.3
Total	790	6.7

In a previous communication[1] we gave some figures resulting from the examination of school-children in this area In 1951 of 1903 children aged 11 to 14 tested with 0.1 mg of tuberculin intracutaneously 13.9% were found to be positive This decrease in the proportion of tuberculin sensitive children suggests that in the future we should have a drop in the incidence of new cases but also that local outbreaks of disease will be more likely and we shall then be able to trace the source of infection in the same way as outbreaks of other infectious diseases are traced to their source

Chest Clinic
109 Station Road
Harrow

R GRENVILLE MATHERS

CORONARY ARTERY DISEASE

Sir,—In your leading article of Nov 26 you rightly point out that the evidence for the thesis that coronary artery disease arises from an excess of animal fat in the diet is far from complete but I think you are in error in asserting that "we know of nothing that directly contradicts this hypothesis." I would refer to the virtual nonexistence of coronary disease among the Eskimos and Lapps whose diet in the long winter months consists largely of animal fat

Seeking a more satisfactory explanation of the very striking war time experiences of Norway I think that the studies of Professor Keys and his colleagues, and the data of Dr Bronte Stewart Professor Keys, and Professor Brock (Nov 26) clearly point the way especially if we bear in mind two facts emerging from these most important studies : (1) that in countries where the caloric content of the diet in general is low the cholesterol content of the blood is also correspondingly low and coronary disease is rare and (2) that all those peoples with low cholesterol contents are known to be eaters of wholemeal or maize bread as their staple diet

In the light of these two facts it is my considered opinion that an all important rôle in the decrease of circulatory diseases soon after the beginning of the German occupation of Norway was played by two factors : (1) the sharp decrease in the *total caloric content* of the diet (and not just of fats) and (2) the simultaneous compulsory change-over from white to wholemeal bread

It is well known that white flour which for the purpose of "improving" its colour and quality is subjected to agenising (i e., treatment with nitrogen trichloride) becomes almost completely void of the natural vitamin E, which is present on the other hand in significant quantities in the chemically untreated wholemeal flour Owing to the comparative lack of fat and protein foodstuffs during the war years, the daily consumption of this wholemeal bread in Norway rose considerably How far reaching is the importance of this second point is clearly demonstrated by the fact that the Bantu, whose staple diet is maize bread (with the highest vitamin E content of all breads) is practically immune from ischæmic heart-disease

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[1] Anderson, A W., Grenville-Mathers R *Lancet* 1952 ii 330

It appears logical, therefore, to conclude (1) that a high caloric diet, coupled with low vitamin E consumption, brings about, through the intermediary rôle of cholesterol, a high incidence of ischæmic heart-disease, and (2) that a low-caloric diet and large consumption of vitamin-E containing food together give virtually complete protection against ischæmic heart disease

London W 1 L SCHMIDT

TECHNIQUE OF ADMINISTRATION

SIR,—I have read with considerable interest references in your columns to the technique of administration [1]

I have had the pleasure of studying the principles and practice of management under Mr R. G Lathey and his staff during this past two years

These principles have as their basis an organisation chart which should incorporate the actual and ideal relationships of organisation. This organisation chart should in addition be drawn up in functional units or under heads of responsibility A 'Graphdex Manning Board' is probably the best medium for this chart

The next step is to draw up written schedules of responsibilities for secondary and tertiary executives or professional heads and officers, and lists of duties for the junior members of the section concerned These schedules should define the basic function of the person concerned, general and special responsibilities, limits of authority, and relationships with other members of the hospital staff No reference is ever made to the manner in which the minutiæ of professional duties should be performed, other than to meet the requirements of the law (e g, control of dangerous drugs)

These schedules are drawn up for all persons from junior technicians to myself, exclusive of course of the honorary medical staff. They are modified and improved upon the occasion of a new appointment

It is by drawing up organisation charts and schedules of responsibility under heads of responsibility that one is able to see at a glance the span of control I understand that the figure suggested by Mr Graicunas [1] is an arbitary one, although a simple calculation will show the possible permutations and combinations of personal relationships that fall to the lot of a chief executive

The organisation, or lack of it, of the nursing staff of the average hospital is such that the head of that service cannot satisfactorily resolve her responsibilities A similar pattern is seen in the smaller technical departments, and is quite easily adjusted by a modification of responsibilities and an addition of executive levels within that department, with due regard for the number and duties of the staff concerned

I do not believe that the general tone of Colonel Urwick's interpretation of administration [1] is applicable today It smacks of a militant attitude—for example, authority is handed down from above There is no need to require authority to be linked with responsibility since where one has earned it it is found to be unnecessary Like Mary Follett I consider that authority comes from below as a result of doing one's job of working through others well, and that any decision made requires to be acceptable

Any interpretation of discipline other than Sir Henry Taylor's would be useless if applied to many situations occurring in a hospital The chief executive officer of a hospital is well advised to remember that he is associated with highly intelligent and skilled colleagues who are always willing to see other facets of a situation

Colonel Urwick maintains that investigation is
principle of management, and that the process of ma
(administration) is cyclic, utilising the other six pr
forecasting, planning, organising, coördinating, con
(I prefer guiding), and controlling (i e, in the sense o
that duties are in fact carried out in the proper m

Mr Leslie Farrer-Brown, of the Nuffield Provincial
Trust, has written that facts do not themselves solve
but the fullest possible knowledge of them should h
search for wise and effective solutions

Invariably an acceptable solution to a difficult si
found after a further examination of the facts

I suggest, Sir, that more attention should be
on the principles of management and the prol
human relations by those concerned with the tr
hospital administrators

It is far more important to widen one's hor
learn to understand and work through others wit
skills, than it is to be immersed in the detail of
of each section of the hospital or to become a
encyclopædia of procedure

Royal Adelaide Hospital
Adelaide
South Australia

BERNARD NICHO
Medical superinter

ATHEROMA

SIR,—Since first becoming acquainted with I
work and theories on the pathogenesis of atherom
wondered at times whether this lesion can be f
those occasional patients who die of hæmopl
middle age The few pathologists I have asked h
been able to enlighten me Dr Levene (Dec 10
this point again, for he suggests that fibrin dep
actually plays a part in the normal development
aortic intima It would be of interest there
examine carefully, and with the electron micros
possible, the aorta of a hæmophiliac dying at any a

May I inquire whether information is available
appearances of the aorta and large arteries in
philia Presumably a patient with hæmophilia is n
from coronary thrombosis Possibly he is immun
atheroma But, instead, does his aorta d
abnormally ?

London, W 1 H WYKEHAM BA

INSENSITIVITY TO VITAMIN D

SIR,—The report by Dr Dent and his coll
(Oct 1) on the development of insensitivity to cal
in postoperative tetany prompts me to recor
following two cases of African women with this cond
thyroidectomy having been performed for simple no
goitre

The first patient, aged 25, was fully controlled on 1
of 'A T 10' daily until the cost of the drug prevent
further use Therapy with calciferol was then institute
after three months control was established with a d
720,000 units (18 mg) daily Three months later, how
clinical and biochemical relapse occurred This was con
by the addition of 12 g of calcium lactate daily to the
dosage of calciferol, since which time she has been well

In the light of Dr Dent's observations it is
possible that in this case control is being maintaine
calcium lactate alone

The second patient, aged 21, has proved entirely refra
to therapy There has been no response after 720,000
(18 mg) of calciferol for three months followed by 960,000
(24 mg) for one month, calcium lactate 6 g daily b
administered concurrently with the latter dose.

Thus this patient demonstrates that resistance
calciferol may occur from the outset

Your annotation in the same issue mentions som
the implications of this phenomenon In my own
its occurrence in the parathyroidectomised patient s
gested a line of inquiry into the vexed problem
parathyroid/vitamin D interrelations The effect of s

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[1] See Lancet, Oct 8, 1955, p 768

liminal doses of Para thor mone on the resistance to calciferol in the second patient is being investigated However it is clear that any effect which para thor mone may have in restoring sensitivity to calciferol will not explain Dr Dent s observation of resistance to calciferol in patients with rickets and osteomalacia in whom parathyroid function was presumably intact

Baragwanath Hospital
Johannesburg South Africa H C SEFTEL

NUTRITION AND VITAMIN B_{12}

SIR,—May I offer some comments on your leading article of Dec 3 especially in regard to the administration of vitamin B_{12} to children

Our studies[1] in collaboration with Dr Badenoch and Dr Sinclair and other colleagues in different parts of the country have not been intended to investigate the general use of vitamin B_{12} supplements for children, and therefore could not be expected to provide the support for such use for which you are apparently searching Suggestions[2] have previously been made in your columns that the lack of convincing evidence for the value of dietary supplements of this vitamin has been due to failure to study people who have been living for a considerable time on diets deficient in the vitamin. We have been fortunate in encountering such people amongst the vegan volunteers, and our primary object has been to characterise the signs of human dietary deficiency of vitamin B_{12} sufficiently well to enable these signs to be utilised in studies on appropriate sections of the normal population amongst whom children are of special interest

In the group of about 150 vegans (*not* 32 as stated in your article) on whom we reported to the Second International Congress of Nutrition in Amsterdam in 1954 there were 33 children between the ages of 1 and 18 but detailed data were then available on only a few of these However the greater susceptibility of young children to vitamin B_{12} deficiency was recognised and attempts have since been made to extend our knowledge in this direction Study of a considerable amount of further data on vegan infants and children leads us to believe that vitamin B_{12} requirements tend to become more critical after early weaning when dietary supplementation with the vitamin may be more effective in children on diets very low in animal protein Under such circumstances the use of vitamin B_{12} dietary supplements would seem to be a wise precaution. The letters we have received from vegan parents whose children experienced vitamin B_{12} deficiency fully justify this warning

Further information is greatly needed on the vitamin B_{12} content of different foods especially those of vegetable origin. This might help to explain why so many of those living in the Middle and Far East manage successfully on diets quite low in animal protein Is this due to their widespread use of fermented and germinated food ?[3] The trace of vitamin B found in groundnut meal for example was probably due to moulds or bacteria which caused fermentation and at the same time produced the vitamin During investigations[4] carried out in these laboratories several years ago on the effect of germination on the B vitamins in cereals and pulses we prepared extracts of peas and soya beans in which germination was found to have produced slight traces of vitamin B_{12}—about 0 5 and 1 0 µg respectively per kg solids (F Cuthbertson personal communication) As germination had not been carried out under strictly aseptic conditions the possibility could not be overlooked of this vitamin B_{12} being produced by bacterial contamination However the production of traces of vitamin B_{12} during germination of seeds has also been observed by Prof W H Schopfer (personal communication) and these possibilities need to be considered in evaluating the vitamin B_{12} content of diets

During attempts[5] to postulate theories explaining the physiological action of vitamin B_{12} attention became focused on its cyanide content We have advanced the hypothesis[6] that the cyanide may serve as a carrier of sulphur used for the formation of sulphur containing metabolites which are essential in nutrition, and perhaps include methionine, which is known to be deficient in many vegetable proteins This involves the formation of thiocyanate from cyanide and has therefore led to studies[7] of thiocyanate metabolism in man It would be of great interest to ascertain whether there is any relation between this thiocyanate metabolism and the sulphur deficiency recently implicated[8] in kwashiorkor especially in view of the possibility now being explored[9] of its successful treatment with suitable mixtures of vegetable proteins together with vitamin B_{12} supplementation

Ovaltine Research Laboratories
King s Langley Herts FRANK WOKES

HEROIN

SIR —One or two points in your editorial of Dec 3 deserve comment

Dealing with the question "Is heroin indispensable ?' you say that the Standing Medical Advisory Committee s 'No' was the only possible answer ' in view of the facts (1) that the British Pharmacopœia Commission, with the authority of the General Medical Council had in 1952 removed this drug from the pharmacopœia, and (2) that a great number of doctors, of all degrees of eminence, long ago dispensed with it in their practice "

So far as this second point goes, there must surely be many drugs which certain doctors never use in their practice but is this a proper reason for banning their use by all doctors ? Our answer to this question must surely be an unequivocal 'No '

The decision of the British Pharmacopœia Commission in 1952 is worthy of further question. Is it not true that certain representations were made to them that if they removed heroin from the *British Pharmacopœia* it might then be possible for the Government to ban this drug ? It would presumably be difficult or impossible for the Government to ban a drug which was included in the *B.P* If as I am suggesting there was deliberate pressure on the British Pharmacopœia Commission to have heroin removed from the *B.P* so as to facilitate later Government action then that decision would appear to have been taken on political rather than medical grounds. Since heroin addiction is so rare in Britain which manufactures and uses medically the largest amount and so widespread in the United States which already bans it one must surely ask what we hope to achieve by banning it here too You partly answer this question by saying : Whether much would in fact be gained by stopping all medical supplies has often been questioned, because anyone who has some morphine and a laboratory can turn it into heroin overnight '

It is flattering to the Fellowship for Freedom in Medicine that you should suggest that Her Majesty's Ministers have to choose between the Fellowship and the World Health Organisation The Fellowship, however is not alone in the belief that this ban is wrong in principle and cannot have the slightest effect on heroin addiction abroad To its credit the *Times* has lent powerful support to this cause and it surely cannot have escaped your notice that the British Medical Association also opposes this ban

Your editorial though true to the odd brand of intellectualism that erupts in your columns from time to time is not a true reflection of the views of a sub

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Wokes F, Badenoch J Sinclair H M *Amer J clin Nutr* 1955 3 375

Pink, C. V Wokes F *Lancet* 1953 ii 1274 Wokes F *Ibid* 1954 ii 353

Platt B S. Report of the 2nd Inter African Conference on Nutrition, Gambia, 1952 p 271

Klatzkin, C North F W Wokes F *Int Congr Biochem.* Cambridge 1949

5. Cooley G Ellis B, Petrow V Beaven G H Holiday E. R. Johnson, E. A *J Pharm., Lond* 1951 3, 271

6 Wokes F Picard C W *Amer J clin. Nutr* 1955 3, 383

7 Wokes F Picard, C. W *Int Congr Biochem.* Brussels, 1955

8 Bigwood, E. J *Voeding* 1955 16, 143 Report of the 2nd Inter African Conference on Nutrition, Gambia 1952 p 249

9 Dean R F A Report of the 2nd Inter African Conference on Nutrition Gambia 1952 p 308

stantial proportion of doctors in this country Contrary to your concluding remarks, common sense no less than principle dictates that we, in Britain, should not ban heroin Surely if any international gesture is needed we could agree not to export heroin The addict will still secure his heroin whatever we do unless perhaps you, Sir, can persuade the United Nations to ban the growing of poppies

Radlett, Herts R S MURLEY

BLOOD-COAGULATION DEFECT ASSOCIATED WITH MISSED ABORTION

SIR,—Dr O'Driscoll and Dr Lavelle are to be congratulated on their interesting article published in your issue of Dec 3

I would like to say how much I agree with their advice that, once the diagnosis of missed abortion has been established, the pregnancy should be terminated without delay If one waits for nature to expel the fœtus, as is so widely recommended, spontaneous evacuation may not occur for several months, during which time even the most placid woman is certain to be uneasy and anxious to have her pregnancy terminated As Dr O'Driscoll and Dr Lavelle have, however, emphasised a more urgent reason for termination is the likelihood of a blood-clotting deficiency developing if the pregnancy is allowed to continue As regards their method of induction in cases of missed abortion after the 12th week, I would prefer the use of laminaria tents combined with an intravenous oxytocin drip Tents are easier to insert than a stomach-tube, appear to be more effective in stimulating labour, and carry less risk of infection

Dublin DECLAN J MEAGHER

ARTIFICIAL HYPOTHERMIA IN POLIOMYELITIS WITH HYPERPYREXIA

SIR,—We have read with great interest the article by Dr Miörner and his colleagues (Sept 17) and, to support their conclusions, we briefly report a similar case observed a year ago

In November, 1954, a man of 32, of athletic build, was admitted with almost complete paralysis below the waist and beginning respiratory difficulties The previous day he had had muscle pain in the limbs and the neck, but no other symptoms The cerebrospinal fluid was characteristic of poliomyelitis The paralysis rapidly ascended and after a few hours the patient had to be placed in a respirator For two days the state remained unchanged, but on the third day he ran a high temperature, the heart-rate increased, and he became cyanosed and lost consciousness His condition was not relieved by oxygen, strophanthin, plasma, fluid, and electrolytes On the morning of the fourth day, in spite of all efforts, he became gradually worse, and signs of peripheral circulatory failure were apparent His condition was considered hopeless

This was the point at which artificial hibernation and hypothermia were started—Laborit's cocktail (chlorpromazine 1 part, promethazine 1 part, pethidine 2 parts) and cooling with ice packs, with the patient in the Drinker apparatus His condition remained unchanged, his temperature was 31°C From then on it gradually improved and at 28°C the circulation was satisfactory, and cyanosis disappeared This temperature was reached in three hours, and it was at this level that the patient was then kept On the slightest raising of the temperature circulation again became deranged There was no shivering at any time In the first three hours a dose of the mixture containing 2 mg of chlorpromazine per kg body weight was needed, and subsequently about 0 1 mg per kg every half-hour was injected into the drip tube

Ten hours after hibernation had been started the patient regained consciousness and even answered questions Treatment was continued and his condition apparently remained unchanged, with regular cardiac rhythm and the patient as in a sleep But after twenty-nine hours the heart suddenly stopped

Post-mortem examination showed extensive bulbar and spinal involvement and destruction by hæmorrhages The air passages were free

We concluded from this case that the benefit of hypo thermia in oxygen lack should be made use of in polio myelitis when pyrexia and a failing circulation make impossible to meet metabolic needs The practice withholding sedatives and hypnotics in poliomyeliti should certainly not be extended to the drugs used artificial hibernation

1st Department of Pædiatrics,
Budapest University P V VÉGHELYI

Central Hospital of Infectious
Diseases, Budapest L NAGY

KWASHIORKOR AND PROTEIN MALNUTRITIO

SIR,—The cases of kwashiorkor described by Professo Brock and his colleagues (Aug 20) are so similar to th cases of malnutrition seen in our hospital in Mexic City—not only in diet and age-distribution, but al in clinical lesions and biochemical findings—that would like to make the following comments on the preliminary results

1 The conclusions reached by Professor Brock and hi *colleagues are based on well-conducted trials that* we aimed at finding the factor(s) responsible for the “initi cure” of the syndrome The definition of kwashiorkor by the F A.O /W.H.O Expert Committee on Nutrition 1953, as a syndrome due to protein malnutrition—i.e., t *relative deficiency of protein foodstuffs in* the diet—does no emphasise sufficiently that the main protein foodstuffs a those which also contribute the largest portion of fat to th normal diet (for instance meat, 6–40% of fat, milk, 3–4% cheese, 10–40%, ham, 20–40%, eggs, 12%) *Considering that a severe restriction of fats in* the diet brings about among other effects, a caloric deficiency that usually canno be fully compensated by an excessive intake of carbohydrates, children with kwashiorkor are deficient in calories; *on th* other hand, because protein foodstuffs are *among* the ma “vehicles” *of* B vitamins, in the same way as fats are fat-soluble vitamins, it seems more logical to speak, not “protein malnutrition,” but of “global malnutrition” simply, malnutrition The diets reported by Brock as consumed by their *patients* before admission to hosp “consist chiefly of maize (corn) porridge in Pretoria Durban, whereas in Cape Town vegetables, such as squash carrots, and potatoes are added to small amounts of The caloric intake in the Cape Town cases is probably than *in the Pretoria and Durban* cases.” The diet inadequate in proteins, certainly did not meet the fat requ ments, and was almost certainly deficient in several o nutrients

2 The sequence of observed *changes* in the cases kwashiorkor *treated* by Brock et al is closely similar those reported by Gómez et al[2,3]—i e, in the first 3–7 days the apathetic, irritable, and anorexic child becomes intere in its surroundings and may ask for *food* Between th 7th and the 14th *day after* admission, the œdema disappea and the affected areas of skin desquamate The seru albumin reaches values of 2 5–3 5 g per 100 ml when th œdema has disappeared

3 We agree with Brock et al. *that* the mortality rate variable, *and that* the first treatment consists, generally in the emergency treatment of either the electrolyte distur ances or infection, or both On the *other* hand, we ha insisted[4] that the prognosis can be assessed fairly accura if one considers the approximate weight deficit, and t presence or absence of electrolyte disturbances infection These factors influence the immediate outco in contrast to the skin lesions *of* “kwashiorkor” “pellagra” type, and the *changes* of the hair and muco and the œdema which have no bearing on the progno In 733 cases studied by Gómez et al[5] 46% *of the* death occurred in the first 48 hours after admission to hospital, Brock et al mention a *mortality rate* of 70% during that sam period The over all mortality rate in Brock's cases was 20%

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1 Schwartz R, Dean R F A *Brit J Nutr* 1955, 9 230.

2 Gómez F Ramos Galván, R Cravioto J Frenk, S Amer J *Dis Child* 1954, 87 684

3 Gómez F Ramos Galván R Cravioto J Frenk S Advan in Pediatrics New York, 1955 vol 7 p 131

4 Gómez F, Ramos Galván, R, Cravioto J Frenk, S Ac *pædiat Stockh* 1954, 100, suppl. 43 p 336

5 Gómez, F Ramon Galván, R, Cravioto J, Frenk, S. J *Pediat* (in the press)

and in the series studied by Gómez 23% in 1953, 21% in 1954, and 19% in 1955.

4. Our group for research on malnutrition reported in 1954 the results of treatment with and without the addition of extra vitamins in a series of 373 cases and controls.[8] The results reported by Brock et al. confirm that children with kwashiorkor (or malnutrition as we and others prefer to name this condition) do not need vitamins in addition to those present in the diet. The calorie consumption in our series fed on "free demand" amounted to about 35 per kg. body-weight per day during the first 5 days of treatment. Once the appetite improved, the children had an intake of 100-300 calories per kg. per day. These findings, similar to those of Brock et al. in Africa, are notable because the improvement is evident from the very beginning when the dietary intake is still far below the requirements of a normal child of the same body-weight.

5. The quantitative requirements of these patients are not the same in each phase of recovery. In the initial stage the child goes into positive nitrogen balance with very small amounts of protein (as has been previously demonstrated in protein-depleted dogs by Allison et al.[6]) and even in some clinical cases with proteins of low biological value such as corn and beans.[7] As soon as the nutritional condition improves, and growth and development tend to reach a normal speed and pattern, the requirements are more selective and the needs of protein of high biological value increase.

Because we have been able to keep our cases in hospital for long periods, we have had the chance of observing and describing some of the clinical and biochemical changes peculiar to recovery.[8] These studies and the knowledge that "initial cure" is not "actual cure" call for determination of the requirements of the different nutrients in the various stages of recovery. Only by such studies as that reported by Brock et al. can malnutrition be fully understood, and treatment placed on a scientific basis.

Group for Research on Infant
Malnutrition, Hospital Infantil,
México, D.F., Mexico.

RAFAEL RAMOS GALVÁN.

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[6] Allison, J. B., Anderson, J. A., Seeley, R. D. Ann. N.Y. Acad. Sci. 1946, 47, 245.

[7] Holt, L. E., Gómez, F. Unpublished data.

[8] Gómez, F., Ramos Galván, R., Cravioto, J. Pediatrics, 1952, 10, 513.

Obituary

ANTONIO EGAS MONIZ

M.D.

THE name of Egas Moniz the neurologist was known all over the world; perhaps that was one reason why Egas Moniz the politician was less renowned outside Portugal. Yet few men have ever combined medical and political careers with such distinction. To medicine he gave cerebral angiography and prefrontal leucotomy, the adventurous moves of a bold mind which won him a Nobel prize in 1949; to the councils of government in Lisbon, where he died on Dec. 13, he gave vigorous Liberal views which gained him the post of foreign minister and which, had not ill health hampered his later years, might have carried him to the presidency of Portugal.

[Studios des Reporters, Paris

To an already illustrious family, Antonio Caetano de Abreu Freire Egas Moniz was born on Nov. 29, 1874, in Avanca, a small village in the north of Portugal. As a young man he went to the University of Coimbra, a picturesque little town whose affairs revolved around its university—a university of the best sort, where a student's formal curriculum was not allowed to interfere too seriously with his enjoyment of the communal life all the faculties. Literature, politics, philosophy, nic medicine: in this fruitful and competitive atmosphere Egas Moniz was elected to the much prized presidency of the Tuna Académica, the foremost of the student societies. He took his medical degree in 1899, and then stayed on for some years in Coimbra before his thoughts turned definitely to neurology and therefore France, where many of the great neurologists were then teaching. In Paris he first met Babinski, Pierre Marie, Déjerine, and others with whom he long kept profitable contact. Of his contemporaries, perhaps Sicard, originator of myelography, was the man who had most influence on Moniz.

In 1911 a new chair of neurology was created in Lisbon. Egas Moniz was chosen to fill it, and he did with honour for 34 years. His output of original scientific work from Lisbon began at once and continued a great rate with scarcely an interruption for the many political duties which he presently undertook with energy and ability.

He had entered politics much earlier—in 1900 when was elected deputy for Estajerra. He was a left-wing monarchist, and his forthright views took him into the abortive 1908 revolution and into prison for a short time. But he came again, and he was appointed Portuguese minister in Madrid during a difficult period at the end of the 1914-18 war, when Portugal fought with the Allies and Spain was neutral. In 1918, still professor of neurology, he became foreign minister and he led the first Portuguese delegation to the Paris peace conference. An event perhaps decisive then followed: a political quarrel led to a duel in 1919, and shortly afterwards he retired from politics. The political scene in Portugal may have seemed cramped to him and the medical one more satisfying; whatever his motives, after 1921 he gave his powers wholeheartedly to medicine and the Lisbon school, whose prestige he took to a high level.

In this new phase of his life, epidemic encephalitis was one of the first subjects that occupied his attention. And then, in July, 1927, he communicated to the Neurological Society of Paris the first news of cerebral angiography. In the years that followed he and his colleagues produced nearly 200 papers and monographs dealing almost exclusively with normal and abnormal cerebral circulation as studied by angiography. They first used sodium iodide as a contrast medium, but side-effects were troublesome, and it was some time before satisfactory results were possible with the use of 'Thorotrast,' a substance with which Dott in Edinburgh was also working at that time.

In 1935 Moniz attended the second International Neurological Congress in London, and heard Fulton and Jacobsen's paper on the effect of frontal leucotomy on the behaviour of the two chimpanzees, Becky and Lucy. After the operation the animals lost the temper tantrums to which they had been prone when confronted with difficult problems. They remained alert, intelligent, and friendly, but it was no longer possible to induce an experimental neurosis. After the meeting Moniz suggested to Fulton that a similar operation might help to relieve many of the unfortunate people in mental hospitals. Fulton and Jacobsen agreed, but they pointed out that bilateral removal of the frontal lobes would be a massive operation with a high mortality. But Moniz had other ideas, and returning to Lisbon he set to work with a young neurosurgeon, Almeida Lima, who had lately returned to Portugal after training with Hugh Cairns at the London Hospital. In the first few operations they injected alcohol into the white matter of the frontal lobes, but later they used an instrument which they called a leucotome. This was a wire snare passed into the hinder part of each frontal lobe and then rotated to cut the white matter. The results at once aroused the widest interest and debate, and the subject was taken up in many parts of the world—notably by Freeman and Watts in the United States.

To put it at its lowest, the introduction of prefrontal leucotomy was the start of a profitable chapter in the study of the organic basis of mental disease; and indeed Moniz's work may be said to have persuaded many people that there was in fact an organic basis worth studying In the past twenty years more refined operations have produced better results, and though there have been disappointments, neurology and psychiatry still stand to gain yet more from the brilliant work of Egas Moniz

PATRICK ALFRED BUXTON

C M G, M R C S, F R S, D T M & H

Professor Buxton, director of the department of entomology of the London School of Hygiene and Tropical Medicine, died on Dec 13 at the age of 63

His father, Alfred Fowell Buxton, was a former chairman of the London County Council, and his mother was the daughter of the Very Rev T W Jex-Blake, a headmaster of Rugby and dean of Wells Patrick Buxton was educated at Rugby and at Trinity College, Cambridge, where he held a fellowship from 1916 to 1921 He finished his medical training at St George's Hospital, qualifying in 1917 After qualifying, he served abroad with the R A M C in Mesopotamia and North-West Persia From 1921 to 1923, he was entomologist to the government of Palestine During these years of travel he became interested in the wild life of the arid regions of the Middle East, and in 1923 he published his first book, *Animal Life in Deserts* The next year brought him different experience and from 1924 to 1925 he studied the problem of mosquito-borne filariasis in Samoa and other Pacific islands These *Researches in Polynesia and Melanesia* were later published as memoirs by the London School of Hygiene and Tropical Medicine

[Stoneman

It was this postgraduate school of London University which, on his return to England, appointed him director of the department of entomology He held this post until his death, first as reader and later as professor of medical entomology He was one of the few remaining members of the original staff of the school, which came into being in 1927, and in the years in which he served it he contributed much to its present high reputation He was elected F R S in 1943 and appointed C M G four years later He was awarded the Mary Kingsley medal and in 1953 the Linnæan gold medal He also served as a member of the Medical Research Council and the Colonial Medical Research Committee

J R B writes

"As a scientific leader, Buxton applied just the right kinds of stimuli to research workers in his department, and furthermore, by example and advice, he helped them to explain their results in good clear English Over many years, he fostered studies of the ecology of disease carrying insects Many investigations of this type, directly inspired by him, are summarised in his monograph on the *Louse* and in his final great work, the *Natural History of Tsetse Flies* As his reputation became widely known, he was asked to visit many parts of the tropics to advise on problems of medical entomology, by such bodies as the Colonial Office, the Medical Research Council, and the World Health Organisation Even in 1954, when not in the very best of health, he visited Singapore to preside over a conference on the threat of yellow fever, and later that year travelled about in Central America to study an epidemic of that disease But, while his later time was much occupied by expert committees, he always took a full share of lecturing and other teaching duties at the school and he enjoyed getting to know his students Scattered over the world, there must be many students of different races who will remember their warm welcome at his family home, when they were exiled alone in London

"Some of us can remember occasions when Buxton was vigorously critical, for he never hesitated to point out indolence or inefficiency, especially in high places But his colleagues and juniors will chiefly recall a paternal companion, widely travelled and extremely knowledgeable on all logical topics Some of us, too, will recall a sympath and practical friend in times of difficulty or trouble"

Professor Buxton married Muryell Gladys, daug of the late Rev. Hon Talbot Rice, and she was associa with him in much of his work She survives him wi son and four daughters.

GEORGE RANKEN TUDHOPE

M D, Ph D St And, D P H, F R S E

Dr G R Tudhope, lecturer in pathology at University of St Andrews, died suddenly on Dec at the age of 62

A native of Newport-on-Tay, Dr Tudhope received professional education at the University of St Andre graduating M B in 1918, and he devoted his whole to the service of its School of Medicine. In 1922 he promoted PH.D, and in 1937 the doctorate of medi was conferred on him with honours and the award o Rutherford gold medal for his thesis, which dealt with distribution of reticulum as a means of differenti sarcoma from diffuse carcinoma

After holding house-appointments at Dundee Ro Infirmary he returned to the School of Medici assistant in the department of anatomy at what Queen's College, Dundee His real interest, how lay in pathology, and within two years from gradu he was appointed lecturer in that subject—a post w he occupied for thirty-five years

W J T writes

"Dr Tudhope's death deprives the university of one clarity of exposition made him an ideal teacher, while who had the good fortune to know him mourn one personal qualities endeared him to all A deeply r man he was motivated, both in the performance of his fessional duties and in the conduct of his life, by the principles—his watchwords being loyalty, integrity, kindliness The warmth of his nature was such that all were in trouble turned to him instinctively for help and solace, he will be sadly missed by his friends—he had enemies

"He dedicated his life to the service of others, to the be interests of the university, and to the care of the departme for which he laboured so long and so loyally Although h had many interests outside his profession, his contributio to the literature of pathology were many and varied, being reflection of his width of knowledge and depth of cultu All his work in the field of research and as a teacher w notable for accuracy of observation and profundity of thoug while the attention he gave to his other interests was characte ised by a constancy that was an inspiration to all who kn him

"Of the many admirable traits in his character the mo engaging was his cordial sympathy for youth, for him was never a task but ever a privilege to undertake any d on behalf of the student body He will be long remembe not only by medical students but by those of other facult for his appreciation of the dignity of man, for his pati with the wayward, and for his unfailing encourageme the less able of his pupils In a very special sense a d of gratitude is due to him for the care he took both of material and of the spiritual welfare of foreign student

"In 1916 his fellow undergraduates elected him presid of the Students' Union, and he laboured selflessly in interests for over thirty years in 1946 his son became turn president of that body—a happy incident unique in history

"He was no less punctilious in the performance of t undertaken on behalf of his colleagues and professi brethren, as is witnessed by the fact that he was secreta of the Staff Club of Queen's College and member of the coun of the Forfarshire Medical Association for twenty nine year he was president of the latter body in 1954–55

"As warden of Airlie Hall, an all faculty residence men, he proved his sterling worth as a guide of youth his wardenship was marked by an atmosphere of happi an air of dignity, and a spirit of comradeship among th in residence which could develop only under the aegis of really good man In all his activities, but especially as warde the courtesy and charm of his second wife was a fitt complement to his own many lovable qualities

"He was chosen by his colleagues as their representative n the senate and court of the University, and his ability and delity were recognised by his election to the presidency of he Association of University Teachers of Great Britain"

Dr. Tudhope is survived by his second wife and his n (bearing the same christian names), who is lecturer in herapeutics at the University of Sheffield

WILLIAM BARR

M.D., D.Sc. Glasg D.P.H

Dr William Barr who retired from the post of medical fficer of health and chief school medical officer for Rotherham in 1952, died on Dec. 2, at the age of 68

In more ways than one he was an outstanding man He came of Scottish farming stock, his parents farmed in Lanarkshire and they made many sacrifices to set him on the way to success. From the local grammar school he went to Glasgow University where he graduated M.B. with first-class honours in 1908 at the age of 21 After eighteen months as an assistant in general practice among the colliery villages of Lanarkshire he was drawn to the public health service and in 1910 he took the B.SC (public health) and the D.P.H In those bygone days £250 a year was a wonderful salary for a first job, and in 1911 he obtained a post as school medical officer under Ayrshire County Council. In 1913 he became medical officer at the Glen Afton Sanatorium in the same county Later in the same year he was appointed to the staff of Dr J R Kaye, county medical officer of the West Riding of Yorkshire as assistant C.M.O.H and tuberculosis officer in charge of the Rotherham Dispensary area of South Yorkshire He s not released for service in the Forces during the 911-18 war and owing to overwork his health broke own. After the war he spent over a year, at first as stant and later as a medical officer at King Edward II Sanatorium, Midhurst In 1920 he was appointed puty medical officer of health and tuberculosis officer Rotherham, and for the next five years he took an tive part in organising the Oakwood Hall Sanatorium 100 beds of which he became the first medical super ndent A colleague remembers him at this time

A tall thin, gangly young man, dressed in a single-asted dark grey suit cut of unusual design with a young face wearing pince nez and surmounted with the t-brimmed felt hat that ever was. This was perched e whitest head of hair—it was white even in those days as the sort of man who if you met him for the first time e street, you would turn round and have a second look mediately you had passed him. In his features was the s of the poet his head was that of the thinker; ress that of the artist and individualist."

1925 he was appointed medical officer of health the borough, and during the next twenty-seven years r his guidance the first steps in many useful public th measures were taken at Rotherham The Sheffield Rotherham Smoke Abatement Committee, the of its kind in the country was formed at the borough s stion Again Rotherham took the leading part in ng together the authorities which later formed the th-West Yorkshire joint board for the mentally ctive When the Midwives Act, 1936 came into tion and local authorities were empowered to ploy midwives and to supply sterilised dressings for the ther s confinement, Rotherham had already for a ade provided maternity outfits and drums of sterilised ings, and it had appointed an obstetric consultant for maternity home and for district cases in 1929 In e same year it formed its voluntary tuberculosis care mmittee—nearly twenty years before such bodies were made compulsory by the National Health Service Act

In dealing with school and preschool children, Dr Barr always insisted that whatever service was started for one age-group should be provided for the other A child to him was a child from birth to 15 years, and he recognised no artificial distinctions. This policy of coördination was carried further in 1938, when all the borough s health and hospital services were brought under the control of one committee with Dr Barr as its adviser When the hospitals were transferred to the regional hospital board in 1948 Dr Barr did not lose interest in the hospital patients. He often said: on admission they must have had a come from and on discharge they must have a 'go to,'' and these were the concern of the local health authority As a result of his attitude, Rotherham has always had a good working liaison with its hospital management committee

His guiding personality had an effect outside Rotherham, for many of his assistants now hold senior posts in other towns. A few years ago he was appointed chairman of the standing conference of coöperating bodies dealing with atmospheric pollution under the Department of Scientific and Industrial Research From 1919 to 1951 he was a member of the general council of the Queen s Institute of District Nursing

F C C writes

I first knew William Barr as a young man in 1913 and it has been a joy to have known him for over forty years He was a thinker a planner and a man of infinite patience He was also of high scholastic attainments. During his early career he had fought personal ill health and could never be said to be a robust man. No he was a kindly man and a wonderful observer possessed of a puckish sense of humour He was a poet of no mean order Verse flew from his pen faster than some of us could write prose Another of his hobbies was conchology and he had a large collection of shells He lectured on this and other subjects of natural history to local societies To William Barr all were God s creatures, and one feels proud to have known such a gentle and kindly man. He could see beauty in very ordinary things Three years after he retired he told me that these had been very happy years for him and that he was just as busy with his new interests as he had been with the old

Dr C R ST JOHNSTON

E A. A. R writes 'It was a privilege to be one of St. J s registrars in the post war period and to discover that factual knowledge was a mere skeleton without the historical associations and the social factors considered for each patient. His was an all-embracing outlook which reflected his own empathy with his younger colleagues fortunes, and his sincerity and tolerance were at their best when one sought his help in the complicated clinical problem His passing has left a void among those of us who knew him as a friend, a counsellor and a fine Englishman.

S C D writing of Dr St Johnston s work for the Walsall group of hospitals, recalls that he was appointed consulting physician to the Manor Hospital Walsall, then under the municipality, immediately after his return to civilian life at the end of the war

On the nationalisation of the hospital service St Johnston became a member of the medical staff of the Walsall group and assumed duties in addition at the General (Sister Dora) Hospital From the inception of the new régime he took a lively interest in its administration he played an active part in drawing up the constitution of the medical staff bodies advisory to the hospital management committee which anticipated by some years that since suggested by the Ministry of Health His colleagues elected him to the first medical advisory committee and he served on it continuously At his death he was acting as its chairman

He was as assiduous in his administrative as in his clinical duties It was largely owing to his influence that the Sister Dora and the Manor Hospitals came to work in ever increasing harmony and the medical staff of the hospital group to regard themselves as a team, working in the interests of the group as a whole To his high attainments as a physician many others will bear witness; my purpose is to pay tribute to the tact patience and judgment which made his services invaluable in committee both as a member and as chairman He will be very deeply missed in the Walsall Hospital Group'

Notes and News

PUBLIC RELATIONS AND MEDICAL RESEARCH

Discussing the dangers of over stimulating public interest in disease, and of allowing people to expect too much, John M Russell, in his report as executive director of the Markle Foundation,[1] New York, says that science must have better relations with its public if it wishes to avoid a repetition of the confusion and misunderstanding which arose over "the most publicized event in medical research during the past twelve months"—the use of the Salk vaccine for poliomyelitis

Collecting money from the public for medical research came into its full bloom, he says, less than ten years ago Tending more and more to suppose that, given the means, all scientific and health problems can be solved in almost no time, the public have been more than generous with personal contributions The success of the money raising campaigns of such organisations as the National Tuberculosis Association, the National Foundation for Infantile Paralysis, and the American Cancer Society has encouraged the formation of other similar agencies to form the spearhead of scientific attacks on other specific diseases, and today in the United States more than two dozen of them are collecting money and distributing it to educate the public and support research projects

In these circumstances, Russell says, "educating the public" can have two meanings. "One is true education, where the facts of a situation are explained and advice given, the *other is propaganda designed to attract the attention of the* public, often by emotional means, and thus solicit support Information that a disease can be prevented if detected early, and advice explaining where to go and what to do about it, is one type of education The tearful posters and frightening statements sometimes made during money raising campaigns is the other" For agencies dependent on personal gifts both types of "education" are essential, but a heavy responsibility now rests on the public relations experts who are charged with raising the money To have public relations experts in science is a new development, and their potential influence—for good as well as for ill—is great

In distributing funds for scientific purposes the Markle Foundation, and some other bodies of its kind, feel that they can be of most use by "encouraging our better young men to stay in academic medicine," and by supporting their research Russell remarks that the methods used for distributing *funds are important* if the freedom of scientists is to be preserved and their integrity protected, for money can sometimes do harm, and money raised with too much enthusiasm and too little regard for the complexities of science carries a particular risk The opinion of the public has become, in the U S A, an enormous factor in the support of research, but the public must be brought to understand that scientific research has its limitations and that basic scientific research takes a long time Research, Russell rightly concludes, "is too essential to be abused or hampered just so money can be raised for its support"

A PHILANTHROPIC RECORD

The Ford Foundation is to give $500 million (£178 million) to colleges, medical schools, and hospitals in the United States during the next eighteen months[2] This, the greatest single gift in the history of philanthropy, will far surpass the total amount disbursed by the Foundation since its establishment in 1936

$210 million (£75 million) will be used to raise teachers' salaries in the 615 privately supported colleges in the United States, and is in addition to $50 million designated for this purpose last March

The 3464 non profit-making voluntary hospitals will receive $200 million (£71 million) to improve their facilities and service, to aid their staff financially, and for research The amount allocated to individual hospitals will be determined by the turnover of pat*ients and the* number of births in the hospital The American Hospital Association estimates that the voluntary hospitals contained 26% of the total number of beds in 1954, but received 61% of the admissions 850,000 more beds are needed in American hospitals including 194,000 in general hospitals, according to the Public Health Service

Privately supported *medical schools* will get the ren $90 million (£32 million) These schools, as well as medical schools, now receive annual grants from the N Fund for Medical Education which was started in 19

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[1] 1954–55 Annual Report of the John and Mary R Markle Foundation 511 Fifth Avenue, New York, 17 N Y U S A

[2] *New York Times*, Dec 13, 1955

SHORTAGE OF HOSPITAL COOKS

Some hospitals in the Midlands are threatened by pa *in one of their vital organs*—the kitchen. This thr paralysis has been caused by an acute shortage of cook can easily get higher paid work in hotels and factory ca in the area the wage for a woman hospital cook is at p 123*s* for a 48 hour week.[1]

One hospital management committee wrote recently Minister of Health asking him to consider raising the hospital cooks or to authorise a special Midland rat one hospital, it says, the kitchen staff of three left in A and since then the matron herself has done almost cooking for the hospital, working in the kitchen for days a week, sometimes for more than twelve hours to the obvious detriment of her other duties At an hospital, a porter has helped with cooking and s breakfast, and a hospital official said that if the defi of cooks was not soon overcome the routine of many Bir ham hospitals would completely collapse[2]

University of Oxford

On Dec 15 the degree of B M was conferred *on the follo*

J V Jones D R K Medley J G Edwards, P M H
Alexander Livingstone, P C E Gould Bryan Moore Smith
Whittington, R M Ingram, W G Edwards C K *Darke*
Hodkinson, A G MacIntyre, R R Sefi A D Ferguson M
Kelly I G Thomson, J G Banwell H de la H Davies C
Miller K T MacQuarrie, A J Smith, P H M Carson, M
Ashley Miller T C Wood, E S Robinson A H W Mas
Morgenstern, J A Tobin, Arnold Freedman N V Mo
Angela M Howe, Margaret N Williams, Ann Priestman, Barb
West, Anne F Darquier de Pellepoix

University of Aberdeen

On Dec 14 the following degrees were conferred

M.D—Muriel M. McLean (with commendation)
M.B Ch B—I V Anderson R A Bennet Phyllis M Co
L D Cruickshank G W G Hunter, M S Luckhoo, J T Sorb

Royal Faculty of Physicians and Surgeons of Glasg

At a meeting of the faculty on Dec 13, with Prof Sta Graham, the president, in the chair, the following admitted fellows of faculty qua physician

W A Dewar, T S Srinivasa Iyengar, Abdul Latif Mir
J R Roy

Institute of Psychiatry, London

At the Maudsley Hospital, Denmark Hill S.E 5, on Mond Jan 9, at 5 30 P M, Dr E Stengel will give the first of fortnightly lecture demonstrations for postgraduates.

Student Mental Nurses

The Nurses and Midwives Whitley Council have agreed an increase of £15 in the basic training allowance of stud nurses in mental hospitals and mental-deficiency institutio in the National Health Service

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[1] *Times*, Nov 30, 1955

[2] *Birmingham Evening Despatch* Nov 29, 195

Dr Minna Gemmell has been appointed senior medical to the maternal and child health nursing project of the World Organisation in Patna Bihar, India

Appointments

Banks, Phyllis B M B Sheff, D C H school M O co Durh
Cook, Margot M M D Basle, D T M & H school M O, Corn
Cort, Frank, M B Manc school M O co Durham
Harris S J M B Lond appointed factory doctor, Nottin
West
Howell Jones H F F A R C S, D A consultant anaest
Maida Vale Hospital, London
Jamison H M M B E M C, M B Lond F R C S senior con
general surgeon S W Durham H.M.C
McDowell, C R M.B Dubl L.R.C.S I asst. regional ortho
surgeon counties of Meath Monaghan, Cavan Louth Lo
and Westmeath
Robertson, A R M.B Glasg D P H asst county M
Derbyshire, and M O H Bolsover
Walker, D G M B Sydney registrar in general surgery, S Dev
and E Cornwall Hospital, Plymouth
Welsh Walter L R.C P L school M O, co Durham
Wrigley J H M B Edin, F R.C.S L consultant general
S W Durham H.M.C

OME SURGICAL ASPECTS OF ANÆMIA*

ALAN PERRY
M.S. Lond., F.R.C.S.
SURGEON TO THE LONDON HOSPITAL

ANÆMIA is commonly defined as a lack of blood shown a reduction in the number of red cells or in the emoglobin content. It is usually caused by bleeding destruction of red cells or by defective or deficient mation of red cells. When I was a student it was sified as primary—i e., of unknown origin—or second y but with advances in knowledge the first category becoming extinct and even pernicious (Addi nian) anæmia can be no longer considered imary.

Pernicious Anæmia

Pernicious anæmia has always had its surgical terest. With its achlorhydria and anorexia, has often simulated carcinoma of the stomach d the subacute combined degeneration of the nal cord may resemble the effects of a spinal d tumour.

After the first world war splenectomy was ll regarded as a possible form of treatment for s condition but the results were bad rtunately in 1927 Minot discovered the value liver as a remedy and surgeons were relieved the need to oblige importunate physicians.

In cases where pernicious anæmia follows partial strectomy the operation is sometimes blamed. I l, however that this sequel is merely fortuitous.

Case 1.—In 1928 a man, aged 41 had a partial gastrectomy chronic duodenal and gastric ulcers. He did well till uary 1954 when at the age of 67 he complained of akness, wasting and anorexia. His hæmoglobin was 50% his colour index 1·1. Radiography after an opaque meal wed normal post gastrectomy appearances. Dr R. R. nford regarded him as a straightforward case of pernicious mia and treated him with vitamin B_{12}. In August 1954 was perfectly well.

Similarly a simple anæmia can follow a gastrectomy.

Case 2.—In 1947 a man, aged 46 had a partial gastrectomy chronic duodenal ulcer. He did well but in June 1951 had to be readmitted with lassitude and shortness of ath. No bleeding was detected and no occult blood in stools. Hæmoglobin 41%; red cells 3 800 000; colour x 0·54. Opaque meal: no ulcer. A blood transfusion (2 pints) was given and when seen in May 1954, he had a hæmoglobin of 91%.

It should be borne in mind that patients with pernicious anæmia may develop carcinoma of the stomach. I will quote one case.

Case 3.—A woman of 63 was admitted on Dec. 30, 1946 under Sir Alun Rowlands with Addisonian anæmia. Hæmoglobin 36%; red cells 1 630 000; colour index 1·12 (fig. 1). Achlorhydria. She was treated with 'Anahæmin'. In November 1951 the blood findings were: hæmoglobin 50%; red cells 4 400 000; colour index 0·56. An opaque meal showed an enormous neoplasm at the cardia of the stomach (fig. 2) and on total gastrectomy on Nov. 23 a large cauliflower mass was found (tubular and papillary columnar-celled carcinoma) and secondaries in two lymph glands. She died in the following April with stenosis of the anastomosis.

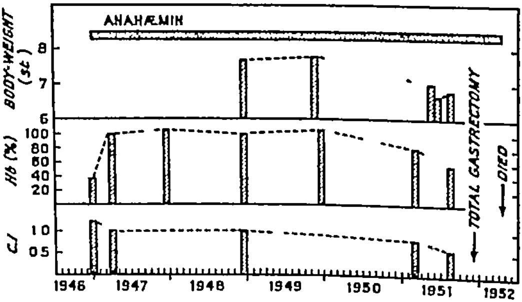

Fig. 1 (case 3)—Course of illness.

Of course it is possible for any patient with a long continued anæmia to develop carcinoma of the stomach in contrast to the cases which I shall describe later in which the carcinoma is the cause of the anæmia.

Secondary Anæmia

Acute anæmia follows rapid loss of a large amount of blood—e.g., by trauma, massive gastric and duodenal hæmorrhage, or hæmorrhage from typhoid ulcer. The cause is usually obvious and treatment has been made relatively simple by the availability of blood transfusion. More difficulty arises in cases where the losses of blood are small and often unnoticed and the condition which first attracts attention is the anæmia.

Chronic anæmia occurs at all ages, and one must remember that it may be caused by carcinoma of the

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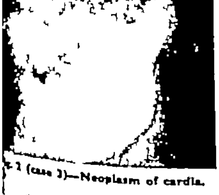
on the Schorstein lecture delivered at the London Hospital on Oct. 14, 1954.



2 (case 3)—Neoplasm of cardia.

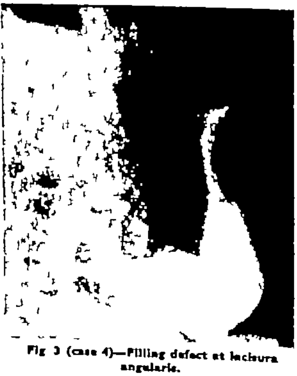


Fig. 3 (case 4)—Filling defect at incisura angularis.

Fig. 4 (case 5)—Filling defect in pyloric antrum.

stomach or of the large intestine Its presenting symptoms—lassitude, shortness of breath, pallor, and so on—may mask the underlying lesion It is my belief that such carcinomata do extremely well *after* appropriate surgical treatment, and I cannot emphasise too strongly the importance of full investigation, even to the point of *exploratory laparotomy*, in *all* cases of unexplained anæmia, whatever the patient's age

Carcinoma of the Stomach

With gastric carcinoma the digestive symptoms may be very slight

Case 4—A man, aged 70, came to outpatients in April, 1952, complaining of shortness of breath for four weeks He had a good appetite and no indigestion, there was no obvious bleeding and he was fat Blood hæmoglobin 37%, red cells 4,200,000 Opaque meal filling defect at the incisura angularis (fig 3) On June 6, 1952, a high partial gastrectomy was performed, and a tubular columnar-celled carcinoma was found (no lymphatic glands seem to be involved) In August, 1954, he was very well, with normal blood

Case 5—A woman, aged 58, was admitted on June 28, 1954, for investigation of anæmia In 1946 she had had treatment for duodenal ulcer and anæmia, and in 1953 an osteotomy for spondylitis In September, 1953, her hæmoglobin was found to be 64%, and on a follow up she was referred for investigation When she was admitted in September, 1953, a lump was felt in the epigastrium, and an opaque meal showed a constant filling defect in the pyloric antrum (fig 4) Hæmoglobin 81% A high gastrectomy was performed, and a polypoid tubular columnar celled carcinoma was found, with a secondary in one greater-curve lymph gland

Case 6—A man, aged 65, was admitted in July, 1954, with a history that in 1940 he was in Mile End Hospital with epigastric pain, anæmia, and vomiting, and in 1952 with abdominal distension (opaque enema reported normal) He now felt tired but his appetite was good. Hæmoglobin 49%, colour-index 1 0 No mass was felt He was fat, and there was occult blood in the stools In hospital his hæmoglobin fell steadily, and though it rose to 83% when he was given 2 pints of blood, it was back in two weeks to 28% On radiography no abnormality was seen non rotation not noticed On Aug 13 partial gastrectomy was performed for a hard plaque over the posterior wall of stomach, with division of bands for non rotation The pathological report was inflamed tubular columnar celled carcinoma, with no growth in the three greater curve lymph-glands examined

The following case is particularly interesting because treatment seems to have been successful despite a long lapse of time between diagnosis and operation

Case 7—A woman, aged 70, had a hæmoglobin of 58% when examined on May 29, 1949, and an opaque meal showed a large filling defect, but she refused operation. On Feb 18, 1950, her hæmoglobin was 38% (fig 5), and a mass could now be felt, though radiography (fig 6) showed little change, but she again refused operation. On Aug 2, 1950, a high gastrectomy was performed, and the lesion was found to be a trabecular polygonal celled medullary carcinoma, with no apparent spread to lymph glands In 1954 she was alive and well

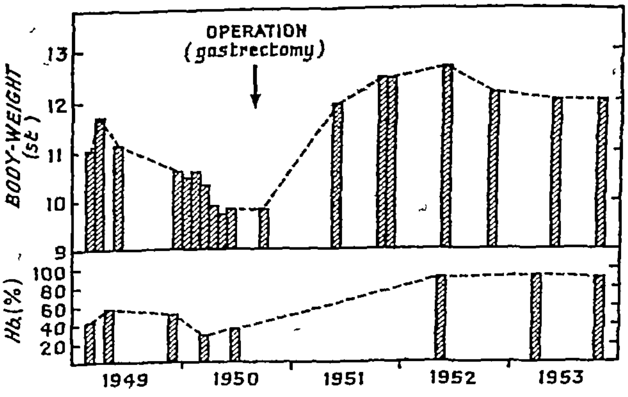


Fig 5 (case 7)—Course of illness

Carcinoma of the Large Intestine

With carcinoma of the large intestine the patient m notice no bleeding, or he may have melæna, or f bleeding may be quite severe Often the regularity bowel action remains unchanged

Case 8—A woman, aged 50, was admitted on Aug 1951, complaining of the passage of some loose motions holiday—possibly with some blood Her hæmoglobin w 66% On Sept 2 sigmoidoscopy was *normal to 25 cm* hæmoglobin 70% An opaque meal showed no abnormali of stomach, intestine, or colon. As all investigations h *failed to explain* the anæmia, laparotomy was undertaken Sept 19, and it revealed a carcinoma of the transverse col near the splenic flexure Thus proved to be a tubular papill *columnar celled carcinoma, without involvement of gla* When the X-ray films were re-examined, no sign of any le could be found

In the following case the picture was somewh obscured by the patient being diabetic and allegi some menorrhagia

Case 9—A woman of 51 attended hospital on Feb. 1 1950, complaining of flatulence Her hæmoglobin was 69% *and a mass was doubtfully palpable in the right iliac fos but an opaque meal was negative* On Aug 17, 1953, a opaque enema displayed an intracæcal mass (fig 7), and on Aug 26 hemicolectomy was performed for a mass near the u of the cæcum, which was reported as tubular columnar-cells carcinoma partly mucoid This mass measured 2 by 2 in. and I feel that in the clinical examination not enough stres was laid on the doubtful findings in the right iliac fossa. In 1954, however, the patient was still well

Case 10—A man, aged 62, was very pale when he firs attended on Aug 7, 1952 His hæmoglobin was 27%, a opaque meal showed prepyloric narrowing, and a test mea 0 07% free hydrochloric acid *Later a mass* was discovered i the right iliac fossa, and on Nov 28, 1952, a right hemi*colectomy was performed for what proved to be a tubul columnar celled mucus secreting* carcinoma of the cæcum.

Case 11—A woman, aged 59, was admitted on June 7, 1944, with anæmia. Her hæmoglobin was 59% and an opaque enema showed carcinoma of the transverse colon *On June 1* most of the transverse colon was excised, leaving a cæcostomy Because of bombing she was evacuated *to Scotland on July 6*

At a follow up on June 1, 1953, she was *pale and short of* breath hæmoglobin 45%. On Aug 11, 1953, her hæmoglobin had fallen to 34%, and an opaque enema showed a filling defect near the *hepatic flexure* At laparotomy a carcinoma was found about 3 in from the site of the previous junction partial colectomy was performed with end-to-end *anastomosis* The pathological report was tubular columnar celled carcinoma, with secondaries in one lymph gland and fibrocaseous tuberculosis in nine

Congenital Conditions

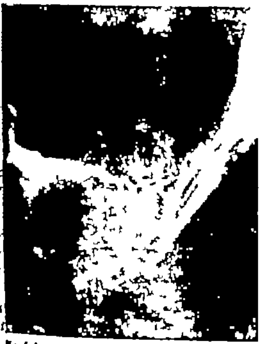
A Meckel's diverticulum may contain ectopic gastr mucosa which ulcerates and bleeds freely enough t cause anæmia Fortunately, as a rule in children th bleeding is severe and obvious and is dealt with as a surgical emergency, provided the child comes under surgeon's care early enough

Of many cases I shall quote three

Case 12—A girl of 8 months was admitted on Oct 2 1937, with increasing pallor and some alleged melæna. He hæmoglobin was 19%, and her red cell count 2,000,000 Despite blood transfusions she went downhill, and she was referred to me by Dr A Maitland-Jones. We both thought ulceration in a Meckel's diverticulum the most likely cause of the hæmorrhage

At laparotomy a small diverticulum was found in the left iliac fossa, adherent to the anterior abdominal wall In view of the child's poor condition it was thought best to separate the bowel and embed the ulcer

On Aug 26, 1946, she was readmitted with intestinal obstruction. Laparotomy was performed and there appeared to be a large pouch lying in the mesentery of the small intestine—probably jejunum This was excised with a portion of intestine Examination showed that the pouch was lined



g. 6 (case 7)—Filling defect of pyloric end of stomach.

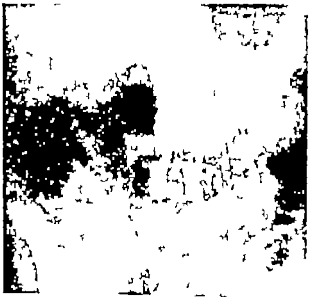


Fig 7 (case 9)—Intracæcal mass revealed by barium enema.

Fig 8 (case 15)—Distension of stomach with non-rotation.

y gastric mucosa, and there were two peptic ulcers—at the ntrance and exit from the intestine which was much arrowed.

his case illustrates the fact that ectopic mucosa can ccur apart from a Meckel's diverticulum—though the riginal diagnosis was not very far out It also illustrates he value of laparotomy where there is bleeding from he intestinal tract, even in the very young

Case 13.—A boy born in 1913 was first seen in 1928 when e was said to have had severe bleeding from the rectum. is hæmoglobin was 21% and he developed papillœdema and etinal exudates with partial blindness of the left eye In 936 he was readmitted having had hæmoptysis five days reviously There was infiltration of the lower lobe of the ght lung and his sputum contained tubercle bacilli. His t eye showed optic atrophy He was sent to a sanatorium 1939 he was again readmitted this time with rectal bleed g His hæmoglobin was 78% An opaque meal showed at a large portion of barium remained in the ileum It was fficult to say whether this was in a Meckel's diverticulum, t it had not the appearance of being so In April 1940 e patient had some abdominal pain but no further bleeding parotomy was performed and a Meckel's diverticulum oved. Its lining consisted of gastric mucosa, and there was mall progressive peptic erosion.

In 1951 the patient was well

Case 14.—A woman, aged 44, first attended on Jan. 21 51 complaining of shortness of breath Her hæmoglobin s 33%, and a test meal showed no free hydrochloric acid opaque meal revealed nothing abnormal but an opaque ma showed a dome-shaped filling defect in the cæcum there was a mass in the pelvis this defect was tentatively ributed to fibroids, but she had had no menorrhagia. At rotomy on March 10 1954 a Meckel's diverticulum was ed: it contained a small ulcer

Non rotation of Intestine

During development the normal rotation of the cæcum d part of the colon to the right of the abdomen may l to take place Often adhesions form across the ond part of the duodenum causing dilatation of the odenum and stomach This may be associated with ration and hæmorrhage

Case 15—A girl aged 11 admitted to another hospital in bruary 1954 with an alleged hæmatemesis and a hæmobin of 28%, was treated by blood transfusion. After her ission to the London Hospital on June 23 1954 an opaque l showed a markedly distended stomach and non rotation g 8): her hæmoglobin was now 83%. At laparotomy the dition of non-rotation was confirmed and the constricting ds were divided.

Acholuric Jaundice

Acholuric jaundice might be described as a hereditary ngenital anæmia due to imperfect formation of the red blood-cells The spleen destroys large numbers of these poor products causing hæmolytic jaundice and anæmia of lesser or greater severity The destruction may occur in phases, producing attacks of more marked jaundice and anæmia Splenectomy removes the destructive agent and converts a sick person into an almost normal one

I well remember a young flying officer who had got into the Royal Air Force with this disease, and before the late war was invalided from Singapore as a case of pernicious anæmia. He was referred to me by Dr Donald Hunter as a case of acholuric jaundice for splenectomy His delight on the 12th day after operation that he could now wear green pyjamas had to be seen to be believed

The following case is a classic

Case 16—Mrs M. was born in 1884 In 1891 at the age of 7 she was admitted to Shadwell as a case of anæmia. In 1896 at the Brompton Hospital her spleen was found to be enlarged and her condition was diagnosed as splenic anæmia When she was first admitted to the London Hospital, in 1902, this diagnosis was maintained and in 1906 she was shown to the Royal Society of Medicine as a case of splenic anæmia. In 1908 on her readmission to the London Hospital, her red cells numbered 1 600 000 per c.mm. and her spleen extended to the right iliac fossa.

This was all, of course before Chauffard discovered the so-called fragility of the abnormal red cells as measured against different concentrations of saline solution.

In 1923 she was readmitted with ulcerative stomatitis hæmoglobin 55% colour index 0·71 Next in February 1932, she came in with a five weeks history of abdominal colic, jaundice and shivering Her urine contained bile, and the fragility of the red cells was found to be increased. Plain radiographs of the abdomen showed shadows attributed to gallstones. On April 8 1932 splenectomy and cholecystectomy were performed: the pathological report was: splenomegaly acholuric jaundice; acute and chronic inflammation and fibrosis of gall bladder

In 1942 she was readmitted having had a swelling of the right breast for six months. Her hæmoglobin was 110% and the red cells were hæmolysed at saline concentrations of 0·42–0·56%. A right radical mastectomy was performed and the condition proved to be a tubular solid acinar scirrhous carcinoma, with secondaries in two out of seven axillary glands

This patient's son also had acholuric jaundice.

Case 17—He was 17 years old when in 1929 he was admitted having had jaundice for two months. (He had also had an attack three years before) On examination he was deeply jaundiced the spleen filled the left of the abdomen, and radiography showed shadows suggestive of gallstones Hæmoglobin 75%; colour index 0 77; fragility of red cells slightly increased (hæmolysis at concentrations up to 0·55% saline) In February, 1930, splenectomy was performed but not cholecystectomy, for though the gall bladder was fatty, no stones were felt A month later the red cell fragility and other blood findings were unchanged In 1932 he had acute appendicitis, and did well

Hæmangiomata of the Intestine

Intestinal hæmangioma is rare but can be important for the surgeon because the diagnosis cannot be definitely established without exploratory laparotomy Unfortunately, very often, as in the case described below, the hæmangioma is too widespread for excision Occasionally, however, it is more localised and can be treated effectively I remember a case, with severe anæmia, in which blood could be seen spurting from hæmangioma, about an inch in diameter, in the wall of the rectum This was destroyed by diathermy

Case 18 —*This patient was 35 years old* when admitted on Dec 28, 1951 His history was that in 1948 he had become increasingly tired and lethargic with headaches, his hæmoglobin was 33%, and for nine months he had liver injections with some improvement On Dec 11, 1951, his hæmoglobin was found to be 35% Opaque meals showed no abnormality, but at operation on Feb 8 we found numerous tortuous large vessels and vascular patches along the whole length of the small intestine (fig 9) Unfortunately excision could not be attempted

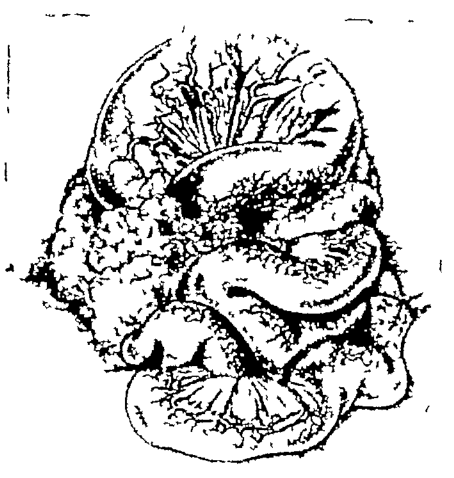


Fig 9 (case 18)—Hæmangiomata of intestine

Splenic Anæmia

In the past splenic anæmia was often a dumping ground, and cases were thrown to the surgeon in the hope that he might be able to elucidate some of the problems involved The proportion of cases of anæmia given this diagnosis is nowadays diminishing, but they still have important surgical interest

There are, I believe, three types in which operation can be of great benefit

1 Cases of anæmia with enlarged spleen which in our present state of knowledge (or lack of it) must still be classified as splenic anæmia

2 Cases of thrombosis of the splenic vein in which the enlarged spleen is an encumbrance

3 Cases of portal hypertension—clinically corresponding to what is known as Banti's disease—in which vascular shunts are of value Here portacaval anastomosis is now largely replacing the lienorenal anastomosis formerly undertaken

I shall quote an example of each of these types

Case 19 —*This patient had attended medical outpatients for six years as a case of splenic anæmia.* From time to time she was treated by blood-transfusion The fragility of her blood-cells was normal, and her hæmoglobin varied between 43% and 67% On Feb 19, 1954, when her age was 34 and her hæmoglobin 43%, her spleen (which was six or seven times the normal size) was removed No dilated veins were seen and the portal vein pressure was 150 mm water The liver looked normal, but biopsy showed hæmosiderosis and fibrosis of the liver as well as hæmosiderosis of the spleen Seen on June 21, 1954, she was perfectly well, with a hæmoglobin of 85%

Case 20 —*A boy, aged 9, who was attending the skin department for psoriasis, was found to have an enlarged spleen* When he was admitted on Aug 29, 1949, globin was 81% Someone had courage to do a of the spleen, and the result was negative Tes function gave normal results, and the Wasserman was negative After removal on Sept 6, 1949, was found to weigh 1 lb 10 oz There was thr the splenic vein and the pressure in the portal 265 mm Unfortunately he developed a subphren but this was successfully drained. He has develo healthy normal boy who can now play all games.

Case 21.—*This patient was 45 years old when sh first lienorenal shunt performed at the London Ho*

When admitted on Dec 20, 1947, she had had s the abdomen and hæmatemesis for sixteen mon abdomen had been tapped on several occasions, abou being removed at the first time and about 1 gallo thereafter Her hæmoglobin was 33%, but b transfusions and a diet containing ample vitamins to 83% Liver function tests showed some liver plasma proteins 6 2 g per 100 ml (albumin 2 9 g, 3 3 g)

The operation was done on Jan 20, 1948, using an a thoracic incision The splenic vein pressure was fo 380 mm. Splenectomy and left nephrectomy we *taken, with end to-end anastomosis of the splenic* veins over Blakemore and Lord ' Vitallium ' tube the peritoneal cavity was tapped and 3 pints of fluid

She did very well till February, 1954, when at follow examination she was noticed to be pale No obvious On readmission on Feb 16 her hæmoglobin was 30 liver-function tests showed nearly normal figures. treated by blood transfusion, and with iron and vit Seen on June 21, 1954, she was very well.

Thrombocytopenic Purpura

Thrombocytopenic purpura is a very dangerous far commoner in the female sex It may occur age and is usually heralded by ecchymoses of t and mucous membranes There is often profou stitutional disturbance, severe anæmia develops q and as a rule the spleen is somewhat enlarged blood-platelets are greatly reduced in numbers, bleeding-time is usually lengthened, but the coagu time is normal In these cases I have seen death bleeding into the brain or into the myocardium

The condition is comparatively rare in boys, an tend to recover as they grow older I have only removed a boy's spleen for this condition, an reason for doing so was largely his own desire to part in the " brutal and licentious " games of our schools

So far as I know splenectomy is the only treat but the time of the operation has to be selected the utmost care During operation the injecti adrenaline into the splenic artery causes consid shrinkage of the spleen, and it is said to squeeze o platelets contained in that organ The effec splenectomy on the bleeding time may be of kinds

1 Immediate and dramatic *On ligation of the p* the bleeding time becomes normal, and it remains no

2 The bleeding time may return *at once* to no but then relapse for a time before returning agai normal.

3 There may be no immediate effect. Neverth the bleeding-time usually returns slowly to normal.

In most cases the platelet-count goes up fairly qu —in a matter of a few days

The results of splenectomy are on the whole excell except possibly in some of the older patients for wh the operation may have been delayed too long

In conclusion I should like to thank all my colleagues the staff of the London Hospital for their help and encour ment, and in particular Mr J E Richardson and Mr Anscombe for much assistance in the preparation of t lecture

DISTURBANCES OF CARBOHYDRATE METABOLISM CAUSED BY BARBITURATES AND ALCOHOL

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Barbiturates and other sedative drugs are known to interfere with carbohydrate metabolism as reflected in the glucose-tolerance test Tod (1935) found that the duration of hyperglycæmia was shortened by barbiturates, morphine and chloral Subsequent investigations showed that carbohydrate metabolism might be disturbed in several ways but lag curves and prolonged hyperglycæmic responses predominated (Merivale and Hunter 1954 Hunter and Merivale 1954)

Hunter and Greenberg's (1954) report of 3 patients who were suspected of having islet cell adenoma of the pancreas, but were subsequently found to be barbiturate addicts shows the importance of these observations

Material

We have carried out pyruvate metabolism tests, after oral ingestion of glucose, on 16 patients who had been receiving barbiturates either because of addiction or as treatment The type of barbiturate dosage, and duration of consumption are shown in table I where information about dosage was unreliable approximate figures are given In view of the similarity between barbiturate and alcohol intoxication (Isbell and White 1953) we carried out similar studies on 7 alcoholic patients details of them appear in table II

TABLE I—BARBITURATE CONSUMPTION IN 16 PATIENTS

Patient no.	Sex	Age (yr)	Type of barbiturate	Average daily consumption (gr)	Duration of barbiturate consumption (months)	Reason for taking drug
B1	M	56	Amylobarb sod	6	2	Medical advice
B2	F	25		12	3	
B3	F	31		8	3	
B4	M	46		6	12	
B5	F	62	Pentobarb sod	3	3	
B6	F	25	Amylobarb sod.	6–12	9	
B7	F	23	Phenobarb	3	108	
B8	F	34	Amylobarb sod	6	½	
B9	F	30	Quinalbarb sod	3–6	6	
B10	F	28	Phenobarb	4	1	
B11	M	58	Amylobarb sod	6	24	
B12	M	38	Pentobarb sod	24	48	Addiction
B13	F	25	Quinalbarb sod	6–9	8	Medical advice
B14	M	42	Amylobarb sod	18–36	36	Addiction
B15	F	47		12–18	60	
B16	M	62		9–15	24	

Method

The pyruvate metabolism test originally described by Williams et al. (1943) and modified by Joiner et al (1950) was used

Blood pyruvate levels were estimated with the patient at complete bed rest The patient was fasted and blood taken without compressing the arm The patient was then given 50 g of glucose in 200 ml of water and the same dose of glucose was repeated 30 minutes later Blood was taken 60 and 90 minutes after the first dose of glucose, and the pyruvate levels estimated by the method of Friedemann and Haugen (1943) The normal range of these levels found by Joiner et al (1950) is shown at the foot of table IV We carried out this test on 5 healthy persons and the results agreed with those of Joiner et al.

TABLE II—DETAILS OF 7 ALCOHOLIC PATIENTS

Patient no	Sex	Age (yr)	Approximate average daily alcohol consumption (oz.)	Duration of alcohol consumption (yr)	Polyneuritis	Liver-function (bromsulphalein test)
A1	M	55	>20 (whisky)	>10	+	Normal
A2	M	59	>20 (whisky)	>10	+ (delirium tremens)	Normal
A3	F	28	5 (whisky)	~2	−	Normal
A4	M	45	>15 (whisky)	~10	+	Mild impairment 10% of dye remaining at 45 min.
A5	M	40	>20 (whisky)	~10	+	Normal
A6	F	41	1	>1	−	Normal
A7	F	33	4 (spirits)	1	−	Normal

At the same time capillary blood sugar levels were estimated at 0, 30 60, and 90 minutes by the method of Haslewood and Strookman (1939) The capillary blood sugar levels were also estimated in 16 healthy persons The results appear in table III and the accompanying figure

TABLE III—CAPILLARY BLOOD SUGAR LEVELS (MG PER 100 ML.) IN 16 HEALTHY PERSONS WHO HAD RECEIVED GLUCOSE 50 G AT 0 AND 30 MINUTES

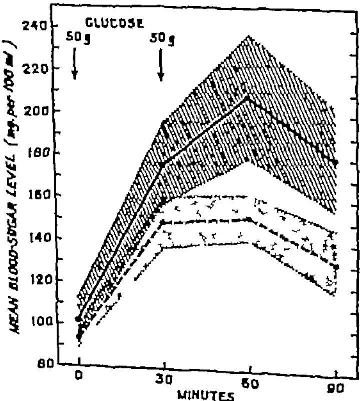
—	Fasting	30 min.	60 min.	90 min.
Mean	93.8	148.6	151.8	131.7
Range	66–107	93–191	108–186	76–198
Standard error	2.4	6.1	6.2	7.5

Results

TWO DOSE GLUCOSE TOLERANCE TESTS

Patients Taking Barbiturates

The results are given in table IV 2 patients (B3 and B6) responded normally to this test although their pyruvate metabolism was altered



Mean blood-sugar levels ± 2 × standard error (hatched and stippled areas) in two-dose glucose-tolerance test.

Continuous line 16 patients receiving barbiturates. Interrupted line 16 healthy persons.

TABLE IV—BLOOD SUGAR AND BLOOD-PYRUVATE LEVELS IN 16 PATIENTS RECEIVING BARBITURATES WHO HAD RECEIVED GLUCOSE 50 G AT 0 AND 30 MINUTES

Patient no	Blood sugar levels (mg per 100 ml)				Blood pyruvate levels (mg per 100 g)		
	Fasting	30 min.	60 min	90 min.	Fasting	60 min	90 min
B1	70	140	168	140	1 14	1 29	1 27
B2	156	156	196	169	0 70	1 81	1 04
B3	95	164	151	128	0 95	1 76	1 67
B4	101	134	162	154	0 60	1 21	1 71
B5	100	157	182	171	1 26	1 03	1 06
B6	77	177	146	109	0 85	1 10	1 70
B7	108	158	205	191	1 18	0 89	1 39
B8	96	125	176	155	0 57	0 82	0 91
B9	63	275	268	257	1 60	1 40	0 50
B10	111	177	166	161	1 98	2 28	2 35
B11	110	187	225	162	1 06	1 57	1 84
B12	91	205	247	216	0 98	1 45	1 34
B13	96	203	380	307	0 57	0 83	1 60
B14	104	195	211	170	0 96	1 83	1 18
B15	123	203	230	193	0 78	2 07	2 22
B16	127	169	219	191	0 74	1 55	1 94
Normal range*					0 40–1 12	0 58–1 26	0 54–1 34

* Joiner et al 1950

1 patient (B14), an incurable barbiturate addict, was studied on two admissions, separated by an interval of six months, with essentially similar results Only the results of his first test are shown in table IV and included in the figure, both results are shown in table VI

In the figure the means of the capillary blood-sugar levels are compared with those in the 16 healthy persons The shaded areas represent the confidence limits, calculated as twice the standard errors of the mean values The absence of overlapping of these areas at 60 and 90 minutes is strong presumptive evidence of a statistically significant difference between the two groups It is not clear why the area for patients taking barbiturates is wider than that for the healthy persons

Patients Taking Alcohol

These results are given in table V All patients showed grossly abnormal responses in comparison with the "healthy" group The interval between the two tests made on patients A1 and A2 was 2 days

PYRUVATE METABOLISM TEST

Patients Taking Barbiturates

The results are given in table IV Only patient B8 gave a normal response to this test, but the result of the glucose-tolerance test was abnormal She had been taking barbiturates for only twelve days before the test

Patients Taking Alcohol

The results are given in table V Patient A7 showed the only normal response to the test, she was the youngest of the group and had taken the smallest amount of alcohol Patients A3 and A6 were tested three weeks after admission, during which time they had not had alcohol

WITHDRAWAL SYNDROME AND VITAMIN B

Peters (1936) showed that thiamine acts as a enzyme or part of the co enzyme system of pyruvic-a oxidase It therefore seemed to us that thiamine m correct the biochemical abnormalities we demonstrat

We gave vitamin-B complex by intramuscular injection the form of 'Becosym' (containing 10 mg aneurine hyd chloride per ml) 2 ml daily for 14 days to 5 patients w continued to receive barbiturates After this time the pyruv metabolism test was repeated

Results before and after the treatment appear table VI For comparison, 4 alcoholic patients receiv the same treatment but no alcohol, the results for th group are shown in table VII

In both groups, the pyruvate levels largely return to normal, or else the peak blood level was decreased

Patient B16, in whom the difference was smallest, w later found to have taken an extra large dose of barbitura from a private source the day before the second test

Although injections of vitamin B partly or complete restored pyruvate oxidation to normal, the results of th two dose glucose-tolerance test were not so conclusi in the small number of patients who received th treatment.

Discussion

Quastel and Wheatley (1932) showed that, in vitro barbiturates interfere with the oxidation of pyruvate and glucose by brain tissue Later, the same was found to be true of heart and liver preparations (Jowett and Quastel 1937) Himwich (1951) and his associates showed a decreased oxygen consumption in man during barbiturate anæsthesia

Our results show that barbiturates cause a widespread disturbance of tissue oxidation, this disturbance is not confined to nervous tissue, and it resembles that produced by alcohol The resemblance between chronic barbiturate intoxication and chronic alcoholism, and the almost identical withdrawal syndromes, may therefore be caused by similar biochemical disturbances

The effect of vitamin B treatment on the pyruvate metabolism and glucose-tolerance tests suggests that barbiturates retard carbohydrate metabolism by inhibit

TABLE V—BLOOD SUGAR AND BLOOD PYRUVATE LEVELS I 7 ALCOHOLIC PATIENTS

Patient no	Blood-sugar levels (mg per 100 ml)				Blood pyruvate levels (mg per 100 g)		
	Fasting	30 min	60 min	90 min.	Fasting	60 min.	90 min
A1	146	154	229	232	1 49	1 42	1 45
A1	126	207	212	207	1 05	1 37	3 51
A2	113	228	260	266	1 58	1 88	1·83
A2	104	212	243	235	1 36	1 67	1 36
A3	122	157	118	136	0 91	1 30	0·97
A4	138	207	315	308	0 90	1 53	1 51
A5	118	166	234	191	1 20	1 37	1·64
A6	117	200	248	276	0 76	1 41	0 61
A7	114	203	235	186	0 58	1·00	0·66

TABLE VI—BLOOD-SUGAR AND BLOOD-PYRUVATE LEVELS IN 5 PATIENTS RECEIVING BARBITURATES, BEFORE AND AFTER 14 DAYS' TREATMENT WITH VITAMIN B (BECOSYM 2 ML DAILY BY INTRAMUSCULAR INJECTION)

Patient no	Blood-sugar levels (mg per 100 ml)												Blood pyruvate levels (mg per 100 g)								
	Fasting			30 min			60 min.			90 min			Fasting			60 min			90 min.		
	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference
B12	91	106	+15	205	194	−11	247	280	+33	216	231	+15	0 98	0 59	−0 39	1 45	1 00	−0 39	1 34	0 99	−0 35
B13	96	106	+10	203	182	−21	380	266	−144	307	193	−114	0 57	0 58	+0 01	0 83	1 02	+0 19	1·60	1 17	−0 43
B14a	104	96	−8	151	182	+31	203	165	−38	119	156	+37	0 83	0 72	−0 11	1 64	0 89	−0 75	1 22	0·91	−0 [illegible]
B14b	115	132	+17	141	138	−3	188	192	+4	127	180	+53	1 57	1 04	−0 53	1 75	1 40	−0 35	1 26	[illegible]	1·01
B15	123	106	−17	203	173	−30	230	166	−64	193	154	−39	0 78	1 07	+0 29	2 07	1 41	−0 66	1 23	1 43	[illegible]
B16	127	109	−18	169	147	−22	219	165	−54	191	157	−34	0 74	1 10	+0 36	1 55	1 66	+0 11	1 94	1 21	−0 13

VII—BLOOD-SUGAR AND BLOOD-PYRUVATE LEVELS IN 4 ALCOHOLIC PATIENTS BEFORE AND AFTER 14 DAYS TREATMENT WITH VITAMIN B (BECOSYM 2 ML. DAILY BY INTRAMUSCULAR INJECTION)

Blood-sugar levels (mg per 100 ml)												Blood pyruvate levels (mg per 100 g)								
Fasting			30 min			60 min			90 min			Fasting			60 min			90 min		
Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference	Before	After	Difference
126	100	−26	207	129	−78	212	169	−43	207	203	−4	1·03	0·74	−0·31	1·37	1·00	−0·37	3·84	1·10	−2·74
101	91	−10	212	184	−28	243	181	−62	235	180	−55	1·36	0·68	−0·68	1·64	1·01	−0·63	1·30	1·01	−0·29
138	82	−56	207	154	−53	316	188	−128	308	179	−129	0·90	0·49	−0·41	1·53	1·06	−0·47	1·51	1·30	−0·21
118	79	−39	166	148	−18	334	182	−152	191	158	−33	1·20	0·42	−0·78	1·37	1·00	−0·37	1·00	0·98	−0·02

pyruvate oxidation and by other ways as yet termined For example, barbiturates may influence ate of absorption of carbohydrate from the gut

drawal Effects

hen barbiturates were withdrawn from patients se carbohydrate metabolism had been restored to mal or near normal by injections of vitamin B, drawal symptoms were mild and short lived and the ents suffered only slight distress 2 of them had iously had epileptic fits and confusional psychoses r sudden withdrawal of barbiturates Vitamin B ctions may similarly modify the withdrawal symp ms in chronic alcoholism

tro-encephalography

Since the normal electrical activity of the brain depends the oxidative metabolism of glucose and possibly of ruvate, interference with carbohydrate metabolism ay account for the electro-encephalographic abnor lities produced by barbiturates

Shimazono et al. (1953) showed that in man the charac tic fast waves caused by the intravenous injection of yclobarbitone sodium could not be elicited during hypo emic coma. Clearly such interference cannot take place en the brain is deprived of glucose, its natural fuel as in poglycæmia (Peters and Van Slyke 1946)

Electro-encephalograms were taken of the 5 patients ated with vitamin B while receiving barbiturates patients were improved after two weeks of vitamin B atment, the alpha rhythm became more stable there was lessening of the fast and slow activity aracteristic of barbiturate intoxication

clusion

If our observations are confirmed in assessing the ue of vitamin B in psychiatric disorders account will e to be taken of whether the patients have been eiving barbiturates Otherwise any improvement may erroneously attributed to vitamin B and vitamin B iciency may be wrongly diagnosed. The improvement y in fact be the result of withdrawing the bar urate. Barbiturates may cause deterioration in mental ess (Hunter and Greenberg 1954 Hunter 1955) Our ults may provide a biochemical explanation for this ervation

Summary

Disturbances of carbohydrate metabolism shown by two-dose glucose tolerance and the pyruvate tabolism tests were found in 10 patients taking biturates. Similar disturbances were found in 7 oholic patients

There is evidence that such disturbances account for electro-encephalographic abnormalities produced by biturates

These abnormalities may be corrected by administer vitamin B even if the patient continues to take biturates. Vitamin B considerably modifies the drawal symptoms in barbiturate intoxication

We thank Mr M P Curwen of St Bartholomew's Hospital, statistical advice; and the physicians of Guy's Hospital and Dr L. C Cook, of Bexley Hospital, for access to patients under their care

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CERVICAL VERTIGO

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IN many cases of vertigo the cause is obscure (Symonds 1952) We are convinced that the neck plays a larger part in the mechanism of vertigo than is generally thought and we have demonstrated its significance in vertigo of various types

Vertigo due to Cervical Spondylosis

We have seen several cases which we believe fall into this group but most have had some complicating factor which might make the cause suspect and we describe one case only

Case 1.—A man aged 57 had been in excellent health "since a baby" While he was building a wall a brick had struck him on the head his neck was flexed at the time and the blow jarred his neck to one side He felt sick and dizzy for a few moments but was not unconscious, nor did he fall On recovery from the shock he noted a severe pain across the back of the neck and up the back of the head made worse by bending the neck backwards and particularly on looking to the left He carried on with his work throughout the day and apart from the pain, felt quite well On lying down that night he had a sudden and fairly severe attack of vertigo—everything started going round and I felt sick." He did not vomit and after a minute or two the vertigo subsided; but the neck pain did not allow him much sleep For the following two days the pain remained severe but it slowly subsided and was gone entirely within two weeks. During this time he noticed that on lying down or on looking upwards with the neck extended, he experienced intense brief bouts of vertigo These also gradually became less severe and by the time the pain had disappeared they were troublesome only on bending the head far back. Throughout this time he had no other symptoms He was free from headache and had no dizziness other than that described, there were no aural symptoms, and none suggesting compression of nerve roots or the spinal cord.

On examination the patient was well built and well nourished His blood-pressure was 170/100 mm Hg, and there was slight atherosclerosis of a degree commonly found in his age group There were no abnormalities in the central nervous or other systems He was referred to the Liverpool Ear, Nose, and Throat Infirmary, where a detailed investigation was negative On bending the patient's head backwards and to the left, he immediately had pain, identical with that which he had experienced since his accident He was then placed flat on a couch, and his head and trunk lowered over the end in the manner described by Gordon (1954) At once he complained of vertigo, and we noticed that nystagmus appeared in association with this symptom The vertigo and nystagmus occurred irrespective of whether the head was to the left, central, or to the right, and disappeared if the patient maintained his position for a little time His head and neck were then held rigidly in relation to each other, and the manœuvre was repeated with the patient on his back, and on his left and right sides, care being taken to ensure that he was tilted with his head as far back as before He did not have vertigo, nor was there any nystagmus These procedures were repeated several times at intervals, on each occasion the same results were obtained

Radiography of the cervical spine showed osteo arthritic changes with slight lipping of c3–7 and slight disc narrowing between c4 and c7 The osteo arthritis, with narrowed spacing and marginal sclerosis in the posterior joints extended as high as c2–3

The minor trauma which this man suffered was highly unlikely to have caused intracranial damage, nor did he have headache or any other symptom suggesting such damage He insisted that his neck was the seat of his pain, and at a later stage of his illness the pain was reproduced only by certain movements Vertigo was related to movements which caused the pain and could be induced only by such movements of the head on the neck The injury was relatively trivial, and we suggest that it alone would not have caused the lesion We believe that the injury merely acted as a trigger mechanism, the fundamental cause being the underlying cervical spondylosis

Post-tractional Vertigo

Case 2 —A man, aged 60, was involved in an explosion in 1942 and he subsequently complained of pain and parasthesiæ in the arms Radiography showed cervical spondylosis, with prolapse of the discs between c3 and 4 and c5 and 6 He was sorely troubled by his symptoms, and for some years was given various forms of physiotherapy with only temporary relief In April, 1953, he was subjected to manipulation, and thereafter slow neck traction was applied for three minutes daily for four days The following day traction was applied, rather more strongly, for eight minutes, but this was not immediately followed by any symptoms Three days later on getting up in the morning he had an acute attack of vertigo and fell to the left There was no vomiting, sweating, or syncope On trying to move to the right or the left he experienced vertigo and was unable to walk straight He stayed in bed for a week and then got up cautiously, finding that the vertigo was brought on only by rapid movement of his head The symptoms slowly diminished and had disappeared within two weeks At no time was there pain, diplopia, or syncope He had no history of ear trouble, and general and aural examinations were negative Since then there has been no recurrence of the vertigo, but the symptoms attributable to the disc lesion have again become troublesome

Case 3 —A married woman, aged 46, had had a hysterectomy five years previously, but apart from this had been in good general health When first seen in August, 1953, she said that five years ago she had noticed a prominence of the left side of her neck, and a little later stiffness of the neck had developed which began to affect her in attacks lasting for a few days to a few weeks During the previous year the discomfort in the neck had been accompanied by a pain in the right arm, and for the past three weeks before she had had similar pain in the left arm There was no history of neck injury or ear trouble, and she had no other symptoms

On examination flexion, extension, and lateral flexion the neck caused pain in the back of the neck, and there a doubtful area of partial anæsthesia down the outer side the left forearm, and on the inner side of the right forea The remainder of the central nervous system was norm as were the cardiovascular and other systems The blo pressure was 135/65 mm Hg, and there was no detecta atherosclerosis Radiography of the cervical spine show considerable "lipping" of c4 and c5, and a rudimente cervical rib on the right side A cervical disc lesion diagnosed and the patient was referred to an orthopæ surgeon for treatment

Treatment and progress —On Aug 27 the cervical spine manipulated, and daily neck traction, together with act and passive movements was started On Sept 7, a d following rather more vigorous treatment than usual, had a severe attack of vertigo, and these attacks continue a violent one occurring while the physiotherapist was mas ing her neck Consequently all treatment was stoppe After about two weeks her vertigo was much less, but still had torticollis and limitation of all neck movement On Oct 14, *since the vertigo had gone completely,* gent massage was again attempted, but, after four days of th treatment she once more began to have vertigo and a spa modic neck pain radiating up to the vertex and downward These symptoms subsided in about two weeks, and there now no pain or parasthesiæ in the arms Subsequently ver gentle neck traction was applied with no recurrence vertigo By Nov 8 the patient was very well, h movements were much more free, and there was onl spasm This satisfactory state of affairs was mai and she was discharged after a further month.

In these two cases, as in the first, there was co able spondylosis of the cervical spines which predi them to further injury There was a clear relati between the neck traction and the vertigo, stre acting as the trigger mechanism In these cas neck must have been directly injured, and this co our belief that the site of origin of the vertigo w cervical region

Post-traumatic Vertigo

Case 4 —A married woman, aged 45, who had bee throughout her life, fell on to the base of her spine an injured the back of her head She did not lose consciousne her main symptom was severe pain at the bottom of her she also had slight pain in the occipital region. About weeks after this injury she was wakened in the night throbbing sensation in the right side of her neck, and morning she sat up in bed, felt her head swimming fell to the left This sensation, which was momentary accompanied by slight nausea About ten minutes late "felt fine," and got up to do her housework. Just b luncheon she looked up at the warming rack and then down to attend to the stove, and immediately the ki "seemed to spin round" to the left, and she fell on t left side Simultaneously she felt "as if something in her neck on the top part of the right side," and she an "agonising pain" accompanied by nausea, but no v ing She thinks that she was unconscious for a minute or Within five minutes she was able to sit on a chair, the v had ceased but a vague soreness persisted in the neck. doctor ordered her to bed where she had stayed for six days before being seen at hospital While in bed she f that bending the neck produced attacks, but that t were definitely subsiding

General examination and aural investigation were negat Radiography of her cervical spine showed no disease

Treatment and progress —A plaster cast was made to h the patient's head and neck firmly in relation to each ot Tipping the patient, as previously described, did not prod vertigo while the cast was worn. The cast was then remo and the patient tipped with her neck bending freely, th was an immediate bout of vertigo, accompanied by nystagm These manœuvres were repeated several times, on e occasion with identical results. Within two months all symptoms had disappeared and it was no longer possible induce the vertigo

Case 5 —A married woman, aged 40, slipped and fell to the back of her head in June, 1954 She was unconscio for a few seconds and was carried to the welfare cent where she stayed for over an hour because of shock a vomiting She was unable to return to work because "feeling sick, and she also had some pain from abrasions on the left arm and left buttock but was able to travel by bus that evening to attend her doctor's surgery The next day she had a severe pain in the occipital region This persisted but after five days she returned to work In the second week of August the pain had spread to her left arm and she was sent to hospital for radiography which she was told ' showed damage to the upper part of the spine About this time she noticed that she was holding her head to the right side and that her neck was stiff She was advised to wear a collar, which she did for six weeks with considerable relief of symptoms. Some time later she had a severe attack of vertigo with a feeling that her environment was rotating in a clockwise direction Since then the attacks had occurred twice a week, and on two occasions she had fallen to the ground and bruised herself. When seen by one of us in January 1955 the patient complained of occipital headaches lasting a few minutes and relieved by analgesics attacks of vertigo and stiffness of the neck which was painful on attempting to turn it to the left

On examination the patient looked healthy and no tenderness or other abnormality was detected in the occipital region of the skull, but there was considerable tenderness over the upper cervical spine Movements of this region of the spine were painful and were greatly limited particularly rotation to the left and extension. She tended to hold her neck slightly flexed to the right There was no evidence of injury to the brain, spinal cord or peripheral nerves but although she was left-handed the grip in this hand was slightly weaker than in the right hand The other systems were normal.

Radiography of the cervical spine was reported on as follows: there is evidence of a fracture of the spinous process of the fourth cervical vertebra with downward displacement of the distal fragment. There is no evidence of bony union. No other bony injury is shown A cervical rib is present on the right side with a buttress type of transverse process of the seventh cervical vertebra on the left side

It is interesting that case 4 like case 1 insisted that the neck was the seat of the trouble In case 5 the story is again one of trouble with the neck vertigo developing after a latent interval longer than in the other cases. Physical signs were confined to the upper part of the neck, and radiographic examination confirmed that the cervical spine was the site of the disturbance

Discussion

ervical Spondylosis

Vertigo is rare Sir Russell Brain (1954) did not mention it in his Heberden oration on cervical spondylosis nor was it mentioned in a discussion of rupture of the intervertebral disc at the cervical level (*Proceedings of the Royal Society of Medicine* 1948) Cervical spondylosis was not included by Denny Brown (1949) in a review of the neurological aspects of vertigo

Barré (1926) first referred to the possibility of vertigo occurring in cervical arthritis, and it is described as one of the many features of the Barré Lieou syndrome Mayoux et al (1951) considered this syndrome by no means uncommon and they claimed to have seen eleven cases in one year

Headache and facial pain as a result of "cervical discopathy" was described by Neuwirth (1952) who remarked that vertigo may be a part of the clinical picture.

Wildhagen (1951) selected ten cases of Ménière's disease which he attributed to cervical arthritis, claiming that the latter brought about permanent labyrinthine [illegible] We cannot agree with this but in four of his patients all tests of auditory function were normal and we think it possible that these cases fall into our group

Finally a passing comment by Dix and Hallpike (1952) in their work on positional nystagmus due to otolith disease is of great interest

> "In a good many subjects pain in the neck and occipital region is complained of and radiological examination has generally revealed some evidence of cervical arthritis, the region however chiefly affected is that of the fifth and sixth cervical vertebrae, a very common site in subjects of our predominant age group and it has therefore been impossible to attribute any significance thereto"

While agreeing with this as a general statement, we do not think it applies to certain cases The damaged otolith will produce vertigo depending upon the position of the head in space We followed the instructions of Nylen (1950) to 'prevent nystagmus through occlusion of the vertebral artery by compression or as a result of alteration in the cervical vertebral column ' The head and spine were moved as a whole, and under these circumstances we were quite unable to produce vertigo or nystagmus in any of our cases only when the head was allowed to move freely on the neck was the characteristic syndrome produced

But why is vertigo rare whereas cervical arthritis is common? For reasons we shall discuss when we consider the mechanism of this condition we believe it to depend on disease of the upper cervical spine only which was the case in the four patients of ours in whom bony damage was demonstrated

Post tractional Vertigo

Several patients whom we have questioned have complained of dizziness and fainting after neck traction, and there is no doubt that the two patients we have described had attacks of vertigo

Mayoux et al refer to this condition when discussing the effect of neck traction in three cases one of which clearly fits into our group

> Mrs S presented with a neurological syndrome due to a cervical disc syndrome she had never had vertigo violent vertigo made its appearance [immediately after neck traction] and examination showed an intense nystagmus.'

Watkyn Thomas (1954) at the end of his summary of the article by Dix and Hallpike on vestibular neuronitis, says:

> 'It appears probable that in some of these cases the exciting cause may be an interference with neck reflexes In some cases of Nuchal Myalgia postural vertigo may be induced and then abolished by manipulation.'

Post traumatic Vertigo

Gordon (1954) describes five cases (in many ways similar to our own) of vertigo following head injury He considers that the vertigo was caused by otolith disease, and we have seen cases which we have classified in this group but the otoliths were not at fault in our patients

There were also other essential differences between our patients and Gordon's. In each of his cases the accident was severe with loss of consciousness lasting for several minutes, while consciousness was not lost in our first patient and in the other only very briefly His cases showed other post concussional symptoms, such as headache and irritability while in our cases these were entirely absent In his patients the symptoms had persisted for years; in ours they were of brief duration with the exception of case 5 in whom they lasted for several months but in this case there was radiographic evidence of damage to her cervical spine

Both in our cases and in Gordon's the symptoms were relieved by wearing a collar but this was to be expected whether the vertigo was due to the position of the head in space or to its position relative to the neck

Finally all our patients complained of pain in the neck and occiput, the site of injury

MECHANISM

Occlusion of the Vertebral Artery

de Kleyne and Nieuwenhuyse (1927) first suggested that nystagmus might be induced by occlusion of the vertebral artery when the head was held in certain positions

Each vertebral artery gives rise to the posterior inferior cerebellar artery on its own side and also to the anterior and posterior spinal arteries. The two arteries unite to form the basilar artery, from which spring the posterior cerebral arteries (Schaeffer 1943)

Thus, occlusion of either vertebral artery would deprive the posterior inferior cerebellar artery on its own side of its blood-supply, and should therefore have wider effects

Ford (1952) has described a case of short lasting, recurrent obstruction to the vertebral arteries A boy, aged 17, developed attacks of syncope followed by vertigo, nystagmus, and diplopia sometimes induced by forcing the head backwards These were caused by a defect in the odontoid process, allowing an unusual degree of mobility in the second cervical vertebral joint Ford also refers to two similar cases

In our own cases the only abnormalities were vertigo and nystagmus, no wider involvement of the central nervous system or displacement of the vertebræ were ever demonstrated

Involvement of the Cervical Sympathetic System

Barré (1926) held that the vertigo in his cases was a result of cervical osteo-arthritis involving the sympathetic system—a view supported by Mayoux et al (1951) Neuwirth (1952) thought that the headache and facial pain in his cases were caused by a similar mechanism

Yet it seems unlikely that stimulation of the sympathetic chain in the neck region sufficient to cause vertigo would not also give rise to more widespread manifestations Barré says that 'Surocaine' injected at the base of the neck ("at the base of the vertebral nerves") produced tinnitus, vertigo, and nystagmus, but these symptoms may not have been caused by infiltration of the sympathetic fibres, nor would it explain the mechanism in Watkyn-Thomas's (1954) cases or in our own

Finally, Cawthorne and Hewlett (1954), discussing vasodilatation and vasoconstriction in Ménière's disease, end by saying "all this suggests that much more work needs to be done before we can accept without question hypotheses concerning the effect of altering the blood flow through the labyrinth in Ménière's disease"

Involvement of the Neck Reflexes

We agree with Watkyn Thomas (1954) that the cause of the vertigo in the cases we have described was interference with the tonic neck reflexes Whether trauma, osteo-arthritis, neck traction, or injection of fluid is responsible, damage is done to the muscles and ligaments of the neck

The centre for the neck reflexes is in the upper cervical region of the cord (Samson Wright 1952) The afferent impulses pass in the posterior roots of c1, 2, and 3, and come chiefly from the muscles of the back of the neck This supports our contention that damage must be high in the cervical region to produce vertigo

The actual paths by which proprioceptive impulses travel, and the nature of such impulses in man, is in doubt However, many possible anatomical pathways have been demonstrated in animals Jansen and Brodal (1954) refer to the following afferent cerebellar fibres

(1) Ventral spinocerebellar tract

(2) External cuneatecerebellar fibres from the cervical and upper thoracic spinal levels

(3) Olivocerebellar fibres from all levels of the spinal cord

(4) *Reticulocerebellar fibres conveying impulses from the* fore limb and hind limb and possibly from the neck also

(5 and 6) Perihypoglossal and trigeminocerebellar fibres of unknown origin

These findings are purely anatomical, mainly obtained by the method of retrograde degeneration, and only the primary endings of any one tract can be mapped out Possibly an impulse originating in any spinal segment activates a larger part of the cerebellar cortex than is accounted for by anatomical studies

Trauma to the neck causes an alteration in the proprioceptive impulses from the end organs, but the pain and reactionary œdema which occur will, for a variable time, act as a splint to the neck Subsequently, these will become less effective, particularly w neck is relaxed as on lying down, and more st will occur, causing further alterations in the reaching the cerebellum and vestibular nuclei same way that false information reaching these from the diseased vestibule or otolith ultimately "consciousness of disordered orientation of the space" (Brain 1951), so will our class of experience vertigo associated with nystagmus. effect of the trauma subsides, increased stretching neck will be needed to induce vertigo, and the will have symptoms only on extreme movement as looking far upwards

As the damage involves the peripheral end only, no central signs will be found, and the can be expected to disappear when healing occ when the brain adjusts itself to the defect

Conclusions

Disease of the neck is a not uncommon cause of in man, and we suggest that this syndrome be cervical vertigo

We have so far found three groups of patient have this syndrome (1) patients with cervical s losis, (2) patients treated by neck traction, a patients with certain types of neck injury

Such patients usually have pain in the back neck and occipital region, sometimes accompani stiffness of the neck After a varying latent in recurrent postural vertigo, occurring on lying and on bending the neck into certain positio noticed This symptom may be reproduced, nystagmus induced by bending the neck, but n merely positioning the head in space The prog is good, and relief may be obtained by wearing a ce *collar until the underlying lesion has resolved*

We should like to thank Dr I Calma, of the phys department, University of Liverpool, for his help o neck-reflex mechanisms, Dr R R Hughes, of the Southern Hospital, for permission to examine and de two of his patients, and the registrars of the Liverpool Nose, and Throat Infirmary, for carrying out detailed aud examinations

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" there is a growing recognition that, in addition learning factual knowledge and acquiring a certain degree professional skill, the medical student is also acquiring a n complex of attitudes and values that will often determi how he uses his skills and knowledge What kinds of attitud and values are involved, and where does he learn them What is the influence of the informal structure of his enviro ment as well as the formal structure of the curriculum How do the student's interpersonal relationships with othe students, faculty, and patients affect him? What are th similarities and dissimilarities of student response to the sam teaching exercise or technique? How does the faculty vie its job? These and many other questions must be explored in order to identify, and ultimately to understand, the critical factors in medical learning"—Annual report of the Commonwealth Fund, 1955, p 7

DETERMINATION OF 5-HYDROXY-INDOLE-ACETIC ACID IN URINE

AND ITS EXCRETION IN PATIENTS WITH MALIGNANT CARCINOIDS

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ATTENTION was focused on metastatic malignant abdominal carcinoids (' carcinoidosis ') by Waldenstrom (1954a) as the cause of a syndrome principally manifested by attacks of flushing tachycardia asthma hyper peristalsis and right sided valvular disease of the heart (Waldenström and Ljungberg 1953 1955 Thorson et al 1954)

Lembeck (1953 1954) and Ratzenhofer and Lembeck (1954) have shown that abdominal carcinoids contain large amounts of 5 hydroxytryptamine (enteramine serotonin) and Pernow and Waldenström (1954) have found in the blood and urine of patients with carcinoid during attacks of flushing substances resembling 5-hydroxytryptamine in their biological effects

Waldenstrom (1954a) suggests that this syndrome is caused by the release of 5 hydroxytryptamine into the blood from the tumour

The discovery that 5 hydroxytryptamine is broken down by mono amine oxidase (Blaschko 1952 Blaschko and Philpot 1953) and excreted in the urine as 5-hydroxy indole-acetic acid (Erspamer 1954 1955) made it very probable that the excretion of this metabolite would be increased in patients with malignant abdominal carcinoids. This effect has indeed been reported by Page et al (1955) and Sjoerdsma and Udenfriend (1955) who found a very large increase in the urinary excretion of 5 hydroxy indole acetic acid in such patients

We have studied the excretion of 5 hydroxy indole acetic acid in 8 patients with carcinoid proved by microscopy, and followed the daily excretion of 5 hydroxy indole acetic acid in 2 of these patients who were in the General Hospital, Malmö

Early in our investigations we noticed that the urine from these patients became blue when treated with Ehrlich's aldehyde reagent (p-dimethylaminobenzaldehyde in dilute hydrochloric acid) It is well known that certain indole derivatives are turned blue by Ehrlich's aldehyde reagent and this reaction has been used by spamer and Boretti (1951) to detect 5 hydroxy ptamine and other indole derivatives on paper romatograms It was therefore to be expected that tients with carcinoid would excrete large amounts of dole derivatives in their urine

By paper chromatography we found that the indole rivatives excreted consisted almost exclusively of hydroxy indole-acetic acid A qualitative and quanti tive method for determining it based on the reaction indole derivatives to Ehrlich's aldehyde reagent has en elaborated

Methods

per Chromatography of Extracts of Urine

The urine was extracted in the following way

100 ml of the 24-hour specimen was made alkaline to H 8·5–9·0 with ammonia The solution was filtered and racted twice with 50 ml of ether to remove impurities e solution was next acidified to pH 4·0 with dilute hydro loric acid and after filtration, extracted three times with 0 ml. of ether The pooled ether extracts were dehydrated th anhydrous sodium sulphate and evaporated to dryness vacuo. The residue was dissolved in ethanol and used for romatography

Paper chromatography was done by the method of Erspamer (1955) with a solvent mixture of n butanol + acetic acid + water (4 1 5) For developing the spots the paper was sprayed by the method of Erspamer and Boretti (1951) with either an alcoholic solution of p dimethylaminobenzaldehyde or a solution of 2-chloro 4 nitrobenzenediazoniumnaphthalenesulphonate in dilute hydrochloric acid

Qualitative Determination

Urine from patients with carcinoid is turned blue by Ehrlich's aldehyde reagent and this reaction may be used as a screen test in most cases of carcinoidosis The test may be applied direct to the sample of urine Preferably 3 ml of Ehrlich's aldehyde reagent is added to 3 ml of urine and boiled The blue colour may sometimes be rather faint when the concentration of 5-hydroxy indole acetic acid is low or there is much interference by urinary or other pigments In such cases it is better to apply the test to the residue obtained by extracting the acidified urine with ether

Quantitative Determination

2 ml of filtered urine is acidified with one or two drops of 10% hydrochloric acid and extracted twice with 25 ml of ether in a small separating funnel The pooled ether extracts are filtered, dehydrated with about 3 g of anhydrous sodium sulphate and evaporated to dryness at 50 C in a water bath The residue is dissolved in 1 ml of 0·1 N hydrochloric acid and to 0·2 ml of this solution in a test tube is added 5 ml of Ehrlich's aldehyde reagent The solution and a blank consisting of 0·2 ml of 0·1 N hydrochloric acid and 5 ml of Ehrlich's reagent are then heated for 2 hours in a water bath at 45–50°C whereupon the test solution becomes blue The solutions are next removed from the water bath and immediately diluted with cold 50% ethyl alcohol to 10 ml The colour is measured with a spectrophotometer (Beckman DU) at 590 mμ Extinction × 62·5 = mg of 5 hydroxy indole acetic acid per 100 ml of urine When the test is done as described here the Lambert Beer law is obeyed within a concentration range of 0–20 mg of 5 hydroxy indole acetic acid per 100 ml

This method allows a determination of 5 μg of 5 hydroxy indole acetic acid (12·5 mg per 1000 ml of urine) If the blue is too faint to read the test should be repeated on a larger volume of the hydrochloric acid solution—e g the remaining 0·8 ml In the present cases of carcinoid 0·2 ml was sufficient for all the determinations

Material

The specimens of urine tested in this investigation came from 7 patients with malignant carcinoid proved by microscopy and from 1 patient whose symptoms subsided after surgical removal of a carcinoid tumour

Case reports

The relevant details of the 2 patients admitted to this hospital are as follows

Case 1.—A male factory worker aged 57 had been healthy until eight years ago when he had recurrent attacks of epigastric pain. During the last two years he had observed a patchy flush. At first the flush came on after he drank alcohol but later it appeared spontaneously He was admitted to hospital a year ago because of abdominal discomfort and diarrhœa Six months ago enlargement of the liver and a murmur over the lower part of the sternum were detected A few months later he was readmitted to hospital and attention was drawn to the carcinoid syndrome The patient's urine and blood contained high concentrations of a substance resembling 5-hydroxytryptamine He was then referred to this hospital with the diagnosis of malignant carcinoid. The urinary excretion of 5 hydroxy indole-acetic acid is shown in fig 1 During his stay here he had an intestinal perforation and had to be transferred to the surgical side and the opportunity was taken to prove the diagnosis by biopsy Later he had another intestinal perforation and died Necropsy

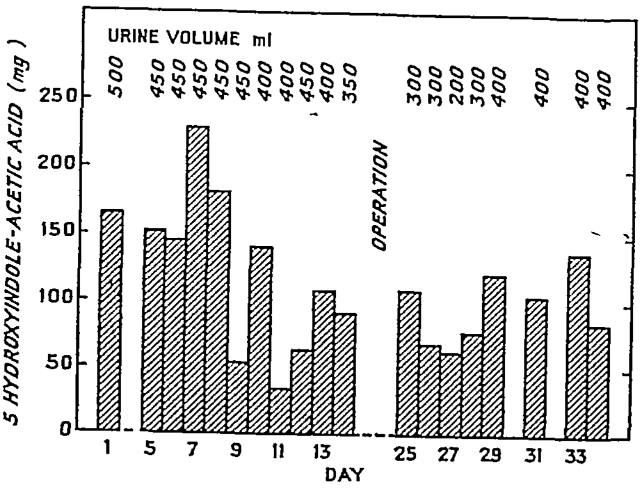

Fig 1—Urinary excretion of 5-hydroxy indole-acetic acid in case 1

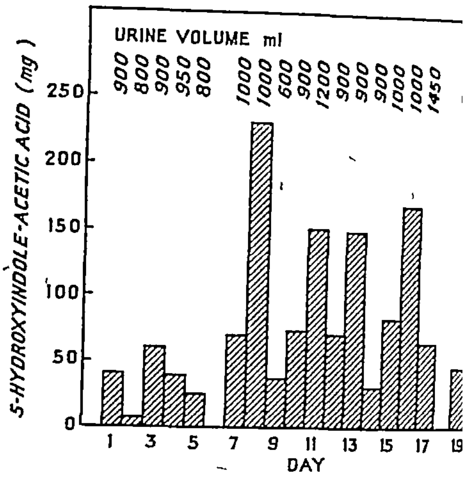

Fig 2—Urinary excretion of 5-hydroxy indole-acetic acid i

revealed pulmonary stenosis and a carcinoid in the small intestine with extensive metastases in the mesentery and the liver

Case 2 —A woman, aged 57, with ten years' history of attacks of abdominal pain and four years' history of attacks of ileus, was operated on about three years ago, when a carcinoid tumour of the small intestine was found with metastases in the mesentery Postoperatively she had intermittent attacks of pain diarrhœa (as much as twenty loose stools a day), and flushes, which appeared especially when she drank alcohol or became excited Three months ago enlargement of the liver and a loud systolic murmur over the lower left part of the sternum were noted During the past two years her urine has intermittently been red The urinary excretion of 5 hydroxyindole acetic acid is shown in fig 2

Results

Besides cases 1 and 2 we examined single samples of urine from 5 other patients with carcinoid and found in all of them 5 hydroxy-indole-acetic acid by the qualitative test By paper chromatography this substance was found to be the major metabolite In none of the cases was either 5 hydroxytryptamine or tryptamine detected in the urine

Urine from a patient whose symptoms of carcinoidosis had disappeared after surgical removal of a carcinoid tumour gave a negative reaction

In 3 of the above-mentioned patients the urine was red and contained rather large amounts of red pigments which probably arose from the *increased metabolism of* 5 hydroxytryptamine The pigments appear, however, intermittently in the urine, and their formation seems to depend on the interplay between several factors Increased excretion of 5 hydroxy-indole acetic acid alone is insufficient to produce the pigments These pigments and the mechanism of their formation are at present being studied by one of us (A H)

Discussion

Paper chromatography was done by the techniques described by Clerc Bory et al (1954) and Erspamer (1955) Of different solvents tried we found a mixture of *n* butanol + acetic acid + water to give a good separation, and this solvent was therefore chosen for most of our analyses The fact that 5 hydroxy indole-acetic acid always predominated and very often was the only detectable metabolite led us to regard the use of further solvents as unnecessary (cf Erspamer 1955)

An approximate estimation of 5 hydroxy-indole acetic acid in extracts of urine and blood has hitherto usually been made either by simple visual examination of the spots on the paper chromatograms—i e , comparison, as regards area and density of colour, of the spot given by the extract and spots obtained with known amounts of 5 hydroxy indole acetic acid, or by elution of t stance from the paper chromatograms and sub colorimetric determination in the eluate Neither procedures is, however, very suitable for clinica the former may be subject to large errors in ju and requires a great many repeated analyses at dilutions to give reasonably satisfactory results , latter, though more accurate, is very laborious an consuming and requires considerable analytical

A specific colorimetric procedure for me 5 hydroxy-indole acetic acid in urine, based on a r with α nitroso β-naphthol, has been develop Udenfriend and Titus (1955) , but details of it ha yet been published

We developed a simple method for the quant determination of 5 hydroxy indole acetic acid dire urine The method is not specific for 5 hydrox acetic acid , several other indole derivative 5 hydroxytryptamine and tryptamine—give a reaction However, this does not limit the applic of the method, because paper chromatography has that 5 hydroxyindole acetic acid is the predom metabolite

The copious excretion of 5 hydroxyindole acetic in the urine—up to 230 mg in twenty four hours— that patients with malignant carcinoid metabolise mous amounts of 5 hydroxytryptamine The n excretion of 5 hydroxy indole acetic acid in twenty hours has been reported as 4 5 mg (Erspamer 1 10 mg (Titus and Udenfriend 1954), and 3-8 (Szoerdsma and Udenfriend 1955) These normal v are all so low as not to be detected by the al mentioned screen-test The quantitative metho however, applicable even down to these small amo

The excretion of 5 hydroxy indole acetic acid in pat with carcinoid usually largely exceeds the repo normal values On one occasion, however, in 1 of patients it was as low as 6 mg in twenty four hour the investigation of suspected cases of carcinoid urine should therefore be examined repeatedly A s negative result may give rise to false conclusions

Malignant carcinoids should probably be classed tumours which are characterised by increased hormo activity—e g , phæochromocytoma and chorionepithelio (cf Waldenström 1954 a and b) The presence of a spec metabolite in the urine—in this case 5 hydrox ind acetic acid—and its identification should be of gr value in diagnosis, which could of course also be confirm by finding an increased amount of 5 hydroxytryptamine the blood The identification of 5 hydrox indole-ace acid in the urine—which reflects the metabolism 5 hydroxytryptamine—is, however, much easier from technical point of view

Continuous observation of the urinary xcretion of 5-hydroxy indole acetic acid fter surgical removal of a malignant arcinoid should be of help in assessing the ffectiveness of therapy

Summary

A screen test suitable for rapid examination of suspected cases of carcinoid is scribed

A simple method for the quantitative termination of 5 hydroxy indole acetic id in urine has been developed

The urinary excretion of 5 hydroxy dole-acetic acid has been followed in patients with malignant abdominal rcinoid (carcinoidosis)

An abnormally large amount of 5 ydroxy indole acetic acid was found in e urine of 5 other patients

In a 6th case no abnormally large mount of urinary 5-hydroxy indole acetic cid was found after surgical ablation of a rcinoid tumour

Paper chromatography has shown that at 5-hydroxy indole acetic acid is e predominant metabolite of 5 hydroxy yptamine.

In 3 of the patients with carcinoidosis the urine ntained red pigments, probably arising from the creased formation of 5 hydroxy indole-acetic acid

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A RAPID CHROMATOGRAPHIC TEST FOR HIGH URINARY EXCRETION OF -HYDROXY-INDOLE-ACETIC ACID AND 5-HYDROXYTRYPTAMINE

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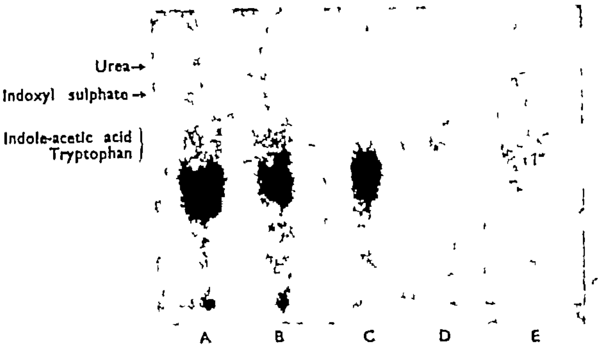

Chromatogram run for 45 min in sodium-chloride/acetic-acid solution Whatman no 4 paper

A B = 50 µl urine of patients with metastasising carcinoid
C = 5 µg 5-H.I.A.A
D E = 50 µl. urine of healthy people
Urea, indoxyl sulphate tryptophan and indole acetic acid do not show in the figure

High urinary output of 5 hydroxy indole acetic acid H.I.A.A.) is probably the most useful biochemical cation of metastasing carcinoid tumours (Page al 1955 Sjoerdsma and Udenfriend 1955 Snow al. 1955 Goble et al 1955) 5-hydroxytryptamine H.T.) excretion has also been found to be high in this ase (Pernow and Waldenström 1954 Snow et al. 1955) 5-H.I.A.A. may be determined quantitatively by a orimetric method (Udenfriend et al. 1955) or qualitatly and semi quantitatively by various chromatophic methods (Jepson 1955 Snow et al 1955) A simple qualitative test based on the colorimetric method has recently been described (Sjoerdsma et al 1955)

The following rapid test, which has been used in the study of suspected cases of metastasising carcinoid is based on paper chromatography using sodium-chloride/acetic acid solutions. Inorganic salt solutions have previously been used by Boscott (1952) as chromatographic solvents, mainly in the separation of phenolic acids and by Horne and Pollard (1948) in the chromatography of streptomycin

Method

Apparatus

No special apparatus is needed. Chromatograms may be conveniently run in wide necked screw top jars using Whatman no 4 paper for preference.

Chromatographic solvents

For the detection of 5 H T: 8 g sodium chloride dissolved in 100 ml water

For the detection of 5 H.I.A.A. 8 g sodium chloride dissolved in 100 ml. water + 1 0 ml glacial acetic acid.

Colour Reagent

2 g dimethylaminobenzaldehyde is dissolved in 5 ml. concentrated hydrochloric acid and 95 ml. water is added.

Procedure

50 µl urine is applied at a point 4 cm from an edge of a rectangular piece of Whatman no 4 paper (Occasionally very concentrated urines give satisfactory chromatograms only when 25 µl. is used.) The urine is applied in 10 µl. portions from a micro pipette and dried by a warm-air current 5 µl. of a 1 mg per ml. ethanolic solution of 5 H.I.A.A. or of a 0 2 mg per ml aqueous solution of 5 H T may be applied in parallel with the urine spot and also a normal urine for comparison The sheet is fastened in cylindrical form with staples and stood for 45 min. in about 100 ml. solvent in a wide-necked jar During this time the solvent travels about 15 cm. The chromatogram is then dried in a warm-air oven, sprayed with the colour reagent and heated at 55–60°C for 10–15 min.

Results

After colour development normal urine chromatograms show a strong yellow urea spot and often weak spots in the indoxyl-sulphate, tryptophan, and indole acetic acid positions This pattern was shown by 110 urines of healthy people Urines containing at least 20 mg per litre of 5 H.I.A A. show a further blue-grey spot which tends to become stronger on standing (see figure) This travels separately from all the other indole material present using sodium-chloride/acetic-acid as solvent Urines containing at least 2 mg per litre of 5 H T show a blue spot running separately from other indoles present, in the sodium-chloride solvent This spot fades on standing Urines from all 9 reported cases of metastasising carcinoid on which 5-H I A A determinations have been done contained 5 H I A A at a level well above the limit of sensitivity of the test, with the exception of case 3 of Snow et al (1955), in which urinary 5 H I A A levels of 6 8–44 mg per litre were found In this case, however, the urinary 5-H T level was high enough to be easily detected Case 1 of Snow et al excreted very large amounts of 5 H I A A but amounts of 5-H T which, though gross in comparison with normals, were usually below the limits of sensitivity of the chromatographic test

The solvents used may perhaps be found of more general use R_f values of some of the more common indole substances are shown in the accompanying table

R_f VALUES AND COLOUR REACTIONS OF COMMON INDOLE SUBSTANCES

Substance	Approximate R_f		Colour with dimethylamino benzaldehyde reagent	
	Sodium chloride	Sodium chloride/ acetic acid	After 10 min at 60°C	On standing
Urea	0 80	0 84	Yellow	Yellow
5 H I A A	0 55	0 42	Blue grey	Blue
5 H T	0 34	0 37	Blue	Fades
Indole acetic acid	0 71	0 54	Purple	Fades
Indoxyl sulphate	0 63	0 65	Orange	Orange
Tryptophan	0 54	0 55	Purple	Fades rapidly
Tryptamine	0 48	0 54	Purple	Fades
5 hydroxytryptophan	0 41	0 40	Blue	Fades rapidly
5 H I A A sulphate	0 75	0 66	Blue grey	Blue
Bufotenine	0 49	0 49	Blue	Fades

These refer to the pure substances, in the presence of urine there may be slight retardation of the spots

Conclusion

This method may prove useful in the diagnosis of metastasising carcinoid Results are obtainable in little more than an hour The chemical substances needed are to be found in any clinical laboratory Mephenesin (G Curzon, unpublished) and acetanilide and related drugs interfere with the test of Szoerdsma et al (1955) but are without effect on the test described here

Possibly cases may be found in which the clinical signs point to metastasising carcinoid though urinary 5-H I A A and 5 H T excretion are below the limits of sensitivity of the test Should this occur, it would be necessary to determine urinary 5-H I A A quantitatively, as mg 5 H I A A per g creatinine or per 24 hr excretion

I thank Dr J N Cumings for laboratory facilities and the Upjohn Company for samples of 5 H I A A and 5 H T

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PRECIPITATION BY FATTY FOOD OF SYSTEMIC DISTURBANCE FROM ARGENTAFFINOMA

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SOME patients with intestinal argentaffin carcinoi have paroxysmal attacks of flushing, dyspnœa, a diarrhœa, and such attacks have been related to t secretion by the tumour mass of 5 hydroxytryptami (5-H T) Factors which have been found to precipita attacks include emotion, spices, and food (Thorson et a 1954), and alcohol (Snow et al 1955), but in mo cases no precipitating factor has been recognised has been suggested that 5 H T may have a physiolog rôle in intestinal activity

In the present case attacks were consistently provok by a diet with a high-fat content

A housewife, aged 64, was admitted to hospital in Augus 1955, with a four year history of flushing attacks after eatin a fatty cooked meal Five to fifteen minutes after eating su food, which she had learnt to avoid when possible, her ey would become blood shot and for two to three minutes h vision would be blurred She would then flush a bright p especially over her hands, feet, and face, and her lips, alw slightly cyanosed, would become purple and swollen. At th same time she would feel breathless and have palpitatio These attacks lasted for about fifteen minutes, and for th past six months they had been associated with diarrhœ which persisted for twenty four hours In 1953 examinatio had shown that her liver was enlarged to two inches belo the costal margin, and a subcutaneous nodule, 2 mm. i diameter, had been found on the front of her chest. O admission in August, 1955, she had a permanent purp telangiectasia of the nose and malar region, ascites, sacr and ankle œdema, and an increased number of subcutaneo nodules on the trunk There was no evidence of valvul disease of the heart Radiography after a barium ene revealed an annular constriction in the lower third of th sigmoid colon, which was also seen at sigmoidoscopy Sinc the epithelium was intact the surgeon did not regard biop as justifiable A diagnosis of metastatic argentaffin carcino was confirmed by histological examination of two of th subcutaneous nodules, which showed carcinoma with characteristic argentaffin-cell granules

Investigations—When the patient had been free fr flushings for some days, the platelet-free plasma conta less than 0 02 µg of 5 H T per ml, and the cerebrosp fluid contained no detectable 5 H T or 5 hydroxy indole-ac acid (5 H I.A.A) These determinations were made chrom graphically (Jepson 1955) Daily determinations of urin 5 H I.A.A. while the patient was on a low fat diet (about 30 per day) showed an excretion of 70–90 mg per day, in th period there were no paroxysmal attacks After a coo meal containing 70 g of fat, which induced mild flushing severe diarrhœa, the 5 H I.A.A excretion was more th doubled for that day, returning to the previous level on th following day (see table)

URINARY EXCRETION OF 5 HYDROXY INDOLE ACETIC ACID

—	Day			
	1	2	3*	4
Urine volume (ml.)	840	900	550	190
5 H I A A (mg per day)	80	90	200	7

* Fat meal given.

These results are reported because of their possib physiological interest, in that the stimulus to the secreti of 5-H T by the argentaffin carcinoma in this case is normal constituent of food

I wish to thank Miss M D Snelling and Dr G E Beaum for permission to publish this case, Dr J B Jepson of th

rtauld Institute of Biochemistry Middlesex Hospital cal School for the estimations of 5 H T and 5-H I.A.A for much helpful advice; and Dr A. D Thomson of the nd Sutton Institute of Pathology, Middlesex Hospital cal School, for reporting on the biopsy specimens.

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A BRITISH TARGET-CELL ANÆMIA

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THE presence of target-cells in the peripheral blood is sically associated with Mediterranean anæmia (thalas æmia, Cooley's syndrome) in patients with Italian ellian Greek or other Levantine parentage Both everely affected patients and those who have only the trait ' have target-cells in the blood The cells are inner than normal and the osmotic fragility of the red ells is decreased In Mediterranean anæmia a relatively rge proportion of the hæmoglobin is of the fœtal type n severe anæmia (thalassæmia major) the red cells ave a shortened life-span whereas in the trait (thalas æmia minor) the life-span is probably normal (Dacie 954) The only other inherited anomaly of the red lls among which target cells occur in the peripheral ood is that associated with the presence of hæmoglobin (Neel et al. 1953) Target-cells can sometimes be und in the peripheral blood of patients with infective patitis or other liver diseases Dacie et al (1953) port one such case.

The two cases described here presented with a mild æmia that did not respond to treatment The patients d target-cells and ovalocytes in their blood, and milar cells were found in the blood of some of their ations. The alkali denaturation test showed that both tients had fœtal hæmoglobin still present in their blood But the patients were not ill with gross splenomegaly like patients with typical Mediterranean anæmia, and there is no evidence of Mediterranean ancestry in either patient

Case reports

Case 1 —A young woman aged 24, who worked in a hospital laboratory complained of feeling unusually tired A blood count showed her hæmoglobin to be only 10 5 g per 100 ml., and she admitted that she had been always anæmic She was referred to the medical outpatient clinic No abnormal physical signs other than pallor and slight icterus were found and she was admitted for investigation

On examination little unusual was found, she was rather pale and had slight but definite icterus no enlargement of liver or spleen and nothing abnormal in the other systems

Investigations —A blood-count showed red cells 4 473 000 per c.mm Hb 10 8 g per 100 ml white cells 7300 per c mm (polymorphs 51% lymphocytes 37% monocytes 10·5% eosinophils 0 5% basophils 1%) reticulocytes 0 5% and mean corpuscular Hb concentration (M C H C.) 20% Blood films showed that target-cells and ovalocytes were regularly present (fig 1) The sternal marrow showed a normal active picture with normal erythroblasts The osmotic fragility curve (fig. 2) showed definitely increased resistance to hypotonic saline solution in a 0·4% sodium chloride solute there was only 5% hæmolysis, in 0 32% there was still only 50%. Electrophoresis of the Hb was done on paper strips (35 × 5 cm of Whatman 3MM paper) in a Durrum type of electrophoresis chamber a sodium barbitone buffer of pH 8 6 ionic concentration 0·05M was

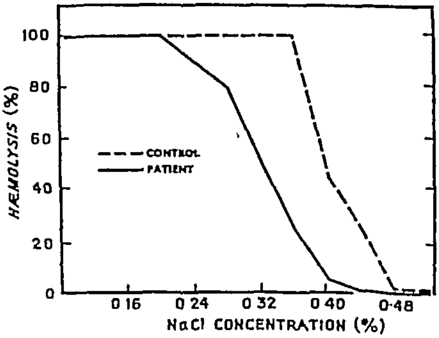

Fig 2—Osmotic-fragility curve of case 1

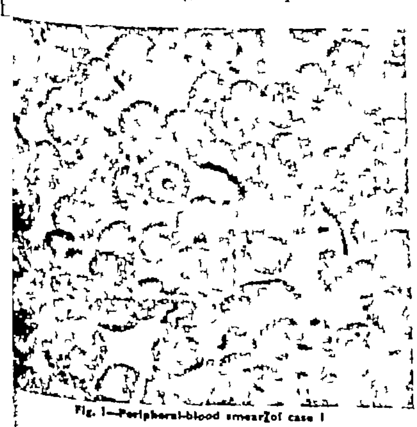

Fig. 1—Peripheral-blood smear of case 1

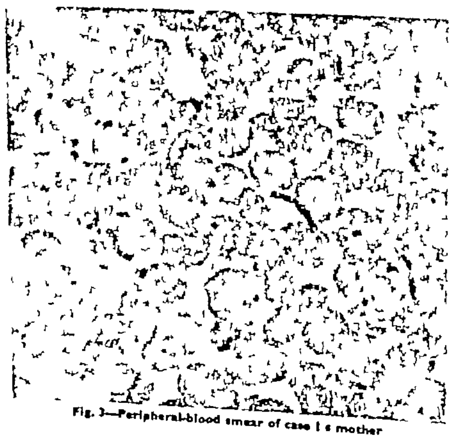

Fig. 3—Peripheral-blood smear of case 1's mother

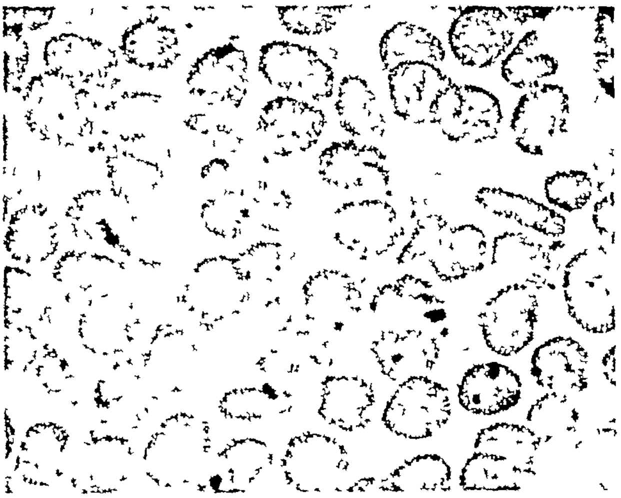

Fig 4—Peripheral blood smear of case 2.

used, 120V was applied for 17½ hr By this technique the hæmoglobin gave an entirely normal pattern The alkali denaturation test by the technique of Singer et al (1951) gave a one minute reading of 5 4%, whereas normal values for adult blood in our laboratory have never exceeded 1 8% , the presence of fœtal Hb was therefore established The serum bilirubin level was persistently 1 0–1 7 mg per 100 ml , liver function tests were normal, the Coombs anti globulin test was negative A test-meal showed normal acid secretion No occult blood was present in the stools

Treatment —The patient was treated with full doses of oral and intravenous iron and adequate ascorbic acid None of this had any effect on the Hb level

Family —The patient had no siblings Her father was said to be quite healthy *Only her mother was available for testing, and she admitted to ' anæmia " for many years Her blood showed the same anomalies as those found in her* daughter (fig 3), and her Hb was 11 5 g per 100 ml

Case 2 —A young nurse, aged 23, had been pale while training Eighteen months previously, while working as a *staff nurse, her Hb was 10 1 g per 100 ml Her anæmia* was investigated, but no cause was found She was treated with oral and intravenous iron, vitamin B_{12}, folic acid, and small doses of thyroid, all without effect Since she felt quite well and presented no pathological signs apart from a low Hb level, no further action was taken Later, however, she married, and the question of her fitness for a pregnancy arose She was therefore admitted to Manchester Royal Infirmary for reinvestigation

On examination she was slightly pale but otherwise quite healthy, without any abnormal clinical signs in any of the systems except the blood

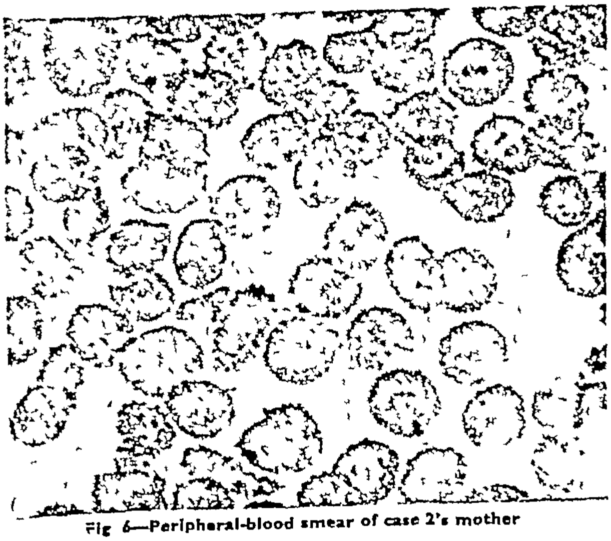

Fig 6—Peripheral-blood smear of case 2's mother

Investigations —A blood count showed red cells 4,820,0 per c mm , Hb 10 7 g per 100 ml , white cells 6200 per c mm (polymorphs 78%, lymphocytes 18%, monocytes 4% normoblasts 2 per 200 white cells, and *reticulocytes* 0·6 A stained smear showed many target-cells and ovalocyt considerable anisocytosis and poikilocytosis, and *some stip* cells , the target-cells were mostly well *shaped and regul* (fig 4) The sternal marrow was very cellular, with all typ except lymphocytes increased , there was striking normo blastic hyperplasia, and some pro-erythroblasts and som double and triple nucleated normoblasts were p The M C H C was 31% The osmotic fragility curve showed strikingly increased resistance to hypotonic solution there was only 5% hæmolysis in 0 4% chloride and only 60% in 0 26% sodium chloride E phoresis of the Hb under the same conditions as in gave a normal pattern, but again the alkali denatu test showed the presence of fœtal Hb, the one *reading being* 3 1% The serum bilirubin *level* w mg per 100 ml , serum iron 220 µg per 100 ml. (high), *serum albumin* level 4 5 g per 100 ml , and globulin level 3 5 g per 100 ml , with normal electroph pattern The Coombs anti globulin test was negative. test meal showed normal acid secretion. No occult b *was found in the stools*

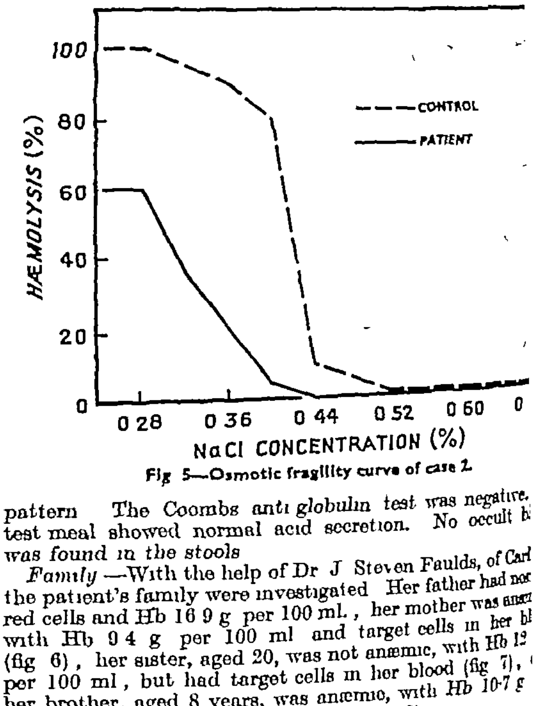

Fig 5—Osmotic fragility curve of case 2.

Family —With the help of Dr J Steven Faulds, of Carl the patient's family were investigated Her father had no red cells and Hb 16 9 g per 100 ml. , her mother was anæ with Hb 9 4 g per 100 ml and target cells in her bl (fig 6) , her sister, aged 20, was not anæmic, with Hb 12 per 100 ml , but had target cells in her blood (fig 7), her brother, aged 8 years, was anæmic, with *Hb* 10·7 g 100 ml and target-cells in his blood (fig 8)

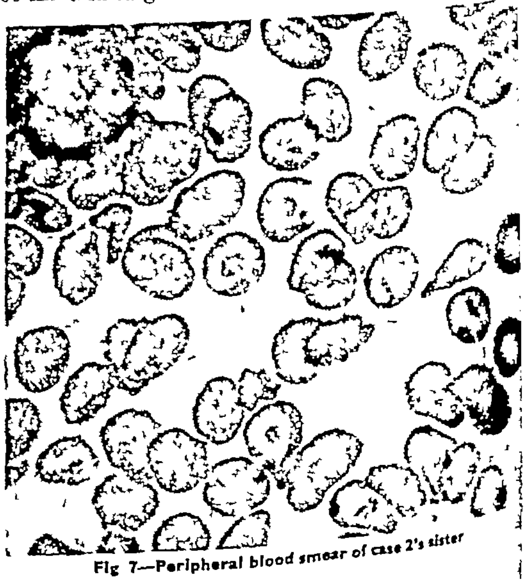

Fig 7—Peripheral blood smear of case 2's sister

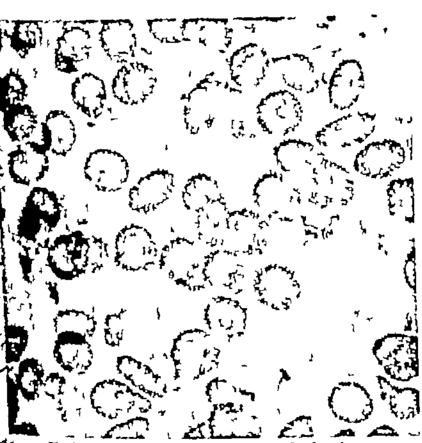

Fig. 1—Peripheral-blood smear of case 2's brother.

Discussion

The clinical picture presented by these two young omen was one of mild anæmia (Hb just under 11 g r 100 ml.) causing them little disability, and their æmia might well have passed unnoticed had they not en working in hospitals. They had no jaundice, no lenomegaly, and no hepatomegaly. Efforts to improve ir Hb levels by giving hæmatinics failed completely. amination of their peripheral blood showed the stant presence of target-cells and some ovalocytes. eir red cells showed a notably increased resistance hypotonic saline solution. Electrophoresis of their b showed no abnormality; in particular there was Hb C. The alkali denaturation test showed that l Hb was present in excess in both patients. They slight evidence of increased hæmolysis: one of them a persistently raised serum-bilirubin level, and the r had a few normoblasts and stippled cells in the d. Neither patient had any evidence of parenchy ous liver disease. The fact that other members of the ilies, including a brother of case 2, also had target s in their blood indicates that the condition falls o the group of inherited red-cell anomalies.

There is no question of Mediterranean ancestry in er family; and although target-cells and fœtal were present in their blood, clinically the condition ered from Mediterranean anæmia. None of the other l-cell anomalies described fit these two families; Hb C was detected. In one of the families described Rundles and Falls (1946) some target-cells were sent and the osmotic resistance of the red cells showed ne increase in that the curve extended beyond the rmal limits; but their patients had splenomegaly. Crosby's (1950) patients with "hereditary non erocytic hæmolytic anæmia" a very occasional get-cell was found, but otherwise the patients were ite different. None of the twelve patients with atypical ngenital hæmolytic anæmia described by Dacie et al. 53) showed either a clinical or a hæmatological ture like these two families with target-cell anæmia. e target-cell anæmia exemplified by these two families s seems to be one more type to add to the list of erited red-cell abnormalities, and clinically it resembles alocytosis more than the other, severer, syndromes. The fact that target-cells were a diagnostic feature the peripheral blood smears in these patients reinforces a warning that the presence of target-cells is *not* gnostic for Mediterranean anæmia or trait.

When the nature of the anæmia was appreciated all attempts at "treatment" were stopped. There is no reason to suppose that a Hb level of about 70% of average normal is a handicap to persons who are accommodated to it; many patients with more severe hereditary anæmias become accustomed to lower levels than this.

Summary

Two cases are described of a mild target-cell anæmia unaccompanied by splenomegaly or other clinical signs; the patients were not of Mediterranean ancestry.

The same anomaly was found in some of the patients' relations.

Fœtal Hb was found in the patients' blood, but no other abnormal Hb.

This condition appears to be one more type of inherited red-cell anomaly.

Attempts to raise the Hb level by treatment are fruitless and should be discouraged.

The two patients were studied in the Manchester Royal Infirmary, case 1 being under the care of the late Dr. Norman Kletts and case 2 under that of Dr. John F. Wilkinson. We are much indebted also to Dr. Steven Faulds, of Carlisle, for information about case 2 and for obtaining specimens of blood from her family.

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STRUCTURE OF RESPIRATORY TISSUE

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THE respiratory tissue of the lung consists of thin partitions—the alveolar walls—which separate the alveolar air-spaces. The alveolar walls are composed of cells, capillaries, and interstitial connective tissue. For the past hundred years there has been much controversy as to whether or not the alveolar walls are lined by epithelium. Another disputed subject has been the nature and rôle of the various types of cells present within the walls. Recently these questions have been clarified by electron microscopy and, in our laboratory, by the use of various histochemical methods.

In this article we present evidence that a squamous epithelium lines the alveolar walls and that the cells included within these walls are connective-tissue cells. Experiments were made mostly on rats, but histochemical studies were made also on human and other mammalian lungs.

Lining of Pulmonary Alveolar Wall

The earliest theories on the structure of the lung implied that the alveolar walls were covered by a "pavement epithelium."[1 66 51 52 107 108 37–39 44 50 31 46 54] However, descriptions of this epithelium were meagre and not supported by illustrations. Consequently they were difficult to interpret and will not be further considered here.

The first carefully worked out theory concerning the lining of the alveolar wall was based on results obtained by silver impregnation. With this technique the surface of the alveolar walls appeared to be covered by extremely flattened structures, called "non-nucleated plates," which alternated with "small nucleated cells" (fig. 1).[27 25 61 105 53–55 26 71 74 45 13 14 18 47 50 51] The plates were described as thin sheets, and generally assumed to derive from the cytoplasm of flattened epithelial cells which had previously fused and lost their nuclei. How

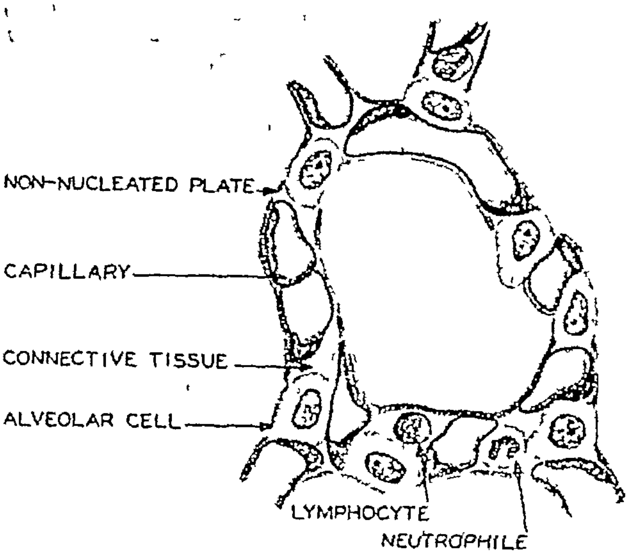

Fig 1—" Non nucleated plate " concept.

ever, histological methods other than silver impregnation failed to demonstrate these " non nucleated plates " and many histologists therefore denied their existence

These histologists developed the radical concept that the alveolar walls were not covered by an epithelial lining and that the components of the wall (capillary network, interstitial connective tissue, and cells) were exposed to the alveolar air (fig 2) [57–59 78 79 35 93–95 103 106 10 4 5 22 68 63 98 97] In the absence of an epithelial lining, the alveoli would be a sort of physiological tissue air space, a " functional interstitial emphysema " [68 40]

The concept of a " bare " alveolus was not accepted by a group of workers who considered the alveolar walls to be lined by a simple squamous epithelium composed of very flattened cells which may or may not form a continuous lining (fig 3) [17 56 83 100 49 90 75 76 6 7 32 96 88] Normally almost indistinguishable with the light microscope, the epithelium was said to become visible under experimental and pathological conditions producing an œdematous exudation which raised it from the underlying tissue [72 73]

The three main concepts of the lining of the alveolar wall—" non-nucleated plates " (fig 1), " bare alveolus " (fig 2), and simple squamous epithelium (fig 3)—were none of them supported by evidence decisive enough to promote general agreement Recently, however, modern histochemical methods and electron microscopy have supplied precise evidence in favour of the existence of a simple squamous epithelium lining the surface of the alveolar walls

In 1951 our application of the periodic acid Schiff technique to the rat lung revealed a thin continuous purple staining membrane on the surface of the alveolar wall [60] Since the membrane had the same appearance and staining properties as reticular fibres and basement membranes, it was tentatively called a " surface reticulin membrane " This membrane, which was generally a fraction of a micron thick, appeared either stretched or wavy according to the degree of expansion of the particular area of alveolar tissue Cross-sections of alveolar walls revealed that the membrane covered both sides of each alveolar septum and extended around the club shaped widening of their free ends Though the membrane was for the most part continuous, short breaks were occasionally observed, where often a cell of the type described below as alveolar cell protruded into the air space [8] Occasionally the membrane was in contact with similarly staining membranes extending into the alveolar walls These structures, which were tentatively referred

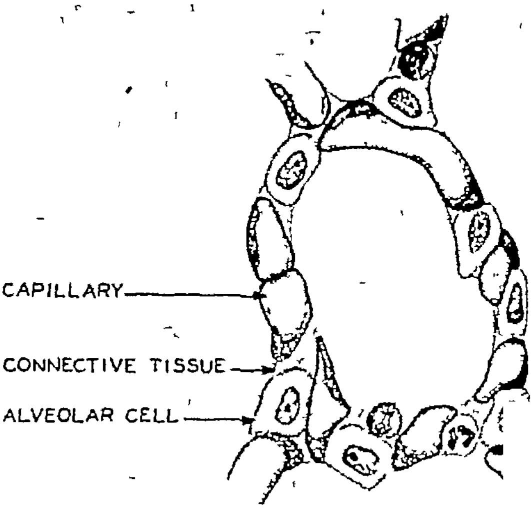

Fig 2—" Bare alveolus " concept.

to as " internal reticulin membranes," [60] are pre
to be due to either projections of the surface re
membrane into the underlying tissue or to poorly
guishable portions of capillary basement memb
In addition, the interstices between the membrane
cellular elements appeared to be filled by amor
material which was lightly stained with periodi
Schiff and may have the rôle of " cementing mate
for the components of the alveolar wall

In 1952 Low and Daniels [65] published electron m
graphs of alveolar tissue which indicated that the alv
walls were covered by a continuous squamous epith
composed of long flat cells with exceedingly attenu
cytoplasm The cytoplasmic extensions were 'a
0 1–0 2 μ thick, and the flat nuclei were widely sepa
from one another The micrographs of Low and Da
did not show any structure corresponding to the su
reticulin membranes

The apparently contradictory results of the two gr
of investigators were reconciled by further indepen
work in both laboratories

Low [66] subjected the respiratory tissue to
longed fixation in osmic acid before electron micros
and thus detected a membrane underlying the pulmo
surface epithelium He pointed out that, after prolon
fixation in osmic acid, it was difficult to preserve the
cytoplasmic extensions of the epithelium—a result wl

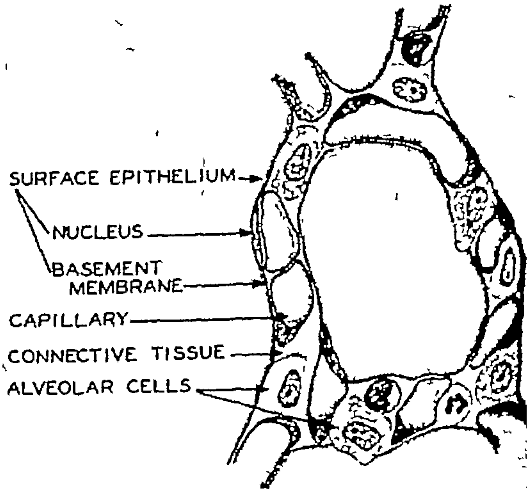

Fig 3—" Surface epithelium " concept.

ay explain why these were not seen by Swingart and ame[illegible] or Policard et al [illegible]

Meanwhile, using sections of human and animal lungs ained by the periodic acid Schiff technique and counter tained with a nuclear dye, we observed flat endotheliform uclei scattered sporadically outside the 'surface eticulin membrane Though little or no cytoplasm was sible in their vicinity, these nuclei must have belonged o cells in direct contact with the alveolar spaces[9] Accordingly, these nuclei were thought to be part of a urface epithelium, although so little cytoplasm was bserved that it was impossible to decide whether the pithelium was continuous or not In any case it was oncluded that the surface reticulin membrane seen in eriodic-acid Schiff stained sections represented the asement membrane of this epithelium[11] It should be oted that the frequency with which the superficial uclei were seen in our preparations was not high, since n the average about two were found per high power ×1200) microscopic field

When the classical theories were re-examined in the ght of these observations, it was apparent that the uclei here described as part of the surface epithelium ere considered by the supporters of the 'bare alveolus eory" (fig 2) to belong to the capillary endothelium he 'non nucleated plates' described in the first ncept (fig 1) may be the cytoplasm of the epithelial lls, since silver impregnation may outline these cells ithout demonstrating their nuclei as may be the case ter impregnation of vascular endothelia. In any case, r observations as well as electron microscopy have led the conclusion that the alveolar walls are lined by two taposed structures—a squamous epithelium and its ement membrane. This conclusion supports the ncept illustrated in fig 3

Cells in Alveolar Walls

The capillaries present in respiratory tissue consist of a *ple squamous endothelium* supported by a basement mbrane that stains with periodic acid Schiff reagent [illegible] he elongated and darkly stained nuclei of the capillary dothelium look like those of the surface epithelium ich therefore can be distinguished only by their position tside the surface membrane Formerly we included th types of cells in the same category and referred to em collectively as 'endothelium like cells' [13] The clei of these cells constitute about 50% of all nuclei sent in the respiratory tissue of the rat

Since it was known that *white blood-cells* are common in spiratory tissue [illegible] it was not surprising that leuco tes—some of which were in the lumen of the capillaries ile others had migrated into the interstitial tissue—ounted for 13% of the cells present [13]

he remainder of the cells observed in the alveolar ls (31%) constitutes a rather complex group which y show morphological differences but share several perties and are therefore grouped under the common ne of 'alveolar cells.' (Other names for these cells alveolar epithelial cells, septal cells epicytes alveolar cytes or macrophages, and dust cells.) By using h fixed preparations stained with Masson's trichrome o main types of alveolar cells can be readily distin shed on the basis of the presence or absence of cyto smic vacuoles and the staining properties of the toplasm.[11] The cells of the first type 'vacuolated eolar cells,' are characterised by a variable number of uoles (fig 3) which are surrounded by acidophil oplasm and in vivo are filled with lipoidal material. e cells of the other type 'non vacuolated alveolar cells' y either appear like plain and poorly limited connec e tissue cells or be differentiated into cells with clearly ined cytoplasm which stains with the light green ponent of Masson's trichrome Transitions between two main types of alveolar cells are often observed.

The two types of alveolar cells have in common two important properties (1) the ability to ingest foreign particles, which explains the frequent presence of particulate matter in their cytoplasm and (2) the ability to progress by amoeboid motion, which may explain the desquamation of these cells into the alveolar spaces The desquamated alveolar cells pass into the bronchioles ascend bronchi and trachea, reach the pharynx, and eventually are lost in the sputum[illegible]

The loss of alveolar cells via the respiratory passages appears to be a constant physiological phenomenon in the rat and other mammals[illegible] as well as in man[illegible] It has been shown in the lung of the rat that the cellular loss is balanced by rapid mitotic proliferation[12] by which the entire stock of alveolar cells is renewed about once a week

With a few exceptions—e g, Osler[17]—the histologists of the last century believed that the alveolar cells were remnants of the epithelium lining the primitive cavities in the fœtal lung and were therefore epithelial in origin The epithelial nature of the alveolar cells was also upheld by many modern histologists[illegible]

In contrast, other workers[illegible] have classified alveolar cells as connective-tissue cells owing to their behaviour (phagocytosis and amoeboidism) and their morphological appearance (lack of regular epithelial arrangement, and absence of basement membrane of their own) Our histological and histochemical work supports this school of thought Thus toluidine-blue revealed a variable metachromatic reaction of the cytoplasm of differentiated alveolar cells—a specific property of some connective-tissue cells. Furthermore, after Masson's staining of Orth fixed preparations, the loose connective tissue of various organs—e g, submucosa of intestine—displayed cells like the vacuolated and non vacuolated alveolar cells of the respiratory tissue Within the lung itself some of the non vacuolated alveolar cells are indistinguishable from ordinary fibroblasts, and these show transitional forms relating them to the other types of alveolar cells We therefore conclude that the alveolar cells belong to the large connective tissue family within which owing to their phagocytic ability amoeboidism and capacity to become pathological cells (foam cells, exudate cells and giant cells) they may be classified as cells of the reticulo-endothelial system

Recently examination of lungs of toads, salamanders, and frogs has proved that the respiratory tissue of these amphibia is lined by a basement membrane that stains with periodic acid Schiff reagent and supports a continuous surface epithelium which is more clearly visible under the light microscope than that of mammalian lungs In addition this epithelium overlies vacuolated and non vacuolated alveolar cells as well as capillaries[10] These observations suggest that the respiratory tissue has the same basic structure in mammals and amphibia

The concept outlined here implies that the alveolar tissue is lined by epithelium composed of extremely attenuated squamous cells resting upon a basement membrane and that the alveolar cells within the walls are connective-tissue cells at various degrees of differentiation This concept is in line with the classical tenets of histology since it implies that like many other tissues, the alveolar wall displays the association of an epithelium with an underlying connective tissue stroma.

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CONVULSIONS FOLLOWING PUDENDA BLOCK BY LIGNOCAINE

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BECAUSE of the hazards of general anæsthesia obstetrics (Jeffcoate 1953, Parker 1954) women who to undergo forceps delivery frequently receive lo analgesia, which is very safe and is rarely followed toxic reactions

Case-report

A well built primigravida, aged 28, was admitted to obstetric department on March 31, 1955, on account of d in the second stage of labour Nothing in the history physical examination suggested liability to convulsio Conditions were favourable for a low forceps delivery

Local infiltration and bilateral pudendal block was effect with 80 ml of 1% lignocaine ('Xylocaine') (0 8 *g*) witho adrenaline, no blood was aspirated, and no hæmaton formed.

Several minutes after the injection was completed, th *patient passed into coma, and an attempt to proceed* with th forceps delivery precipitated a generalised clonic lasting a minute Phenobarbitone gr 3 was given b muscular injection, but a second and more violent co followed and continued for two to three minutes unt controlled by sodium thiopentone 0 5 g intrav The patient was cyanosed, but her colour improv introduction of an airway and with continuous admin of oxygen Forceps delivery was resumed and a infant was born. The third stage was uncomplica further gr 3 of phenobarbitone was given by intram injection Twenty minutes after delivery, the patien became restless and clonic movements of the limbs menced A further fit was averted by intravenous i of sodium thiopentone 0 5 g

Thereafter, the patient made a good recovery, conscious and normally orientated within three hou delivery

Discussion

Local analgesic drugs may produce systemic because of accidental intravenous injection, dosage, deterioration of the solution into toxic down products, or unusual sensitivity in the patie

In the present case the lignocaine was injected fully, and at most a very little can have been inadver injected into *a blood-vessel* The maximum safe venous dose of lignocaine in man is uncertain In intravenously in mice it is about twice as toxic a caine (Hunter 1951) In man intravenous administ of 10 ml of 1% procaine is well tolerated, so po 5 ml of 1% lignocaine would be a safe dose I present case, unless the patient was unusually sen to the drug, it is unlikely that the convulsions caused by accidental intravenous injection

The maximum safe dose of lignocaine suggeste Gordh (1949) is 0 5–1 g A larger dose is comm tolerated but is never necessary Carnegie and B (1950) regarded 1 g as within the limits of sa Gordon (1955) suggested that 100 ml. of a 1% sol is the maximum safe dose for a forceps delivery the present case, the dose given (0 8 g) was large. by the usually accepted standards would not have expected to produce a toxic reaction But the perin at term is highly vascular, and the absorption of in ted analgesic solutions is, in my experience, gre accelerated Furthermore, with analgesic solutio whereas potency increases in direct ratio to concen tion, toxicity increases in geometrical ratio to concent tion It seems that in the present case the dose unnecessarily great and the concentration too h The manufacturers of the solution used established th it contained no toxic substances that might have cau the convulsions

This case underlines the need for caution when sub tuting lignocaine which is comparatively unproved, procaine which is well tried and relatively non toxic. Procaine is not very well diffused in the tissues but the least toxic of all local analgesics, and for the ginner is the drug of choice the analgesia suffices for w forceps delivery

Lignocaine has many advantages over procaine is stable, diffuses readily and produces rapid and rofound analgesia, but it sometimes causes drowsiness nd although this effect has been regarded as an advan age (Crawford 1953) it is probably the first symptom of oxicity Lignocaine is undoubtedly more likely than rocaine to produce toxic effects Administered sub utaneously in 0 5% solution lignocaine has a toxicity qual to that of procaine but in 1% solutions it is 0% more toxic and in 2% solutions 50% more toxic (Goldberg 1949) Accordingly lignocaine should be administered as the smallest effective volume of a low concentration solution I have found 50 ml. of a 0 5% solution satisfactory for pudendal block

Summary

A case is described in which convulsions followed administration of 80 ml of 1% solution of lignocaine (0 8 g) for pudendal block

For this purpose 50 ml. of a 0 5% solution of lignocaine is effective and safe

I thank Dr W J Clancy for permission to report this case and Prof C Scott Russell for much help and constructive criticism.

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LABORATORY INFECTION OF MAN WITH VIRUS OF ENZOÖTIC ABORTION OF EWES

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Laboratory infection with psittacosis virus is a well cognised hazard, and lymphogranuloma venereum G V) has been acquired in similar circumstances as an ection of the upper respiratory tract (Harrop et al. 11) The virus of enzootic abortion of ewes (E A E) hich belongs to the same large group of infectious agents amp et al 1950), has not so far been recognised as a use of human disease and for this reason has been garded as probably safe to handle in the laboratory multiplies abundantly in the yolk sac of the developing s egg producing larger yields of virus particles than obtained after infection with psittacosis or with G V Since it shares the heat stable group antigen mmon to all viruses of this sort (Monsur and Barwell 51) its presumed harmlessness to man has commended r laboratory work particularly the preparation of tent antigens for use in complement fixation tests

Case report

An Egyptian doctor aged 35 visiting this country for graduate training came to this department on Jan 31 and worked only with E.A.E virus in a room not used the time for other virus studies. The work involved ulation of eggs and the preparation of suspensions from infected yolk-sacs. On Feb 10 she became ill with what lieved to be flu but remained at work for a week took large doses of aspirin daily She was admitted to hospital on Feb 28 complaining of general malaise headache, pain in the chest and cough During the weekend immediately preceding this she had had hæmaturia

Examination and Investigations —On admission her temperature was 103 4°F, pulse rate 134, and respirations 28 a minute Her throat was red and inflamed and she had a persistent harsh non productive cough Numerous scattered crepitations were heard over the lower right chest, mainly anteriorly and the percussion note in the right axilla was somewhat impaired Radiography revealed pneumonic consolidation of the right middle lobe extending into the upper part of the right lower lobe (fig 1) A blood-count showed leucocytes 8700 per c mm (differential count normal) and hæmoglobin 70% A cloud of albumin was found in a catheter specimen of urine, the deposit contained many red cells and a few granular casts. Cultures of urine and of blood were sterile

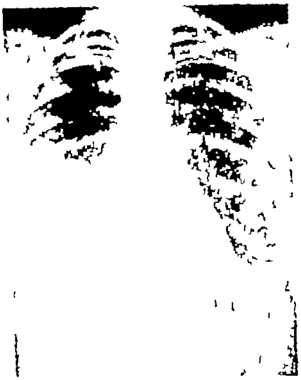

Fig 1—Radiograph of chest on day of admission 9 days after onset.

Diagnosis —The clinical findings notably the pronounced radiographic changes with a relative paucity of other physical signs in the chest with the normal leucocyte count suggested virus or atypical pneumonia. Nothing in the history indicated that psittacosis was likely except that the patient had in another room observed manipulations with that virus on a few recent occasions. Although without precedent infection with E.A.E virus was thought to be a possibility more in keeping with events before the illness Sputum was produced from the day after admission and *Staphylococcus pyogenes* predominated in several cultures at the time its presence was considered to be contributory possibly to infection with influenza virus

Virus Investigations —Serum collected soon after admission (10 days after the onset) showed no fixation of complement when tested at 1 in 4 and higher dilutions against Q fever and heated psittacosis virus antigens. Tests for cold agglutinins and antibodies to streptococcus M G were negative these two tests and that for Q fever were again negative with serum at the 17th day of illness, but with the psittacosis group antigen a serum dilution of 1 in 64 gave complete fixation and to 1 in 256 partial fixation was obtained A third specimen collected on the 20th day, gave the same end point but complete fixation was found at 1 in 128 The results of these and subsequent tests are shown in table I Since penicillin resistant *Staph pyogenes* was cultured from sputum received on the day after admission and since psittacosis virus is sensitive to this antibiotic streptomycin was added to a suspension of the specimen in broth to a final strength of 1 mg per ml as a preliminary to attempts to grow a virus in eggs and mice After incubation for 2, 5 or 8 hours the material was inoculated into 4-day old yolk sacs The embryos died at intervals of 4–14 days and all showed bacterial contamination of the yolk-sac but in smears of two

TABLE I—RESULTS OF COMPLEMENT FIXATION TESTS WITH PSITTACOSIS-GROUP ANTIGEN

Date (1955)	Days after onset	Reciprocal of highest dilution of serum giving	
		Complete fixation	Partial fixation
March 1	10	Negative	Negative
8	17	64	256
11	20	128	256
April 25	66	64	128
May 26	97	32	64
June 2	104	32	128
July 28	160	32	64

TABLE II—COMPLEMENT FIXATION TEST SHOWING BEHAVIOUR OF SERUM FROM PATIENT AND FROM A KNOWN CASE OF PSITTACOSIS BEFORE AND AFTER ABSORPTION OF GROUP ANTIBODY

Serum	Absorbed with	Dilution	Antigens		
			E A.E virus		Patient's virus
			Heated	Unheated	un-heated
Patient	Nil	1/16 1/32 1/64	+ + + + + + + + + + + +	+ + + + + + + + + + + +	+ + + + + + + + + + + +
	Heated L G V virus	1/16 1/32 1/64	+ + –	+ + + + + + + + +	+ + + + + + + + + +
Known case of psittacosis	Nil	1/8 1/16 1/32	+ + + + + + + + + + + +	+ + + + + + + + + + + +	+ + + + + + + + + + + +
	Heated L.G V virus	1/8 1/16 1/32	– – –	– – –	+ + –

Complete fixation, + + + +
Partial fixation, + + +, + + or +
No fixation, –

the appearances suggested that a Castaneda positive virus was also multiplying Successful isolation of such a virus resulted from intraperitoneal injection of the same suspension of sputum into four 6 week old mice No gross or microscopic abnormalities were found in two which were well when killed 5 days later, but a suspension of their spleens yielded positive results after inoculation into yolk sacs, large amounts of virus were then seen in stained preparations, and cultures for bacteria were sterile The virus isolated in this way differed from the psittacosis strain maintained in this laborat that yolk sac passage consistently killed embryos a longer interval (4–5 days), and the yields of virus, asses microscopy and antigen potency, were much larger A important distinction from *psittacosis virus* was that th mice not killed a few days after injection of sputum d die later of virus infection, nor was it possible to est intraperitoneal infection in mice with the agent isolat eggs A few animals died but without microscopic ev of virus growth, and further passage was without Previously E.A E virus has been found to behave i way, and in this instance infection of the mouse s although limited, led to recovery of the agent in yol cultures with the exclusion of bacterial contaminants. behaviour conforms with the E.A.E laboratory strain, confirmation of this identity was obtained by an absor test (Bedson et al 1949), in which sera from the patien from a known case of psittacosis were treated with h L.G V virus to remove group antibody The results are in table II, which shows that unheated E.A.E virus gives sp complement fixation with the patient's serum, as d similar antigen made from the virus isolated from her sput by contrast, absorption of the psittacosis serum has elim the reaction with these preparations When the pa returned to work, five weeks after the start of her illness, tests were done with preparations of psittacosis, E.A.E., L.G V viruses Both heated suspensions of virus part from yolk sacs and the more specifically reactive ext made by treatment with 0 02 *N* HCl (Barwell 1952) injected intradermally Two days later small papular rea to all the heated antigens were observed, these were 4 in diameter and therefore smaller than is usually tak indicate a positive Frei test Of the acid extracts only from E.A.E virus gave a reaction, and thus took the form inconspicuous but palpable lesion 8 mm across

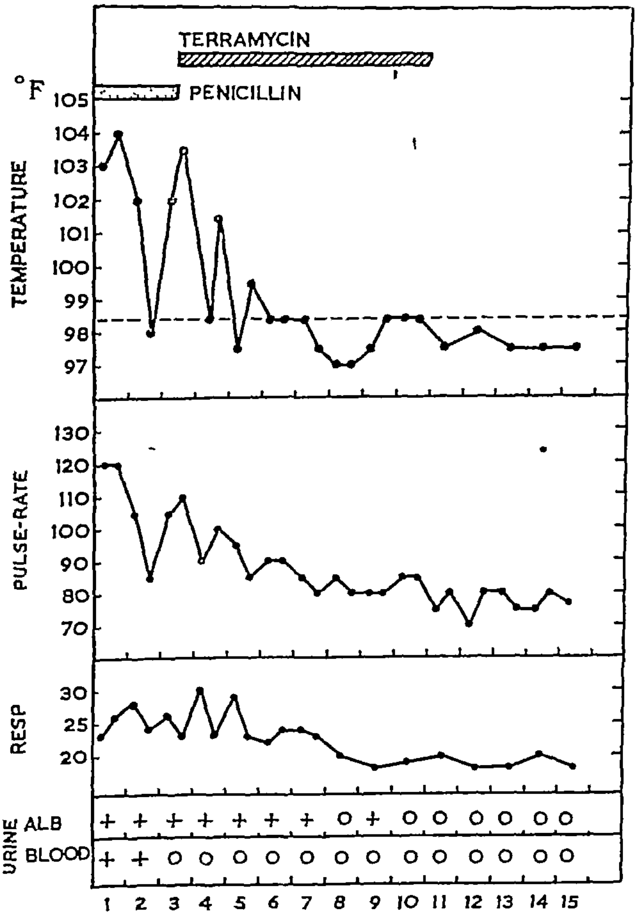

Fig 2—Chart of treatment and progress.

Treatment and Progress—From the first two days admission penicillin 0 25 mega unit was given 12 h with no response On the 3rd day a course of oxytetrac (terramycin) was started 0 5 g was given 6 hourly for doses followed by 0 5 g b d for 7 days There was improvement, and the temperature was normal with days (fig 2) Progress was uninterrupted, and the pa was discharged on March 15, when radiography of the c and examination of the urine showed no abnormalities

Experimental infection with psittacosis in (Bedson and May 1945) and the disease in man can treated with penicillin, to which E A.E virus is sensitive (Dickinson and Inkley 1951) The failure penicillin in this case is in keeping with the identity of strain isolated from the sputum, although the course treatment was very short and the dosage small Te mycin is effective against E A E as well as psittac virus

Discussion

The changes in the urine, first noticed a week af the onset, were taken to indicate acute focal nephriti an unusual complication of virus infections Howev *Staph pyogenes* was also found in the sputum and m have played a part in its development

The large number of different psittacosis like viru isolated from mammals (mice, cats, sheep, cattle, a opossums) is of interest from many points of vie including man's possible susceptibility to some of the For example, this potentiality on the part of felin pneumonitis virus (Baker 1944) has been mention although not established An infection among nati in the Belgian Congo has been attributed to anoth virus of the same group by Giroud and Jadin (195 who suggest that these outbreaks may have originate from cattle, sheep, or goats Psittacosis group antibod was subsequently found in some of the goat sera teste by complement fixation (Giroud et al 1954)

The case described here indicates an apparently nov activity on the part of a virus causing abortion in sheep Since extremely large amounts of the virus may be seen in the placenta of affected sheep, it seems possible that infection may at times take place in those tending these animals but has so far escaped recognition

Summary

A case of acute virus pneumonia in a laboratory worker reported

The properties of the virus isolated from sputum sorption tests on the patient's serum, and skin tests dicated that infection was due to the agent causing zootic abortion in ewes.

This virus had been used by the patient for experi ental work during three weeks before the illness and s not previously been recorded as a cause of human sease.

I am indebted to Prof Clifford Wilson and Dr D G brahams for the clinical notes.

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Preliminary Communication

THE DEMONSTRATION OF LYMPHATIC VESSELS

THE lymphatic drainage from tissues can be studied by injecting some material which will be visible in the vessels when the tissues are removed at operation or biopsy Ideally the material injected should be (*a*) non toxic, (*b*) diffusible on interstitial injection and readily taken into lymphatics (*c*) rapidly removed, without causing local or general stain when injected into living subcutaneous tissues, and (*d*) easily visible and non diffusible in the fixed specimen

Substances in common use do not fulfil all these criteria thus Evans blue and patent blue tend to fade from lymphatics during mass clearing; pontamine sky blue is more permanent, which though an advantage histologically is a disadvantage clinically and particulate dyes tend to remain in the tissues and enter lymphatics poorly

A new method has therefore been devised for the demonstration of lymphatic vessels in the breast diffusible solution containing free iron is injected into the interstitial tissues from which it is taken up by lymphatics When the breast has been removed, the iron is precipitated in the vessels and nodes by fixation botonic acid potassium ferrocyanide/formol saline solu tion forming a permanent particulate, and easily visible russian blue Various iron-containing solutions have en used including iron dextran similar to that given y injection for iron deficiency anæmia A small uantity of patent blue added to the injection displays e vessels during operation and a radio-opaque addition rovides for radiographic record of the specimen

Post mortem injected iron can be made to enter the mphatic vessels by massage and its use has the vantage of avoiding extensive skin staining by dye

Iron-containing compounds of high molecular weight itable for the biopsy study of superficial lymphatic ssels are at present under investigation with Mr avid Crockett F R C.S

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Medical Societies

HEBERDEN SOCIETY

THE annual meeting of this society was held in London on Nov 25 and 26, under the presidency of Prof R L TUNBRIDGE

Spondylitis and Heart disease

Dr JAMES SHARP had found that of 788 patients attending a clinic for the investigation of cases of spondylitis 25 had disease of the mitral or aortic heart valves 3 of these, all with pure aortic disease, appeared to have typical ankylosing spondylitis, and Dr Sharp suggested that the processes in the spine and heart might be related.

In at least 7 of the remainder the changes in the heart spine, and sacro iliac and limb joints seemed to have resulted from severe attacks of rheumatic fever The clinical features of these 7 and of 12 further patients who had the same condition but had not been referred to the spondylitis clinic, were described 17 of them had permanent change in limb joints of the type originally described by Jaccoud, and 12 had residual limitation of spinal movement

Radiographically the sacro iliac joints were commonly involved The changes in the spine were characterised by alteration in shape and sometimes hypoplasia of the vertebral bodies narrowing and ossification of multiple discs without vertebral osteophytosis apophyseal joint involvement progressing to bony ankylosis, and occasion ally ossification of spinal ligaments. In its complete form this radiographic picture was recognisably different from that of typical ankylosing spondylitis.

Deep X ray therapy did not appear to be of value for such patients but they were usually greatly helped by aspirin The most important measures in their long term management were the prevention and early treatment of streptococcal infections

Prednisone and Prednisolone

Dr H F WEST opened a discussion on prednisone and prednisolone The ability of prednisone to suppress the adrenal gland was approximately the same as that of a dose of hydrocortisone equal in therapeutic potency

Dr OSWALD SAVAGE confirmed the therapeutic effec tiveness of the new substances—particularly evident in an improvement in strength of grip In different patients they proved from two to ten times as potent as cortisone Dyspepsia was a common toxic effect, but was not invariably worse on the new steroids than on cortisone Afebrile pneumonia and staphylococcal septicæmia had occurred during treatment.

Dr MALCOLM THOMPSON said that in the United States hæmorrhage from the upper or lower alimentary tract was a recognised danger of treatment with the new steroids After several months of treatment the dose often had to be increased to maintain suppression of the disease, but a change to cortisone was sometimes an effective alternative to this

Dr G D KERSLEY had found prednisolone useful in treating a case of rheumatoid arthritis with heart failure and œdema

Dr F DUDLEY HART had been impressed by the promptness of the response to the new steroids. He felt however that the increased incidence of dyspepsia associated with their use outweighed the advantage of their negligible effect on sodium metabolism

Dr A ST J DIXON commented on the "lift which a patient experienced when he was transferred from cortisone to one of the new compounds

Dr E G L BYWATERS stressed that the incidence of side effects was the crux of the problem and that it was too early to draw firm conclusions on this.

Dr J J R **Duthie** was anxious about the effect on the integrity of joints of completely suppressing inflammation and thereby removing a check to their over-use

Rheumatoid Arthritis in a Population Sample

Prof J H **Kellgren** described a survey in which a sample of the general population aged 55–64 was examined clinically, radiographically, and serologically for evidence of rheumatoid arthritis Clinical evidence of rheumatoid arthritis was found twice as frequently in women as in men, but radiographic signs of rheumatoid arthritis and positive sheep cell-agglutination tests were equally distributed between the sexes In 9 out of 10 patients with severe clinical rheumatoid arthritis the diagnosis was confirmed by positive radiographic signs and/or a positive agglutination test, but with lesser degrees of clinical disease such confirmation was less usual there were 20 patients with positive radiographic signs and/or agglutination tests among the 283 who had been recorded as free from clinical evidence of rheumatoid arthritis

The prevalence rates in this sample ranged from 1% for men and 3% for women for severe clinical rheumatoid arthritis, confirmed radiographically and/or by the agglutination test, to 11% for men and 27% for women where all grades of clinical disease including a past history of polyarthritis were included

Thus precise diagnostic definition was essential for the study of comparative prevalence-rates in different populations

Population Study of Osteo-arthritis in Women

Dr J S **Lawrence** had found radiographic osteo-arthritis in 83% of men and 87% of women in a sample of persons aged 55–64 It was multiple (more than four groups of joints affected) in 39% of men and 49% of women Radiographically women had significantly more osteo arthritis in the distal and proximal interphalangeal joints of the fingers, in the carpometacarpal joints in the knees, and in the metatarsophalangeal joints of the feet Men had significantly more osteo arthritis in the wrists only

Two main factors seemed to be responsible for the greater prevalence of multiple osteo arthritis in women (1) a factor, believed to be genetic, associated with clinical Heberden's nodes and with osteo-arthritis of the interphalangeal, metacarpophalangeal, and carpometacarpal joints of the hands, the interfacetal joints of the cervical spine, the sacro iliac joints, and the metatarsophalangeal joints of the feet, (2) a second factor, possibly also genetic, associated with obesity and with osteo arthritis of the weight bearing joints only Other causal factors —trauma, deformities, occupation, and rheumatoid arthritis—played a relatively minor rôle in determining the distribution between joints of osteo arthritis in women

Arthritis and Psoriasis

Dr V **Wright** described clinical and laboratory findings in 31 cases of arthritis associated with psoriasis In 25 the arthritis was atrophic, 5 had degenerative joint disease, and 1 had rheumatic fever Lesions in the skin most commonly antedated the arthritis, changes in the nails came on at the same time as the joint lesions much more often than psoriasis of the skin, and tended to wax and wane in parallel with the arthritis

At its onset the arthritis was polyarticular less often than in classical rheumatoid arthritis Although the distal interphalangeal joints were most commonly the joints first involved the process did not remain confined to them, and there seemed no reason to distinguish psoriatic arthropathy as a clinical entity in which only these joints were affected Other clinical features of atrophic arthritis associated with psoriasis were a tendency to mimic gout, a high incidence of comp remissions, morning stiffness as a prominent sympt and a tendency to be either very severe or very mild

In 3 cases the picture had been of ankylosing spon litis together with peripheral arthritis The differen agglutination test was negative in all but 1 case— gesting that the combination of psoriasis and arthr was more than the coincidence of two common disea and that the arthritis was modified by the psorias not a completely distinct entity Among the ot laboratory results, the serum globulin level was high 6 of 22 patients, and the serum alkaline phosphat level raised in 14 Among the 5 cases with ost arthritis there were, rather surprisingly, 4 with chan in the nails

Neutral Salt-soluble Collagen

Dr D S **Jackson** reported a new method of isolati and purifying the so called "alkali soluble collagen This involved extraction of the skins of young rabbi with neutral salt solutions followed by repeated precip tation with saturated sodium chloride or ammoniu sulphate

Physicochemical methods suggested that the partic in solution was rod-shaped, the rods aggregating t produce fibrils of 100 Å diameter having a 2000 Å spacin which were transformed on warming to 37°C to fibr of 1000–2000 Å diameter and the typical collagen spacin of 640 Å

Serum-proteins in Rheumatic Fever

Dr I **Gilliland**, Dr I C **Isdale**, and Dr E M **Abdel-Wahab** reported their findings in an investigation of changes in the serum proteins during an attack of rheumatic fever The ratio of albumin to α_2 globulin (measured by paper electrophoresis) was low in the initial stages of the illness and rose steadily as the patient recovered

ROYAL SOCIETY OF MEDICINE

Anæsthesia, Respiration, and Resuscitation

The section of comparative medicine met at the Roya Veterinary College, London, on Dec 14, under the presidency of Mr **James McCunn**, to see films and exhibits based on the theme New Apparatus and Method of Interest in Anæsthesia, Respiration, and Resuscitation

ANÆSTHESIA IN ANIMALS

Prof C **Formston** showed a film of a cæsarean sectio operation on a cow, using a three rib paravertebral block, and Mr **Oliver Jones** reviewed the problem of adminis tering an anæsthetic to a jaguar The technique wa designed to prevent any excitement stage The anima was first placed in an airtight container and then a ether chloroform mixture was blown in under pressur The animal rapidly lost consciousness subsequently was removed from the container and endotracheal intub tion was performed with a tube that somewhat resemb an outsize umbrella

EXPERIMENTAL CARDIAC SURGERY

Some of the problems of cardiac surgery were under lined by two films illustrating possible experimenta approaches

Dr A B **Cookson** demonstrated the manner in which a dog's heart could be excluded from the general circula tion for a short time with the aid of hypothermia After being rewarmed the animal did not appear to have suffered any ill effects

Another method was advocated by Dr D G **Melrose** who outlined the principal features of the mechanical heart lung machine Briefly, the venous blood is with drawn from the right side of the heart, passed through a oxygenator, and then pumped back into the aorta With this technique the work of the heart and lungs can be taken over while the heart or main vessels are opened under direct vision

EXHIBITS

The exhibits included many mechanical respirators for use in anæsthesia and for patients with poliomyelitis These machines could be divided into two main types: those that were powered by compressed air or gases and those operated by an electric motor It is evident that there is no general agreement on which method is the more suitable

The majority of the respiratory machines were of the positive pressure type: that is to say during inspiration gases are blown into the trachea and bronchial tree under pressure and during expiration the pressure rapidly falls to zero Some pumps, however were capable of exerting a negative pressure during the expiratory phase (negative phase machines) in order to aid emptying of the alveoli There is as yet no unanimity on the efficacy of the negative phase or the ideal relationship between the length of inspiration and that of expiration

Prof. E A **Pask** showed a pump which was powered by a standard vacuum-cleaner and was capable of ventilating 6 patients simultaneously Another feature in some of the models on show was a patient-operated attachment This is particularly useful if the patient is breathing spontaneously but has insufficient muscle power to ensure adequate ventilation. In such a case the respiratory rate can be controlled by the patient: for whereas expiration is passive the moment inspiration starts the slightest volume change triggers-off the pump so that a full inspiratory movement is completed Dr J P **Payne** showed a positive pressure machine which can be patient controlled and responds to a volume change of as little as 0·5 ml of air

For the long term ventilation of the patient with poliomyelitis the importance of a suitable humidifier in the inspiratory circuit was emphasised by Dr J M K **Spalding** and Dr A **Crampton Smith**

A completely different approach to the ventilation of patients with poliomyelitis was shown by Dr J T **Scales** and Dr A **Kinnier Wilson**, who use a British cuirass respirator A plastic shell surrounded by thick foam rubber at the edges is placed over the front of the patient's chest and abdomen so as to ensure an airtight seal Inspiration is effected by sucking air out of the shell thus pulling the ribs and abdominal wall outwards as do the respiratory muscles, and during expiration the negative pressure rapidly reverts to zero In this way patients can be suitably ventilated in the sitting or standing position so that the apparatus permits considerable freedom of movement and nursing care

Among the many other exhibits was a machine for continuously following the blood pressure designed by Dr J **Green** an apparatus for neonatal anæsthesia shown by Dr R W **Cope**, and a phrenic nerve stimulator which was recommended by Dr K W **Cross** and Dr I W **Roberts** to initiate respiratory movements in the newborn child

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Reviews of Books

Denial of Illness

Symbolic and Physiological Aspects Edwin A **Weinstein** M.D associate neurologist Mount Sinai Hospital New York; Robert L. **Kahn** PH D., research psychiatrist at the hospital. Springfield Ill Charles C Thomas. Oxford Blackwell Scientific Publications 1955 Pp. 166 34s

In the attempt to cover up something regrettable, the facts may be moulded into a plausible and unimpeachable story and it is not long before the story teller is convinced of its truth that is just how it happened In hysteria, a free-floating seed of anxiety can take root and bear a harvest of bodily discomforts and disabilities anywhere between the scalp and the toes, symptoms which do not really exist—to the other person, that is And yet when someone has a serious disability demonstrable to all bystanders he can elect to deny that anything is amiss. This phenomenon of denial and unawareness of disability termed anosognosia by Babinski has been recognised since 1885 and various explanations have been put forward. As it was found to occur most often when blindness was associated with hemiplegia, deep-seated lesions involving the parietal lobe of the minor hemisphere and the thalamus have usually been invoked—and occasionally discovered

During the past eight years the authors of this book have been intensively investigating the changes in behaviour of 53 anosognosic patients. In addition to denial of disabilities and the necessary confabulation nearly all of them had evidence of severe mental derangement—e g disorientation for time and place paraphasia paranoia hypomania or depression misidentification of persons, incontinence and even hallucinations. Intelligence tests showed very little impairment except when the subject matter infringed on the patient's disability Then the answers went all awry In the person tree-house drawing test patients showing explicit denial can achieve symmetry but those whose denial is only implicit will, if suffering from a left hemiplegia omit the left side of the object in their drawing thus mirror imaging their disability

Electro-encephalography revealed in all but 1 patient that during the period of denial there was diffuse slow wave activity on both sides but no focal abnormality suggesting that the relevant disruption involved the centrencephalic system In patients whose disturbed brain function was restored as after subarachnoid hæmorrhages encephalitis, or the successful removal of a tumour the slow waves disappeared and the anosognosia was replaced by anxiety and depression or hypochondria. At necropsy moreover patients showed a wide variety of lesions with no one common factor

The most interesting observation is the account of the vast improvement in orientation and social behaviour when the patients got back home suggesting that the hospital may not always be the best place—for those who deny that they are ill at any rate

Official History of the Canadian Medical Services 1939-45

Clinical subjects vol II Editor: W R **Feasby**, B.A M D Canadian Army Medical Historian. Ottawa Queen's Printer and Controller of Stationery 1953 Pp 537 $5

During the late war, Canadian soldiers sailors, and airmen served in every continent, and the results of medical experience in widely different circumstances (of environment and kinds of warfare) are clearly and comprehensively recorded in this official history Unnecessary detail has been avoided to permit discussion of fresh topics and aspects of treatment and an extensive statistical section provides valuable data for calculating man power for the future Especially useful are the chapters on burns, cardiovascular surgery the treatment of shock, and the rehabilitation of patients with bone and joint injuries

For those inclined to think of modern war mainly in terms of battle casualties, bullet wounds, and emergency surgery it is salutary to be reminded of the weakening of effective man power by the diseases regarded as largely civilian hazards. For instance the childish complaints—chickenpox, measles, german measles, scarlet fever, and mumps—were by themselves responsible for 575 Canadian soldiers (equivalent to roughly one battalion) being off duty throughout the war Gastro intestinal disease (notably duodenal ulcer and the dysenteries) caused a high rate of invalidism and this book estimates that 'psychiatric disabilities will account for approximately 30% of all casualties invalided out of any army during war An important innovation was made by the Canadian Army medical services and directorate of personnel selection when in 1943 they jointly introduced the PULHEEMS system of recording physical, mental, and emotional capabilities which was afterwards adopted by the Armed Forces of many other countries, including the United Kingdom

The companion volume (I) is devoted to the organisation of the Canadian Medical Service and descriptions of the campaigns in which it served.

First Four Minutes

Roger **Bannister** C.B.E. B.M London: Putnam. 1955 Pp 222 15s

The fascination of round numbers was probably one of the things that created for the four minute mile more world wide interest than any event in the history of athletics When, in 1922, the mighty Nurmi held the world record, he said he thought such a time was impossible Nine years later, Ladoumègue, of France, was the first to beat 4–10 Runners from all over the world then chipped tenths off the record until, in 1945, Haegg, of Sweden, was within 1 4 sec of the Everest of athletics The question had become not will it be done, but who will do it first? And the answer, Roger Bannister, now tells his story

Dr Bannister says that attempts to correlate athletic ability with physical characteristics are by no means as valuable as the less scientific judgment of coaches and trainers To his own experiments on respiration he attaches little practical value for athletes, common sense is the guide The complete absence in the book of any reference to diet and the various traditions of old time training is a tacit pronouncement on the systems based on superstition rather than fact The modern view on training emphasises the education of the body by physical work and especially by "interval running"

Throughout his athletic career, indifferent to praise or censure, Bannister held and maintained certain unorthodox opinions he considered that a course of training should be adjusted "to the energy," to ensure "a physical overdraft from greater will power," and he maintained that physically and mentally the athlete may reach a peak perhaps only once a season, a view shared by his great predecessor, Jack Lovelock, but by few other athletes Bannister did not compete in the 1948 Olympic Games because he felt that such an effort early in his career would prejudice his chances for 1952 He "did not expect people to understand his scheme of training" The periods of inactivity with relatively little exercise may have been the best for his particular need, alternatively, his method of training may have failed to give him the toughness he needed for an Olympic 1500 metres He had "built himself up for one supreme explosive effort at Helsinki" Unexpectedly, he was called on to run on three consecutive days and that may have been fatal to his plans

However that may be, his victories last year at Berne and Vancouver were a triumphant vindication of his attitude towards training His book shows uncommon literary ability, and quite apart from its interest to the sportsman, it gives a striking picture of a sensitive young man who has had the remarkable experience of being one of the best-known men in the world

Kolpofotogramme

Vol. III *Zur Pathogenese des Portiokarzinoms und Erleichterung seiner Frühdiagnose durch farbige Kolpofotogramme* ROBERT GANSE, DR MED, Direktor, Frauenklinik Friedrichstadt der medizinischen Akademie Carl Gustav Carus, Dresden Berlin Akademie-Verlag 1955 Pp 120 DM 38

Dr Ganse continues his study of the earliest phases in the development of carcinoma of the ectocervix Colpophotography not only brings into view the whole thickness of the epithelium but includes the stroma and blood-vessels The method is superior to cytological examination, and except in true erosion, leucoplakia, and early carcinoma, biopsy may be avoided As in previous volumes, the photomicrographs are of indifferent quality, but the clarity and colour of the reproductions are quite startling

Collected Papers of Otto Fenichel

2nd series Editors HANNA FENICHEL and DAVID RAPAPORT London *Routledge & Kegan Paul* 1955 Pp 374 35s

THIS volume includes the papers and addresses written during the last ten years of Dr Fenichel's life

There is no single thread running through them, though in many of them the importance of ego psychology is emphasised, and the social factor in the causation of neuroses is given more weight than by most English psycho analysts An interesting theme, insufficiently developed, is the supposedly changing form of the neuroses Fenichel believed that in Freud's day neuroses appeared in people of intact personality, disturbed at certain points by inappropriate actions, impulses, and thoughts, whereas the "modern neurotic" has a "torn or deformed" personality which is "so involved in the illness that one cannot say at what point health ends and illness begins" He attributed this phenomenon, tentatively, to a change in morality in European and American cultures the evidence for the supposed fact, and the explanation, deserve more inquiry

The papers testify to Fenichel's justifiably authoritative tone during these years, his wide experience in psycho-analysis, his occasional bigotry (for example, if a young doctor while learning to be a psycho-analyst practises non-analytic psychotherapy only, "this is frank quackery"), and his boldness in speculation

Bickham-Callander's Surgery of the Alimentary Tract

Vol I, II, and III RICHARD T SHACKELFORD, M.D., assistant professor of surgery, Johns Hopkins University School of Medicine, assisted by HAMMOND J DUGAN, M D, assistant in surgery, Johns Hopkins University School of Medicine Philadelphia and London W B Saunders 1955 Pp 2575 £21

THIS comprehensive encyclopædia of operative surgery of the alimentary tract is concerned with techniques—operation, manipulation, endoscopy, and intubation. It is well printed and the illustrations are good. A splendid book for a library, but too expensive for most private shelves

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The Subnormal Mind (3rd ed. London Oxford University Press 1955 Pp 391 20s)—These are the Heath Clark lectures delivered by Sir Cyril Burt, D SC, in 1933. In the preface with which he introduced them to readers two years later, he pointed out that the time had now come for psychology to play a larger and more helpful part in the training of medical students and in the daily work of consultants, medical officers of health, and indeed of doctors generally His own contributions to psychology, and especially to the study of mental subnormality in children, have demonstrated how much medicine can gain from the labours of psychologists, but it is questionable whether the lesson has been well learnt Perhaps there has been too much semantic confusion between the discipline of psychology, applied to medical problems in the way which this book exemplifies, and, on the other hand, the medical psychology which is so closely linked to psychotherapy and so preoccupied with dynamic abstractions In the preface to the new edition, Sir Cyril reinforces his original argument He deplores any mechanistic conception of mental illness, and he insists that human personality has a definite hierarchical structure The lectures themselves provide a clear and consistent account of the author's point of view regarding mentally defective, backward, delinquent, and neurotic young people They exhibit his characteristic penchant for footnotes and tantalising references to earlier writings that are in fact regrettably inaccessible, they illustrate too his masterly capacity to present psychological material as though it were familiar, easy, and assured

Proctologic Anatomy (2nd ed Baltimore Williams & Wilkins London Baillière, Tindall, & Cox 1955 Pp 31 61s 6d)—This work by Prof R V Gorsch, of New York, was first written to fill a gap left by the teaching of anatomy in American medical schools, and to present the detailed anatomy of the pelvis, colon, rectum, and anal canal, and thus meet postgraduate needs These aims have been achieved, though the account of anal musculature is already out of date Illustrations are many and most are good, but certain photographs of anatomical dissections are not very helpful Surgical implications are touched upon and this aspect could usefully be expanded, for example, an analysis of the circumstances giving rise to rectal procidentia would be an advantage

Refresher Course for Practitioners (Vol I Calcutta Indian Medical Association. 1955 Pp 364 Rs 8)—Articles appearing in the *Journal of the Indian Medical Association* between October, 1954, and May, 1955, have been incorporated in this book, which should prove as useful to Indian general practitioners as the *British Medical Journal's* refresher course is to their British colleagues

The Interpretation of Dreams (London Allen & Unwin 1955 Pp 692 21s)—This new translation by James Strachey of Freud's masterpiece is a reprint of that published in volumes IV and V of the standard edition of Freud's works (see *Lancet*, 1954, I, 445)

THE LANCET

LONDON SATURDAY DEC 31 1955

Blood-transfusion

THE regional blood transfusion services in this country now send out something like three quarters of a million bottles of blood annually More than one bottle is used for most transfusions but even so the number of blood transfusions now given is staggering The transfusion services label each bottle with the ABO group and say whether the blood is Rh(D) positive or negative, the accuracy of this labelling is taken for granted, and it is a tribute to the care exercised in transfusion service laboratories that errors are almost unknown. Hospital staffs are responsible for determining the blood group of the patient in need of transfusion, and for cross matching the recipient's serum with the donor cells and it is at this stage that most difficulties arise most variations of technique exist, and most mistakes are made Considering the huge number of transfusions given, errors are remarkably rare But whereas the hundreds of thousands of safe transfusions pass unnoticed, those that go wrong cause great anxiety, and the very few that result in the death of a patient receive the full blast of publicity in the coroner's court—and elsewhere when claims for damages are made DISCOMBE [1] says that every transfusionist however able may one day be a witness at an inquest, he must be prepared to explain his actions in non technical language, and if not a natural orator he would with advantage practise elocution so that he can be heard in all parts of a small auditorium ' This view may seem unnecessarily gloomy but certainly only constant vigilance prevents accidents

LOUTIT [2] has recently reviewed the causes of death and disease from blood transfusion The first one he lists is ignorance—ignorance that is of all the factors that count in safe transfusion Up to 1900 when LANDSTEINER laid the foundations of knowledge of blood groups transfusions could not be given because of this ignorance, and even now when large books describe all the blood group systems that are known, the occasional new antibody appears and causes reactions Secondly there are technical errors—errors of grouping and cross matching LOUTIT points out that about 10% of mismatched transfusions result in kidney failure and death of the recipient though methods of dealing with this accident have been much improved The third cause is clerical error in recording the results of the tests applied Fourthly, there are what he calls "administrative errors" donor and recipient have been correctly grouped and cross matched and the results have been accurately recorded, but things go wrong (As an example, he cites the disaster in which two patients in a ward had the same surname and the bloods were interchanged between the laboratory and the ward) Finally, there are errors of judgment—giving blood to patients who are not in a fit state to receive it, or giving it too quickly, or transfusing unnecessarily so that for example a surgeon may operate on his day, instead of treating the anæmia with iron and operating later The responsibility for these errors of judgment lies with the clinician in charge, and they are becoming steadily less frequent as clinicians become more familiar with the proper use of the transfusion which is so readily available It is the mismatched transfusion that has received most publicity and the effect has been to make pathologists particularly careful about cross matching and juniors unwilling to take the responsibility of deciding when a cross-matching is safe A compromise has to be made ideally, the 9 more important groups should be determined for each recipient's blood, and the blood for transfusion should show the same combination of 9 groups—but by then the patient might well be dead At the other extreme, there is the practice of taking Rh negative blood of the appropriate ABO group and carrying out a quick cross matching test on a tile, but this is very wasteful of the 15% of Rh negative donors and will miss any unusual incompatibility, especially in patients who have to have many transfusions

To help the new houseman to choose a practical and reasonably safe transfusion technique and to understand the laboratory requirements in time and material, Dr GEORGE DISCOMBE [1] has written a very useful, informative, and suitably dogmatic pamphlet He points out that cross matching and grouping errors are not always responsible for transfusion accidents, and of a series of 14 such accidents, which he had previously reviewed,[3] only 3 were due solely to laboratory errors (DISCOMBE adds to LOUTIT's list of causes that of the worrying clinician, who wants blood within minutes) Rarer causes of reactions are the presence of the A subgroups which give weaker reactions with anti A sera and are so missed, the use of blood that has been stored after removal of the bottle cap and possible contamination, and the use of concentrated red cell suspensions that have been prepared more than twenty four hours before administration. He points out also that blood from a properly controlled refrigerator at 4°C does not need to be warmed before transfusing unless the recipient's serum contains cold agglutinins of high titre warming above 37°C can easily damage the blood irreversibly, and transfusion of such blood may be fatal For cross matching DISCOMBE recomends a tube technique using bovine albumin, which takes two hours before the result can be safely read it is useful he suggests, to set up a duplicate using saline only instead of albumin, since this detects more effectively anti M anti N, anti P and anti H If expert laboratory help is available the Coombs anti globulin test should be performed because this will disclose antibodies not detectable in any other way , this test takes at least one hour and is better for being left for two hours

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[1] Blood Transfusion a Guide to the Practice of Transfusion in Hospitals By Dr George Discombe London: Heinemann Medical Books 1955 Pp 34 6s

[2] Loutit J F Med-leg J Lond 1955 23 85

[3] Discombe G Lancet 1954 ii 936

DISCOMBE then takes the view that it is unreasonable to expect properly cross-matched blood for transfusion to be provided in under two hours from the arrival of the specimens in the laboratory He reminds clinicians that when the patient is in a state of severe collapse, and it does not seem that he can wait two hours, the reason is lack of blood *volume* rather than lack of blood-cells Consequently transfusion with one of the plasma substitutes, dextran or polyvinylpyrrolidone, should tide the patient over the waiting period It is clear that, armed with DISCOMBE's pamphlet, the not-too experienced resident can take a stand when faced with clinical pressure, but when a full laboratory service is to hand, the time between the request for blood and its supply can be shortened DUNSFORD and BOWLEY,[4] in their comprehensive monograph, use much the same routine as DISCOMBE for cross-matching , they carry out saline and albumin compatibility tests and a Coombs compatibility test, and they agree that this takes two hours or so, since this is the optimum time for incubation of the test mixtures in the saline and albumin tests The full techniques *must* be carried out for a group of " dangerous recipients "—i e , all those who have a history of previous blood-transfusion, parous women with an obstetric history suggestive of hæmolytic disease of the newborn, and patients who have any form of hæmolytic disease Patients who have not previously been transfused and parous women with normal children are classed as " safer recipients " , for this group DUNSFORD and BOWLEY prefer to carry out the full test schedule , but, if time presses, and if an *experienced* operator is at hand, they are prepared [5] to do a slide compatibility test with albumin and a rapid Coombs compatibility test, both of which can be read in about thirty minutes In Denmark a rapid method of blood-grouping has been devised by ELDON [6] In this method cards are prepared coated with a film of 'Cellophane' on which are dried samples of anti-A, anti-B, and anti-D sera and an inert control serum, each on a separate panel The sera, which are chosen for high avidity, are mixed with sodium chloride, heparin, and dextran before drying and it is claimed that these additives prevent rouleaux formation, give large clot-free masses when agglutinated, and enable the grouping to be carried out satisfactorily at room-temperature For testing, the dried sera are dissolved in water and then a drop of the patient's capillary blood is added to each panel and stirred The results can be read in three minutes, and any agglutination with the inert serum indicates that the test is inadequate for that patient's blood It is perhaps possible that such a technique can be adapted to cross-matching, and ZEITLIN [7] suggested a method for obstetric emergency transfusions, but he used only Rh-negative blood ELDON states that 6 out of 15,000 grouping tests were found to be incorrect Unfortunately an error of 4 per 1000 cannot be disregarded when blood-grouping is involved, because at least 250,000 transfusions annually are given in this country , but the method may be developed further More reliable methods of accelerated Rh-typing have been proposed by STRATTON [8] and HARVEY [9]

In an uncompromising comment on the present situation, Dr ALISTAIR FRENCH, secretary of the Medical Protection Society, has said [10] that junior residents should *not* be called upon to perform cross matching tests, and that if necessary " the pathologist must be got out of bed to perform this heavy and responsible task " We wonder what he would say to the practice, which some hospitals have to adopt of sending for a technician to perform this work after hours The answer seems to lie in the classification of " dangerous " and " safer " recipients which we have mentioned Hospitals that have no resident clinical pathologist should not undertake work in which transfusion is often needed—for example, thoracic surgery, or the care of patients with blood-diseases that need repeated transfusion If a " dangerous " recipient is admitted in urgent circumstances then the pathologist, and no-one less, must be called, but when safer recipients are to be transfused then, if DISCOMBE's techniques are followed, the normal resident staff should be able to tide over the immediate emergency

Pulmonary Embolism

As we observed a year ago,[11] pulmonary embolism is commoner than was formerly supposed, and in the old and feeble it may appear so quietly as to be overlooked It is hard to say just how common emboli of this kind are , but the incidence of massive postoperative emboli may be more readily estimated In an assessment of fatal postoperative pulmonary embolism from many centres, both in the United States and elsewhere, DE BAKEY [12] gives an incidence of 14 per 1000 operations , but the figures fro hospital to hospital and from year to year in particular hospital vary bewilderingly Many of the statistics may be misleading because they pay litt attention to the degree of care in the post morte search for the embolism and primary venous throm bosis, or to the criteria used in clinical diagnos Certain conclusions, however, are accepted by mo authorities There is, for example, a general feeli that the incidence of pulmonary embolism in an hospital population rises and falls over the years If true, this makes it very hard to assess prophylacti measures, because succeeding years cannot be strictl comparable Another view with much to support i is that pulmonary embolism is as common in medica as in surgical wards There is no definite sex pr dominance , and although embolism has been recordec at the extremes of age, it is commonest between 40 and 60 Beyond these few facts, strikingly little can be derived with certainty from vital statistics

The thrombosis responsible for pulmonary infarction is usually in the leg,[13] and there are many conditions which predispose to its formation BYRNE [14] found that cardiac disease was the most significant factor associated with the combination of venous thrombosis and pulmonary embolism in a general hospital population, it was present in 28% of his series of 748 patients.

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[4] Dunsford I , Bowley, C C Techniques in Blood Grouping Edinburgh, 1955

[5] Dunsford, I , Bowley, C C *Ibid* p 179

[6] Eldon K *Dan med Bull* 1955 2 33

[7] Zeitlin R A *Lancet* 1954 i, 23

[8] Stratton, F *Brit med J* 1955, i, 201.

[9] Harvey, P W *Ibid*, p 203

[10] French, A *Med leg J , Lond* 1955 23, 85

[11] *Lancet* 1955 i 34

[12] De Bakey M E *Int Abstr Surg* 1954, 98, 1

[13] Bauer, G *Acta radiol , Stockh* 1945, 26 577

[14] Byrne J J *New Engl J Med* 1955, 253 579

This is compatible with previous investigations, though the corresponding figures for associated heart disease have varied from 13% to 80%. If only fatal pulmonary emboli were considered, then heart disease was present in 73% of Byrne's cases. About a quarter of the emboli in this series followed an operation, and an operation for a malignant lesion seemed especially liable to be followed by infarction. The association of carcinoma with spontaneous superficial and deep phlebitis and sometimes pulmonary embolism is, of course, well recognised, and was described by Trousseau in his patients and himself almost a hundred years ago. Carcinoma of the pancreas may be the one most often associated with Trousseau's sign, although in Byrne's postoperative patients cancer of the colon was the chief culprit. Other conditions associated with postoperative embolism are venous stasis due to bed rest, dehydration, shallow pulmonary ventilation, trauma to the venous intima, and changes in coagulability of the blood. Platelet stickiness, rise in fibrinogen level, and shortened coagulation time are among the blood defects recognised. 6% of Byrne's cases were associated with infection, 5% with pre-existing varicose veins, 5% with childbirth, and 5% with hemiplegia. Byrne has reviewed only those patients in whom the pulmonary infarction was associated with clinical signs of venous thrombosis in the calf. But it is common experience (for the physician as well as the surgeon) that most lethal emboli strike with dramatic suddenness, bringing vicious chest pain and hæmoptysis before any diagnosis of limb thrombosis has been made.[15] Death may sometimes be heralded by premonitory emboli, but usually it is the first episode that is (almost instantaneously) fatal.[16]

The foremost problem is prevention, and there is little progress to record. The popularity of early postoperative ambulation has waxed and waned. De Bakey concludes that those institutions which have faithfully pursued early postoperative ambula on have proved no decrease in the incidence of ulmonary embolism; indeed, in many there has been n increase. But Farquharson[17] holds that really early ambulation does prevent thrombosis. There is a growing conviction that prophylactic division of the femoral veins is unjustified, although the method is still much used, especially in the United States, in elderly patients and those prone to thrombosis. We cannot with certainty prevent emboli, and it is no easier to detect the thrombosis before the clot fragments. Tests for this purpose have been designed from time to time, but none has been satisfactory. Even when it comes to the management of a patient in whom an embolism is suspected there is no general agreement. The Swedish workers, led by Jorpes[18] and Bauer,[19] have made a good case for anticoagulants. Femoral or more proximal venous ligation has equally enthusiastic supporters, including Byrne. Others believe that, as it is the first embolism that kills, if the patient survives he has little to fear from later ones. There is statistical evidence for this view, but at present most people will be prepared to disregard it and use anticoagulants when there is a threat of phlebitis, phlebothrombosis, or embolism.

Annotations

TUBERCULOSIS AND LIVER BIOPSY

Hæmatogenous dissemination of tubercle bacilli is regarded as a rare complication of localised tuberculosis, except in the early post-primary period and in the terminal stages of the disease. Certainly attempts to cultivate the organisms from the blood-stream at any stage of the disease fail with very few exceptions. But the findings of Haex and Van Beek,[1] who performed aspiration liver biopsies on 180 proven cases of tuberculosis and 150 controls, suggest that, despite the negative blood-cultures, dissemination via the blood-stream is a frequent, and perhaps almost invariable, accompaniment of the localised disease. Objective evidence of dissemination, revealed as submiliary tubercles in the biopsy specimen, was found in almost every form of tuberculosis, including primary infection, "typho-bacillosis," pleurisy, pericarditis, peritonitis, and lymphadenitis, as well as in cases involving the lungs, kidneys, adrenals, eyes, bones, and joints. Positive results were also obtained in 14 out of 20 cases of erythema nodosum and, still more surprisingly, in each of 4 cases of erythema induratum (Bazin's disease). Haex and Van Beek emphasise that the remarkably high proportion of positive results in their series was obtained only by meticulous search of every one of the hundred or so serial sections into which each biopsy specimen was cut.

In many patients the evolution of the disease was followed by repeated biopsies. For this purpose the hepatic lesions were classified according to their location, size, presence or absence of caseation or fibrinous exudate, the type of cellular exudate, and the presence and type of giant-cells. Acid-fast bacilli could almost always be demonstrated in lesions undergoing caseation, but rarely in non-caseating tubercles. Only 4 out of 70 guineapig inoculations proved positive. The age of the lesion was assessed by the proportions of epithelioid cells, fibroblasts, fibrocytes, and scar tissue with or without hyalinisation. In many patients there was evidence of hæmatogenous dissemination continuing for several months despite what is usually regarded as adequate treatment with streptomycin and *p*-aminosalicylic acid. A similar study of 503 liver biopsies in tuberculous patients recently reported by Oldershausen et al.[2] only partly confirms the findings of Haex and Van Beek. In this investigation miliary tubercles, or what the authors term "retothelial nodules," were found in 193 specimens—an incidence of about 34%. In the 384 patients with "non-hæmatogenous" pulmonary tuberculosis the incidence was 26.5%.

This rather striking difference in the results of the two investigations may, at least in part, be accounted for by differences in technique and the thoroughness with which the specimens were searched. The matter is obviously of considerable importance not only in the diagnosis and treatment of tuberculosis but in the effect it may have on our views about pathogenesis.

OLD PEOPLE'S REAL NEEDS

Until 1948 institutional care of those in need was provided by the local authority, generally in public-assistance institutions. Most of these were built in the middle of the 19th century to cope with vagrancy and destitution which had greatly increased after the Industrial Revolution. Grey and cheerless, with narrow dormitories approached by steep stone staircases, they reflected the austerity of the Early Victorian approach to the problems of social inadequacy.

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[15] Marks, J., Truscott, B. M., Withycombe, J. F. R. *Lancet*, 1954, ii, 787.

[16] Paaby, H. *Acta chir. scand.* 1955, 109, 319.

[17] Farquharson, E. L. *Lancet*, Sept. 10, 1955, p. 517.

[18] Jorpes, J. E. Heparin in the Treatment of Thrombosis. London, 1946.

[19] Bauer, G. *Lancet*, 1946, i, 448.

[1] Haex, A. J. C., Van Beek, C. Tuberculosis and Aspiration Liver Biopsy: Its Clinical Significance in Diagnosis and Therapy. Haarlem: Erven F. Bohn. 1955. Pp. 166.

[2] Oldershausen, H. F. v., Oldershausen, R. v., Tellers, A. *Klin. Wschr.* 1955, 33, 104.

In time the need for this kind of accommodation was largely limited to the aged and infirm and to a few chronic sick in the younger groups Wards as well as dormitories were required for these residents, and many local authorities used the powers conferred on them to build modern hospital units or to adapt the old institutions Thus, when the National Health Service was started in 1948, most institutions included hospital accommodation, varying widely in comfort and efficiency, as well as the "House," or residential section, where people with social rather than medical needs were admitted

By the National Health Service Act of 1946 responsibility for those in need of hospital care was given to the regional hospital board, while the welfare work carried on in the same institution was left under the local authority To cope with this administrative problem, a joint-user arrangement was brought into force, and the authority owning and controlling the institution—generally the regional hospital board—continued to provide accommodation for those who were the responsibility of the other authority When the hospital accommodation of the old institutions was thus drawn into the main hospital service many of the defects due to its historical development were put right In many areas wards were reconstructed and redecorated, treatment centres equipped with facilities for investigation and treatment were set up, and a more enlightened approach to the disabilities of old age was introduced Nevertheless much still remains to be done The obvious need for home like living quarters has stimulated some local authorities to provide separate small hostels for old people outside the institutions, but many are still accommodated in the residential sections of the old institutions Though in some places attempts have been made to improve this accommodation, in others conditions remain substantially the same as they have been for many years Modernisation of the buildings is expensive, and if the institution is under the regional hospital board improvement of the residential part has to compete with other hospital needs

A report[1] on these institutions, made lately by a working party of West Cornwall Hospital Management Committee, remarks on the vivid contrasts between the listless degenerating residents in the jointly used institutions and the bright vivacity shown by those in the County Council's Old People's Homes "Those in jointly-used institutions are for the most part content to sit thoughtless, despondent, and inactive all day long, the only interruption to their monotony being mealtimes In the Old People's Homes there is an active interest in life, the residents get out and take part in the life of the community join local libraries and are obviously very much alive" So sharp was the contrast between these two groups of old people that the working party at first thought that it must be due to selection of those sent to the hostels But during their survey at one institution, where the old people lived and had their meals with low grade imbeciles, the working party found one old man "who was still alert, intelligent and self-respecting" and discovered that he was the last person to be admitted They began to wonder whether in such an atmosphere it would not take "a man of unusual stamina to hold on to a decent standard of life" and by the end of their survey, which included visits to institutions where the accommodation was "worse than is usual in common lodging houses," they had decided that it is not "surprising that there is rapid deterioration after admission to such places" This survey shows that, in one part of the country at any rate, the situation is not nearly so satisfactory as Miss Hornsby Smith makes out in a parliamentary answer reported on a later page

Clearly the accommodation in institutions should b largely replaced by further small residential homes, but in planning these it should be borne in mind tha a main object of our welfare services for elderly peopl should be to enable them to remain comfortably a home in their familiar surroundings and near thei friends The hostel, however well run, cannot be a complete substitute for home, and it should be reserved mainly for infirm old people who require more care and attention than can be given them at home Yet many of the smaller hostels opened in recent years, excellent though they are in many ways, only accept residents who can, for instance, go upstairs unaided and attend to their personal needs In planning future hostels the needs of the frail or infirm old person should be met by providing more ground floor bedrooms and dormitories or by installing lifts More staff will also be needed to help them during the night, and to nurse them in short illnesses Hostels for frail old people may be more difficult and expensive to run, but, as so often, it is the difficult and expensive that is needed and that may prove the easiest and the cheapest in the long run

T S H AND EXOPHTHALMOS

THE idea that the thyroid stimulating hormone (T.S.H.) produced by the anterior pituitary might be the cause both of thyrotoxicosis and of the exophthalmo which often accompanies it has been under discussion for the past twenty years or so It still remains no m than a suggestion which, after much hard work in ma quarters, has not yet been either dismissed or fin proved The latest work on the subject was descri at a recent meeting of the section of endocrinology the Royal Society of Medicine by Prof A Querido, Leiden, and Dr I Gilliland Each had developed own method of estimating T S H in the blood Profes Querido used the rate of uptake of I^{131} by the mou thyroid as an index of T S H activity, while Dr Gillila used the rate of decay of thyroid radioactivity in chic which had already received a loading dose of I^{131} T two methods seemed to have about the same degree sensitivity and reliability, and the results obtained we remarkably similar The amount of T S.H in the blo of normal persons is only just detectable in most case and in some none may be found Patients with my œdema from any cause (except pituitary failure) near always have an increased T S H level in the bloo Dr Gilliland had, however, seen a few cases of extrem myxœdema without detectable circulating T.S.H H explained these by suggesting that in prolonged sever hypothyroidism the pituitary is itself affected and ca no longer make T S H This view was strongly supporte by the finding, in one of Dr Gilliland's cases that T.S.H was originally absent but after brief and partial treat ment of the myxœdema it appeared in the blood in quit large quantities

In patients with thyrotoxicosis, but without exoph thalmos or other eye signs; the level of circulating T.S.H. is no greater than normal It may also be normal in some cases with well developed eye signs, but in other there may be extremely high values Both speakers a the Royal Society of Medicine agreed that there was a general tendency for exophthalmos to be associated with high levels of circulating T S H, but when studied in detail the correlation often broke down In particular Professor Querido was much impressed by a single case in which the exophthalmic ophthalmoplegia syndrome progressed rapidly, in spite of a low level of T.S.H in the blood

The mere fact that patients with myxœdema have much T S.H in their blood, but no exophthalmos, enough to disprove the simplest answer to the problem It seems clear that a complex situation exists which can only be unravelled by the development of new techniques An obvious question to ask (but which cannot at present be answered) is whether the substance in the blood of patients with myxœdema is the same as that in the blood of patients with exophthalmos Or is there something else in the patients with exophthalmos which makes them sensitive to the action of T.S.H ? Possibly T.S.H is irrelevant altogether for Dobyns et al [1,2] claim that the pituitary makes a quite separate hormone which produces exophthalmos in the Atlantic minnow and can be found in the blood of patients with exophthalmos It seems highly probable that the pituitary has something to do with the production of exophthalmos but both the nature of the connection and the other factors involved remain obscure A recent report from Paris [3] describing the beneficial effect of hypophysectomy in a case of rapidly progressing exophthalmos supports this view

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[1] Western Morning News, June 29, 1955

SCREENING TESTS FOR ARGENTAFFINOMA

THE discovery of the endocrine activities of argentaffinomata is being rapidly exploited The syndrome of flushing pulmonary stenosis and diarrhœa has now been described in a substantial number of cases, and its relation to the secretion of 5 hydroxytryptamine (5-H T serotonin enteramine) by the tumour is now well established [4,5] Because 5 H T is rapidly oxidised to 5-hydroxy indole acetic acid (5 H I A.A) in its passage through the lungs,[6] estimation of the original hormone in blood or urine is unreliable as well as difficult and it is now generally recognised that estimation of 5 H I A A in the urine, in which it appears in large amounts in these cases, is the best diagnostic method

Earlier methods for the estimation of 5 H.I A A were necessarily fairly cumbersome involving relatively tedious extraction or paper chromatography To realise the potential value of the method in diagnosis (in for example obscure instances of cyanosis hepatomegaly pulmonary valve disease or subacute small bowel obstruction) simpler methods were clearly needed In a leading article last month [5] we suggested that ‘it should not be outside the bounds of possibility to devise a qualitative method suitable for use in the clinical side room We based this observation only on the known reactivity of 5 H.I.A.A and the large amounts excreted (as much as a gramme daily) In fact, a method which almost fulfils this criterion was published in September by Sjoerdsma, Weissbach and Udenfriend [7] Their method however is less simple than the one described on p 1359 of this issue by Mr Hanson and Dr Serin They have abandoned the 1 nitroso 2 naphthol reaction of most recent authors and reverted to Ehrlich s aldehyde reagent, originally recommended by Erspamer and Borelli They describe two methods (a) a quantitative method involving simple ether extractions and photometric estimation and (b) a qualitative method involving mere mixing of equal quantities of reagent and urine in a test-tube and boiling The first is one of several similar methods now becoming available and only use and direct comparison will show which is most satisfactory in practice It is of interest however, that Dr Curzon whose paper also appears on an earlier page finds that mephenesin and acetanilide give false positives with tests of the Udenfriend type and not with Ehrlich s reagent But the qualitative test of Hanson and Serin is another matter altogether It sounds as simple as a Benedict s test for sugar A blue colour means 5 H I.A.A significantly raised no blue colour means 5 H I.A A within normal limits With this method, preoperative diagnosis, even in urgent cases of intestinal obstruction due possibly to argentaffinoma should be perfectly feasible Difficulties will probably arise in practice but the method is obviously a very promising one

Dr Curzon s own method which also uses Ehrlich s reagent, breaks new ground with the use of salt solutions for very rapid paper chromatography It is a remarkably quick method for its class, and has all the advantages of chromatography in the accurate identification of individual compounds but it can hardly be done we would imagine in much under two hours, which makes it considerably slower than Sjoerdsma et al.'s method and completely outpaced by Hanson and Serin s

At the moment any laboratory undertaking this estimation should be prepared to use any of three methods (a) Hanson and Serin s rapid method for screening (presuming of course its value is confirmed) (b) one of the extraction methods to give a quantitative result and (c) one of the chromatographic methods, to make certain that the material extracted in (b) is in fact 5 H I A A It would be unwise to abandon chromatographic methods altogether until we know a great deal more about the mode of excretion of indole derivatives or about possible interfering substances especially if methods as simple as Curzon s prove adequate

An incidental point mentioned by Hanson and Serin is the appearance of a red colour in the urine of 3 of their patients The nature of the pigments concerned has not been established Presumably some unsuspected reaction of the indole derivatives present is involved, and its elucidation may well uncover facts of interest

The systemic disturbances associated with argentaffinoma have sometimes been connected with the taking of food [8] and alcohol [9] In a third paper published this week Dr Bleehen records a case of argentaffinoma in which paroxysms of flushing dyspnœa and diarrhœa were provoked by fatty food The attacks regularly followed five to fifteen minutes after a fatty meal This could not have been a direct action and there must be an intermediate hormonal mechanism—very like the secretin mechanism What stimulates the tumour cells may stimulate normal argentaffin cells and Dr Bleehen's observations may prove of considerable physiological interest

NEW MINISTER OF HEALTH

Mr R H Turton has been appointed Minister of Health in succession to Mr Iain Macleod, who has held office since 1952

Mr Turton who is 62 has sat in the House of Commons since 1929 as Conservative member for Thirsk and Malton He was educated at Eton and Balliol College Oxford, and was called to the Bar Inner Temple in 1926 At the outbreak of war in 1939 he joined the 4th battalion of Green Howards and he served as D.A.A.G 50th(N) division and as A.A.G at general headquarters of the Middle East Forces He was awarded the Military Cross in 1942

In 1951 he was appointed parliamentary secretary to the Ministry of National Insurance and he continued to hold this post when in 1953 the Ministry added pensions to its responsibilities. Just over a year ago Mr Turton was moved to the Foreign Office as one of the joint under-secretaries of State

The medical profession will wish Mr Macleod well in his new office as Minister of Labour He deliberately made the years which he spent at the Ministry a time of consolidation for the National Health Service They were also a period of steady if uneventful progress. His successor faces a year to which the imminent report of the Guillebaud Committee is likely to bring incident and it is to be hoped, opportunities for further advance

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[1] Dobyns, B M *Endocrinology* 1953 52 705

[2] Dobyns, B M Wilson L A *J clin Endocrin.* 1954 14 1393

[3] *Ibid*, 1955 15 1239

[4] See *Lancet* 1954 ii, 373 958

[5] *Ibid* Nov 19 1955 p 1020

[6] Goble A J Hay D R Sandler M. *Ibid* p 1016

[7] Sjoerdsma A Weissbach H Udenfriend S *J Amer med Ass* 1955 159 397

[8] Thorson, A Biörck G Björkman G Waldenström J *Amer Heart J* 1954 47 795

[9] Snow P J D Lennard Jones J E Curzon G Stacey R S *Lancet* 1955 ii 1004

Special Articles

CLINICAL PATHOLOGY

The Challenge of the Future *

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Although clinical pathology has been recognised since 1948 as a full specialty in status equal with other specialties, the innumerable discussions about the desirability of a College of Pathology, and of higher qualifications for pathologists, and much of the evidence given before the Hadfield Committee, indicate dissatisfaction and frustration among some pathologists In my opinion the cause is largely a matter of mental outlook, and the remedy an alteration in outlook among some of the dissatisfied Such things as higher degrees and diplomas have their convenience in labelling people who have attained a certain degree of proficiency in their specialty, though they should never be used as a criterion for a consultant status, but they will not in any way cure the dissatisfaction referred to, nor raise a person's standing, in the profession, above that established by his own qualities The standing of an individual can be raised only by himself

Rôle of the Clinical Pathologist

The rôle of the clinical pathologist is twofold

First he must see that proper investigations are carried out accurately to produce the data required, making full use of the scientific and technical staff of his laboratory Although he may delegate much of this work to technicians, he must be technically competent to supervise this routine work, and to suspect and rectify errors which may occur

Secondly he must bring his knowledge of scientific medicine to all types of clinical problem (By reason of his training and continued scientific outlook, his knowledge of scientific medicine should be greater than that of the average clinician) He must look at the patient as a whole and endeavour to interpret his findings in the terms of derangement of structure and function (He must not accept as a fact that the blood plutonium is raised in the Smith Jones Robinson disease, but must continually be asking himself "why ?" and trying to find the answer) He must continually keep in touch with the developments in scientific medicine by wide reading, by attendance at meetings, by visits to other hospitals and laboratories when opportunity offers, and by any other available means

In my first hospital laboratory appointment in 1928, when the tempo and range of laboratory work were very different from now, the senior surgeon came into the laboratory and asked me about a patient on whom we had done some investigations but whom I had not seen He expressed surprise, saying "I thought you saw all patients on whom you did tests" Even in those days this was an ideal impossible to realise fully, but the closer we can approach to it, the better will be our work, and the greater its value to our colleagues in other departments

One of the problems in which the aid of the clinical pathologist is increasingly sought is the control of the electrolyte balance, and here it is particularly necessary to consider the patient as a whole, and not merely the laboratory findings

For instance, a patient who had had a gastr became ill she began to froth at the mout generalised twitching, became stuporose, and l epileptiform fit

The serum-electrolytes gave the phenon abnormal figures of Na 91 m eq, Cl 60 m.eq, 22 3 m eq, and K 5 m eq per litre, with a norm level of 27 mg per 100 ml (I should say here tha estimates were repeated and found accurate, bu are far the lowest I have ever encountered) A sight from these laboratory findings it might that there was a gross salt deficiency, and that n salt therapy was the correct treatment Further u however, showed that the patient had been give water per rectum, ad lib, and had absorbed in the p thirty-six hours the enormous amount of mor 13 pints It was clear then that the condition was water intoxication rather than salt deficiency the only therapy used was to cut down the fluid i In the course of the next four days the exces was excreted, the patient made a clinical recover the serum-electrolytes returned to normal val Na 140 m eq and Cl 98 m eq per litre

Had hypertonic saline been given in amount su to remedy the apparent deficit—as judged from the analyses alone, without consideration of the clinical picture—it would probably have perpet the œdematous state of the tissues, and prolonged, prevented, the ultimate recovery

From time to time I have been asked whether it not be possible to construct a nomogram, from could be read off the proper amount of saline sol necessary to correct a deficiency This example the futility and danger of such an approach case of electrolyte disturbance has to be assessed the clinical as well as the chemical standpoint, an appropriate repair fluids have to be calculated individ

It would be possible to go on indefinitely, examples of where a laboratory test by itself could to erroneous conclusions, but I will mention only others

A patient was admitted with the clinical pictu severe scurvy, and was submitted to an ascorbic-saturation test, 700 mg of ascorbic acid being g every morning and the urine examined four to six after the test dose Even after fourteen days no signifi ascorbic-acid excretion had occurred, which sugge that the case was indeed one of severe scurvy, as thought But the fact that there had been no signific clinical improvement during this period caused interpretation to be queried, and further investiga showed that the patient was in fact suffering f chronic nephritis, having a very low clearance not for ascorbic acid but also for urea Renal efficie is, of course, a prerequisite for any type of excre test

Another patient, presenting with the typical pictur acute pancreatitis, showed a low value for urin diastase, and in consequence laparotomy was perfor and the clinical diagnosis of pancreatitis confirm Further investigation then showed that the patient in renal failure with a blood-urea of 350 mg per 100

Both these cases show how misleading a laboratory can be if considered by itself, and both mistakes co have been avoided if all relevant findings, including presence of albuminuria, had been taken more seriousl

Discrepancy in Laboratory Findings

Although the fundamental characteristic of th clinical pathologist, by which he is differentiated fro the various scientific and technical workers in th hospital laboratory, is his medical training and clinic outlook, these are of no value unless the laborator work is of the highest practicable standard of accurac

It is not always realised how hard it is to maintain a reasonable standard The laboratory surveys organised by Belk and Sunderman [1] in American laboratories in

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* From the presidential address given to the Association of Clinical Pathologists on Sept 30, 1955, entitled "Clinical Pathology, Past and Present the Challenge of the Future"

[1] Belk W P, Sunderman, F W *Amer J clin Path* 1947, 17 853

1947, and by Wootton and King[1] in this country in 1952 and 1954, showed the gross errors made by some laboratories—even in routine estimations such as those of blood-sugar and blood urea. A recent check in which the same serum was examined by six laboratories (in connection with the preparation of reference standards) showed that there is still no reason for complacency. The six laboratories were all places where a reasonable standard was to be expected; yet there were discrepancies. Thus five out of six found a urea level between 50 and 58 mg. per 100 ml. while the other put it at 64 mg.; five out of six found glucose within range 96–110 mg. per 100 ml., while the other's figure was 70 mg.; and there were ranges of 120–129 m. eq. for sodium in five laboratories with 115 m. eq. in the sixth, and 2·9–3·7 m. eq. for potassium, with one value of 2·4. The four laboratories producing results outside the general range were different for each test.

Variations can of course be due to the use of different methods and a laboratory is usually rather more consistent in its own results than in comparison with other laboratories. (Thus in the 1954 trials organised from Hammersmith[2] the ratio between determinations of the same constituent at different levels showed rather less scatter than the individual determinations.) But even to maintain internally consistent results numerous controls and checks of specimens of known content of the constituent being analysed are necessary, and control charts as suggested by Henry and Segalove[3] should be kept. Standards of known content are now available to all laboratories through the work of the joint committee of the Association of Clinical Pathologists and the Association of Clinical Biochemists.

I cannot do better here than quote Bodansky[4]:

> The precision and accuracy of a clinical biochemical determination are also the end result of a sequence of many steps, beginning often at the patient's vein. Some of these steps are seemingly trivial but all are important. The supervising biochemist must exercise constant vigilance over each of these steps. He must guard his technicians against the laxness born of the error that the precision of the determination need be merely as good as the biological variability of the components under analysis. The supervising biochemist, whether his primary training is medical or chemical, should be sufficiently acquainted with the clinical material, so that any seeming discrepancy between the laboratory result and that expected from the patient's condition be immediately evaluated in terms of both laboratory procedures and clinical consideration.

Now the gross discrepancies in laboratory findings refer to constituents which are the bread and butter of the ordinary laboratory. If there is such a difficulty in controlling everyday tests, how much are the results going to be worth of tests which may be more complicated and less frequent?

Organisation of Laboratory Work

This leads to thought about the organisation of laboratory services. Before 1948 many of us hoped that laboratory services could be organised on a national or at least a regional basis; but this was not done and hospital laboratories, for the most part, are directly under hospital management committees. Thirty years ago it was possible for one pathologist to be reasonably expert in all branches of clinical pathology—but the case is very different now. It is possible for an individual to be adequately trained and competent in the day-to-day work of all the four main branches, but it is very difficult to keep in touch with all the detailed advances going on even in one branch. Yet there is neither enough money nor enough skilled staff to enable specialists in all these branches to be appointed to most groups, even if this were desirable.

For certain types of special bacteriological work the central reference laboratories such as Colindale, and for very unusual blood-group problems the Lister Institute, provide a solution; but for many other problems the specialist services should be much more widely dispersed so that personal contact between the workers concerned is reasonably easy geographically. The most satisfactory way of doing this is to organise pathological services on the basis of a unit larger than the management committee—a unit large enough to provide for specialist staff in the main branches—and if this could be brought about it would be much less extravagant in staff and expensive equipment than the present attempt to make each management-committee service self-contained. At the same time, I would like to express my personal opinion that the administration of the Public Health Laboratory Service and the hospital laboratory service as two parallel organisations is very wasteful of skilled man-power, and except for special laboratories such as Colindale and possibly a very few special epidemiological laboratories, economy could be effected by uniting the two types of work as one service.

Failing this suggested reorganisation the easiest practicable solution is for pathologists in neighbouring hospitals to work as a team. A desire to be self-sufficient sometimes militates against a close integration at the committee level, but there is no reason why the pathologists themselves should not work together, each being responsible for the day-to-day work of his own hospital as well as developing a specialty for a larger area. This is in fact done in many areas; but there are still places where time is wasted and standards sacrificed, because a pathologist tries to deal personally with everything sent in, rather than refer any of the work to a neighbouring laboratory.

Biochemist and Chemical Pathologist

In this context I should like to refer particularly to chemical pathology. The desirability—alike for accuracy of results and for economy of work—of concentrating special investigations applies particularly to some chemical problems. Unless a laboratory performs a given test sufficiently often and regularly to establish its normal range and put up adequate controls, results are of little value. Moreover, clinical biochemistry is one of the branches of pathology in which progress is going to be made at an increasing speed and with many increasingly difficult techniques.

If this demand is to be met, the most pressing need is for more pathologists to be appointed whose special interest is chemical and who have had adequate training in biochemistry. It is unlikely that in any foreseeable future there will be enough of these—nor is there at present enough special work—to justify such an appointment to every group; but they should be sufficiently numerous to be members of most of the teams I have suggested, and this is far from being the case at present.

In many laboratories the non-medical biochemist is already an important member of the team; but, although in pure research the possession or not of a medical qualification is of no importance, in the clinical laboratory service the position is very different, and the chemical pathologist, by virtue of his dual qualification and clinical outlook, is the proper person to collaborate with the clinicians in all types of metabolic disorder.

It must be admitted that the average general pathologist, without special chemical training, cannot compete technically with a trained chemist; but I am convinced that the tendency of some pathologists to shy away from anything chemical and to hand it all over to the biochemist is entirely wrong, and if this tendency extends widely it may well lead to the complete splitting off of biochemistry from clinical pathology. This would be a major step towards the destruction of clinical pathology as a specialty, and would be to the great disadvantage of clinical medicine

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[1] Wootton, I. D. P., King, E. J. *Lancet*, 1953, i, 470.
[2] Proceedings of 1st European Congress of Clinical Chemistry, Amsterdam.
[3] Henry, R. J., Segalove, M. *J. clin. Path.* 1952, 5, 305.
[4] Bodansky, O. *Ann. Rev. Biochem.* 1955, 24, 628.

Compared with the non-medical scientist, the general pathologist has the great advantage of having been trained in physiology, pathology, and the clinical subjects his wide general medical reading should keep him in the position where he is able to advise his clinical colleagues as to what investigations are likely to be helpful, even if the biochemist is responsible for carrying out the determinations The general pathologist need not know much about the techniques of estimating 17-ketosteroids or 17-ketogenic steroids, but he should know what they are and what they indicate, and whether their determination in a particular case is likely to be helpful or merely a waste of the laboratory's time

Other examples which come to mind are such tests as Wassermann reactions and antenatal blood grouping For Wassermanns to be reliable, adequate controls—which take up a considerable part of the time of testing—are necessary, and, unless a laboratory has a good many Wassermann tests each week, technicians' time will be saved, and results will be more accurate if one laboratory does the Wassermanns for two or three The same remarks apply to rhesus grouping apart from D-screening, and a general test for antibodies which can be done generally, a laboratory doing adequate Rh grouping must have continuously available and accessible a large number of special sera whose individual characteristics are known, and bloods whose constitution in Rh subgroups and other factors is known, and this is impracticable for the limited amount of work going through any individual hospital

Training

The training of clinical pathologists is under consideration by our Committee on Academic Affairs, and is in any case far too wide a question for general discussion here But there are one or two points to which I would like to refer

I have laid stress on the need for a clinical pathologist to look at his problems from a broad physiological-pathological point of view, but he cannot do this unless he has accurate data from which to reason Although the experienced pathologist will delegate more and more of the technical work to scientific and technical staff, he cannot do this with safety unless he has personally practised the ordinary techniques of the laboratory sufficiently to become really familiar with them, and their snags and difficulties if he is to control the work of the technicians properly, he must understand the theoretical basis and the sources of error of the methods used in the laboratory, and this means that a considerable proportion of his early training should be occupied in acquiring technique

The importance of adequate academic training for all pathologists was emphasised by our association's original committee on training It was suggested that a period working in a university science department was desirable if clinical pathology is to hold its place in the forefront of scientific medicine this is essential, not for the technical knowledge gained but as an introduction to scientific method, and scientific mode of thought, which will fertilise all the subsequent career of the trainee The chemical pathologist, unless he has already taken a science degree, should have at least a year's training in pure biochemistry in order that his work in chemical pathology may be productive, and our Committee on Chemical Pathology has made a strong recommendation to this effect

For these proposals to be realised, the authorities will have to recognise these periods as *necessary* parts of training, and to make available posts of registrar or senior-registrar status to be held in a science department This is administratively feasible, because trainees are all appointed at regional level, and the over-all establishment is regulated by the Ministry itself

Ancillary or Consultant?

Although clinical pathology has now achieve *position where its practitioners* are financially and every other respect the equal of their colleagues in clinical branches, it is still sometimes (though not any official documents) called an "ancillary" subjec a term which (according to the *Oxford English Dictiona* means subservient or subordinate For clinical patholo such a description is outmoded, but it could v easily become accurate, *for if a pathologist is cont* to carry out uncritically (even if accurately) numer tests ordered by a clinician, and leave it at that, may be a specialist but he is in no way a consultant, a he remains subservient and subordinate In such a c the years of medical training are wasted and the w could be done equally well by scientific officers a technicians

If, however, the pathologist takes full hold of t opportunities offered, and continuing his studies *fundamental physiological and pathological problem* becomes a real medical scientist with a deep and increa ing knowledge of disease in the widest sense, appl this knowledge to clinical problems and as far as possib contributes to new knowledge by his own work, h position is totally different he will be consulted an respected by consultants in other branches, and h status and the future of his subject will be assure This is a challenge which we all must accept—and on o answer depends the future of our specialty

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"MINIMAL" TUBERCULOUS LESIONS

SIR GEOFFREY MARSHALL presided over the sevent quarterly clinical forum, *arranged with the coöperation* of Dr F B Kiernander, which was held at the Ciba Foundation, London, on Nov 28 and was devoted to the Treatment of Minimal Tuberculous Lesions of the Lung

Prof J W CROFTON emphasised the reduction of the relapse rate by long continued chemotherapy Air Commodore C A RUMBALL discussed *the reactivation of pulmonary tuberculosis* in air crew by the stretching of lung parenchyma during rapid or explosive decompression or radial acceleration Between 40% and 50% of nodular lesions *resected after* chemotherapy, he said, contain viable bacilli, and because of flying stresses such nodules are a greater potential danger to air-crew than to civilians *At present the only acceptable treat*ment for this type of disease in air crew is surgical resection

Mr J R BELCHER said that *resection* is the only correct operation for these solid lesions - collapse therapy is useless At the present time he advocates preoperative chemotherapy for six to nine *months* His present indications for operation are (1) breakdown following prolonged chemotherapy, (2) persistently positive sputum, (3) "large" *tuberculomas, and* (47) where *the diagnosis* is in doubt In addition he felt there are still indications for an "insurance operation"—which results in no deformity and can be *performed* in one stage —*for those who are unable* to spend a long time in hospital, for those who are apt to forget to take their chemotherapy, and (because of their susceptibility to the disease) for Negroes and recent emigrants from Ireland.

Prof ROBERT CRUICKSHANK pointed out that all the antituberculous drugs act on the *actively* multiplying bacilli Isoniazid is exceptional in that it acts equally well on intracellular organisms He discussed conflicting views on the effect of chemotherapy on the development of immunity in tuberculosis In the discussion, Dr J L LIVINGSTONE spoke of the differences in patholog and behaviour of these minimal lesions SIR GEOFFREY ood said that it is now the policy of the Royal Air orce to treat actively all these cases with rest and hemotherapy, with additional resection in selected cases he optimal period for chemotherapy is still in doubt The relation of chemotherapy to the development of mmunity in experimental tuberculous infection of the ornea in mice was discussed by Prof J M ROBSON Prof ROBERT KNOX strongly advocated the administra ion of rotating pairs of drugs, rather than the continued use of any two of the three principal drugs. Dr D'ARCY HART referred to the occasional difficulty in deciding whether these lesions are primary or secondary Mr VINCE POWELL said that it is often difficult to differentiate between a cavity and an emphysematous cyst occurring beyond fibrosis in cases that have received chemotherapy for a long time

A.M.A 's BOSTON MEETING

THE clinical meeting of the American Medical Association was held in Boston from Nov 20 to Dec 2

In different halls at the same time Dr PAUL D WHITE (Boston) outlined the epidemiology of cardiovascular disease, Dr SHEILA SHERLOCK (London) described the benefits of dietary protein withdrawal in the treatment of hepatic coma and Dr H M LEMON (Boston) claimed prolonged remissions of advanced mammary cancer following cortisone therapy Simultaneous counter-attractions were a sound film by Dr JOHN C MATT (Tulsa, Oklahoma) demonstrating the *Rizzoli Stone* operation for correction of anovaginal atresia and a colour television programme on carcinoma of the stomach by Dr RICHARD H SWEET *(Boston)*

Dr P HENNEMAN from Dr Fuller Albright s laboratory in Boston advocated oral sodium phytate in the treatment of hypercalcæmia and hypercalcuria of sarcoidosis, hypervitaminosis D and idiopathic hypercalcuria Acting like a resin, it prevents the absorption of calcium by forming insoluble calcium phytate in the gut

Dr M S SACKS (Baltimore) analysed 42 cases of idiopathic thrombocytopenic purpura whereas cortisone was of benefit in the acute disease in childhood, it was of little value in the chronic disease in adults

Dr F C LOWELL (Boston) discussed the significance of smoking *as a* causal factor in emphysema, and emphasised the smoking habits of his patients by calculating their cigarette packet years ' His *patients* with emphysema had a higher incidence of peptic ulcer and bronchial carcinoma than control groups but the total numbers were too small to indicate anything more specific than a trend

Dr G S MYERS (Boston) underlined the importance of seeking mitral stenosis in patients with symptoms of *chronic pulmonary disease.*

Dr J L POOL (New York) demonstrated the difficulties sometimes encountered in differentiating lipoid pneumonia due to aspiration of paraffin inhalants, from lung cancer

Dr BELTON BURROWS (Boston) outlined the response to radio iodine treatment in a group of 72 patients with hyperthyroidism Two thirds responded to a single dose of 10 000 r e p ; and of these, 2 became myxœdematous In the patients who received multiple doses of radioactive iodine there was an increased incidence of progressive exophthalmos and pretibial myxœdema developed in 3

Dr SEYMOUR J GRAY and his co workers (Boston) discussed the *clinical* use of urinary uropepsin excretion in gastro intestinal and *endocrine disease* There was a significant difference between the high values in patients with bleeding gastric or duodenal ulcers and the low values in patients with hepatic cirrhosis and bleeding œsophageal varices

Antibiotics received due attention in a panel on antimicrobial therapy conducted by Dr CHESTER S KEEFER Dr LOUIS WEINSTEIN Dr MAXWELL FINLAND, Dr CHESTER W HOWE (Boston), Dr WILLIAM P BOGER (West Point, Pa), and Dr MARK H LEPPER (Chicago) and also later in a discussion on empyema thoracis by Dr D MILLER (Burlington) and Dr J P LYNCH (Boston)

Cortisone was advocated in the treatment of check rein shoulder emphysema, and advanced mammary cancer ; and there was a panel discussion on cortisone and allied compounds in the treatment of infectious, arthritic, malignant, and degenerative diseases This was conducted by Dr R G SPRAGUE (Rochester Minn) Dr B F MASSELL (Boston) Dr J H BUNIM (Bethesda) Dr O H PEARSON (New York), and Dr W F HERRELL (Lexington)

Since Boston is just recovering from a severe epidemic of poliomyelitis, it was appropriate that a session was devoted to discussion of this disease by Dr CHARLES A JANEWAY and his colleagues (Boston) On another day Dr T H WELLER (Boston) discussed the enteric viruses.

Dr EDWARD H KASS (Boston) revealed that symptomless *infections* of the urinary tract had been found in about 6% of random samples of outpatients attending the Boston City Hospital on account of other disorders.

SCOTTISH LAW ON ,MENTAL PATIENTS

THE Royal Commission set up last year under the chairmanship of Lord Percy of Newcastle to inquire into the certification *and detention* of mental patients in England and Wales [1] has not yet *reported* Meanwhile proposals for revision of legislation in Scotland are set out in a white paper [2]

The position in Scotland was reviewed *in* 1946 *by* the Russell Committee [3] which laid great weight on voluntary admission The white paper now proposes a general simplification of the law , and it *suggests a new procedure* for the mentally ill patient, dispensing with the *need for* a judicial order where the patient at present *has to be* thus dealt with solely because he is not mentally capable of seeking treatment voluntarily All the proposals are put forward as the basis for discussion, before new legislation is *drafted*

MENTAL ILLNESS

The Voluntary Patient

At present the written assent of a commissioner of the General Board of Control must be obtained within three days of a voluntary patient's admission The white paper proposes that this procedure *should* be replaced by a simple notification of admission to the board in the case of patients *over* 16 years of age but for those under 16 written assent *will still* be required It is proposed to repeal the limitation of the existing provisions which do not authorise *the admission* or continued detention of a voluntary patient whose mental condition is certifiable

The Recommended Patient

The white paper proposes that provision be made for a new class of *mental* patient—the recommended patient '—who would be admitted to hospital under an intermediate procedure This new procedure would cover cases where the *patient himself* is incapable of deciding or is unwilling to enter hospital voluntarily, but the appropriate relative (or in his absence the authorised officer) is willing that *admission* should be sought in accordance with two medical certificates recommending inpatient mental hospital treatment. The medical superintendent of the mental hospital would have to certify to the General Board of Control within fourteen days of admission that the patient had mental illness and was a proper person to be detained. Thereafter the patient would be protected by safeguards which already apply to certified patients; and, in addition, he would have the right to appeal to the Board of Control at any time within a month of his admission.

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[1] See *Lancet* 1954 i, 353.

[2] The Law relating to Mental Illness and Mental *Deficiency* in Scotland *Proposals for Amendment* H.M. Stationery Office Pp 14 9d.

[3] Report of the Committee on the Scottish Lunacy and Mental Deficiency Laws. H.M. Stationery Office 1946 See *Lancet* 1946 ii 166

The senile patient.—Certain aged persons have a type of mental illness that requires mental-hospital treatment. In such a case judicial order can at present be avoided only by voluntary admission. Where the patient objects, or is incapable of assenting, to this course, but the relatives agree that mental-hospital treatment should be sought, the proposed new procedure would enable such treatment to be obtained without judicial process. The proposed new form of certification, says the white paper, should minimise any risk of senile patients being committed to mental hospitals simply because they need some kind of institutional care. "But the ultimate safeguard must lie in the provision of adequate accommodation for senile patients both in non-mental hospitals and in homes for the infirm."

The Certified Patient

It is expected that the great majority of mental-hospital patients will be admitted either as voluntary patients or as recommended patients; but it will be necessary to retain a form of judicial retention. It is proposed that the terms at present in use in the Acts relating to the certification of a person as a lunatic, an insane person an idiot, or a person of unsound mind should cease to b used. A person could instead be detained in a menta hospital on the order of a sheriff, after certification b two doctors that this is necessary for him to obtain th care and treatment he requires.

MENTAL DEFICIENCY

The certifying doctor, instead of classifying a mentall defective person into one of the present four statutor terms, will be required to state that the patient is mentally defective, and to answer specific questions designed to ascertain what type of provision, training, and accommodation will best suit the patient.

ABSENCE WITHOUT LEAVE

The white paper proposes that it shall be an offence to assist a certified mentally ill patient to absent himself without leave, knowingly and wilfully to harbour or conceal such a patient, or to assist such a patient to break any condition of temporary leave of absence; or to harbour a certified mentally defective person who is absent without leave from an institution or from guardianship (it is already an offence to assist such a person to absent himself without leave, or to break any condition of his guardianship or release on licence).

In the Mental Hospital *

PATIENT AND NURSE

Effects of Environmental Changes in the Care of Chronic Schizophrenics

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For a long time many have recognised that the familiar picture of the chronic deteriorated schizophrenic is not a necessary consequence of an inexorable process; even in the most disturbed wards of mental hospitals, occasional spontaneous remissions occur. In the last quarter-century more and more people have come to see that the hospital atmosphere, enforced inactivity, and lack of responsibility can hinder rather than help the patient's progress, and various efforts have been made to modify hospital care accordingly. Believing, with Adams,[1] that the most important therapeutic element in the environment is the people in it, we have attempted an experiment in which a group of patients and nurses were given a chance to develop more or less enduring relationships with one another. This is an account of what happened over a year.

THE BEGINNING

For six weeks one of us spent an hour or two every day in the most refractory female ward of the hospital. This ward houses 65 patients and is staffed by four (sometimes only two) nurses. Some of the patients who were exceptionally noisy and violent, tended to absorb the energies of the nurses. Other patients were habitually passed over, and had very little personal contact with nurses or other patients. They sat round the walls, or lay on the floor, in the same place every day. Occasionally one of them would attack another patient or a nurse, for no known reason, and then revert to her customary inactive state. If approached, several of them were liable to spit obscenities, or to attack one. For this reason they were very seldom approached.

From this group the observer selected 11 patients. The people chosen were at all times confined to the ward, or to a courtyard annexed to the ward, unless visitors came to see them. It was felt that they were all too "disturbed" to attend hospital dances. No occupational therapy was available in the ward. Occasionally someone tried to sew or make a rug, but another patient would interfere and nothing came of it. The only criterion of selection was the patients' social isolation. Their ages ranged from 22 to 63 years, and all had been in the same ward for over four years without even temporary remission. They were all schizophrenics.

During the initial period some changes were made among the patients selected: 2 who were unwilling to go over to the room in which the experiment was to be conducted were replaced by 3 others at the request of a senior doctor. Four months after the scheme had started a patient who had been asking repeatedly to go over was included in place of one who had been uninterested.

The matron delegated two nurses whose sole job wa to be with these 11 patients in the room set aside for th experiment. This was large, bright, newly decorate and comfortably furnished, and it contained magazine and materials for knitting and sewing, making rugs and baskets, drawing, and so forth. The room adjoined a kitchen, a billiards room used by the staff, and a doctor bedroom. A door at the head of a stair leading from thi block of rooms could be locked or kept open as desired.

We gave the nurses no direct instructions except to ask for daily reports to be written, and sociograms to be completed. We met them once a week to exchang information about the patients.

SETTLING DOWN

The procedure on the first day became the routine which has persisted to the present.

The nurses appeared for duty on the ward at 7.30 A.M. They shared general ward duties until 9 A.M. when they took

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[*] A group of articles chiefly concerned with the value of active occupation and work for mental patients and the means whereby it is best provided.

[†] Working with a grant from the Scottish Hospitals Endowments Research Trust.

[1] Adams, E. O. Cited by Enelow, A. J. *Psychiat. Quart.* suppl. 1952, 26, 44.

ir patients over to "the room" where they stayed with om until they took them back to the ward for lunch at on leaving them there while they had their own lunch 2 P.M. they collected them again from the ward and took em back to "the room" until 5 P.M. The nurses then turned to "the room" for about half an hour to write up e day's happenings. They did this five days per week and d no other duties. Thus the patients spent six of their irteen day hours in the room with their nurses. One or her of the doctors visited the room, at any time each day, d usually did not stay longer than thirty minutes

At first "the room" was little more than an extension f the ward The patients quickly settled into their wn jealously guarded places in the room The nurses put a magazine on a patient's lap, or offered a ball of wool but the patients remained apparently indifferent and withdrawn However, several of them began to sew or read a little One began to draw When they returned to the ward they seemed to become entirely absorbed into their customary rôles From the second morning, however, they were waiting at the ward door to be taken across to the room

In the first few months, the two nurses devoted themselves to getting the patients to do things or to stop doing things. They used direct exhortations and expressions of approval or direct prohibitions and expressions of disapproval They tried to encourage the patients to copy them They expected their efforts to be assessed by others, and made their own assessment in terms of whether they got a patient to pick out skeins of wool or to start a rug, or to read a magazine, or in terms of whether they were quieter and "better behaved"—e.g. used less obscene language. To a patient sitting with legs up on a chair, they would say, 'That's not nice, that's not lady like' They attempted to instil into them more "correct" table manners: they told them to be "less selfish"

They expressed anxieties that a patient might run away while they were shepherding them from ward to room or back again They were afraid that in this interval they couldn't "keep a grip on them" They heavily sedated the patients before going over to the room and they kept the stair door locked If a patient went outside the room door they ran after her to bring her back. They wanted to know what to do if a patient started to break up a chair or to attack another patient.

The nurses felt that the patients were "better" in the room—i.e. quieter and doing something—but later reported that they were 'twenty times more uncertain' on return to the ward, attributing this to their resentment at coming back to the ward It was said that the presence of the doctor, either in the ward or in the room made them more uncertain

PROGRESS INSIDE THE ROOM

Gradually however a change became noticeable in ost of the patients, more apparent in the room than the ward They paid more attention to their appearance and some began to sew, draw or make rugs, with me application Most of them took over small jobs hich they jealously insisted on doing themselves Thus t tea time one patient made the tea another laid out the a, a third put the sugar on the table another the lk yet another spread the tablecloth and so on

Some patients began to behave towards one another differentiated individuated ways and there was a rtain constancy in these responses

The nurses were less worried and less on edge They both lt that the patients were becoming more "sensible" from a survey of what the patients were saying at this riod however it is clear that the change lay with the rses in that they were beginning to understand the tients better They ceased always to lock the stair or and to feel it necessary for the patients to be lated in the mornings They began to report more phenomenological material They became more sensitive to the patients' feelings and more aware of their own anxieties

VENTURING OUTSIDE

The senior nurse left during the eighth month of the work, and was replaced by another The day after her departure there was a clear change in the patients When we came in one of them at once approached us in a smiling and dignified manner With extreme formality she shook hands and invited us to sit down, at the same time expressing delight at our visit. Most of the patients greeted us in this way Nearly everyone in the room was knitting or sewing The patients began to help each other in small ways Such friendliness became so commonplace that the nurses ceased to make special note of it But, despite this alteration in social conduct, the patients' speech was still that of severely disturbed people

The door on the landing was now left permanently open, and the patients began to follow the nurses whenever they left the room on errands When the nurses started to polish floors the patients began to help them The nurses' reports at the weekly discussions showed an increasing attempt to understand the patients The nurses were less concerned with the prohibition of unwanted or antisocial activities by direct action and more interested in anticipating the unsatisfied needs which they thought produced them

The patients did more and more of the work in the room and gradually took over the scullion work in the divisional kitchen The domestic staff there responded warmly to this unexpected assistance and regularly we began to find two of the patients there for the greater part of the day One patient began to scrub the stairs and another polished the linoleum on all the landings At first when patients left the room they had wandered erratically through the hospital but now it was obvious that they were on their way to do something—to collect stores to clean some part of the hospital or to go for a walk in the grounds This movement out of the room was followed by the first requests for weekend passes.

ADVANCES AND SETBACKS

The next step came when the Matron provided some money to be used by the nurses as they thought fit. Trips into the town for afternoon tea became a regular event, and the patients bought sweets cosmetics, and materials for home permanent waves The nurses reported that the patients no longer merely made small friendly gestures, but helped each other with their hair with their clothing or with their self appointed tasks.

The next change was the introduction of cooking facilities There was an old gas oven in the kitchen and the utensils for baking were supplied All the patients were interested Some who had not previously joined in any general activity began to help

About this time the hospital occupational therapists began to attend the weekly discussions They asked how the nurses managed to get the patients to do so much to assist them The reply was "We never tell them to do anything Now when we are doing something the patients come over to see what it is Then they start to help and often take over the entire job themselves. When we have a lot to do we sometimes ask for assistance as one would do among any group of people It is not a good idea to try to get them to do something just for the sake of doing something

The general behaviour of the patients continued to improve. There were fewer reports from the ward of the patients attacking others The nurses from the refractory ward reported that they were receiving more help from the patients and seemed to feel that they were making good progress

There was a setback when one of the regular nurses left for four weeks holiday and a substitute came in her place The patients became more easily upset and quarrelsome Housework and baking stopped The landing door was usually locked No-one went out for walks, alone or accompanied The remaining regular nurse was sharper with the patients and checked them much more, as she had done when she first went to the room When she too was going on holiday for a fortnight, the newcomer felt unable to carry on, and the room had to be closed for a week But during this break the patients did not fade into the background of the refractory ward as they had done at the beginning of the scheme Some of them worked in the ward and others went down to the occupational-therapy department

On the return of their usual nurse the patients settled down again During a fortnight when she worked alone in the room further improvements were noted

The most significant are not however the easiest to describe For instance, Mrs Smith said to one of us at tea time "Would you care for a cup of tea ?" He accepted and she began to pour him a cup Nurse asked her if the doctor took sugar and milk "Of course he does One spoonful of sugar Don't you remember He always does" This ordinary conversation, was quite startling both to the nurse and the doctor Not only was the patient talking sense in sound syntax (this she had done before), but, suddenly she had abandoned the stilted intoning of words which had characterised her speech for years, which is so characteristic to psychotics and so elusive to written description

THE ROOM AND THE HOSPITAL

We did not suggest a special name for the scheme, and the nurses named it the "rumpus room" To begin with they had mixed feelings, about it, they regarded it as part of a mysterious and new-fangled series of innovations started by the doctors, but they also took it as a challenge They felt that they were being given a chance to show what a high standard of nursing in good conditions could do for patients

The problems which arise when a patient is felt to be "special" caused difficulty Comments that all the "rumpus room patients" were being specially treated were common among the staff The group nurses, who did not work on a shift system but were free in the evenings and at the weekends, were considered to have a cushy job The group nurses reacted in a defensive way to this, adopting a protective attitude when their patients were criticised during staff discussions Accordingly, reports of the patients' behaviour were often conflicting

Tensions of this kind are lessening A change was first noticed when the Matron made available money for trips out Soon after this it was noticed that the term "rumpus room" fell into disuse

DISCUSSION

In the twelve months described many changes occurred in these patients They were no longer isolates Their conduct became more social, and they undertook tasks which were of value in their small community Their appearance and interest in themselves improved as they took a greater interest in those around them These changes were satisfying to the staff The patients lost many of the features of chronic psychoses they were less violent to each other and to the staff, they were less dishevelled, and their language ceased to be obscene The nurses came to know the patients well, and spoke warmly of them

We started this work with the idea of giving patients and nurses the opportunity to develop interpersonal relationships of reasonably enduring nature A physical environment was supplied which was clean and pleasant and materials for knitting, sewing, and drawing, a gramophone, foodstuffs, and facilities for cooking were made available, and the patients and nurses were left to make what use of them they wished But our observations on the results seem to us to support the view that what matters most in the patients' environment is the people in it The nurses found it useless merely to try to get the patients to do something, but, once the patients liked the nurses, attempts to help them bec the basis for apparently autonomous activity in wl the patients used the material in the environm Disturbance and rupture of the relation, perhaps bec of the absence of a particular nurse, or to some fai in her understanding interrupted this activity

The material used or the nature of the activity wa secondary importance Some of the patients impro while they scrubbed floors, others baked, made n or drew pictures We conclude that the physical mate in the environment, while useful, was not the m important factor in producing the change It was nurses And the most important thing about the nur and other people in the environment, is how they f towards their patients Our experiment has sho we think, that the barrier between patients and st is not erected solely by the patients but is a mut construction The removal of this barrier is a mut activity

We wish to thank Prof T F Rodger and Dr. A. MacA for advice, assistance, and support in carrying out this wo We are indebted to the Matron and nurses of Glasgow Ro Mental Hospital for their coöperation.

Parliament

Breaches of Privilege?

On Dec 19 Lieut-Colonel Marcus Lipton brought t the Speaker's notice two alleged cases of breach o privilege

The first arose from the publication of a booklet b the British Medical Association, *Homosexuality and Prostitution*, which contained the following paragraph

> Other ways in which male homosexuals arouse the hostilit of the public include their alleged tendency to place their loyalty to one another above their loyalty to the institutio or government they serve, and, on the part of homosexuals in positions of authority, to give preferential treatment to homosexuals or to require homosexual subjection as expedient for promotion The existence of practising homosexuals in the Church, Parliament, Civil Service, Forces, Press, radio, stage and other institutions constitutes a special problem.

In the present state of the law, Colonel Lipton held, any assertion of the existence of practising homosexuals in Parliament must be regarded as serious

Varying reports of the contents of this publication appeared in the London morning papers on Dec 16, but the booklet itself was not generally available to the public at bookshops or bookstalls He had had to obtain a copy from the offices of the British Medical Association, which made it impossible for him to bring up the matter at the opening of parliamentary proceedings that day

The **Speaker** replied that, in matters of privilege, his duty was confined to seeing whether the conditions were fulfilled which enabled a complaint to get precedence over the orders of the day One of these conditions was that the complaint must be made at the earliest possible moment He had ascertained that the report of which Colonel Lipton complained was published on Dec. 14 and extracts from it, including the passage complained of, appeared in the Press on the morning of Dec 16. Therefore, by the rule, Colonel Lipton ought to have produced it at the beginning of business on Dec 16 in order to get precedence over the orders of the day That did not, Mr Speaker added, prevent Colonel Lipton from putting down a motion for the consideration of the House, which was the final guard of its own privileges

The second case which Colonel **Lipton** raised dealing with an article on the report in *The People*, was also after consideration disallowed by the Speaker on the ground that only a cutting, and not the whole paper, had been submitted

QUESTION TIME

Supplies of Heroin

Replying to a question asking which London hospitals had, view of the intended ban increased their normal stocks heroin and whether he had approved the additional penditure thereby incurred, Mr IAIN MACLEOD the Minister Health said that he regretted that the information was not ailable There would of course be no question of approval r additional expenditure for such a purpose but authority as not required for the purchase of drugs within the total the approved budget

Lieut Colonel MARCUS LIPTON Is it not quite deplorable at a small group of doctors should have made up their mind sabotage the ban the Government were intending to impose ? the Minister not going to make clear that further attempts evade the ban which the Government are standing by at he moment, will be viewed with disfavour by him ?—Ir MACLEOD : This is a difficult question We do not control he stocks of drugs which a hospital chooses to purchase and ven after reflection I do not want to issue any form of nstruction on this matter I think that would be going too ar On the other hand it is right to say that this is an xpenditure of public money and that therefore those who spend it should take into account the views of the Government

Replying to a further question Mr Macleod said that heroin addicts were not registered or licensed to receive heroin and a patient received heroin under the National Health Service only if his doctor prescribed it as being necessary for his treatment If heroin were not available it would be for the doctor to decide which if any of the various alternative drugs should be prescribed

Dr DONALD JOHNSON Will the Minister be mindful of the danger that these people many of whom are chronic addicts will form a hard core for the illicit traffic in drugs in the event of heroin being stopped ? In particular did the Minister see in *The Lancet* the letter by a medical man in which he mentioned that two of the addicts he was treating had been approached by pedlars in drugs ?—Mr MACLEOD I saw that letter which I thought was a very strange one for a doctor to write. I would say that the number of addicts in this country is known to be so small that I do not think they would provide any appreciable traffic in an illicit trade

Replying to further questions Mr MACLEOD said that he saw no reason for setting up under the National Health Service laboratories for be manufacture of dangerous drugs for distribution to medical practitioners

Health Centres

Mr SOMERVILLE HASTINGS asked the Minister of Health to what extent local health authorities had provided accommodation for general practitioners in premises in which their clinics were held so that the advantages of close association between services for prevention and cure might be obtained without the cost of new building—Miss PATRICIA HORNSBY SMITH parliamentary secretary to the Ministry replied The Ministry is not aware of any such cases unless the hon Member has in mind health centres

Mr HASTINGS Would not the hon. Lady agree with Lord Dawson of Penn that one cannot separate prevention and cure and is it not desirable, wherever possible—as I believe being done to some extent in Birmingham—to associate practitioners with preventive services ?—Miss HORNSBY SMITH The Minister would encourage any experimental scheme for associating general practitioners with the local health services, especially in coordinating antenatal work, provided that it is both legally and financially justifiable A considerable number of experiments which vary in their application, are being carried out on the health centre basis.

Replying to a further question Miss Hornsby Smith said that 6 new health centres had been provided under the National Health Service Act, 1946 in addition to 24 premises taken over as centres by local health authorities in 1948 A 7th new centre was opened recently and a small number of schemes were at various stages of planning and construction The Minister would continue to support so far as he could, further experimentation where new facilities for local health authorities and general practice were needed and coöperation between these branches of the service could be achieved

Mr ARTHUR BLENKINSOP : Would the Minister be prepared to consider whether any detailed amendment of the Health Service Act might be necessary to encourage coöperation between the preventive and the aftercare services ?—Miss HORNSBY-SMITH : The experience of how these new centres work in a year or so after their inception will be of great benefit in judging their future use, but it would be idle to ignore the fact that needs vary from area to area While these centres might serve a vital need in a new community they are not always as applicable in old-established residential areas

Chronic Bronchitis

Replying to a question Mr MACLEOD said that he was aware that the death rate from chronic bronchitis in adult males varied greatly in different localities, and in the same locality in those engaged in different industries. Some aspects of the problem were already being considered by his Standing Medical Advisory Committee and he was informed, by a working party of the Medical Research Council

Mr HASTINGS : Does the Minister realise that the death rate from bronchitis in this country is higher than in most countries, if not indeed in any other country ? Does he also realise the number of days' work lost every year through this affection, and is it not time that a serious attempt was made to discover how it can be prevented ?—Mr MACLEOD, Yes indeed I feel it is time that we did that and it is exactly for that reason that the two inquiries I have mentioned have been put in hand In addition I am informed that in 1956 the Industrial Health Advisory Committee of the Ministry of Labour is also to take up this problem

Dr EDITH SUMMERSKILL As the, mortality rate from chronic bronchitis is higher in Warrington than in any other constituency in the country can the Minister say whether the mortality rate varies in direct ratio to the degree of air pollution ?—Mr MACLEOD I should not have thought that it was in direct ratio but there is beyond doubt a connection between the two

Replying to Dr BARNETT STROSS Mr MACLEOD said that he had noted the encouraging fall in the death rate from tuberculosis in recent years but the numbers of new cases notified had not been falling so quickly and still made heavy demands on the chest clinics. He could not accept the suggestion that the death rate from chronic bronchitis was rising

Dr STROSS If we are successful in further combating tuberculosis could not the staffs of the chest clinics be used for dealing with chronic bronchitis and allied disorders ?—Mr MACLEOD The bronchitis figures must be studied with great care because they are not always comparable owing to the changes in the international classification. It is true that we can look forward to having a considerable increase in resources as the beds for tuberculosis are not so much used but I do not think that that time has yet come

Tuberculosis in Common Lodging-houses

Replying to a question Mr MACLEOD said that he was aware of the recent evidence indicating that a not inconsiderable proportion of those living in common lodging houses and reception centres were suffering from pulmonary tuberculosis and liable to infect others. He was considering how best to deal with the matter He was having a meeting very soon with the Ministry of Housing and Local Government and the National Assistance Board to formulate a joint plan of action

Hospital Building

Replying to a question Mr MACLEOD said that the total estimated value of hospital capital building projects now in progress or to be started in the current financial year including projects financed from non Exchequer funds so far as information about these was available was about £31½ million.

Radiation Hazards

Replying to a question asking what action was being taken to ensure the protection of hospital staffs against radiation hazards, Mr MACLEOD said that the Radioactive Substances Advisory Committee had submitted to him a code of practice for the protection of persons working with ionising radiations in hospitals. This would form the basis of advice which he hoped to send to all hospitals shortly

Mr BLENKINSOP : Is the Minister aware that the existing practice varies greatly between one hospital and another in this respect ? Would he consult the Minister of Labour about the responsibility for issuing the necessary orders under the Radioactive Substances Act ? If it turns out to be his responsibility will he consult himself ?

Albomycin

Replying to a question Mr MACLEOD said that members of the staff of the Medical Research Council discussed the properties of albomycin with the doctors who recently visited this country from the Soviet Union The Council were endeavouring to obtain a supply of this antibiotic from the Soviet Union so that its properties could be investigated

Old People's Homes

Mr C I. ORR EWING asked the Minister of Health whether he would appoint a committee to inquire into the well being of old people in homes administered by the local and county authorities —Miss HORNSBY-SMITH No, Sir Homes provided by local authorities under part III of the National Assistance Act are inspected by the Minister's officers from time to time, and he is satisfied that the local authorities are alive to their responsibilities and that the residents in these homes receive a very high standard of care

Mr ORR-EWING Does my hon Friend not agree that the Curtis Committee does most valuable work for children in public care, and would she consult the Minister to see if a similar committee might be set up to look after the well being of old people, because there are numbers who suffer from not very good feeding, and numbers of other elderly people who are subject to unnecessarily strict discipline in these homes?—Miss HORNSBY-SMITH It is only fair to local authorities to say that during the past years they have increased considerably indeed not only the number of beds but also the standard of part III accommodation for old people Recognising the difficulty that there is a large demand, which they are not always able to meet, they have also done an enormous amount of work in improving the old P.A.I.S being used for this purpose It is not possible to give them up because of the demand by the large number of patients It would be a great reflection on the fine work the local authorities have done in difficult circumstances if any suggestion went out from this House that they are not doing their job fairly

Public Health

New Regulations on Food Hygiene

IN his recent report for 1954,[1] Sir John Charles, chief medical officer of the Ministry of Health, said that the preventive measures which had been taken against food-poisoning had been ineffective Action to improve the situation has quickly followed In conjunction with the Minister of Agriculture, Fisheries, and Food, the Minister of Health has made new regulations,[2] which were laid before Parliament on Dec 21, and most of them will come into operation on Jan 1 They add a number of new provisions in respect of the hygienic handling of food and the construction and maintenance of premises, stalls, vehicles, &c, where food is handled Among points referring to food-handlers, any open cut or abrasion must be kept covered with a suitable waterproof dressing, and smoking is barred while handling "any open food" or working in "any food room where there is open food" The regulations prohibit the use of newspaper for wrapping food other than uncooked vegetables Some foods prepared in catering establishments must be kept at a temperature of not less than 145°F until they are served for immediate consumption This will be a difficult regulation to enforce, but it should impress on caterers who care little for bacteriology the importance of handling made-up dishes and precooked foods with particular care

Local authorities can grant certificates of exemption in cases where the regulations cannot reasonably be enforced —for example, where accommodation is restricted If a certificate is refused or withdrawn, an appeal may be made to magistrates The new regulations can come into force without affirmation by Parliament

A statement by the Caterers' Association of Great Britain said[3] that the stricter regulations would cost the hotel catering industry many thousands of pounds While the association believed that the dangers of food-poisoning in commercial catering establishments had been greatly exaggerated, it was fully alive to the need for the highest standards of hygiene and it will therefore play its part by helping its members to understand and thus comply with the regulations

In England Now

A Running Commentary by Peripatetic Correspond

How does one address a colleague? The older m particularly if they are old Furrovians or were up 'varsity in Edwardian days, are of course mostly c mitted to surnames, but in recent years there has b among the younger generation, a vogue for christ names The radio and television have encouraged t trend for the announcer's business is to create for b the novice on the air and the listener an atmosphere informality and friendliness In hospitals christ names tend to be used if one is fortunate enough to ha a lady doctor on the establishment "What did y think of the case, Dr (or Mrs or Miss) Winterbotham sounds cold and staid and even had you been of h sex and on the same staircase at St Borage's you wou not want to call her plain Winterbotham The gen sex merits a less formal form of address, indeed, t ladies themselves often suggest it ("In future call m Penelope," they say) Then again, christian names a used if Americans are about, or when colleagues ha returned to these shores with a fondness for the America way of life ("Say, meet Al,—gee Al—I'm so sorry, I forg your name although you did tell me once") Naturall christian names must be reserved for such places as th laboratory, lunch table, or hospital lift and not for th bedside

For those who wish to adopt the informal mode o address with colleagues of like age there are well know techniques in common use A smooth transition fro surname to christian name may be effected by letter at first subtly and by stages in the signature, and the more openly in the form of address, perhaps with a apology—"My dear Ambrose (I am sure you will wis it thus)" Another way is to initiate the change over the telephone when grins, frowns, and blushes ar invisible. Or, most gracefully of all, you may effect the change in the man's presence through the mediary o his wife "I can't recall, does Percy take cream in his coffee?" Thereafter you can call him Percy with impunity

It is of course easy for a senior to call a junior by christian name and some, even those who qualified pre-1914, now regularly do so maintaining that i encourages better work It is not so easy, however when a junior consultant wishes to be on friendlier terms with a chief but ten years his senior It is generally accepted that the senior man must make the first move though I know of several successful instances where the junior has seized a convenient moment—at the residents Christmas party, for instance—and boldly broken the ice with one blow ("Why, Alfred old boy, I've never seen you look better") The sooner the change is mad the better, because as they grow older the age-g narrows thus when one of them is 80 the other w be 70, and they will then both be too embarrassed t put the matter right Incidentally it will act like a to if you address an octogenarian, or even a septuagenar by his christian name at this age the dears begin feel out of the swim, and with so many of their frien of necessity departed they are more lonely than o thinks They delight at being encouraged into the soci of younger men

Paradoxically enough the difficulty about informalit in address is increased when the senior man is knighte and the christian name with the prefix "Sir" no becomes the correct mode of formal address. Dare o drop the "Sir," thinks the junior This happened to m when my old chief Lethal Chambers, the anæsthetist, wa knighted I thought that "Chambers" would be a go halfway between "Sir Lethal" and "Lethal," but decided eventually to go all out for "Lethal" I am so glad I d because now that he is a peer I feel so much more a home when he has me to tea in the library of the Hous of Lords

* * *

As I crawled through the African jungle in m mosquito-boots and topee with trailing chains (a usef prophylactic against sickness), I reflected on the word of my colleagues and friends before I left Englan "How lucky you are to be able to get away to a qu spot where you can live and work far from the bustle' What nonsense! Life in the tropics goes on at a far faster pace than at home Everyone seems to delight in violent outdoor exercise in temperatures which were meant for sleep only There is a constant stream of visitors to be entertained, and dinner parties are almost a nightly event. You have to be a member of two or three clubs and appear there fairly frequently and I spend a lot of my spare time writing letters home No, give me the peace and quiet of a London suburb where I am on smiling terms with my neighbours but would never think of visiting them or they me where I don't need to entertain my relatives and friends from one Christmas to the next, where my main exercise is turning the knobs of the television set where the greatest intrusion on my privacy is a telephone call from a friend once or twice a week and where the only letters I write are replies (after a decent interval) to the anxious ones I receive from my lonely friends in the tropics.

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[1] See *Lancet*, Dec 17, 1955 p 1289

[2] The Food Hygiene Regulations 1955 S I 1955 no 1906 H M Stationery Office 6*d*

[3] *Times* Dec 22 1955

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The Christmas spirit among hospital administrators!

Dear Dr X,

I am writing to you to express the hope that except in case of absolute necessity there will be no further discharges from the wards between now and Christmas Day I am raising this matter with you because of the undesirability of emptying beds which cannot be filled thus creating a very bad occupation figure to return in the official statistics which have to be submitted to the Ministry of Health

Yours sincerely,
Y Z,
Hospital Secretary

* * *

The red stag which visited us before Christmas seems o have come to stay It is an extraordinary beast. Last week he spent the whole day grazing with the cattle n the meadow behind the farm, and when the old sheep-dog went coursing out to bring the milk cows in at dusk he stag followed them into the shippon Antlers got bit in the way with milking machines and the visitor as obviously not built for such feminine functions, o George had to push him out and shut the door Just hy a wild red stag should take it upon himself to come own from the hills and masquerade as a shorthorn eifer is wrapped in mystery Perhaps it is something o do with the gentlemen who dress themselves in skirts nd bras and get read about on Sundays. But whatever is clothing any sort of wolf in his nature would make most interesting cross. Germany may boast of breeding ack to the aurochs, but we look more like achieving he cow that jumped over the moon

Perhaps he is the odd man out in the musical chairs of st November I have often met stags in the rutting ason and they are unpredictable I remember one turday afternoon at 2000 feet coming round a summit irn to find a huge red stag standing on the blind side was touch and go who jumped first. Luckily he did, d backwards at that. He bounded down the crags th a much smarter turn of speed than I could have done it had been the other way round. Maybe our local dolph is finding solace in the companionship of some male company that vaguely resemble the unattainable ybe he is astigmatic. Who knows? He has thrown the winds his native caution, almost begging to be ifted off to Richmond Park for photographs and dwiches. The trouble is that if he hangs around here ch longer he risks getting into a sandwich himself. me people are not averse to dirty work on a dark night l venison is an acquired taste.

* * *

Father Christmas (to nine year-old girl after depositing ants on the end of her bed): Now do you believe in ther Christmas?

Little girl (fluently) Yes Doctor!

* * *

MINISTERIAL CHANGES

Another Act begins. Ring up the Curtain!
Who's our new Hero now? The name is Turton
But doubtless lest the Play might still fall flat
They've fixed it that our Heroine's still Pat!

Letters to the Editor

DOMICILIARY CONSULTATION IN PSYCHIATRIC PRACTICE

SIR,—Dr Denis Leigh writes (Dec 17) "It is my experience that a family doctor is well advised to steer clear of psychotherapy, other than simple, supportive measures" This statement in its unqualified form seems to me misleading It is true only for certain general practitioners who were trained in a certain way and who are working with certain psychiatrists.

Experience in the general practitioner seminars of the Tavistock Clinic has shown that "simple supportive measures" and especially wholesale 'reassurance' and 'advice' are hardly more than well meant shots in the dark which as often as not fall very wide of their targets I wish to add that ours are not the only experiences of this kind, from all parts of the world research workers in psychotherapy report similar observations

It has been stated time and again that at least a third of the general practitioner's work consists in dealing with 'neurotic' disorders To advocate a hit-or-miss therapy for this vast number of troubled patients is unjustifiable

Admittedly the present training of students does not properly equip them for the task This however, can and must be remedied. Psychotherapy must become as integral a part of medical training as bacteriology or pharmacology are already That this has not yet happened is mainly due to the unduly conservative attitude of the teaching hospitals

The Tavistock Clinic scheme for general practitioners has shown that in psychotherapy—as in all other branches of medicine—correct therapy can be based only on proper understanding of the patient's problems With some honest effort the skill needed for understanding the patient's psychological problems can be learnt to the great benefit both of the patient and of his doctor for if the problem is understood the development of the frustrating and irritating atmosphere that so often obtains between the neurotic patient and his doctor can be prevented

A proper follow up of our cases proved that this better understanding enables the general practitioner to achieve therapeutic results that would be a source of pride to any psychiatrist I wish to emphasise that the doctors taking part in our seminars become, not amateur psychiatrists, but better general practitioners

A pre-condition of this development is a change of heart both in the psychiatrist and in the general practitioner The general practitioner has to give up his safe *status pupillaris*—his being the little man who looks up with ambivalent respect to the great consultant—and the consultant has to divest himself of his aura of omniscient mentor After that they may settle down to study together an, as yet, hardly explored field—psychotherapy in general practice

The Tavistock Clinic
London, W 1

MICHAEL BALINT

SIR,—Dr Denis Leigh's efforts to improve the psychiatric service are commendable, but certain of his views are highly regrettable and misleading

I entirely disagree with his statement that "general practice is not the milieu in which to practise psychotherapy" and I can only conclude that his experience must have been very unfortunate to have led him to believe that "a family doctor is well advised to steer clear of psychotherapy"

I am a family doctor and it has been my experience that psychotherapy is the most useful form of treatment available in general practice by its use I have been able to help far more patients than I could ever have done with placebo or symptom-stopping medication

DIAGNOSES IN 68 CASES REFERRED FOR PSYCHIATRIC OPINION, 1951–53

Diagnosis	Male	Female	Total
Asthma	2	2	4
Anxiety state	3	4	7
Anxiety hysteria	1	3	4
Children			
Behaviour difficulty	1		1
Enuresis		1	1
Truanting		1	1
Depressive state	4 (1)	12 (3)	16 (4)
Dyspareunia		2	2
Dementia, arteriosclerotic	1	1	2
Hysteria	1 (1)	10 (1)	11 (2)
,, ? terminate pregnancy		3	3
Impotence	2		2
Mania, acute	1 (1)		1 (1)
Mental deficiency		1	1
Obsessional state	4 (1)		4 (1)
Psychopathy	2		2
Schizophrenia	3	2	5
Ulcerative colitis		1	1
Total	25 (4)	43 (4)	68 (8)

Figures in parentheses indicate numbers of patients admitted to hospital

Of course, a proper understanding of the factors underlying psychiatric disturbances is necessary, in the same way that a knowledge of pathology is essential in dealing with physical disease Just as we talk of "major" and "minor" surgery, so we may talk of "major" and "minor" psychiatry, and I believe that the general practitioner should be able to deal with minor psychiatric problems by means of minor psychotherapeutic measures —and, equally important, he should also have the time Levine[1] describes twenty-five techniques of psychotherapy which may be used by the general practitioner

Dr Leigh's proposal that the family doctor should not undertake this type of treatment suggests that he is not fully aware of the extent of the need for it, and it also implies a very poor opinion of the family doctor's capabilities that I cannot accept It is the psychiatrist's duty to ensure that doctors in-training are properly fitted for the work they will find awaiting them.

Dr Leigh writes "The general practitioner himself deals with most of his psychiatric patients" This is as it should be—in fact, as it must be when one realises the numbers of patients involved

In my own practice, in a survey I carried out in 1951[2] I found that 11% of my patients had psychiatric disturbances and a further 31% psychosomatic illnesses, making a total of 42% with illness due to stress

In the three years 1951–53 I referred 68 National Health Service patients for consultant psychiatric opinion, the final diagnoses are shown in the accompanying table 26 of these patients were seen on domiciliary consultation, and 8 of them were admitted to mental hospital I would add that I was present during the psychiatric interview in every case (nor would I have it otherwise), and in no way did this interfere with the patient-psychiatrist relationship as Dr Leigh seems to expect My view is that if the family doctor's relationship with the patient is good, then the full history will be ready for the psychiatrist, who can use the time in the diagnostic interview to explore the patient's personality structure and the possible underlying psychodynamics, and to assess the need for treatment and the type of treatment required

During this same time I saw just over 300 patients with minor psychiatric disorders which I treated without referral for psychiatric opinion, and a much larger number of patients with psychosomatic disorders All of these required psychotherapy—some of them forming the basis for an investigation into the management of the climacteric[3] The results of this alone show the val psychotherapy in general practice

Although my average list during the three 1951–53 was only 1350 I still found it difficult to sufficient time for psychotherapy, so it is h surprising that a practitioner with a list of up to 400 have time only to treat symptoms, and will not be to deal with underlying emotional difficulties does not mean that this method is unsuitable for ge practice—it means that if the general practitioner practise with a fully orientated psychiatric approa cannot have a large list of patients

Finally, Dr Leigh correctly criticises the train the medical student in psychiatry, and he asks " the established practitioner be given further teachin I am surprised that he does not go on to answer question by referring to the paper by Dr Mic Balint,[4] who has described the method used at Tavistock Clinic I am only one of many who have fo and still finds, the weekly seminar a great help, a can wholeheartedly recommend this course to any do who aims to *help* his patients in the fullest sense of word Further, I would recommend that psychiat throughout the country consider the possibility of arra ing this type of seminar for groups of family doc who are interested in this approach Perhaps here, m than anywhere, is the opportunity for the gene practitioner to practise true preventive medicine.

London, N W 3 PHILIP HOPKINS

HEALTH CENTRE OR GROUP PRACTICE?

SIR,—The virtues of group practice are not in dispu Indeed, the Harlow experiment has the merit that combines the virtues of group practice with those of health centre In so far as Dr Munro and his colleag (*Lancet*, Dec 17) in Edinburgh are preaching in favo of group practice, they are preaching to the converted

Their general argument—that good group practi accommodation can be provided at two thirds what has cost at Harlow—is not unreasonable, though it ma prove misleading Their capital costs were 13s 3d p patient at risk as against £1 per patient at risk at Harlow To achieve this saving, they reduce consulting room si omit alternate examination rooms and sluice an specimen-rooms, and get rid of pram shelters Th would certainly not give a 33% saving in a new building I suspect that the discrepancy between the Edinburgh and the Harlow figures lies mainly in the fact that a Edinburgh it was apparently possible to adapt tw buildings without having to build everything speciall for the purpose

Any group practice which is fortunate enough to b able to adapt rather than build afresh may manage get good accommodation at 13s 3d per patient at risk Such adaptable premises can usually be found in indu areas But at Harlow, and on most new estates, the are no existing buildings to be had, for a complete new group practice building, it would be unwise to allo less than 17s to £1 per patient at risk

Had Dr Munro and his colleagues visited Harlow most of their criticisms would have been answered

(1) The Harlow health centres are experimental. So thr different consulting room sizes have been tried. At on health centre the consulting rooms are 10 ft by 10 ft. Th experience has shown that this is just a little too small. extra foot or two each way is worth the extra cost

Experience has also shown the value of one examinatio room per consulting room Indeed, in our next health cent we hope to have one and a half examination rooms per co sulting room Half an examination room, as Munro et a advocate, is better than none, but when work is heavy delays must be inevitable

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[1] Levine, M. Psychotherapy in Medical Practice New York, 1947

[2] Hopkins P *In* Modern Trends in Psychosomatic Medicine Edited by Desmond O'Neill London, 1955 chapter 1

[3] Hopkins, P *Trans Hunter Soc.* 1955, 13, 89

[4] Balint, M. *Brit med J* 1954, 1, 115

(2) Again a sluice- and specimen room is provided in only one of the health centres. So far our experience suggests that its cost is justified.

(3) The cost of a simple pram shelter is small—about one-tenth of that of an oil fired central heating system. It might be classed as a luxury if no local authority clinics were held in the same building But Harlow is a 'pram town, and it is usual to see twenty or more prams parked outside a health centre In these circumstances, to provide a new clinic building without a pram shelter would be unthinkable

(4) The idea of using the G P 's consulting room for local authority clinic purposes has its attractions But there are disadvantages; for example a G P may want to see long cases in the afternoons when the clinics are in action. Moreover there must be rooms for the midwives clinics for the health visitors weighing and educational sessions, and space for antenatal exercises. Some doubling up is possible but there are limits

(5) Coöperation with the local authority services is certainly possible without physical juxtaposition But the advantages of having clinics, health visitors district nurses and the dentists under the same roof have to be experienced to be realised. The estimates of Munro et al on space required for records and on secretaries and receptionists needed are confirmed at Harlow But they would scarcely need to pay the salaries of two full time nurses if the district nurses held daily clinics in their premises.

The points raised by Dr Munro and his colleagues have been answered in detail to avoid misunderstandings Adequate new group practice accommodation can be got a little cheaper than at Harlow, but only by making real sacrifices in efficiency I am sure Dr Munro s cost figures are realistic I must ask him to accept that the Harlow figures are no less realistic As health centres go the Harlow buildings are among the cheapest ever constructed It would be a bad day for general practice if the authorities in their future buildings set out to cut on our modest Harlow costs

This is not to belittle the fine achievement of Dr Munro and his colleagues If all doctors in industrial areas and new housing estates would follow their example the most pressing problem of general practice would have been solved

Harlow STEPHEN TAYLOR

NON ANTIGENICITY OF CHONDROITIN SULPHATE

SIR,—Dr Boake and Dr Muir (Dec 10) refer to work by us.[1] We should like to call attention to some facts which have recently come to light in the course of our work, which may account for some of the discrepancies between the two sets of results.

Since our original report we have several times obtained (in rabbits) precipitating sera for cartilage extracts, u ing streptococcal vaccines coated with human-cartilage xtracts prepared by the method of Finbinder and chubert[2] We have also noted, however that antisera o human blood group A substance (obtained by the same mmunising method) give positive complement fixation ests with some samples of cartilage extract

Conversely positive complement-fixation tests have een obtained with antisera to certain human-cartilage xtracts and purified human blood group A substance ruickshank[3] using a precipitin test has also found ross reactions between rabbit antisera to human artilage extract and human blood group substances

From these observations it may be inferred that xtracts of cartilage prepared by the method of Finbinder nd Schubert sometimes contain traces of blood group ubstances and that it is antibodies to these and not o the chondroitin sulphate itself that are obtained

Another factor which may influence the antibody esponse of rabbits is the presence of an A like substance in the tissues of some rabbits We have described the effect of this factor on the antibody to human blood group A substance in a paper at present in course of publication[4]

Canadian Red Cross Memorial Hospital
Taplow Maidenhead Berks
L F GLYNN
F J HOLBOROW

FILM ON BLOOD TRANSFUSION

SIR—In comment on your review (Dec 17, p 1303) of the new film on blood transfusion, on which I acted as technical adviser, I must point out that the "needle piercing' set was used in the demonstration deliberately after consultation with the Ministry of Health on the grounds that the principle has not been abandoned, and that after suitable clinical trials a similar type of set will (contrary to your belief) be reintroduced by the National Blood Transfusion Service Furthermore this film is intended for wide distribution outside this country where this type of set is almost invariably used

North London Blood Transfusion Centre
Deansbrook Road Edgware Middlesex
J D JAMES
Director

PROTOPHRENIA

SIR,—Dr Bourne (Dec 3) has performed a valuable service in reviving the interesting question whether in some severely afflicted mental defectives the arrested mental development is due to severe and prolonged psychological trauma in early childhood Apart from the problem of diagnosis the really important issue is whether or how far, 'protophrenia' as described by Dr Bourne, is reversible In his account of some of the older children in his group some become docile imbeciles, and others burnt out and dilapidated ones yet others do not change Dr Creak (Dec 17) has pointed out that many such child psychotics as she terms them even with intensive psychotherapy do not return fully to normal and some have to be regarded as permanently 'atypical"

It is by no means rare in hospital practice to find persons of medium grade feeblemindedness (e g I Q 60) who as children were classified as imbeciles and whose behaviour seemed to be consistent with this and indeed with that of members of Dr Bourne s residual group Yet in the course of time changes sometimes occur For example, a few days ago a 20 year-old girl here was re tested with the Wechsler scale four years ago her I Q was 37 (i e, very near the mean of Dr Bourne s residual group) but it has now increased to 54 with a corresponding improvement in social competence In the light of experience at this hospital there now seems in her case to be every prospect of some further mental growth Indeed our general finding has been that those with the worst social histories tend to have the best prognoses not only in terms of I.Q increment[5] but also in their eventual social adjustment[6]

As yet very little is known about the dynamics and limits of this improvement, but experience suggests that in the absence of intensive psychotherapy changes of this nature tend to be delayed until adolescence or even later These may perhaps occur as a result of only very gradual recovery from psychological injury, because, as Hebb[7] Eickhoff[8] and others have indicated, early learning experiences form the basis for subsequent learning Thus the protophrenic' may lack the basis for the next step in mental development with the result that later learning may at the worst not occur, or at the best be delayed and proceed over a long period of time. Eventual improvement in such patients may arise partly as a result of removal from disastrous circumstances and partly as an effect of exposure to new environmental conditions for varying periods of time, which may include education or training. We do not know, however, what proportion of such children are even capable of subsequent improvement, and thus it is to be hoped that the Fountain Hospital will report from time to time the progress or otherwise of Dr Bourne's residual group

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[1] Glynn, L E, Holborow E J Lancet 1952, ii 449
abinder J Schubert, M J biol. Chem. 1950 185 725
uickshank, B Personal communication.

[4] Glynn, L E. Holborow E J Johnson, G D J Immunol (in the press)
[5] Clarke A D B Clarke A M Lancet 1953 ii 877
[6] MacMahon, J F Brit med J 1952 ii 254
[7] Hebb D O The Organization of Behaviour New York, 1949
[8] Eickhoff L F W J ment Sci 1955 101 399

The Manor Hospital,
Epsom, Surrey

J F MACMAHON
A D B CLARKE

CONSULTANTS IN DERMATOLOGY

SIR,—As a dermatologist who has also had charge of a venereal-disease department for over twenty-five years I fully endorse Dr Ingram's protest (Nov 26) that dermatological clinics should not be run by venereologists

On the other hand I can see no reason why in certain instances V D clinics should not be undertaken by dermatologists. The work of the V D clinic, interesting and absorbing as it is, can be readily learnt by any competent consultant, and traditionally dermatologists have undertaken this work

In sparsely populated areas it is surely more profitable for the dermatologist to move from the skin department to the V D clinic in one hospital than to waste his time travelling many miles to a distant hospital in order to undertake another dermatological clinic

Dr Campbell is wrong when he states (Dec 17) that there are no young trainees qualified to practise both specialties adequately. All my own trainee dermatologists are given a thorough grounding in venereal diseases and have to work in the V D department. Those who have gone to some Commonwealth countries have found this training essential

Finally, it should be noted that, whereas higher academic qualifications are required by consultants in dermatology this is not the case in venereology

London W 1

JOHN L FRANKLIN

ELECTRON-MICROSCOPY OF ATHEROMA

SIR,—Although in agreement with some of the findings reported by Dr Levene (Dec 10) we are in total disagreement over the material illustrated in figs 5, 6, and 8, which we believe to be reticulin and *not* fibrin

Electron-microscopic examination of the intima and inner aspect of media from normal fresh aorta and all the various stages of atheromatous formation (lipid streak, pearly plaque, chalky plaque, and ulcerating plaque) reveal a similar morphology consisting of the following components (1) thick, dense fibres of elastic tissue, (2) large, irregular fenestrated elastic sheets, (3) very fine amorphous material, (4) striated fibres about 300–900Å in width, with a basic 220Å transverse banding with accentuation of each third component to give 640Å periodicity

Numerous electron-micrographs demonstrate the intimate association of the fine amorphous material with these fibres to form the large, irregular sheets and thick dense fibres of elastin. Components 1, 2, and 3 have previously been demonstrated in aortic media[1] It is significant that Dr Levene does not mention the presence of typical elastic material. The striated fibres described under (4) are similar to those illustrated by Dr Levene in figs 5, 6, and 8. On the basis of their variable width and the underlying 220Å banding with accentuation of the 640Å periodicity, in our opinion they represent reticulin fibres as described by various workers.[2 3]

It is generally accepted that mature collagen is simply a closely compacted form of reticulin[4–7] The fibres illustrated by Dr Levene in figs 5, 6, and 8, have a transverse periodicity of about 230Å and are closely similar to those found in maturing collagen. The amorphous material we found closely associated with these fibres may well be the ult microscopic counterpart of the mucoid deposits described Lindsay and Chaikoff[8] in naturally occurring aortic arter sclerosis in the cat. These workers found that the init histological lesion was accompanied by deposition of ac mucopolysaccharides in the intima which became gradua replaced by reticulum, collagen, and elastic fibres as the plaq matured

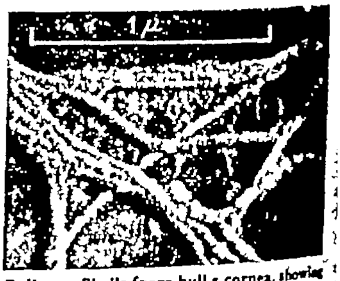
We also feel that it is impossible to differentiate betwe fibrin fibres and those of reticulin and collagen by t action of tryptic enzymes on formalin fixed materi In any case, Irving and Tomlin[2] have shown th unfixed samples of reticulin are susceptible to pancreat digestion, the reticular argyrophilia is destroyed bu may be restored by treating the fibres with eithe hyaluronic acid, blood plasma, serum, fibrinogen, albumi or globulin

Our own studies support Dr Levene's observation tha normal and pathological atheromatous intima give th same morphological picture. We consider, however, that the differences between the two conditions involve a preliminary disturbance of the collagen elastin system rather than the deposition of fibrin which may occur later by encrusting the fully formed atheromatous plaques

Leeds

M K KEECH
R REED

SIR,—With regard to Dr Levene's paper I should like to mention that collagen may show a cross banding with a periodicity of 210–220Å (i e, a third of the usual 640Å periodicity), which makes it very difficult to distinguish between these fibrils and fibrin, especially since the exact magnification of the electron microscope cannot be gauged directly



Collagen fibrils from bull s cornea, showing 220Å cross banding (× 35,000)

This type of cross banding is found in thin fibrils, which occur in tissues rich in mucoid—e g, cornea (see accompanying figure)

Microbiological Laboratory,
University of Amsterdam

A VAN DEN HOOFT

HEROIN

SIR,—In an annotation on Dec 3 you advocated the abolition of the use of heroin by the profession in an article which was remarkable for its lack of balance. It appeared to be written from an editorial chair which knew little of the practical use of heroin. You stated that "The Royal Colleges, the British Medical Associa-tion, or the whole profession through a plebiscite, could have expressed an opinion" May I draw your attention to the fact that the whole profession has expressed its opinion in a most emphatic manner, and has strongly protested against the ban on heroin

1 At the Annual Representative Meeting of the B.M.A held on June 3 last there were about 450 delegates present who represented all the B M.A divisions and branches in the country. They came armed with a mandate from their constituents and by a large majority the following motion were passed

'That this meeting protests against the threatened withdrawal of the most excellent sedative heroin which is of inestimable value in so many conditions, and recommends that it should still be manufactured in this country for use by medical practitioners but not exported"

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1 Hall D A Reed, R Tunbridge, R E *Exp Cell Res* 1955 8 35
2 Irving E A, Tomlin, S G *Proc roy Soc* B 1954 142, 113
3 Robb Smith A H T *In* Connective Tissues Transactions of the 3rd Conference, Josiah Macy, jun., Foundation. New York 1952, p 92
4 Wyckoff, R W G Electron Microscopy New York, 1949
5 Wyckoff R W G *In* Connective Tissues Transactions of the 3rd Conference, Josiah Macy, jun, Foundation New York 1953 p 38
6 Vanamee, P Porter K R. *J exp Med* 1951, 94, 255
7 Burton, D, Reed R *J Soc Leath Tr Chem* 1953, 36, 13

8 Lindsay, S Chaikoff I L *Arch Path (Lab Med)* 1955, 60,

"That the meeting instructs Council to seek direct access to the Government to obtain the reversal of the decision on the banning of heroin."

2. The medical committees of eleven out of twelve undergraduate teaching hospitals in London (representing over 00 consultants) sent a letter to the Minister of Health protesting against the heroin ban. A number of medical committees of postgraduate teaching hospitals in London did likewise

As the matter is sub judice by the Government it is important that this overwhelming verdict of the profession should be given the greatest prominence

London N W 1 F C Warner

INDOLE DERIVATIVES

Sir,—In your leading article on argentaffinoma (Nov 12) you hinted at a possible connection between -hydroxytryptamine (serotonin) and plant growth hormones.

After Friedman et al[1,2] had found that the urine of patients with chronic myeloid leukæmia contained indirubin (double indole-derivative) in higher concentrations than normal I investigated the effect of indirubin and also of plant growth hormones on the white blood-cell count in the guineapig Indirubin causes a transitory leucopenia; plant growth hormones cause neutrophil leucocytosis and increase in eosinophils plant growth inhibitors have the reverse effect.[3]

Like you I believe that indole derivatives may have special effects in warm blooded animals Further investigation of indole derivatives in connection with the white blood cells might be of interest

Interne Kliniek
Rijksuniversiteit
Ghent Belgium B C de Landsheere

PREDNISONE AND PREDNISOLONE IN RHEUMATOID ARTHRITIS

Sir,—I read with interest the paper by Dr Dudley Hart and his colleagues (Nov 12) in which they record their results with prednisone and prednisolone in the treatment of 14 patients with rheumatoid arthritis I would like to add my experience with prednisolone

18 patients with very severe rheumatoid arthritis were chosen for this preliminary trial from a large number attending the outpatient clinic whose previous therapy had not proved entirely satisfactory 3 had been treated with aspirin or other drugs, 10 with phenylbutazone (by mouth in 3 cases and by intramuscular injection in 7) and 5 with cortisone All the patients who received cortisone had been unsatisfactorily treated with phenylbutazone by mouth and by injection. The beneficial effect of the prednisolone was assessed by noting the improvement in the pain stiffness, and tenderness in the joints. Any reduction in the swelling and increase in the range of the movements of the joints was also taken into consideration The improvement reached its maximum within two days after starting administration of mg of prednisolone four times a day and the majority were subsequently satisfactorily maintained when the dose was reduced to 5 mg twice a day All the patients remained for one week in hospital and after discharge have been followed up in an outpatient department at three weekly intervals, for two to three months 2 relapsed but subsequently regained their improvement when the dose was increased to 5 mg times a day No toxic side-effects have been observed

The results of this short term trial indicate that prednisolone is much more effective than cortisone in relieving the symptoms and signs of rheumatoid arthritis In most cases the dose was a quarter that prescribed for cortisone In this respect my results agree with those of Dr Dudley Hart and his colleagues but they differ partly in that all my patients preferred prednisolone to cortisone whereas 5 of their patients were indifferent

Prednisolone judged from the results in this small series of cases is more effective than any previous drug in the control of the signs and symptoms of rheumatoid arthritis

In addition prednisolone has had a beneficial action in the control of a case of severe hæmolytic anæmia, and relieved a patient with giant urticaria who was completely resistant to all other forms of therapy

Prednisolone was supplied for trial as Meticortelone by the Schering Corporation and as Delta-Cortril by Messrs Pfizer Ltd

Dudley Road Hospital
Birmingham R O Gillhespy

INSTITUTIONALISATION

Sir,—Your challenge (Dec 17, p 1301) must not be allowed to pass unanswered Anyone on consideration could without importing Civil Service jargon suggest half a dozen suitable titles for the article in question, for the English language is singularly rich in words of one or two syllables.

I could not attempt to suggest any word or words 'with the same signification' (significance?), for I do not know what the word means I doubt very much if any of your readers do either If you yourself cannot define it in simpler terms, you would appear to be guilty of printing meaningless gibberish

We all admire *The Lancet* as a literary, as well as a medical, journal I hope that it will long continue to be so and that you will resist the use of ugly, unnecessary and indefinable words

Newcastle upon Tyne M H Armstrong Davison

Sir,—Though Dr Armstrong Davison protests against the word institutionalisation he will probably be glad to hear that the process of disinstitutionalisationism is taking place in his own region

The need for it may be judged by the response of a mentally defective hospital patient who when taken on a Christmas shopping expedition to an erstwhile sixpenny store exclaimed By——what a smashing sale-of work

Northgate and District Hospital
Morpeth Northumberland C Guy Millman

POLIOMYELITIS

Sir,—In view of the previous letters by Dr Breen and Dr McMath (Oct 29) and Dr Laurent (Nov 19) with their reports on the cerebrospinal fluid (C.S.F.) findings in recent outbreaks of poliomyelitis our experience in this regard at Stoke Mandeville Hospital may be of interest

In the period from July 24 to Dec 1, 1955, 58 cases of poliomyelitis (18 non paralytic and 40 paralytic) were admitted to the unit directed by Dr W Ritchie Russell. The C.S.F. was examined early in 17 of the 18 non paralytic and in 14 of the 40 paralytic cases, and as the accompanying table shows there was no significant difference between the findings in the two groups

C.S.F. FINDINGS IN POLIOMYELITIS

—	Paralytic (14 cases)	Non paralytic (17 cases)
Duration (days) of minor illness before C.S.F examination		
Average	3 2	3 36
Range	1–6	1–6
Total white blood-cells (per c mm) :		
Average	87	94
Range	2–184	0–389
Polymorphs :		
Average per c.mm	40	66
Range per c mm	2–117	0–350
Average % of total	52	58
Range % of total	5–100	0–87
Protein (mg per 100 ml.)		
Average	56 1	53 7
Range	30–110	18–170

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1. Friedman F, Jacobson, W Nature Lond 1946 157 337
2. Friedman F, Marrian D H Perutz M F Biochim biophys Acta 1950 5, 75
3. de Landsheere, B C Experientia 1951 7, 307; Arch int Pharmacodyn 1952 90 363 Ibid 1953 94 36

The high polymorph counts found during the early stages in both groups are similar to those recorded in many other outbreaks. In fact the proportion of polymorphs was over 50% in 8 of the 14 paralytic, and in 12 of the 17 non-paralytic cases. (In another case recently admitted to the respiration unit in Oxford, the C.S.F., *examined a few hours before paralysis appeared*, contained 1020 cells per c.mm., of which 96% were polymorphs.)

Like your other correspondents we have not had the benefit of help from virus laboratories during this sharp outbreak.

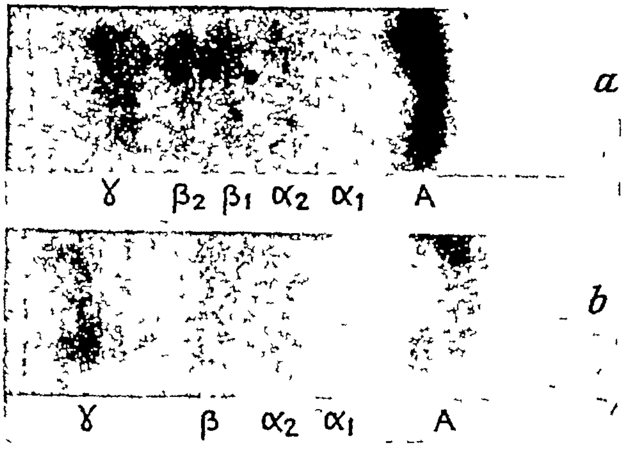
Department of Neurology (United Oxford Hospitals), Stoke Mandeville Hospital, Aylesbury, Bucks.

J. DOMINIAN
M. L. E. ESPIR

ELECTROPHORESIS OF PLASMA-PROTEINS

SIR,—In his letter of June 11, Dr. Christiansen reports splitting of the β-globulin band in serum from some patients in the fasting state after heparin injection. He observes that no separation occurred when heparin was given after a fatty meal.

We have found recently, however, in the course of some experiments on the clearing mechanism of heparin, that the splitting of the β globulin band occurred in 2 cases during alimentary lipæmia *before* the administration of heparin; 30 minutes after intravenous injection of heparin the splitting disappeared in the "cleared" serum. This is, however, a rare phenomenon: in 35 other cases we failed to observe this splitting after the fatty meal, although the electrophoresis took place under the same conditions. The absence of splitting in the fasting state and the disappearance after the administration of heparin support the hypothesis that splitting may be caused by some change in the lipoprotein pattern of the serum.



Electrophoresis of serum during alimentary lipæmia (a) before and (b) after injection of heparin

S. GERO
M. JAKAB
M. BAUMAN
S. ROHNY
J. GÁCS

III Medical Clinic,
University of Budapest.

HYDROCORTISONE IN PAINFUL SHOULDER

SIR,—Mr. Waugh (Nov. 5) must not think that my methods of examination *fail to take account of pain referred to the shoulder*, not only from the neck and thoracic outlet, but from the arm and forearm as well.

In the article on hydrocortisone that Dr. Troisier and I wrote in 1953,[1] we devoted a quarter of the space to clinical examination, for that alone shows where the injection must be given.

I have always emphasised that the entire segment which a pain arises must be examined. In the case shoulder this involves examination of the neck, s shoulder, elbow, wrist, and fingers. If Mr. Waugh wi at my *Textbook of Orthopædic Medicine* (1954), he will fi I divide the examination of the shoulder into two Stage 1 (p. 219) describes the preliminary examinatio determines whether or not the shoulder area contai lesion. If this proves so, detailed examination of the at the shoulder follows (*pp.* 220–236).

London, W.1. JAMES CYRI

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[1] Cyriax, J., Troisier, O. *Brit. med. J.* 1953, ii, 966.

MORPHINE ANTAGONISTS

SIR,—I read with interest the *observations* b Bonnycastle and Dr. Costa (Sept. 10) concernin actions of bemegride (ββ-methyl ethyl glutarimide, 'N 'Megimide') and amiphenazole (2 4 diamino-5 p thiazole hydrochloride, 'DAPT,' 'Daptazole,' 'DHA given either individually or in combination as antago to opiate-induced or barbiturate induced respira depression in rats.

Results of experiments with these drugs appear to ind that the rat responds less like man than does the dog dog has been awakened under electro-encephalogra control[1] from morphine or light barbiturate narcosis by gradual administration of amiphenazole alone, or from barbiturate narcosis with a mixture of amiphenazole bemegride, without producing any clinical or electro-enceph graphic signs of incipient convulsions. There further appe to be an increase in respiratory activity before the ani awoke. However, respiratory minute volume was measured. When these drugs—especially bemegride—w administered more rapidly and in larger doses convuls were produced which rapidly subsided. We have deliber induced convulsions several times in a single experim without the loss of an animal.

Preliminary experiments in collaboration with E. Trethewie on the decerebrate cat indicate that a phenazole will increase the respiratory minute-volu This increase is not wholly accounted for by generalised movements (which indeed may be ab indicative of increased motor activity. A similar d of amiphenazole administered to the intact cat produced no signs of increased motor activity.

Comparison with nikethamide suggests that *amiph* azole is at least as effective dose *for dose* in increa respiratory ventilation. Bemegride, however, does pr duce signs of increased motor activity in doses wh promote respiratory stimulation.

Although not denying that in excessive *doses* th drugs have a central stimulant action we maintain if administered as advised in the treatment of barbitur intoxication or morphine depression, they have a w margin of safety. In regard to the reported signs toxicity after the administration of bemegride[2] amiphenazole,[3] these were observed in our earliest c and were due to too rapid administration and exces dosage, through lack of experience. We have since no cause for concern, but one should always be on lookout for the occasional, perplexing case of idiosyncr

Finally I wish to refer to the high therapeutic saf of amiphenazole.[4]

1. Amiphenazole has been administered intravenously divided doses over 20–30 minutes to 17 young heal unnarcotised volunteers in doses of up to 225 mg. with producing any acute or residual symptoms or signs of toxi As much as 60–90 mg. was given in one dose on 12 sepa occasions.

2. *Amiphenazole has* been given to a critically ill pati with congestive cardiac failure, bronchopneumonia, and p operative shock following repair of a ruptured gastric ul A dose of 15 mg. was administered half hourly (720 mg.

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[1] Shaw, F. H., Simon, S. E., Cass, N. M., Shulman, A., and J. R. Nelson, E. R. *Nature, Lond.* 1954, 174, 405. Whyte, H. M.
[2] Shulman, A., Shaw, F. H., Cass, N. M. *med. J.* 1955, i, 1238.
[3] Shaw, F. H., Shulman, A. *Ibid*, p. 1367.
[4] Shulman, A. Unpublished.

day) as a buffer to a depressed respiration This treatment was continued for 14 days until the patient died, without any obvious symptoms or signs suggesting drug toxicity At necropsy low grade peritonitis was found which was due to silent rupture of the suture line

Although amiphenazole has not been effective in every case its clinical value should be fully investigated in view of its safety in therapeutic doses (5–50 mg)

I thank Mr C. D Donald, honorary inpatient surgeon and Dr L. C Hudson medical superintendent Prince Henry Hospital, Melbourne for permitting me to refer to this case which was under their care

Physiology Department
University of Melbourne

A SHULMAN

Obituary

THOMAS BENJAMIN DAVIE

B.A Stellenbosch M.D Lpool, LL.D Camb., F R C P
F R.S S Afr

Professor Davie came to this country last month to represent, as its principal and vice-chancellor the University of Cape Town at the Queen Mother's installation as Chancellor of the University of London While he was in this country his own University of Liverpool and the University of Oxford had hoped to give him honorary degrees. But owing to his illness the ceremonies had to be postponed, and he died in London on Dec. 14 These academic honours were his colleagues' recognition of the leadership which he had offered during seven difficult years to the vice-chancellors of the Commonwealth In conference he consistently urged that universities must stand for academic freedom independent of race creed, or colour, and by his own courage he set an example of how to say No to governments which would make universities a tool of politics

[Liverpool Daily Post

He was born in 1895 in South Africa and he graduated B.A. in 1911 at the University of Stellenbosch In 1917 he joined the Royal Flying Corps and was completing his training as a pilot officer at the time of the Armistice. After demobilisation he turned to South Africa where he taught science in several ys' schools. In the early part of 1922 he served with the ansvaal Scottish Regiment during the rebellion which ke out in Johannesburg in that year A bullet wound his thigh left him with slight permanent shortening a leg.

Two years later he came to this country to study dicine at Liverpool University where he graduated with first-class honours in 1928 A colleague who met him while he was holding house appointments the Liverpool Royal Infirmary describes him as mirable among the residents by his greater age turity, and physique. Davie stood head and shoulders, sically and in personality, above his medical genera n in Liverpool. As might be expected he had played eat part in student activities, writing for the annual dical dinner songs which were largely based on Gilbert Sullivan and which were always sung with great to."

While still a student he had held the Holt fellowship Physiology and during his tenure he did much of the rk on the production of antibodies on which was based thesis for which he was awarded his M.D in 1931 anwhile, in 1929, he had been appointed to the junior lectureship in pathology at the University of Liverpool under Prof J H Dible In 1931 he was appointed pathologist to Walton Hospital, where he reorganised the pathological service While he was at the hospital he maintained his contacts with the university, and in 1933 he returned to the department of pathology as senior lecturer He was a gifted and energetic teacher, combining schoolmasterly didacticism with a light and bantering method of questioning His famous Saturday morning class on the accumulated specimens of the week, with its cut and thrust, question and repartee, became a feature in the medical school In 1935 he was appointed to the chair of pathology in the University of Bristol Three years later he succeeded Professor Dible at Liverpool In 1940 he was elected F.R.C.P.

The outbreak of war in 1939 revealed his talent for administration He organised the first blood bank in Liverpool and soon was taking part in the arrangements for a pathological service over a large part of the North of England in active collaboration with the Ministry of Health and the Emergency Medical Service During the blitz on the Western Approaches his service faced grim weeks of bombing A colleague recalls his voice 'cheerful and gay as usual' coming over the telephone one morning to say 'that the whole of his transfusion service had been blown up—autoclaves and everything—could we send what we had?'

He was also continuously and widely immersed in the inner affairs of the medical school and university, and in 1940 he became whole-time dean and began to give more and more time to administration His ability was quickly recognised and in 1947 he was invited to return to South Africa as principal and vice-chancellor of the University of Cape Town He was thus appointed to a difficult job at a difficult time and almost from the moment of his arrival he was handicapped by a sudden and disabling attack of rheumatoid arthritis which permanently crippled him The policy of apartheid fell heavily on Cape Town University, which is one of the two South African universities which admits students irrespective of race or colour In maintaining this traditional academic freedom Davie was both firm and statesmanlike He remained simple and friendly but also firm never weakening in his belief that a university should be 'universal. As he himself put it earlier this year in the Hoernlé memorial lecture: 'Its doors should at all times be open to everyone who can benefit by or contribute to its teaching Its desire for freedom from interference is primarily directed to what is taught but is inextricably bound up also with who shall teach and who shall be taught.

J H D, who was closely associated with him in his early years at Liverpool writes Tom Davie was a big man in many ways physically and morally He was forthright good humoured, genial and withal strong He was not a man to be upset by difficulties They seemed to fade away and be blown out of existence before his good humoured bulk and breezy manner He was a fighter for any cause he believed in, but always a chivalrous and worthy opponent He enjoyed life he enjoyed being in the swim, and he enjoyed doing things. He did well and as the minister said at his funeral—and the words rang true in the memories of those who knew him— he was steadfast to the end.

Dr Davie married in 1921 Vera C Roper, who survives him There were no children of the marriage.

LIONEL VERNON CARGILL

F R C.S.

Mr Cargill, consulting ophthalmic surgeon to King's College Hospital and consulting surgeon to the Royal Eye Hospital died on Dec 13 at the age of 89

He was educated at King's College School, and in 1891 with a Salter's university exhibition, he entered the medical department of King's College He continued to win many of the prizes and scholarships available, including the Sambrooke exhibition, and after he had passed the intermediate M.B examination he was appointed assistant demonstrator in physiology at King's College In his final years he continued to carry off many awards, and in 1889 he was senior scholar of his year and received Sir Joseph Lister's clinical surgery prize After qualifying in 1890 he was almost immedi ately appointed ophthalmic clinical assistant to Prof M M McHardy, who confirmed Cargill's decision to specialise in ophthalmology, but he also held the post of house-surgeon to Lister

In 1892 he took the F R C S and became the first house-surgeon and surgical registrar at the Royal Eye Hospital, where for some time he had already been a clinical assistant Two years later he was appointed Sambrooke surgical registrar at King's In 1894 he joined the honorary staff of the Royal Eye Hospital and in 1899 he was elected assistant ophthalmic surgeon to King's He was now well launched on his career and his private practice grew But he found time to serve on the staff of the Seamen's Hospital, Greenwich, perhaps partly because of his interest in the Thames estuary, where he spent many congenial weekends on his yacht

During the Boer War he went to South Africa as ophthalmic surgeon to the Imperial Yeomanry Hospital, and in the 1914–18 war he was consultant for diseases of the eye in military hospitals in London and had charge of the ophthalmic beds at the 4th London General Hospital

In 1931 he retired from the staff at King's and in the same year he was elected chairman of the council of the Royal Free Hospital He also became a member of the court of the Society of Apothecaries, which in 1890 had granted him his first medical qualification, and in 1939 was master In the same year he was appointed a fellow of King's College

Mr Cargill's wife died four years ago He leaves three daughters

CHARLES HENRY ALLEN

O B E, M B Edin, F R C S E

Mr C H Allen died on Dec 10 at the age of 78, in the General Hospital, Nottingham, to which he had given many years of service as honorary surgeon

A farmer's son from Metheringham in Lincolnshire, he was a student at Edinburgh University where he graduated M B in 1900 The same year he went to the Nottingham General Hospital as assistant house-surgeon, and after obtaining the F R C S E in 1906 he was appointed to the honorary staff in 1907

In his early days he was an active Territorial officer, and at the outbreak of the 1914–18 war he was a captain in the 3rd North Midland Mounted Brigade field ambulance In the spring of 1915 he went to Egypt with the brigade, and he was later detached from the field ambulance to command Ras-el-Tin Military Hospital He was three times mentioned in despatches for his services in the field, twice by Lord Allenby, and later he was appointed O B E and awarded the Order of the Nile (4th class)

After the war he returned to his work as honorary surgeon at the General Hospital, Nottingham He was also for many years consultant surgeon to the City Hospital He was a fellow of the Association of Surgeons, and in 1931–32 president of the Nottingham Medico-Chirurgical Society Later he became senior surgeon and chairman of the medical committee of the hospital He retired from consultant practice in 1946, after being requested by the hospital board to continue his work as a surgeon during the war for four years past the retiring age

J F S writes "C H, as he was called by all of us at the General, had a shrewd clinical sense and was essentially a safe surgeon Conscientious to a high degree, he did not stint himself in the care he gave to his patients, the more ill the patient, the harder he fought He had an informed mind on many subjects and could be a most entertaining companion with a lively sense of humour He spoke little of his own attainments He was keenly interested in sport, his favourite recreation was hunting and he especially loved a good horse For many years he was a prominent member and follower of the Blankney Hunt in Lincolnshire He was also an enthusiastic, though indifferent, golfer, and he was widely read on the game, as he was on all subjects in which he took an interest, and this applied in even greater measure to his chosen profession He was a staunch friend and will be well remembered by his own colleagues and his wide circle of friends"

EDWARD AULT MARSON

M B Manc, F F A R C S, D A

Dr Marson, anæsthetist to the Manchester Royal Infirmary, died on Dec 8 at the age of 55

He was educated at Hulme Grammar School and Manchester University where he graduated M B in 1925 After holding resident appointments at Ancoats and St Mary's Hospitals, he set up in general practice in Manchester It was not long before he became a visiting anæsthetist to Ancoats Hospital and Stockport Infirmary His anæsthetics practice increased so much that in 1937 he gave up his general practice to give all his time to anæsthetics In 1949 he was appointed to the staff of the Manchester Royal Infirmary as a consultant anæsthetist

Though of a modest and unassuming nature, Marson did much to forward the local development of his specialty He was one of the prime movers in the formation of the Manchester and District Society of Anæsthetists in 1945 and he was the first honorary secretary After the society amalgamated with the Manchester Medical Society, he was in 1952 elected president of the section of anæsthetics

C E S writes "Marson would answer a call for help from a colleague with a generous expenditure of time and energy His gentle care and consideration for his patients was boundless and to those with whom he worked he was courteous, patient, and understanding During the last few years he was often gravely ill, but he carried on cheerfully and with no word of complaint His example is an inspiration to us all"

Dr Marson leaves a widow and a daughter

Prof P A BUXTON

Sir Philip Manson-Bahr writes

"Seldom, since the days of Darwin and Wallace, has there been such a competent and all round naturalist as Patrick Buxton. He had great accomplishments, a vivid active brain, great powers of observation, an innate love of Nature, and a great talent in description His literary style was impeccable, and he was a witty and exceptionally good speaker. It is not generally known how widespread were his interests. Besides being a field naturalist, he was a good ornithologist, with several new species to his credit, and he was a first rate botanist and a good gardener His monographs are models of their kind, and are replete with all manner of data which he was able to correlate in a remarkable manner. In them he appears as an expert on meteorology, history, geology, and kindred sciences which he welded into a complete whole His greatest work is his magnificent *The Natural History of Tsetse Flies* published in 1955 By reason of little personal peculiarities and mannerisms a host of stories grew up about 'Buggy Buxton,' as he was affectionately called He usually wore a rare flower or leaf in his buttonhole and was never so happy as when giving away rare plants out of his garden to his friends"

Prof V B Wigglesworth writes

"When Buxton was appointed head of the department of medical entomology at the London School of Hygiene and Tropical Medicine in 1926, he realised that the development of medical entomology was being impeded by lack of knowledge of the physiology of insects, and I was the first of a long series of research workers whom he recruited to this field I remained in his department for nineteen years and I found him an admirable chief For I am only one among folk who are now scattered all over the world who benefited from Buxton's thoughtfulness for others His very characteristic manner, with some element of display, and a large element of sarcasm, could be amusing or irritating—but those who knew him best were so well aware of the true quality of the man that they learned to disregard this protective mannerism. In his last few years, in devoting himself to the tsetse-fly problem on the widest front, Buxton was able to exhibit to the full his great talents as a naturalist He was also developing with enthusiasm a new field of natural history study for his coming years of retirement and, mellowing with the years, the veneer of his manner wore off and revealed for all to see the kindness, honesty, and unselfishness which made up a great character"

Professor EGAS MONIZ

Sir Geoffrey Jefferson writes

In spite of the gout which had so much interfered with his hands and with his mobility for some years past Professor Egas Moniz remained as alert intellectually and as interested as at any time, so it seemed at the time of the Fifth International Congress of Neurology held in Lisbon under his presidency in 1953. His famous hospitality and his friendliness were undiminished One of his last publications was his beautifully reproduced history of playing cards *Tratado do Jogo do Boston* 19 2

His life now that it has come to its end can be seen in perspective and the impression that it gives is that it was a happy and unusually productive one His name will live for his two great contributions to medicine Because both of these innovations were of a surgical nature Professor Egas Moniz has often been referred to as a neurosurgeon This he was not Dr (now Professor) Almeida Lima had usually acted as his surgical hands He was not only professor of neurology in Lisbon but by training a neurologist of the Paris school, a close friend of Babinski and like Babinski's brother a gourmet Certainly he looked to Paris always for its approval, it was before the French neurologists that he preferred to test his ideas His first tentatives in angiography were given at a meeting of the Société de Neurologie in Paris in 1927 and his first 20 cases of prefrontal leucotomy were reported to the Académie de Médecine in 1935

Babinski in the preface which he wrote not long before he died to Egas Moniz's book in which the value of angiography was first massively demonstrated (*Diagnostic des tumeurs cérébrales*, Paris 1931) quoted Paul Valéry Valéry had said that scientific discovery is less important or less interesting perhaps, because of what follows from it than is the analysis of the intellectual processes which brought it to birth This was a very apt quotation No-one who was privileged to watch the development of Egas Moniz's discoveries could help but admire the ways in which they were developed He turned to angiography because he was dissatisfied with the limitations of neurology alone in brain tumour localisation and especially its failure to distinguish between one kind and another Although very many thousand angiograms have now been made, Egas Moniz with the assistance of Almeida Lima, had already in 1931 observed and recorded all the basic facts—the bilateral filling obtained when one carotid is compressed the elevation of the pericallosal vessels in hydrocephalus as well as the displacements of vessels and tumour fillings which are now commonplace were twenty five years ago startling exhibits. Furthermore he Almeida Lima and Caldas Lacerda had in 1931 shown the first arteriographically proven cases of carotid thrombosis a subject that Egas Moniz returned to in 1940 and 1947

To the general public Professor Egas Moniz was better known no doubt because of prefrontal leucotomy, an operation first really popularised in Britain by Wilfred Willway at Bristol with Professor Golla's encouragement Egas Moniz told how he was led to leucotomy through the description by John Fulton and Jacobsen of the disappearance of anxiety behaviour and temper tantrums in monkeys after bilateral frontal ablations He illustrated here better than in angiography Paul Valéry's dictum The Nobel prize which he shared with W Hess of Zürich was the fitting crown. Looking back, it is clear that just as many thought that Walter Dandy's invention of pneumography was more important than anything that Harvey Cushing did (which is one of those views which are mainly wrong) so Professor Egas Moniz outstripped Dandy Humanity has reason to pay its last respects and express its gratitude to another very great pioneer explorer The fullness of that personality can only truly be appreciated by those informed of his complete history from his early political days when he led the Portuguese delegation to the peace conference after World War I.

Those of us who knew Egas Moniz personally and his charming wife will regret greatly that so intelligent, so active and so charming a personality has gone from among us.

Births, Marriages, and Deaths

DEATHS

ERY.—On Dec 13, at the Royal Northern Hospital lon, James Aitken Montgomery M D physician-superin ent, Coppetts Wood Hospital London.

Notes and News

STAFFING A KOREAN HOSPITAL

SOME two years ago the Society of Friends sent a team to Kunsan, a port on the west coast of Korea to help in restoring the work of the civilian hospital there Unlike the mission hospitals organised on Western lines, Kunsan Hospital has retained much of its Korean character with a Korean medical superintendent and staff but American and British doctors and nurses have contributed modern Western knowledge and experience in treatment

At the time of the team's arrival Korean doctors had been out of touch with modern medical practice for many years; but with the aid of their Western colleagues they have been able to provide medical care of a good standard In this they have been greatly helped by the visits, lasting three months of a physician who gave a series of lectures and ward rounds and of a surgeon who demonstrated surgical techniques which Korean doctors were later able to practise Full training programmes for nurses and laboratory technicians have also been arranged At present 70% of the patients in the hospital are "on relief" and are non paying In accordance with Korean custom patients relations help with their treatment and cook their meals; there is a central kitchen to provide meals for those patients who have no-one to cook for them

It is hoped that the hospital will be well staffed and running efficiently by the time it is transferred completely to the Koreans in two years time Much however remains to be done and the Society of Friends are anxious to find a doctor who is prepared to go to Kunsan Hospital for a period of eighteen months The services of a physician who will continue the teaching for a period of three months would also be welcome

Inquiries about this valuable and rewarding work should be addressed to Lewis E Waddilove Beverley House, Shipton Road York

NEW OCCUPATION CENTRE IN LEEDS FOR MENTALLY HANDICAPPED

ON Nov 29 Dr G E Godber deputy chief medical officer of the Ministry of Health, opened a new occupational centre for mentally handicapped children in Leeds Leeds now has five centres catering for 453 people and the new centre will take 108 children under sixteen. It has been designed by the city architect and the cost of the building was £44 000 It contains a large combined dining and assembly hall administrative rooms and nine class-room blocks set at right-angles to the assembly hall In opening the new centre Dr Godber said that Leeds has led the world in the care of the mentally handicapped Dr Z P Fernandez, chairman of the mental health services subcommittee of the city council, said that Leeds spent more in this field than any other local authority in the country averaging £103 per thousand of population as against £7 or £8 in other areas. The city had the highest ascertainment record in the country and in his experience incorrect certification was unknown.

University of London

The title of reader in biochemistry has been conferred on Mr A. L. Greenbaum, PH D, in respect of his post at University College

University of Durham

On Dec 17 the degrees of M.B B S were conferred on the following:

J W Alderson, J P R Campbell P N Cowen Dorothy M H Dickinson, Kathleen H Fowler B R Hayes, Sylvia J Jayson, D M H Jones Veronica Marr M B Mummery, T O Nelson Williams J O, Odulate Wahab Olabode Oshodi D L Pearson, G A Turnbull Sheila M. Waterhouse J G. White Jean C Whitfield

In absentia

University of Bristol

On Dec 10 degrees of M B CH B were conferred on the following:

Aboyomi Babatunde Claudius-Cole M. R. Clift, Izette R Coulton Arumugam Ganendran, J A Hayes, W G R Hobbs B I D Hodge I M Joiner, F J M Killick, Stella A. F Maxted Margaret E. C Parke R J Saundby D W Seldon J A C Strachan M T White J H Williams

University of Manchester

The following have passed the final examination for the degrees of M B, CH B

James Adams, E S Ainsworth, Norman Beenstock, J N Bowers, E O Cockings, R P Davis, A W Drummond, T B Edwards, Anne E Evans Joseph Glass, S L Goodman, Audrey W Gostling, C A A Haigh, Catherine E Hall Susan Hetherington, J N MacCaig, Anne Maclachlan J G M Maclachlan, J D Mason Brian Peach Sheila G Quain, Gillian P Roach, Raine E I Roberts, J H M Robertson Eric Rowley, Beryl Sephton, Anne E Treharne

University of Liverpool

At recent examinations the following were successful

M D—F G Anderson, Cynthia J Discombe, R J Fallon, W L Sanders, J K Wilson

M Ch Orth—M. Alms, Sheroo D Bharucha, P G Brady J H C Carrier, H S Y Fang, P Kilburn, H Klein, I L Macfarlane, I K. Sharp G C Slee, H Thompson

M.B Ch B—J R Burrows W Caplan, Mary R Daniel, P W Davies, M M Gerassimos R G Ingham, Andrew E Jaques C D Krasner E Lewis G S Wilson, E M W Wong

University of Birmingham

On Dec 16 the following degrees were conferred

M.D—C G Berry, D L Crombie

Ch M—J A Mantle

M.B, Ch.B—Eric Anthony, George Atkins, J E Backhouse, Brian Baker, John Bennett J A Binnie, A. H Brittain, Brenda M Browne, Nancy G Campbell, R H Cawley, M J Daly, J B Davies, H R Dobson J D Earp R I Froment, Harrydewa Goriah, Daphne E Mahabir, M E T D R Maigrot, Stanley Middleburgh, D W Millard Helen W Rogers, M G Saunders, L W Smith, M P Taylor

University of Sheffield

Dr S K R Clarke has been appointed lecturer in bacteriology and virus diseases

University of Edinburgh

On Dec 16 the following degrees and diplomas were conferred

M D—Margery A. Lawley, *J A H Lee, *Rachel B Mackay (with honours), D S McLaren, J B Primmer, *J D Robertson, J L Stewart

* Commended for thesis

D.Sc—G W A Dick

Ph D (in the faculty of medicine)—G D Forwell

M B, Ch B—Catherine G Butcher, C S Cairns I M Campbell, R I Davies, T K Hay I M Hourston, J O Jones, Thalia H Lowe, R T McKay, J C Ramsay, M D Scott, P M Shaw, J R M Shepherd, Isobel M. Sinclair Phyllis Watson, Evan Whittaker

D.P.H—Ariane G M. Wiseman

D M R.D—J K Davidson, Lockhart Frain Bell K W M. Grossart M W M Hadley, Hamish Innes

D M R T—J T Lamb, A L Meikle, William Muirhead

D Psychiat—Frank Badrock, P G McGrath, H B Milne

Royal College of Physicians of London

On Tuesday, Jan 10, Dr R T Brain will deliver the Watson Smith lecture His subject will be the Clinical Vagaries of the Herpes Virus The first Marc Daniels lecture will be given by Sir Geoffrey Todd on Thursday, Jan 12 He is to speak on Chemotherapeutic Control in the Treatment of Fibro nodular Pulmonary Tuberculosis Both lectures will be given at 5 P M at the college, Pall Mall East, S W 1

Royal College of Surgeons of Edinburgh

At a meeting of the college held on Dec 14, with Prof Walter Mercer, the president, in the chair, the following were admitted to the fellowship

Jayalakshmi Yegnanarayan Ayer Shyam Kishinchand Bulchandani, Remo Cantamessa, George Fahmy, N P G Fischer Kizhakeveettil Idikula George Jayashree Kirloskar, Agnes Kramer, E V Mackay, G M. J Mascarenhas A F Masson, R W D Middleton, R R Munro, T D Ness Robert Nikhwa, Ramachandra Pararajasegaram R B J Peiris E R Price Tahir Abdel Rahman Abdur Rashid, Royston Reed Davis, Sunil Kumar Sarkar Sohandal Sharma, Hiran Sirikantha Kirthisingha, Peter Stemmler, David Tanne W A Lisle Thompson, G M Thomson, W G Walker, G A Wall, T E C Williams

Child Psychiatry in Glasgow

The opening of a new department of child psychiatry (the third of its kind to be established in Scotland) is described in the *Glasgow Herald* of Dec 16 Associated with the Royal Hospital for Sick Children, it is under the direction of Dr Frederick Stone, and the permanent staff will include a psychiatrist, a psychiatric social worker, and a child therapist Its special concern will be emotional health and development in childhood and adolescence, and it will provide a specialist service for diagnosis and treatment Plans are being made for research and teaching, in coöperation with the departments of child health and psychological medicine in Glasgow University

King Edward's Hospital Fund for London

The Fund has received a further instalment of £ from the Nuffield Trust for the Special Areas In fou this Trust, Lord Nuffield provided that any sums av by way of repayment of loans or otherwise from his for the special areas should pass to King Edward's H Fund In all £1,650,000 has now been received

Scientific Film Association

A meeting arranged by the medical committee o association is to be held on Tuesday, Jan 17, at 6 30 at the Mezzanine Cinema, Shell Mex House, Strand, Lo W C 2, when Dr Robert Ollerenshaw will discuss the us abuse of film in medical illustration

Common Cold Research Unit

This unit is asking for 600 volunteers during 1956 so there may be no hold up in the work They are anxio enroll as soon as possible 100 volunteers for the trials the middle of January till the middle of March. Comfor living quarters are provided for volunteers Fares to from Salisbury are paid up to a maximum of £3, and 3s pocket-money is allowed Volunteers should be bet 18 and 45 years of age and in normal health Fu information may be had from the medical director of unit, Harvard Hospital, Salisbury

CORRIGENDUM *Rowton Houses*—In one of the refere to Rowton Houses that have recently appeared in our colu (Sept 17, p 572), they were described as lodging hou This was incorrect From 1899 onwards legal rulings h established that Rowton Houses do not belong to this categ but are hotels or hostels for working class people

Diary of the Week

JAN 1 TO 7

Monday, 2nd

Dental and Medical Society for the Study of Hypnosis
8 P M (11 Chandos Street, W 1) Dr A A Mason Treatm of Oral Disorders by Hypnosis

Tuesday, 3rd

Royal Army Medical College, Millbank, S W 1
5 P M Sir William MacArthur Mediæval Leprosy in the Briti Island—What Was It ?

Institute of Dermatology, Lisle Street, W C 2
5 30 P.M Dr P D Samman Tuberculosis Cutis

Wednesday, 4th

Royal Society of Medicine, 1, Wimpole Street, W 1
8 P M. *Surgery* Dr R L Holt, Mr W M Capper Pr A G R Lowdon Surgical Management of Uncomplicate Duodenal Ulcer

Institute of Dermatology
5 30 P.M Dr J O Oliver Mycobacteria in Skin Disease.

Thursday, 5th

Royal College of Surgeons of England, Lincoln's Inn Fields London, W C 2
5 P.M Prof Arnold Sorsby Some Dominantly Inherited Centr Fundus Lesions

Royal Society of Medicine
8 P.M. *Neurology* Dr R. S Allison, Dr P D Bedford, Prof A Meyer Clinical Consequences of Cerebral Anoxia.

Friday, 6th

University of London
5 15 P M (London School of Hygiene and Tropical Medicine Keppel Street W C 1) Prof C De Duve (Louvain) Intracellular Distribution Patterns of Enzymes (First two lectures)

Royal Society of Medicine
5 30 P M *Anæsthetics* Dr A A Mason. Hypnosis.

Institute of Dermatology
5 30 P M Dr G B Dowling Skin Tuberculosis and Sarcoidosis

Royal Medico-Chirurgical Society of Glasgow
8 30 P M (Royal Faculty of Physicians and Surgeons of Glasg 242, St Vincent Street) Prof Graham Bull Treatment of Disturbances in Body Water and Electrolytes

Appointments

GILLIGAN M. S, M B Belf, F R C.S.I surgeon Louth count council

HELLIWELL, PHILIP, M B Edin F F.A R C.S D.A consult anæsthetist, St Peter s, St. Paul s, and St Philip s Hospital London

HODGSON JONES I S *M.D Camb*, M.R C.P consultant dermato gist Northampton and Kettering areas

WILLIAMS, W R, M B Wales, D T.M & H, D.P.H asst M O.H an school M.O Merionethshire

Appointed Factory Doctors:

CURRAN D V L.R C.P E Shipley Yorks
SHELDON K M. M. M B Camb Bradford East, Yorks
TURNER, R E S, M R C.S Bracknell, Berks

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R A F Appointments

The Air Ministry have announced the following Royal Air Force medical appointments

Air Commodore P B L Potter to be principal medical officer Middle East Air Force with the acting rank of air vice marshal, *Air Commodore A F Cook to be principal medical officer Bomber* Command and Group Captain J Magner to be principal medical officer Flying Training Command with the acting rank of air commodore

Fulbright Travel Grants

The United States Educational Commission in the United Kingdom is offering travel grants to graduates, professors, lecturers, and senior research workers of the United Kingdom and Colonies to go to America for an academic or educational purpose between June 1, 1956, and April 1, 1957 Further particulars may be had from the commission, 55, Upper Brook Street, London, W 1

The London Medical Orchestra

This orchestra is giving a concert in aid of the Infantile Paralysis Fellowship at B M.A House, Tavistock Square, W C 1, with Mr Alan Loveday as soloist, at 8 P M on Saturday, Dec 10 Tickets may be had at the door

Dr Elspeth Warwick deputy medical officer of health for Nottingham has been given leave of absence to undertake an assignment for the World Health Organisation to advise on the setting up of maternal and child health services in parts of Nigeria

Diary of the Week

NOV 13 TO 19

Monday, 14th

UNIVERSITY COLLEGE, Gower Street W C 1
5 30 P M Dr W S Feldberg, F R.S Recent Experiments on the Pharmacology of the Periventricular Grey Matter of the Brain

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E C 4
4 30 P M Mr Samuel Oram Valvular Disease of the Heart
5 45 P M Sir Russell Brock Surgery of Valvular Disease of the Heart

Tuesday, 15th

ROYAL COLLEGE OF PHYSICIANS Pall Mall East, S W 1
5 P M Dr Wilfrid Sheldon Cœliac Disease (Charles West lecture)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W C 2
3 45 P M Dr F Stansfield Anatomy of the Visual Pathway

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Medicine Keppel Street W C 1) Prof R E Tunbridge Structure of Connective tissue Fibres

ROYAL SOCIETY OF MEDICINE 1, Wimpole Street W 1
8 P M *Pathology* Dr J V Dacie Dr W R Pitney, Dr R M Hardisty, Dr P Wolf Laboratory Aspects of Blood Coagulation

ST MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W 2
5 P M Mr John Peel Diabetes and Pregnancy

INSTITUTE OF NEUROLOGY
5 30 P.M (National Hospital Queen Square W C 1) Dr P Sandifer Pain in the Neck and Upper Limbs

INSTITUTE OF DERMATOLOGY, Lisle Street W C 2
5 30 P M Dr J A. Dudgeon Viral Diseases of the Skin.

SOCIETY FOR THE STUDY OF ADDICTION
8 P M (11 Chandos Street W 1) Dr Horace Joules Sir Adolphe Abrahams, Mr Kenneth Mullard, Prof Sidney Russ, D.SC Smoking and Cancer

ROYAL ARMY MEDICAL COLLEGE Millbank, S W 1
5 P M Sir Owen Wansbrough Jones, PH D The Medical Services and New Weapons

MANCHESTER MEDICAL SOCIETY
4 30 P M (The University Manchester, 13) Dr D A K. Black Patients and Doctors in Classical Times

Wednesday, 16th

SOCIETY OF APOTHECARIES OF LONDON
5 30 P.M Sir Zachary Cope The Society of Apothecaries and Medical Education (First Gideon De Laune lecture)

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road W 12
2 P M Dr G Popjak Fat Metabolism

ROYAL SOCIETY OF MEDICINE
8 15 P M *General Practice* Dr E Crosbie Walsh Sir Russell Brain Mr Murray Falconer Dr John Hunt Dr A S Playfair Cerebrovascular Disease

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road W C 1
5 30 P M Prof F C Ormerod Plastic Surgery of the Middle Ear

INSTITUTE OF DISEASES OF THE CHEST Brompton Hospital S W 3
5 P.M Dr Clifford Hoyle Sarcoidosis

INSTITUTE OF DERMATOLOGY
5 30 P M Dr Dudgeon Viral Diseases of the Skin

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE 28, Portland Place W 1
3.30 P M Dr P A Tyser Public Awareness of Public Health

ST MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GUIDANCE, 91 Dean Street, W 1
0 P.M Dr Colman Kenton Techniques of Contemporary Physical Treatments

EUGENICS SOCIETY
5 30 P M (Burlington House, Piccadilly, W 1) Dr H C M Williams Problem Families in Southampton.

RESEARCH DEFENCE SOCIETY
5 30 P M (University College, Gower Street, W C.1) Sir H Dale, O M, F R.S Humanity's Rising Debt to Med Research (Stephen Paget lecture)

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY 64, St. Jame Street, Nottingham
8 30 P.M. Dr Clifford Kennedy Incoördinate Action of Pregnant and Non pregnant Uterus

UNIVERSITY OF LIVERPOOL
5 15 P M (Surgery Theatre) Prof R I Harris (Toront Hypermobile and Rigid Flat Feet (Lady Jones lectu

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 24 St. Vinc Street Glasgow, C 2
5 P M Prof J N Davidson Biochemical Approach to C Structure in Health and Disease

Thursday, 17th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Medic Prof N H Martin Protein Diseases

ROYAL SOCIETY OF MEDICINE
8 30 P M *Proctology* Mr Harold Dodd The Charter of Pr tology (Presidential address)

INSTITUTE OF NEUROLOGY
5 P M Dr Margaret Kennard (Canada) Electro-encephalogra Frequency Patterns as Related to Behaviour

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE
5 30 P.M. Mr Harold Edwards Contribution of War to Advancement of Surgery (Blackham lecture)

LIVERPOOL MEDICAL INSTITUTION, 114 Mount Pleasant 3
8 P.M Mr Hedley Atkins Carcinoma of the Breast

MANCHESTER MEDICAL SOCIETY
8 P M *Anæsthetics.* Dr F W Oliver Carbon dioxide Co trations in Anæsthetic Apparatus Dr E. G Rees J The Anæsthetist in Obstetrics

UNIVERSITY OF EDINBURGH University New Buildings, T Place
5 P.M Prof G M Bull Diagnosis and Treatment of Distur of Water and Electrolytes

UNIVERSITY OF ST ANDREWS Queen's College, Small's W Dundee
5 P M Prof W Malcolm Millar Differential Diagnosis of O and Functional Disorders

Friday, 18th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P M Mr F W Holdsworth Traumatic Paraplegia
4 P M Dr Douglas Gairdner Anaphylactoid Purpura (Sch lein Henoch Syndrome)

FACULTY OF RADIOLOGISTS
5 P M (Royal College of Surgeons) Sir Russell Brain Neur of the Cervical Spine (First Crookshank lecture)

INSTITUTE OF LARYNGOLOGY AND OTOLOGY
3 30 P M Mr J C Hogg Epistaxis

INSTITUTE OF DERMATOLOGY
5 30 P M Dr M S Thomson Lichen Planus

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W 1
6 30 P.M Dr E E Pochin, Dr H Miller Discussion of R Iodine Measurements in Clinical Practice

MANCHESTER ROYAL INFIRMARY
5 15 P.M (University of Manchester) Lady Violet Bo Carter, D B E Of Human Greatness (Lloyd R lecture)

Appointments

ALWYN SMITH, PETER M B Lond whole time deputy senior Welsh Regional Hospital Board

ARDLEY JOHN, M B Durh, D P H deputy M O H, Coventr

BENNETT GEORGE M B Manc, D O.M S asst. ophthalm (S H.M O) Sunderland and Hartlepools H.M C.S

CORMAC, C D, B.M Oxfd D P H M O.H, Lincolnshire (Lind

DIXON W M, M B Lond M R C P whole time asst chest phy Hammersmith chest clinic, London.

GRANT F G, M B Belf, M R.C O G consultant obstetric gynæcologist, North Down and Downpatrick H.M C

LEWIS, MARY P H, M.B Aberd asst M O.H, Warrington.

Birmingham Regional Hospital Board

KASASIAN A H M R C S F F A. R C.S part time cons anæsthetist, Lichfield, Sutton Coldfield and Tam group

MANFORD MARGARET L, M B Lond, F F.A R.C.S., part consultant anæsthetist, Wolverhampton group

WOOD S R M B Birm part time consultant dermato Lichfield Sutton Coldfield and Tamworth group

East Anglian Regional Hospital Board

DUNN J F, M B Glasg senior registrar in psychiatry, Hel Hospital, Norwich

KIRKLAND, ANNE K. M.B Glasg, D P M senior registrar mental deficiency and child psychiatry, Little Plum group of hospitals

ROWE, L F M B Edin. senior registrar in psychiatry Andrew's Hospital, Norwich

The Hospital for Sick Children Great Ormond Street, London

ISAACS SUSANNA M B Lond. M R C.P, D C H part time re to the department of psychological medicine

MCCREDIE D A M B Melb house physician

Manchester Regional Hospital Board

NICHOLSON, R S M R C.S tuberculosis physician (S.H Preston and Chorley Hospitals

ROSS D N, M D Glasg, F R F P.S consultant physician (w time) in geriatrics, Ashton, Hyde, and Glossop Hospita

WINSTON, R M, M.D Manc asst pathologist (S.H.M.O.) W Manchester Hospital Centre

TESTS OF ADENOHYPOPHYSEAL FUNCTION *

A C Crooke
MD Camb
CLINICAL ENDOCRINOLOGIST THE UNITED BIRMINGHAM HOSPITALS

The study of diseases of the adenohypophysis has nerally followed a common pattern The first descrip n of the clinical picture is often confused and confined a few examples Later a number of such descriptions gathered together and a common pattern is recognised is is followed by an account of the morbid anatomy ally the biochemical changes, including the hormonal lance, are worked out This sequence of events is mplified in the study of basophilism

In 1932 Cushing described the clinical appearance of s patients who presented the picture which subse ently became known by his name To these he added umber of others previously reported and he claimed t the disease was caused by an adenoma of basophil ls in the anterior lobe of the pituitary gland Twent rs ago I showed that the constant pathological finding the adenohypophysis is a hyaline change in its basophil ls and that adenomata are not constant and when ent are not necessarily composed of basophil cells empts to elucidate these pathological findings by ical investigations and by experiments on animals led prolonged arguments but no conclusions Even the re recent histochemical studies have failed to provide atisfactory solution

t an early stage my interest shifted from the morbid tomy of the pituitary gland to the biological and mical properties of its hormones as it became apparent t a fuller understanding of its pathology rested on the urement of its functional capacity I next developed est for adrenocorticotrophic hormone using hypo sectomised rats and this enabled Cortis-Jones work with me at the London Hospital, to demonstrate that nocorticotrophic hormone is ultrafiltrable Later were joined by Morris, but subsequent stages in the ration were delayed by the war and it was not ble to publish this work until afterwards (Cortis Crooke Henly Morris and Morris 1950) ough this was interesting fundamental research it ght us little nearer to our goal of estimating pituitary tion in man. Since opening the Department of cal Endocrinology in Birmingham however our pal interest has been in pituitary function tests. I ose, therefore, to review the methods which are able and to attempt to assess their usefulness, and ly to describe briefly some of our own work on this ject

ts of adenohypophyseal function may be divided hly into four groups. In the first group a measure t is made of some indirect effect of a gland which is influenced by the pituitary gland Among such are the measurement of the basal metabolic rate ulin-sensitivity test, Kepler s test of water load, the excretion of certain breakdown products such 7 ketosteroids, pregnanediol and the œstrogens. In cond group a measurement is made of the synthesis tion or excretion of a hormone produced by a gland h is itself influenced by the pituitary gland Among tests may be included the uptake of radioactive ne by the thyroid gland the level of circulating tein bound iodine and the excretion of certain corti s and perhaps of specific 17 ketosteroids and œstro . In these two groups it is presumed that when a ber of tests indicate poor function of several glands there is some degree of pituitary insufficiency, but these tests give no indication of increased pituitary function Obviously such indirect measures give a poor estimation of pituitary activity and I do not propose to discuss them more fully

The third group of tests is a modification of the first two in which the same functions are measured but the measurements are repeated after treatment of the patient with specific pituitary trophic hormones. The hormones which lend themselves to such investigations are the adrenocorticotrophic thyrotrophic, and gonadotrophic These tests are more specific than those in the previous groups because they demonstrate the ability of a gland to respond to pituitary stimulation thus distinguishing between primary and secondary failure of the gland They cannot demonstrate increased pituitary secretion, but they seem to be a considerable advance on older methods and are likely to become more widely used and I propose to discuss them more fully

The fourth group of tests entail the direct measurement of specific pituitary hormones in blood or urine Such tests are urgently needed in order to recognise specific types of adenohypophyseal failure and to distinguish these from failure of an end-organ to respond to pituitary stimulation and finally to diagnose specific types of excessive pituitary stimulation I propose to describe what has been attempted so far in this group of tests, although only the measurement of gonadotrophic hormones can be regarded as practicable for limited studies in well-equipped departments

Tests depending on Measurement of Effect of Treatment with Specific Pituitary Trophic Hormones

CORTICOTROPHIN

In recent years several tests have been proposed in which is measured *some indirect* effect of adrenocortical secretion in response to stimulation with corticotrophin (A C T H) Examples are Thorn's test in which the fall in the relative number of circulating eosinophil cells is estimated, and the excretion of breakdown products such as 17 ketosteroids Such tests offer poor comparison with the direct measurement of adrenocortical hormones in circulation or their excretion in urine after stimulation with corticotrophin

The development of a method for determining the level of 17 hydroxycorticosteroids (principally 17 hydroxy corticosterone or compound F) in blood by Nelson and Samuels in 1952 has opened new fields for investigation Using this technique Bliss et al (1954) and Eik Nes et al (1954) compared the effect of rapid intravenous injections of corticotrophin with *infusions* given over longer periods of time and concluded that 25 I U of corticotrophin given as an intravenous infusion over a period of six hours was the most suitable for testing adrenocortical response The response of different individuals in the control series varied considerably, but the characteristic response of each was unaltered in successive tests using different doses of corticotrophin The test has been applied principally to the detection of primary adrenocortical failure, but it has been shown to be sufficiently sensitive to detect less severe failure in patients dying of pulmonary tuberculosis whose adrenal glands were found at necropsy to be unaffected by tuberculosis These patients had normal blood levels of 17 hydroxycorticosteroids during the control period but failed to respond to stimulation with corticotrophin—a condition described as low adrenal reserve Some patients with mild Addison s disease also showed low adrenal reserve in contrast with the usual finding in patients with severe disease who have low levels of 17 hydroxy corticosteroids initially

The methods for determining 17 hydroxycorticosteroids in blood are rather complicated and are unsuitable for

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dential address to the Section of Endocrinology of the Royal Society of Medicine Oct 26 1955

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routine laboratory use, but simpler methods have been developed for their determination in urine by Reddy et al (1952), J H U Brown (1955), and Appleby et al (1955) These procedures have a disadvantage when applied to patients with disease of the liver or kidneys, because the conversion and excretion of steroids in the urine may be impaired (Brown et al 1954) Liddle et al (1954), however, used the urinary method of Reddy et al (1952) and found that an intravenous infusion of 40 I U of corticotrophin given over a period of eight hours caused about a fivefold increase in the amount of 17 hydroxycorticosteroids excreted daily by a group of 64 control patients There was considerable individual variation in the response, as was reported earlier in investigations on the blood-levels Growth hormone and thyrotrophic hormone had no effect on the rate of excretion

Because corticotrophin has to be administered by intravenous infusion the test is not easily used in routine practice Gemzell and Franksson (1953) tried a slowly acting corticotrophin preparation They found that 50 I U given intramuscularly caused a greater rise in the blood level of 17 hydroxycorticosteroids after eight hours than 20 I U of ordinary corticotrophin given by infusion Bayliss and Steinbeck (1953) objected that the results obtained with slowly acting corticotrophin are too variable but Forsham et al (1955) showed, by careful study of the action of corticotrophin gel, that increasing dosages given intramuscularly caused the hourly output of 17 hydroxycorticosteroids in urine to increase at the same rate but for progressively longer periods They proposed a dosage of 80 I U of the gel and the measurement of 17-hydroxycorticosteroids in urine during the succeeding eight hours as a standard procedure (Orr et al 1954)

There is a distinct diurnal variation in both the blood-level (Tyler et al 1954) and the urinary output (Doe et al 1954) of 17 hydroxycorticosteroids, and it might be preferable for a routine laboratory test to be based on the amount excreted during a period of twenty four hours This would require a larger dose of corticotrophin gel, such as 120 I U (Nabarro 1954) It might be useful if the Medical Research Council's Committee on Clinical Endocrinology would explore this question and recommend a procedure for general routine use It would be a great advance on methods previously available for detecting adrenocortical insufficiency, whether primary or secondary to pituitary failure

THYROTROPHIC HORMONE

Investigators have used thyrotrophic hormone (T S H) to distinguish between primary hypothyroidism and hypothyroidism due to pituitary insufficiency Earlier workers measured the basal metabolic rate and other indirect indices of thyroid function after injections of T S H, but Querido and Stanbury (1950) used the increase in the level of circulating protein-bound iodine (P B I) and the uptake of radioactive iodine by the thyroid gland after treatment with T S H as indices of increased thyroid function Perloff et al (1951), using a similar procedure, gave a tracer dose of 50 μc carrier-free I^{131} orally, and measured the activity at the neck twenty-four hours afterwards Approximately two weeks later they gave 20–30 mg of T S H intramuscularly on three successive days and repeated the tracer studies after the last injection The difference in the percentage of iodine taken up at the neck was used as an index of response to T S H Schneeberg et al (1954) subsequently found with this test a clear difference in the response between a group of 22 patients with primary thyroid deficiency and 12 with thyroid deficiency secondary to Simmonds's disease, and there was no overlapping of ts between groups They also showed that these two could be readily distinguished from 24 healthy ls by this procedure

These tests are cumbersome, and Jefferies et al (
proposed a simplified procedure

They gave I^{131} in a dosage of 10 μc to adults and 3-5 μc children, and three hours afterwards they measured the upt at the neck with a scintillation counter The lower th served as control for the background Immediately after th they injected 10 mg (4 U.S P units) of T.S H intramuscularly Twenty four hours after the first dose of iodine and imme ately after a preliminary count at the neck they gave a seco dose of I^{131} and measured the uptake again three hours later The difference in I^{131} uptake before and after treatment wi T S H was used as an index of response

Their results appear to be comparable with those obtai by other workers using more lengthy procedures. W have repeated their test and the chief objection see to be that measurements are made at a time when th uptake of iodine is very rapid and before it has bec bound in the thyroid gland We have found it neces to measure the radioactivity twenty four hours af giving I^{131} Vale et al (1955) have claimed recently th some patients with Simmonds's disease require mul injections before a response can be obtained

This test can be done on outpatients, and pro the necessary apparatus is available it is simple and r It is sensitive enough to demonstrate low thyroid res —a condition (comparable to low adrenal res described in the previous section) in which failure of thyroid gland is slight and symptoms are mild initial uptake of iodine in this condition is normal, treatment with T S H does not cause any further incr Finally, the test clearly differentiates between pri thyroid insufficiency and insufficiency caused by pitu failure Patients having thyroid therapy or iodine cause confusion because, like patients with Simm disease, their initial iodine uptake is low and it incr after treatment with T S H, but unlike patients Simmonds's disease their initial level of protein b iodine is normal The test promises to be of much gr value than any other so far developed for distingu between minor degrees of primary and secondary roid failure and to warrant consideration as a ro procedure provided enough T S H can be obtained reasonable price

HUMAN CHORIONIC GONADOTROPHIN

This hormone (H C G) stimulates the productio 17 ketosteroids and of œstrogens, but no attempt s to have been made to develop a test of pituitary gonadal function with it Birke et al (1954) fractio the 17 ketosteroids by the method of Zygmuntowic found a considerable increase in the excretion of a sterone and ætiocholanolone after three daily inje of 600 I U of H C G This suggests that a practicable could be devised, but there has been considerable troversy about the possibility that H C G stimulates adrenal cortex Borth et al (1953) made a careful of the effect of H C G on the excretion of 17 ketoste formaldehydogenic corticoids, and œstrogens in oophorectomised women but found no change In if it is true that a preparation of H C G stimulates adr cortical secretion, that preparation is, by defin adrenocorticotrophic and it becomes a question chemical identity which is far from solution

The methods used for the chemical determinatio œstrogens and pregnanediol in urine have not satisfactory, but the procedures described recently J B Brown (1955) and Klopper et al (1955) are prac able procedures and the way now appears to be op develop a test of ovarian function using H C G The obstacle to such a test is that during the reprod phase of life control values are not easily defined, o to the cyclical variation in the amount of these horm excreted This, however, should not hamper the us the test for distinguishing between failure caused primary disease of the ovary and failure secondary pituitary insufficiency The criticism that H C G stim es the adrenal cortex to produce œstrogens has been sed by several workers, including Decio (1955) This quires further investigation but again it is a question chemical identity of the trophic hormones

The possibility of using two or more of these tests ultaneously in a simplified form is interesting Such levelopment would go some distance towards gaining better understanding of pituitary disease, but the l need is for methods of measuring pituitary trophic rmones themselves in urine or better still in blood

Measurement of Pituitary Trophic Hormones

One of the principal difficulties in the way of measuring tuitary hormones lies in their chemical constitution hey are all believed to be protein or polypeptide in ture, and methods of assay often depend on compli ted biological procedures A second difficulty is that ey are to a variable extent biologically interdependent, metimes facilitating and sometimes inhibiting each her's actions A third is that although some are now ell defined others are not and their final number is not nown I can only describe briefly some of the efforts hich have been made to assay those hormones which ve already been found in human urine or blood

GROWTH HORMONE OR SOMATOTROPHIC HORMONE

Somatotrophic hormone (S T H) has proved one of the ost elusive hormones in human blood and urine, though it has been isolated as a homogeneous protein om pituitary glands. An elaborate assay has been veloped for it by Greenspan et al (1949) This consists measuring the thickness of the silver stained epiphyseal rtilage of the femur of hypophysectomised rats after a urse of injections with the hormone Greenspan (1950) ed the assay subsequently in an effort to demonstrate T.H in lyophilised serum of growing children and tients with acromegaly, but without success Recently mzell et al (1955) using the same assay have monstrated S T H. activity in vaginal blood obtained st partum after fractionation with ethanol They en repeated Greenspan s work on lyophilised blood and and S T H activity there also This assay cannot be rarded yet as a practical procedure although it is one those which is most urgently required for clinical vestigation.

THYROTROPHIC HORMONE

A large number of different methods have been devised the assay of T.S H The first depended upon changes the weight of the thyroid glands of various animals er methods depended on morphological changes (De bertis 1948) and yet others on growth and meta rphosis of tadpoles (D Angelo et al 1942) Most bsequent workers have attempted to measure some ctor directly related to the secretion of thyroid rmone Some have measured the uptake of radio tive iodine (Querido et al 1953 Overbeek et al 53, Gilliland and Strudwick 1953) or radioactive osphorous (Besford Crooke, and Matthews 1952 elman et al 1953 Kriss et al 1954 Lamberg 1955 mberg et al. 1955 Tala et al 1955 Wahlberg 1955) the thyroid glands of various animals while others ve measured the changes in the level of protein bound ine in animals after treatment with T S H (Adams d Purves 1955) Most of these workers have attempted apply their methods to detecting or measuring T S H human blood or urine, but the results so far have en disappointing

There is evidence of the existence of two thyrotrophic tors—one concerned with growth of the gland and the her with its secretion (Greer 1952) Assays based on anges in thyroid weight or on the height of its epithelial lls may not therefore be measuring the same substance says based on factors directly connected with retion

Another factor has been obtained from pituitary extracts which appears to be related to T S H It was described by Dobyns and Steelman (1953) who called it the exophthalmos producing substance (E P S) They have separated it by precipitation with trichloracetic acid from the factors which cause an increase in weight and in secretion of the thyroid gland It is assayed by its effect in producing proptosis in the Atlantic minnow *Fundulus Heteroclitus* Subsequently Dobyns and Wilson (1954) demonstrated the presence of E P.S in the serum of patients with " progressive " exophthalmos

It is evident that big advances have been made in the assay of the various thyrotrophic factors but that no final decision has been reached about which are the best techniques Their application to human disease has hardly yet begun, but it is reasonable to hope that within a fairly short time clinical methods will become available at least for research purposes

CORTICOTROPHIN

The various methods which have been developed for the assay of corticotrophin (A C T H) have nearly all been based on one procedure—the depletion in the concentration of ascorbic acid in the adrenal gland of the hypophysectomised rat (Sayers et al 1948) Using this method but varying the extraction procedure or the method of administration to animals, many different groups of workers have tried to assay corticotrophin in blood (Cooke et al 1948 Taylor et al 1949 Granirer 1951, Gray and Parrott 1953 Sydnor et al 1953a and b Ceresa and Reyneri 1953, Paris et al 1954 Gaarenstroom et al 1954 Moruzzi et al 1954) and in urine (Rubin et al 1954) Sayers (1955) has criticised the results obtained by some of these workers and shown that the concentrations which many have claimed to have found in blood are unrealistic since if such concentrations were maintained artificially Cushing s syndrome would develop He stated that the normal blood level is less than 0 6 milli unit per 100 ml. blood which is below the limit of detection but it becomes detectable in patients with Addison s disease or after adrenalectomy

In 1951 Dixon et al distinguished two adrenocorticotrophic factors—one which caused adrenocortical repair and the other depletion of ascorbic acid in the adrenal cortex of the hypophysectomised rat This suggested that corticotrophin has two factors—one concerned with the growth of the gland and the other with its secretion, similar to the two T S H factors already mentioned It raises a question about the desirability of exploring other techniques for methods of assay

A new method was reported recently which depends on the storage of liver glycogen under the influence of corticotrophin (Overbeek and van der Vies 1954) but it has not been applied clinically Another method of particular promise depends on the production of measurable quantities of 17 hydroxycorticosteroids by portions of rat adrenal gland in vitro (Saffran and Bayliss 1953 Saffran and Schally 1955, McKerns and Nordstrand 1955) The steroids have been identified as corticosterone and 17 hydroxycorticosterone (Elliott and Schally 1955) This assay has several advantages It does not require hypophysectomised rats the glands of a single animal serve as controls on the unknown material, the end point is the measurement of the active hormone produced and the procedure is statistically sound and has a λ of 0 15 Unfortunately it is not sensitive enough for clinical use in its present form but it seems to be worth further investigation

A short time ago it was claimed that corticotrophin was identical with the hormone which acts on melanophores and could be measured by its action on them This claim was not substantiated, but it is evident that a melanocyte stimulating hormone (M S H) exists in man (Lerner et al

1954) which is readily measurable by an in vitro technique in which its action on the melanophores in a piece of skin of a frog is measured photo electrically (Shizume et al 1954) Normal urine extracted with benzoic acid and ethanol and normal blood extracted by adsorption on oxycellulose have been shown to contain measurable quantities, and the level is raised during pregnancy and in Addison's disease (Shizume and Lerner 1954) The technique appears to be simple and reliable, but it is difficult to know what is the significance of M S H in human disease or what relation it bears to corticotrophin The two hormones generally appear to increase together

One may conclude that the clinical assay of corticotrophin and its related hormones is already practicable on a very limited scale and that further rapid development in this field is probable

THE GONADOTROPHIC HORMONES

Three groups of gonadotrophic hormones have been investigated in man The first of these includes prolactin or lactogenic hormone and luteotrophic hormone (L T H) These may be identical, although this has not been established beyond doubt The second comprises the pituitary gonadotrophins, which have two biologically distinct components called luteinising or interstitial-cell stimulating hormone (I C S H) and follicle stimulating hormone (F S H) There is some evidence that these two factors are always present in the same ratio to one another, and they may therefore represent different biological actions of the same molecule of hormone, but Walter (1955) in Edinburgh and P S Brown (1955b) in our laboratory have recently established, by different methods, that this is not so The third is human chorionic gonadotrophin (H C G)

H C G has been studied clinically to a greater extent than any of the pituitary trophic hormones It is recognised by the familiar Aschheim-Zondek, Friedman, Frank and Hogben tests, but, since it is not derived from the pituitary gland, it would not be relevant to discuss it in this review of pituitary function tests, except to differentiate it from other gonadotrophic factors

Prolactin and Luteotrophic Hormone

Few attempts have been made to assay prolactin clinically In 1951 Coppedge and Segaloff described a method of extracting it from urine, which they then assayed in pigeons using the hypertrophy of the crop gland as an end-point They claimed to be able to recognise a peak in the amount excreted during the secretory phase of the normal menstrual cycle We experimented with a similar method at about the same time but found that the cost was exorbitant

There is strong evidence that prolactin or luteotrophic hormone (L T H) acts upon the prostate (Segaloff et al 1955) It may be a secretomotor hormone acting on both the male and female secondary sexual glands, and we have been investigating the possibility of using its action on the rat prostate as a method of assay

The Pituitary Gonadotrophic Hormones F S H and I C S H

More attention has been given to the assay of this group than to any of the other trophic hormones, because of the relative ease with which some sort of result can be obtained Most clinical studies date from the description of a method by Klinefelter et al (1943) This consists in administering different dilutions of an extract of a twenty-four-hour sample of urine to immature female mice Usually two mice are used for each dilution, and the increase in the weight of the uterus is used as the end-point for an 'all or-none'' type of response Most workers accept a twofold increase in the weight of the uterus over the control value as a positive result This procedure is in widespread use, and it is generally called the Klinefelter assay Modifications have been intro[illegible] mainly into the extraction procedure They include ultrafiltration, precipitation with benzoic acid tannic acid, and extraction by adsorption on followed by elution with alkali and precipitation wit acetone—this last procedure has gained most favou in this country Further purification of the kaolin extra by chromatography on calcium phosphate has bee developed in our laboratory (Butt and Crooke 1953) I enables the hormone, concentrated from more than a litr of urine, to be injected into a single mouse withou evidence of toxicity This has been confirmed by Lorain and Brown (1954), who have integrated it into th routine method of assay for gonadotrophins

The magnitude of the error of the Klinefelter assay i not generally known, but in our hands it is many hundre per cent There are several reasons for this

Firstly the method is notoriously unspecific Secondly th amount of hormone excreted in a twenty four hour sa of urine is generally insufficient for an adequate number mice to be used at each concentration of extract te Thirdly the methods of extraction from urine leave much be desired We think that the hormone is brought out of u by co precipitation with other proteins Certain pro precipitants which we have used for extraction do not pre tate pure glycoproteins, but the pituitary gonadotr hormones are generally considered to be glycoproteins T large quantities may be left behind, often in too dilute or toxic solutions to be capable of demonstration except special techniques Fourthly, although it is generally bel that the kaolin acetone extraction procedure removes œstrogens, it has recently been observed in our labora (Butt 1955) that biologically significant amounts of œstro are bound to proteins and taken through to the final ext which is injected into the mice This protein bound œstro may be partly responsible for the uterine hypertrophy w characterises a positive response

Fortunately the differences in concentration of mone in urine are so great that the Klinefelter assay been found to give results of clinical value For rese purposes, however, two things are necessary the set up of a standard preparation of human pituitary gon trophin, and the development of quantitative and possible, selective methods of assay The former has been met by the preparation of a standard ext made from the urine of women who have passed menopause This is called HMG20A and has been m by Organon Laboratories Ltd , at the instigation of Medical Research Council's Committee on Clinical E crinology The demand for more quantitative and spe assays has been met by several workers in different w P S Brown (1955a), working in our laboratory, develo a quantal assay, and Loraine and Brown (1954) Edinburgh, a quantitative assay based on the ute response of the immature mouse With both of the is practicable to estimate potencies with an error of ab ten per cent

Steelman and Pohley (1953) have introduced a method which they thought might be specific for F They treated young female rats with sufficient H C G produce maximum hypertrophy of the ovary They th found that the addition of F S H caused further hyp trophy It was suggested that the luteinising action H C G might be identical with that of pure pitui I C S H , which is not available for such work If so contamination of a preparation of F S H with I C should not affect the result of the assay and it might considered as specific for F S H P S Brown (1955a) applied this principle to immature mice and develop a statistically satisfactory assay He has used th method simultaneously with his quantal method on th urine of women who have passed the menopause, a compared the results with those obtained on urine fr the same individuals after they have been treated w cortisone (P S Brown, personal communication) Th reduction in the amount of gonadotrophin excreted aft treatment is significantly different when measured the two assays This demonstrates a qualitative change character of the pituitary hormones being excreted hese women after cortisone therapy and shows that two assays are measuring different effects.

1942 Creep et al claimed that I C S H causes oration or hypertrophy of the prostate of the hypo ectomised rat and that the result is not influenced he presence of F.S H This observation has formed the s of assays for I C.S H The use of hypophysectomised is cumbersome and limits the number of examina s that can be made but Loraine and Brown (1954) e obtained satisfactory data for valid assays. Recently aloff et al (1955) have stated that contamination of extract with small quantities of prolactin (or L.T H) y enhance the effect of I C.S H fivefold and seriously ct the results of an assay It is possible that prolactin resent in the extracts of urine used for this assay The thod is being used routinely for clinical studies, how r by McArthur et al (1955) who have demonstrated peaks in the excretion of I C S H during the normal strual cycle.

The present status of the assays for pituitary gonado phic hormones may be summarised as follows The de, unspecific semiquantitative Klinefelter method is ilable in many centres for routine clinical investiga n but the more elaborate more specific, and quanti ive methods for F S H and I C S H are only now ginning to become available for research purposes

Chemistry of Pituitary Gonadotrophins in Urine

Most workers have concentrated on the development of re specific and sensitive biological procedures and we ught that it might be better to approach this problem m a chemical standpoint If it is possible to separate factors which have different biological actions by mical means it would be permissible to assay them by specific biological methods

arting with kaolin extracts of urine we succeeded in rating H C G from the pituitary gonadotrophins by orption on tricalcium phosphate (Butt and Crooke 2) The pituitary gonadotrophins can be eluted with dium hydrogen phosphate and we called this ract G A. H C.G can be eluted with trisodium phos te and we called this extract G B We then found t G A obtained by chromatography on columns is trophoretically homogeneous on paper, and we sured the concentration in urine by various methods oke et al 1954) These included the ninhydrin ction using glycine as a standard, the orcinol reaction g glucose as a standard and the polarographic method proteins. The results obtained by the different hods were comparable We then measured the output A in the urine collected each night during eight trual cycles by a group of five women who were struating normally We found two peaks in the retions—one just before the middle of the cycle and just before or during menstruation The amount eted at the peak averaged eight times the amount eted at the trough or lowest point in the cycle en the results were plotted the curves were remarkably oth, and we thought that they probably reflected amount of biologically active hormone excreted At time we could only use the crude Klinefelter assay in r to check our results because the new assays had been developed The biological results were valueless ever because of the enormous inaccuracy of the y

ore this paper was published we have collected large unts of extracts from many different sources includ urine from women who have passed the menopause m women during the follicular and the luteal phases the cycle from women with ovarian agenesis, from g children and from men These extracts have been ayed by our new methods and we have found that the ical results do not correspond with the chemical results We now think that it is possible that G.A may contain a carrier protein with which biologically active components may combine or from which they may be detached It is interesting that the excretion of G A fluctuates so regularly during the normal menstrual cycle and that it can be materially reduced by treating the patient with œstrogen It is likely that the excretion of G A represents some function of pituitary gonadotrophic hormone and that the determination of some component of G A in urine may have a clinical value comparable to the determination of 17 ketosteroids which Callow and I first recommended for the diagnosis of adrenocortical carcinoma

Meanwhile the extracts which we have collected from various sources are being used for chemical studies We have found that when these are measured by ultraviolet absorption at 280–290 mμ we obtain a much better approximation to the biological activity More recently we have been able to fractionate G A further by counter current distribution in cellosolve salt water mixture and by chromatography on borate buffered ion-exchange resins (Butt 1955 and personal communication) This work is being pursued because we believe that in the future methods will be developed for the chemical determination of all pituitary trophic hormones along lines similar to those which we have outlined But I should like to conclude by emphasising the vital importance of the closest possible collaboration between clinician physiologist, and chemist in all this research

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TREATMENT OF ŒSOPHAGEAL HIATUS HERNIA*

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I HAVE chosen this subject not because I have found the answer to the problem of satisfactory repair, nor because I have much that is new to say, but for two other reasons firstly, this is an unsolved difficulty and, therefore, the setting-out of different viewpoints sometimes gives a clue to further advance, and secondly, I am in the main tackling the condition from the abdominal end—an approach which is less popular nowadays, but one which has several advantages over the thoracic one

It is remarkable how hiatus hernia and its complications have become more and more prominent in our operation lists and surgical literature Undoubtedly, one important reason for this is our increasing knowledge of the effects of the reflux of gastric juice into the gullet, and another reason is the greater accuracy of radiological diagnosis, or perhaps it is more correct to say, the more frequent search by the radiologist for the presence of hiatus hernia or reflux The endoscopic appearances too are now familiar to the œsophagoscopist—the lax gullet full of gastric juice, the mobile and often patulous cardiac orifice, the congested, bleeding, granular, and sometimes ulcerated or stenosed lower œsophagus

Despite these things, I believe there may be a real rise in the incidence of œsophagitis It is, after all, a form of peptic ulceration, and we know how duodenal and gastric ulceration have varied in frequency over the last fifty years It is possible that, just as the average young man of 1910 was in little danger of his gastric juice ulcerating his duodenum, whereas in 1950 he runs about a 10% risk that this may happen, so the person of 19[illegible] with a hiatus hernia kept an unulcerated œsophagus, whereas in 1950 his risk of ulceration or of œsophagitis is higher

Indications for Repair of a Hiatus Hernia

The mere discovery of a hiatus hernia with or without reflux is not an indication for surgery in the middle-aged or elderly In the young, there is something to be said for repair in order to prevent loss of respiratory efficiency and safeguard against œsophagitis If there are symptoms, most typically heartburn, in the middle-aged and elderly, medical management should first be tried. Reflux is always worse if the intra abdominal pressure is increased—for example, by obesity or tight corsets. have even known œsophageal symptoms begin a result of a chronically over distended bladder, and t were relieved after prostatectomy. Therefore, the point in medical treatment is to treat obesity and to ad the patient to avoid tight belts or corsets This may relieve the symptoms The reduction of weig also an advantage if surgical treatment should be necessary later on Stooping should be avoided and patient should learn to sleep in the sitting up po A régime similar to that for peptic ulcer should followed In many cases, the patient comes to the d because he is worried about the *cause* of his symp and explanation and some simple instruction on ho minimise them will make him completely happy

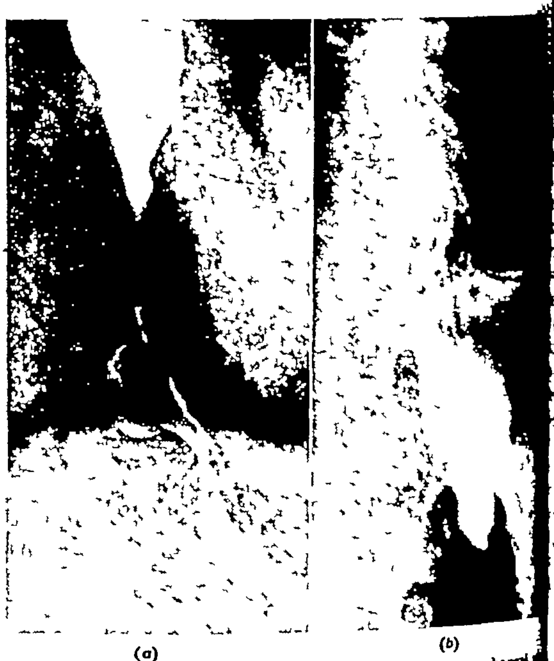

Fig 1—(a) Preoperative view of hiatus hernia with œsophageal s ture, (b) after resection of the strictured area and upper half of stomach

If medical management fails or stenosis, œsophag ulceration, or bleeding occurs, surgery is indicated. T main indications for surgical treatment are

(1) Chronic œsophagitis associated with pain, or recurr bleeding which resists medical management

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(2) Penetrating ulcer of the œsophagus or severe stricture
mation, except in the very aged.
(3) Massive hernia, associated with breathlessness or cardiac
barrassment
(4) Recurrent gastric obstruction in the sac
(5) Acute emergencies—e.g acute intestinal obstruction in
e sac or ulcer perforation
(6) Association with cardia cancer

Surgery is also indicated if there is an associated stric, duodenal, or stomal ulcer or gall-stones Before rgery is undertaken it is most important to have a tisfactory radiograph of the lower gullet and also an sophagoscopy whenever the patient is physically suit le for this examination It is necessary to find out hether the œsophagus is ulcerated shortened stenosed fixed, and it is important to measure its length and dge its elasticity

Surgical Management

Even if operation is decided upon the presence of a atus hernia does not mean that its repair is necessarily e best procedure. For example, if the patient has an tive duodenal or stomal ulcer as well as a hiatus hernia d complains of heartburn it has been my experience t a partial gastrectomy for the ulcer will also relieve e heartburn In younger and more slender subjects, it worth repairing the hernia as well but as many of se patients are elderly or poor operative subjects it seful to know that the gastrectomy alone will produce omfortable patient If gall-stones are present chole stectomy alone will not relieve heartburn In such es, hiatus repair is also necessary If there is an ive œsophageal ulcer then any repair must be carried transthoracically for it is possible to perforate the er during the œsophageal manipulation If there is a stenosis with shortening of the gullet, I am inclined believe that the opportunity to prevent reflux by air of the hiatus is gravely diminished, at any rate in adult. This is not because fixity or shortening make mpossible to bring the œsophagus down into the lomen—reduction *is in fact often easy*—it is because ulceration has taken place at the exact junction of ric and œsophageal mucosa and the cardia mecha n is probably irreparably damaged Hiatus repair will some success in these cases, but the chances are less not know the ideal procedure in these cases Resec of the involved œsophagus and œsophagojejunal stomosis to a Roux loop is a certain method but too ardous for the average case Resection of the stricture and at least the upper half of the stomach with œsophagogastric anastomosis has theoretical disadvantages in that the reflux continues (fig 1) In practice I have found it very reliable and an easier and safer operation than a *similar resection for cancer* because the *fibrotic gullet* holds stitches better I have not found that œsophagitis recurs after the operation This is the operation I prefer for severe cases in patients who are reasonable surgical risks. In unfit patients I reduce the gastric acidity by means of a lower partial gastrectomy of the Polya type If this does not give complete relief a course of bouginage is instituted, for there is less chance of relapse once the *erosive power of the gastric juice is diminished* by the partial gastrectomy This procedure which was advocated by Wangensteen (1940) does not produce the dramatic improvement of a resection but over the years a steady improvement occurs (fig 2)

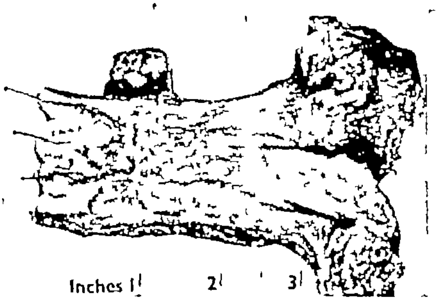
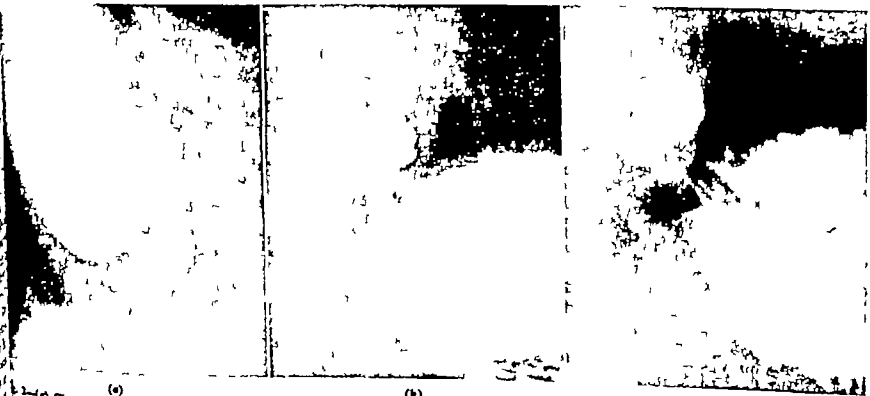


Fig 3—Lower œsophagus partly lined by gastric mucosa, with ulceration at the junction of gastric and œsophageal mucosa.

A word should also be said about ulceration associated with the œsophagus lined with gastric mucosa (Barrett 1950) This should be regarded as a form of true con*genital short œsophagus* In the 2 *cases of this type* which I encountered there was an undoubted hiatus weakness and reflux of gastric juice into the gullet The gastric mucosa lined lower œsophagus has folds in it which are more prominent than normal œsophageal folds and puts one on guard (fig 3) The most satisfactory treatment for this type of case is again resection of the stricture and upper half of the stomach (upper partial gastrectomy) Repair of the weak hiatus would be unlikely to


(a) (b) (c)

2—(a) Œsophageal stricture associated with hiatus hernia in 1949; (b) two years after valved Polya gastrectomy; (c) five years after gastrectomy cure these patients because peptic juices will continue to be secreted above the diaphragm

Technically the repair of a hiatus hernia is extremely difficult The problem is to repair a hernia through a flat sheet of muscle, at the same time retaining a reasonably elastic opening through which the œsophagus and vagus nerves can pass The hernial margins become distorted and sometimes thinned, and the phreno-œsophageal ligament, an extension of the subperitoneal diaphragmatic fascia on to the lowest œsophagus and cardia, which normally acts as an accessory retentive structure, becomes infiltrated with fat and so stretched and tenuous that it becomes useless as a means of repair of the hernia

The margins of the hiatus are muscular, formed by a splitting of the fibres of the right crus of the diaphragm, the superficial or anterior fibres passing to the right margin and the deeper fibres to the left margin of the hiatus, though in some 16% of the cases, some fibres of the left crus cross behind the hiatus to reinforce the right margin There is very little muscle anterior to the hiatus (a maximum of 1 5 cm of muscle) before the central tendon of the diaphragm is reached The posterior margin of the hiatus is only 3 cm above the first visceral branches of the abdominal aorta, and as the crura arise from the lateral surfaces and intervertebral fibrocartilages of the first three or four lumbar vertebræ (Carey and Hollinshead 1955), it is obvious that this part is an abdominal rather than a thoracic structure and, I believe, is most clearly defined from the abdominal aspect There is no doubt that in the normal subject, the musculature of the hiatus and particularly the phreno œsophageal ligaments are best seen from the abdominal surface The latter are particularly obtrusive when they are normal, as seen, for example, during the operation of vagotomy

I have used both the abdominal and thoracic approaches for operations on œsophageal hiatus hernia and have seen troubles and recurrences after both, but in most cases I elect to use the abdominal approach for a number of reasons

The Abdominal Approach

Advantages

The first advantage concerns the diagnosis The degree of herniation can be judged very much more accurately from below than from the thorax, particularly the minor degrees of herniation In fact, minor degrees of herniation are practically unmeasurable from the thorax, and the surgeon must operate on the strength of his preoperative diagnosis alone It must also be remembered that opening the thorax removes its negative pressure, and during an intrathoracic operation there is little tendency for the stomach to enter the mediastinum Consequently, the thoracic surgeon may underestimate the very strong tendency for the stomach to enter the hernial sac, and I have seen what I would consider inadequate operations carried out through the thorax on that account On exposing a hernial sac from the abdominal aspect, it is remarkable how strong is the pull into the chest If the stomach is reduced into the abdomen it requires constant firm traction to prevent it from returning into the sac, and one is in no doubt whatever that very firm suturing, both of the hiatus and the phreno œsophageal ligaments, will be necessary to keep the stomach out of the posterior mediastinum

The necessity of some form of abdominal approach is tacitly admitted by most thoracic surgeons when they make the approach abdomino thoracic, or make use of an incision in the diaphragm

Perhaps more important than diagnosis of the extent of herniation, however, is the diagnosis of accessory conditions The difficulty of differentiating between the oms of hiatus hernia and those of gall stones, peptic and coronary disease are well known The thoracic approach gives no aid to the diagnosis of coronary di but an abdominal one clarifies the diagnosis of biliary and gastroduodenal disease or stomal ulcer and enables th conditions to be treated I have seen several patients wi associated peptic ulcer and hiatus hernia in whom th latter condition was dealt with only through a thorac incision, and symptoms were little relieved I find over 20% of my hiatus hernia cases need an o on the gall bladder or stomach, and usually this operat is more important than the operation on the hiatus. It i true too that many patients with hiatus hernia need a operation on their œsophagus which should be car out transthoracically, but, provided œsophagoscopy carried out beforehand (as it always should be) such ca are readily distinguished before operation

It is true that the approach from the abdomen dem experience in the exposure of the cardia region. occasionally requires the use of certain expedients increase the abdominal approach and is somewhat m tiring for the surgeon in obese or otherwise diffi patients Perhaps one of its greatest advantages, ever, is the fact that this operation calls conside less on the patient's reserves and leads to fewer operative pulmonary and cardiac complications the thoracic approach As many of these patients elderly, the easier postoperative course is an impor consideration

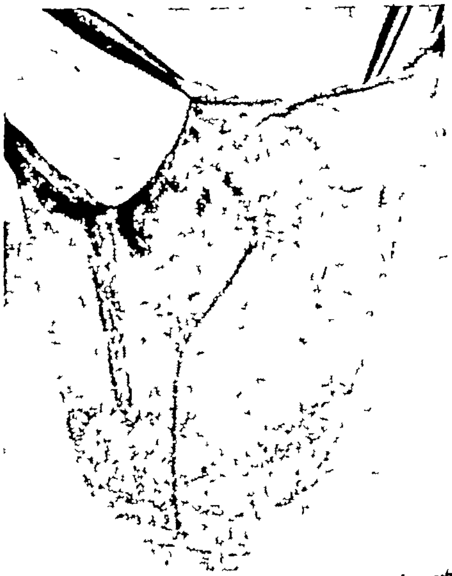


Fig 4—A hiatus hernia sac (partially filled with fluid to demonstr removed without difficulty by the abdominal approach.

Disadvantages

The fat patient, and particularly the one who has retained a strong anterior abdominal wall, increase abdominal cavity at the expense of his thoracic ca and the diaphragm rises notably In some cases diaphragm appears to bulge upwards behind the h in a remarkable way, and the gastric fundus and come to lie behind the heart Although the œsoph hiatus does not itself rise so much as the central te the operative difficulties are nevertheless greatly incre and the deep chest makes the approach more di In such cases it is often wise to decide in favour transthoracic route for repair The raised intra abdom pressure so hampers the freedom of the diaphragm, th before operation the patient must reduce his weight give his diaphragm freedom to descend

The presence of penetrating ulceration, severe sho ing or stricture, or malignant disease in the cardia re are all contra indications to abdominal repair of a hi

ABLE I—COMPARISON OF RADIOLOGICAL AND CLINICAL FINDINGS AFTER OPERATION

Radiologist's report	Clinical findings		
	Satisfactory	Improved	Unchanged
hernia no reflux	12		
nia, no reflux	2	3	
nia and reflux	1	2	3
ux no hernia	1		1

nia and as I have already said, often contra indicate empts at thoracic or any other repair of the hernia

Repair of the Hiatus Hernia

proach

he work of Allison and others on the transthoracic roach is well known so I propose to deal only with technique for the abdomen The first requisites are d spot lighting, good relaxation and a high enough sion

therefore make a high midline or right paramedian sion If there is a great depth of subcutaneous fat, ill impede deep retractors and I sometimes remove h of the subcutaneous fat by undercutting along the th of the wound for about 2 in from each side, so the skin edge falls down to the level of the anterior us sheath

most cases it is an advantage to remove the xiphoid ess freely The anterior margin of the diaphragm is incised upwards and this lets more light into the us region On rare occasions, in the deep-chested those with a high diaphragm, it may also help to de the sternum up and into each 4th intercostal space two halves are retracted, the anterior diaphragm is ed further upwards, taking care not to open the ardium.

fter opening the abdomen, the extent of the hernia is stigated As I said before, the presence of a peptic affects the nature of the operation considerably, so a careful general examination must be made

ext the left hand is placed with two fingers either of the left lateral ligament of the liver and this ent is divided, freeing the liver from the diaphragm, the left lobe can be drawn downwards and to the t, where it is held by a retractor A second small ctor is placed in the left side of the wound by sistant, who then draws the stomach downwards. ncision is made through the peritoneum and stretched no-oesophageal ligament at the hiatus level exposing oesophagus. At this stage, a bulky sac should be ed downwards by inserting the fingers on its medial side and it can be rapidly drawn inside out, and away with scissors (fig 4) The gullet is defined and a slender rubber sling is placed round the oesophagus and vagus nerves. Next, I pass a tractor ligature through the anterior part of each margin of the oesophageal hiatus and draw it forwards. The margins are carefully cleaned and stripped of all fatty and loose fascia and peritoneal tissue around each side to the posterior part, where the muscle-fibres can be seen passing around the front of the abdominal aorta It is sometimes necessary to divide the upper part of the lesser omentum, or hepatogastric ligament, in order to visualise the posterior margin of the hiatus Having defined the entire circumference in this way, a finger is placed on the superior surface of the margins of the hiatus, and the pleura and pericardium gently eased away from the edge, in order to make it possible to pass stitches through without damaging the pleura or pericardium

II—RESULTS OF OPERATION IN PATIENTS WITH HIATUS HERNIA ALONE

Operation	No of patients	Operation deaths	Survivors of operation					
			Completed 1 year	Traced	Satisfactory	Improved	Unchanged	Late unrelated deaths
ior repair	13	1	12	10	6		3	1
rior repair	67		40	47	31	12	1	
rior imbrication	7		1					
rior repair and pyloro ty								
[illegible] repair	1		1	1		1		
ic crush	7		6	5	3		2	
	4		4	4	1	2	1	
Total	99	1	73	67	11	15	10	1

tisfactory = No troublesome symptoms

proved = Better than before operation but still troublesome ptoms.

f the patients treated transthoracically had had recurrences lowing abdominal repair In 2 of the others an abdomino thoracic route was used on account of a suspicion of malignancy

Repair

The stage is now ready for repair I have tried several methods in the past, mainly using interrupted sutures anterior or posterior or both anterior and posterior to the gullet I have during the past year, mainly been imbricating the right margin over the left one behind the gullet but lately I have been doing the same thing anterior to the gullet. My overlapping methods are too recent to compare their relative efficiencies So far as the anterior repair is concerned it is important to carry the overlapping forward to the fibrous part of the diaphragm for this means that the approximated muscular margins have their insertions brought together and so there is less distortion of muscle fibres

TABLE III—RESULTS OF OPERATION IN PATIENTS WITH HIATUS HERNIA AND STRICTURE OR PENETRATING ŒSOPHAGEAL ULCER

Operation	No of patients	Operation deaths	Survivors of operation					
			Completed 1 year	Traced	Satisfactory	Improved	Unchanged	Late unrelated deaths
Œsophagectomy	9	1*	7†	7	5	1		1
Lower partial gastrectomy	7	1	5	5	3	1		1
Posterior repair	6	2	3	3	2	1		
Anterior repair	1	1						
Posterior repair lower partial	1							
Posterior repair lower partial, and vagotomy	2		2	2	1		1	
Anterior repair and lower partial	1	1						
Total	27	6	17	17	11	3	1	2

* This patient had a radical operation on an erroneous diagnosis of carcinoma.

† 2 of these have died of unconnected causes but had been assessed a year or more after operation

I close the hiatus very snugly around the oesophagus Next I put some stitches of fine non absorbable material between the fascial tissue round the cardia and the fascia under the diaphragm One does not repair the phreno-oesophageal ligament, for this structure is too tenuous and frail to use in most hiatus hernia cases The object is rather to *replace* the ligament exactly where it should be by sutures I have seen these sutures placed an inch or more from the cardia, between the gastric fundus and under-surface of the diaphragm. This is inadequate for they will not prevent a cone of cardiac end of stomach from re-entering the posterior mediastinum. Before drawing these latter sutures tight, there is an important preliminary—namely *to replace* gently the oesophagus up into the posterior mediastinum until the oesophago-gastric angle is correctly restored If this is not done, then there is a risk that the 1–2 cm of oesophagus left below the tightened hiatus may be bathed in gastric juice and as much pain and damage may ensue if 1 cm is ulcerated as if the whole gullet were exposed to the action of the acid juice

It is safe to make the new hiatus fit closely round the gullet, in fact, I believe it is important to do so Some temporary dysphagia may result, but there will never be any permanent obstruction so long as the new hiatus margins are of muscle—for, at the worst, these margins can be dilated by passing a small mercury-laden (Hurst) bougie

Preparation and Aftercare

The most important preparation for these operations is to reduce the weight of obese patients and the most important postoperative care is to keep the weight down Most patients after these operations should avoid occupations involving prolonged or heavy muscular strain

Results of Surgical Treatment

The results are difficult to classify There is, however, one statement commonly made in the past, with which I find I must disagree It used to be said that after operation for hiatus hernia, one should not do a barium meal on the patient again because the patient will be satisfied, but the films will show a recurrence Now, in our follow up, carried out by my medical and research colleague, Dr Brian Swynnerton, we found that the results of X ray examination tallied closely with the clinical results Table I shows a number of cases which were examined by the radiologist on their follow-up (this is not a complete follow up and the percentages are not the total percentages of good and bad results) This table shows that there is a tendency for the X ray and clinical results to coincide, and it is noticeable that all cases without reflux or recurrent hernia according to the X ray examination also had satisfactory results

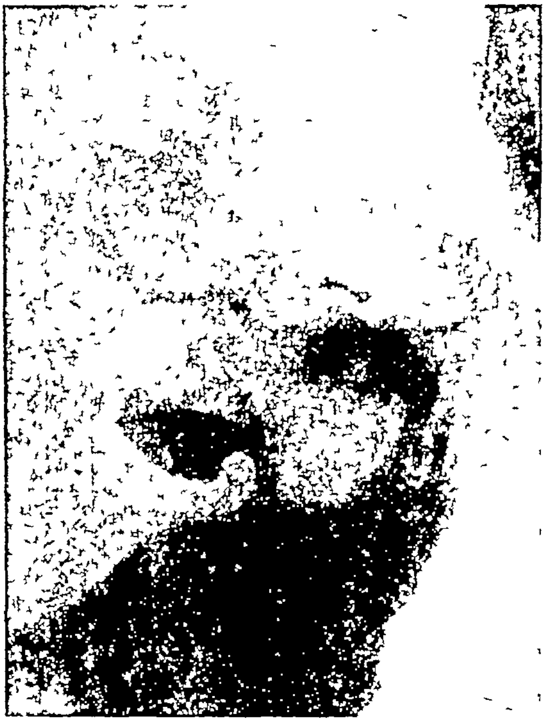


Fig 5—Large gastric ulcer and large hiatus hernia in an old woman If surgery is necessary in such cases, all that is needed is a lower partial (i e., Billroth I) gastrectomy, removing the ulcer

In view of the associated condition and complications, it is difficult to compress the results of our most recent follow up It has been our experience that if there is going to be a relapse, it comes within the first year We have, therefore, followed up patients operated on more than a year ago The operations were performed by lf and my assistants in one hospital Table II gives sults in patients who had a hiatus hernia alone osterior repairs produced rather more satisfaction than anterior ones I believe this is, in fact, due better dissection round the hiatus, for the anterior were much earlier ones Phrenic crush was carri on very feeble patients with symptoms of gastric ceration in the chest rather than œsophagitis I r that the operation does not relax the hiatus itself, I believe such benefit as it gives is due to elevati the left diaphragm, thus diminishing the intra abd and increasing the mediastinal pressure and allowi hernial contents to return more readily to the abd cavity

TABLE IV—RESULTS OF OPERATION IN PATIENTS HERNIA AND ULCER OF STOMACH OR DUODEN

Operation	No of patients	Operation deaths	Survivors of operati Completed 1 year	Traced	Satisfactory	Improved	Unchanged
Lower partial gastrectomy	8		6	6	5	1	
Anterior repair and lower partial	1		1	1	1		
Posterior repair and lower partial	6		2	2	2		
Posterior repair, vagotomy, and drainage	9	1	8	8	4	4	
Upper partial and vagotomy	1	1					
Total	25	2	17	17	12	5	

In a number of these patients there were no symptoms œsophagitis

H.H +G U, 7
H.H +D U, 13
H H +D U +G U, 4
H H +duodenal ileus, 1

By "œsophagectomy" (table III) is really meant I call upper partial gastrectomy—that is to resection of the upper half of the stomach and the to just above the stricture

Of the deaths following repair of hiatus hernia, due to perforation of the œsophageal ulcer, so I regard hiatus repair as quite safe for these patient nowadays treat the cases by some other means. death following lower partial gastrectomy (by w meant a high Polya type of operation) was d pulmonary embolism in a rather flabby and patient

In the group with hernia plus peptic ulcer (ta I think gastrectomy is the most important part operation (fig 5) In fit patients, a hiatus repair added but some are aged one was a lady of 84 gastric ulcer penetrating the tissues above the phragm, she is very well following a simple Bil resection

It is tempting to do a vagotomy at the time of repair in the duodenal ulcer cases, but vagotom not been so successful as gastrectomy

Cases with associated gall stones (table V) need careful assessment It is wise to assume that cholec tomy will not relieve heartburn

TABLE V—RESULTS OF OPERATION IN PATIENTS WITH HIATUS HERNIA AND GALL-STONES

Operation	No of patients	Operation deaths	Completed 1 year	Traced	Satisfactory	Improved	Unchanged
Posterior repair and cholecystectomy	11		6	6	5		1

have included as a matter of interest cases associated carcinoma of the cardia

	No of cases	Resected
mous-celled carcinoma	9	4
ocarcinoma	16	12
Total	25	16

ave found this association so often that I wonder ther reflux oesophagitis may not be a cancer pro ing lesion. The combination is difficult to recognise ologically, because the tumour tends to prevent ix and the hernial sac becomes obliterated with rth.

Conclusion

here are many interesting problems to solve in dealing hiatus hernia and its complications How satisfac- is hiatus repair in the treatment of the more advanced of reflux oesophagitis? Has the thoracic approach advantage over the abdominal? Is an oesophago ne resection necessary in severe cases? Would it be equally successful merely to transect the gullet e the diseased part and make an anastomosis een the cut end of the oesophagus and a Roux loop of jum, leaving the stomach in situ? (I have done this fully in 1 case) Is a Polya type of gastrectomy a ble method of dealing with oesophagitis in cases not licated by duodenal ulceration?

e answer to all these questions awaits careful docu ation of our cases, careful operation, and an unbiased y of our results.

s. 1 and 2 were originally published in my Lettsomian s (*Postgrad. med J* 1954 30 577)

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BACUTE BACTERIAL ENDOCARDITIS IN THE ELDERLY

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have recently seen several cases of subacute ial endocarditis in the elderly in whom the diagnosis een missed or delayed This appeared to be due to main reasons (1) it is not generally realised that isease may occur in this *age-group* (2) *the disease* be less severe in the aged and (3) several of the criteria are not necessarily found in the aged

analyse here the cases diagnosed as subacute ial endocarditis in St Thomas's Hospital in 1946– with particular reference to the clinical features in the patients aged more than 60 During these there were 76 cases, of which 62 were confirmed by -culture or by necropsy Of the 76 *patients* 26 within six months of diagnosis including a few who shortly after admission or were not diagnosed until sy We make no comments on therapy, because adequately covered in recent reports

Age distribution

age-distribution is shown in fig 1 as in other the maximal incidence occurred in patients aged but 14 (18·5%) patients were over 60 5 of them) being over 70 This proportion in the elderly is er than has previously been reported

lis (1944) reviewed 41 cases from St Thomas's Hospital the penicillin era and the oldest patient was aged 54; Perry (1936) analysed the age-distribution in 461 cases ted by Horder (1909) and Thayer (1931) and found that patients were over 60

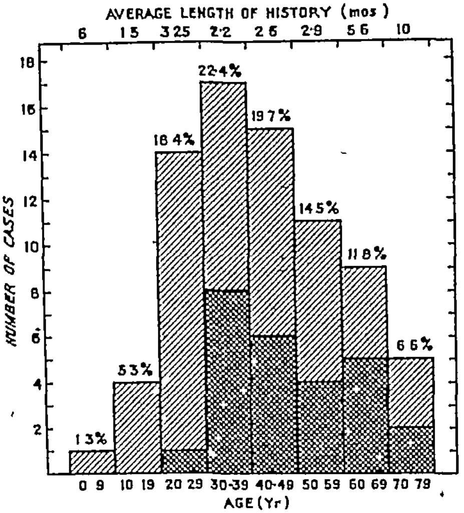

Fig 1—Age-distribution of cases of subacute bacterial endocarditis at St. Thomas's Hospital in 1946–54: *hatched* deaths.

More recently Cates and Christie (1951) have reported the results of penicillin therapy in an M R C trial at many centres and found that only 3% of 408 patients with proved subacute bacterial endocarditis were over 60

These figures published from hospitals may not reflect the true age-distribution The Registrar General's statistical review of deaths for 1931 showed that 13% of patients who died of subacute bacterial endocarditis were over 60 (Perry 1936) and the review for 1953 showed that 28% of all deaths from this disease were in patients over 60 This latter figure does not of course, reflect the true distribution, because a large number will have been cured and it may be expected that the cures will be greater in younger patients

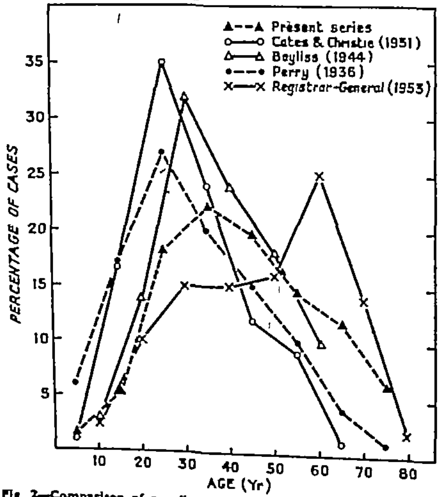

Fig 2—Comparison of age-distributions found by different workers.

The percentage of patients in various age groups in these series is shown graphically in fig 2 The most likely explanation of the different age distribution in the Registrar General's review for 1953 seems to be that more of the elderly patients die despite treatment and more of the elderly patients die undiagnosed From these figures and from our own it is clear that subacute bacterial endocarditis is by no means rare in the elderly, and the low proportion in previous hospital series probably reflects a lack of awareness of its possibility

Case-reports

Brief clinical and pathological findings are summarised in the accompanying table

Cases 1–5 —The clinical picture resembled that of subacute bacterial endocarditis in younger patients, and the diagnosis was made reasonably quickly except in case 5, where delay was entirely the fault of the patient, who stayed from her doctor for six months

Case 6 —A man, aged 69, was seen in St Thomas's with two months' history of lassitude and low pyrexia presented a classical picture of subacute bacterial carditis, but his blood cultures remained negative recovered slowly under treatment with large doses of cillin but had an embolism in his right leg after discharg He had been transferred from another hospital for inve gation, and it is presumed the correct diagnosis had not be made there because it was not considered.

Case 7.—A woman, aged 64, had two years' history the classical symptoms and signs of subacute bacterial carditis, which had been diagnosed elsewhere, but treat had never been really effective, because she kept relap After penicillin 166 mega units had been given in six she made a complete recovery

SUMMARY OF CLINICAL AND PATHOLOGICAL FINDINGS

Case no	Age (yr)	Sex	Presenting symptoms	Length of history (mos)	Evening pyrexia	Heart murmurs	Clubbing of fingers	Spleen	Petechiæ	Emboli	E S R (mm in 1st hr) (Westergren)	Hb %	White cells (polymorphs %)	Blood culture	Comments
1	61	F	Pyrexia painful spots in fingers	2	101	Loud basal systolic and diastolic		+	+ +	Osler's nodes, red cells in urine	32	92	10 600 (77%)	*Strep viridans*	Known to have had aorti potence for several Recovery alive 3 years late
2	63	F	Malaise after extraction of teeth	3	100	Apical presystolic and basal diastolic					25	75	9400 (80%)	*Strep viridans*	Known to have had mitral and aortic incompet Recovery, lt calf venous bosis during treatment
3	62	M	Loss of weight anorexia	3	100	Loud apical systolic	+			Fatal cerebral		40	13 500 (86%)	*Strep viridans*	Died 10 days after treatment Cerebral embolus
4	62	M	Lassitude aches	4	101	Loud apical systolic with thrill		+	+	1 Rt big toe 2 Fatal cerebral	40	72	8800 (87%)	*Strep viridans*	Died, both emboli occurred treatment
5	67	F	Dyspnœa malaise	6	101	Loud apical systolic	+			Red cells in urine	19	60	5500 (82%)	*Strep viridans*	Delay in diagnosis because did not report to her Recovery
6	69	M	Lassitude, pyrexia	2	103	Loud apical systolic		+	+	1 Red cells in urine 2 Hæmorrhage in retina 3 Rt leg		44	6800 (81%)	Neg	Diagnosis not proved but certain, transferred from hospital with pyrexia of un origin, slow recovery, emb rt leg after discharge
7	64	F	Recurrent bouts of pyrexia	24	100	Loud apical systolic with thrill	+	+	+			76	10 500 (75%)	*Strep viridans*	Diagnosis had been made cl but she kept relapsing (9 ti spite of apparently therapy Recovery
8	70	F	Loss of weight malaise	5	102	Loud basal systolic and diastolic	+				56	80	9800 (72%)	*Strep viridans*	Admitted to surgical ward. noma of stomach Diagno considered until she had an of left ventricular failure hospital from heart failure
9	63	M	Malaise, pyrexia, loss of weight, heart failure	6	102	Loud apical systolic with thrill	+	+	+		35	63	7700 (72%)	Neg	Investigated elsewhere. urinary infection Chloram col gave short remission. five months from heart-f
10	70	M	Malaise pyrexia	12	100	Harsh apical systolic	+	+			35	104	8200 (64%)	*Strep viridans*	Investigated for pyrexia of un origin in spite of classical Recovery
11	70	F	Cardiac failure low pyrexia	6	100	Harsh apical systolic				Rt thumb	30	80	12 000 (75%)	*Strep viridans*	Cor pulmonale diagnosed admission Penicillin (one gave brief remission diagnosis not considered embolus in thumb Died later from heart failure
12	78	F	Malaise aches, pyrexia	24	101	Harsh apical systolic				Rt fore finger	34	82	7100 (66%)	*Strep viridans*	Admitted with pyrexia of unk origin, but routine blood-cu was positive after 11 Recovery Embolus during ment
13	65	M	Severe cardiac failure	3	101	Basal diastolic	+		+			73	3800 (82%)	Not done	Admitted with severe heart-fa Significance of clubbing petechiæ not appreciated necropsy
14	70	M	Pyrexia of unknown origin	8	102	None reported						68		Not done	Persistent pyrexia after cath tion was thought to be d pyelonephritis. Died in failure Correct diagnosis considered (see text)

Case 8 —A woman aged 70 complained of lassitude and of weight for five months. She was referred to a surgeon admitted to hospital for investigation of suspected gastric cinoma. She was not seen by a physician until she had an ack of acute left ventricular failure whereupon the correct gnosis was made.

Case 9 —A man aged 63 complained of malaise loss of ight and pyrexia He was admitted to another hospital der a surgeon for investigation of suspected urinary tract ection. Nothing abnormal was found in the genito urinary ct but chloramphenicol given empirically for ten days ted the pyrexia and temporarily improved the symptoms. er his discharge from hospital the symptoms soon returned l by the time he was admitted to St Thomas's Hospital he l signs of mild cardiac failure He showed classical signs subacute bacterial endocarditis but his blood-cultures ained negative Under prolonged treatment with peni in the pyrexia abated and his general health improved, but died in five months from cardiac failure

ase 10 —A male doctor aged 70 complained of general laise for twelve months and pyrexia for at least three nths. He was fully investigated elsewhere without a gnosis being reached When he came under our care he l classical signs of subacute bacterial endocarditis blood ture was positive and he responded completely to pro ged treatment with penicillin We felt that the diagnosis ld certainly have been made at the other hospital if only ad been considered (the patient had already suggested the nosis).

ase 11 —A woman aged 70 was admitted to St Thomas's pital with mild cardiac failure of three months duration. had low pyrexia and a harsh apical systolic murmur but s considered that the fever and heart failure were a result hronic bronchitis and emphysema She was given a short se of penicillin and routine treatment for cardiac failure responded temporarily After two months she was mitted with heart failure and a return of low pyrexia tly after admission she had a painful swelling in her right pb It was thought that this might have been due to an bolus; so blood was cultured and found positive She had clubbing an impalpable spleen, and no previous evidence emboli. She underwent prolonged treatment with penicillin recovered but died a year later from cardiac failure younger patient the combination of low pyrexia and a h apical systolic murmur would have suggested the ect diagnosis earlier

se 12.—A woman aged 78 complained for two years of e aches and general malaise which slowly got worse, and s known that she had had low pyrexia for at least six ths before admission. Examination revealed evening xia, a harsh apical systolic murmur and an easily palpable t kidney which was thought initially to be enlarged d-culture produced *Strep viridans* During treatment with cillin she had a small embolus in a finger but she eventually vered completely and lost all her long standing pains al investigations were focused on the right kidney and correct diagnosis had not been considered before the d-culture report arrived though the findings of prolonged xia and a heart murmur would certainly have led to its r consideration in a younger patient.

se 13 —A man, aged 75 complained of increasing ness for three months, and was admitted with severe t-failure and gross cardiac enlargement due to aortic mpetence. He also had evening pyrexia, clubbing and hial hemorrhages on his legs He was severely ill did respond to treatment of heart failure and died in three s. Necropsy showed that he had subacute bacterial carditis which had not been considered during life bly because of the severity of the heart failure

se 14.—A man aged 70 was admitted with signs and ptoms due to thrombosis of a posterior cerebellar artery admission he was apyrexial, and no heart murmurs were d. He developed retention of urine requiring permanent eterisation. Shortly after this pyrexia developed per nt, and gradually became more severe until he died six ths later The progressive pyrexia had been ascribed to lonephritis, but at necropsy he was found to have subacute erial endocarditis of the mitral and aortic valves and both eys contained infarcts, but there was no evidence of lonephritis. The notes and investigations were regrettably equate but at no stage was any heart murmur heard In retrospect it seems probable that bacterial endocarditis developed shortly after catheterisation and remained undiagnosed throughout his long stay in hospital

Discussion

Although in many respects subacute bacterial endocarditis in the elderly is similar to that in younger age groups, several features may be different and are worth emphasising In some cases the disease is in every way similar the onset being relatively definite and in 2 of our patients it followed tooth extraction Pyrexia, clubbing and a palpable spleen, in conjunction with a heart murmur soon lead to blood culture and the correct diagnosis Evidence of emboli, however other than a few petechiæ was rare In other cases the onset is much more insidious; fever and a heart murmur may be the only signs and if the murmur is accepted as a common and often insignificant finding in the elderly, the diagnosis will be long delayed

Sex distribution

There were 7 men and 7 women in our group of patients over 60 This is in agreement with the sex distribution found at all ages Cates and Christie (1951) reported that of 408 patients who were bacteriologically positive, 202 were males and 206 were females

Length of History

It is always difficult to say when subacute bacterial endocarditis begins It is usually taught that it is of insidious onset, but we were impressed when looking through the notes, by how often patients were able to date the onset to a particular week and often to a day We have analysed the time from the apparent onset until diagnosis It naturally varied from patient to patient, but, when an average was taken for each decade a striking difference was found over the age of 60 The only patient under 10 had a long history of six months but from then until the seventh decade the highest average was 3 5 months (in the third decade) In the seventh decade it was 5 6 months and in the eighth 10 months (fig 1) As already stated this was found to be due to three factors (1) the paucity of physical signs, (2) the more insidious nature of the disease in the elderly (2 of our patients having had symptoms for two years) and (3) the frequent delay in diagnosis because the disease had never been considered—5 of our 14 patients were not diagnosed until their second admission or after transfer from another hospital

Valvular Site of Disease

The valvular site of the disease judged by the murmurs found on examination, showed differences compared with younger groups. In 9 patients the mitral valve alone was affected, and in all these a loud or harsh apical systolic murmur often accompanied by a systolic thrill was noted In none of these 9 patients was a mitral diastolic or presystolic murmur noted In 3 patients the aortic valve (aortic diastolic murmur) alone was affected and in only 1 patient were murmurs heard at the base and apex (this patient was already known to have mitral stenosis and aortic incompetence) In no patient was congenital heart-disease suspected The comparable figures for acquired heart-disease in the large series reported by Cates and Christie (1951) are 169 mitral valve only 44 aortic valve only and 143 both aortic and mitral valves

Antecedent Heart-disease

In only 2 of our 14 cases was there any known antecedent valvular lesion, and in none of the remainder was there any previous history of rheumatism. The valves may have been the seat of atheromatous degeneration, but this seems unlikely because atheroma is much more common on the aortic valve It is very striking in this series how high is the incidence of apparently uncomplicated mitral incompetence none of the 9 patients so affected were known to have had a previous valvular lesion It appears that, in the elderly, " virgin valves " are quite likely to be the site of infection This is in striking contrast to the over all picture of the disease, for Cates and Christie (1951), summarising the results of the M R C trial on 442 patients, state that " in no case was it thought that a previously normal heart was affected "

Physical Signs

All the patients had pyrexia, usually 100–101°F at night All had heart murmurs as described above with 1 exception (case 14)—a patient who appeared to acquire the disease after permanent catheterisation in a surgical ward and about whom the notes were regrettably inadequate Clubbing was present in 7 (50%), and a palpable spleen was noted in 6 (43%)

Evidence of Emboli

Petechiæ were present in 6 patients during life, in 2 of these cases red blood cells were noted in the urine, and in 1 case retinal hæmorrhages were present In 1 further case a painful swollen thumb during her second admission led to the correct diagnosis In 4 patients major emboli were noted after the diagnosis had been made and treatment begun, and in 2 of these they were fatal Osler's nodes were not noted in any patient before diagnosis and in only 1 afterwards In 6 patients there was no clinical evidence of emboli before the diagnosis was made

Blood culture

Blood culture was positive in 10 of the 12 cases diagnosed during life, and *Strep viridans* was present in all In 1 case the culture plate was not positive until fourteen days after inoculation The erythrocyte sedimentation rate (Westergren) was raised in the 8 cases in which it was estimated (range 19–56 mm in 1st hour)

Foci of Infection

In 2 patients the disease followed the extraction of teeth, and in 1 it followed permanent catheterisation, in 1 it is said to have occurred after " influenza," but this may well have been the onset of the disease 2 males had symptoms of prostatic enlargement, and 1 subsequently had a successful prostatectomy

Heart-failure

Heart failure was present in 3 patients at the time of diagnosis, and they all died within a year The 2 patients who died undiagnosed also had severe heart-failure This is clearly a most important prognostic sign because, so far as we know, none of the survivors has subsequently developed heart-failure

Summary

76 cases of subacute bacterial endocarditis were seen in St Thomas's Hospital in 1946–54 14 (18 5%) were over 60, and their clinical features are analysed

The disease is not uncommon in the elderly, but the diagnosis is often missed because it is not considered

In comparison with younger patients the disease may be more insidious in onset, and evidence of emboli, other than a few petechiæ, is unusual In 9 of the 14 cases the mitral valve alone was affected, and none of these was known to have had previous valvular disease

A heart murmur, particularly a loud apical systolic murmur, in association with pyrexia should always lead to a consideration of the diagnosis of subacute bacterial endocarditis

We thank the physicians of St Thomas's Hospital for permission to report their cases

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EARLY DIAGNOSIS OF SUBACUTE BACTERIAL ENDOCARDITIS

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THE diagnosis of subacute bacterial endocarditis in early stages, which is of great importance, presents ma difficulties Patients continue to be referred to ho at a comparatively late stage of this illness. Alth the early symptoms may appear trivial they cause the patient to seek medical advice, and patients have had medical attendance from an stage of their illness (Jones et al 1947) Widesp recognition of the early symptoms of this illness, partic larly in general practice, should be an important in reducing its mortality

Subacute bacterial endocarditis is relatively un mon About 5 cases are admitted to this hospital year There is little opportunity to acquire exper of the disease in general practice, and knowledge symptoms has at present to be obtained from rela advanced cases admitted to hospital

Classical descriptions of subacute bacterial endoca such as those of Horder (1909, 1926) and Libma Friedberg (1941), are well known More recent acc have been given in connection with penicillin (Matthew and Gilchrist 1948, Cates and Christie I present here a study of a small series of cases adm to a general hospital, and I have tried to emphas clinical features which may be of value in the recog of early cases in general practice

Material

The series consists of 65 cases of subacute bac endocarditis admitted to hospital during the n years from 1936 to 1954 It includes all the cases ad to Addenbrooke's Hospital during this period cases from other sources In every case either diagnosis was confirmed post mortem or positive cultures were obtained in life 24 patients, admitted 1949, had been under my personal observation 30 pa had been treated with adequate courses of penicil other antibiotics, and two thirds of these were ali the time of writing The average duration of symp before admission to hospital, was ten weeks (1–31 weeks) Most of the patients had received me attention from an early stage of their illness

Sex and Age

In the M R C series (Cates and Christie 1951) the were affected almost equally In earlier series a prepo ance of male patients was a common finding Two- of the patients in this series were male (table I)

Past History

A past history of either heart disease or rheu fever was obtained in 35 cases (54%) 26 patients (gave a past history of heart disease, which had ne been well compensated, about two thirds of these

TABLE I—AGE AND SEX DISTRIBUTION IN 65 CASES

Age (yr)	Male	Female	Total
Under 5	0	0	0
6–10	2	0	[illegible]
11–20	6	3	[illegible]
21–30	9	6	15
31–40	8	4	[illegible]
41–50	6	3	9
51–60	5	2	[illegible]
61–70	6	4	10
Over 70	1	0	1
Total	43	22	65

d no symptoms or only slight incapacity, and the ainder only moderate incapacity None of the pati were known to have had congestive heart failure or ablished auricular fibrillation before the onset of their ess.

history of dental extraction shortly before the onset llness was noted in 11 cases (17%) This history or the ence of dental sepsis on admission was noted in 28 es (43%)

The association of the disease with pregnancy is ortant and was found in a third of the 12 cases which urred among women of childbearing age in this series nptoms in these patients may easily be attributed pregnancy or to the puerperium and their true signi nce missed The following case illustrates the impor es of being on the look-out for evidence of this disease pregnant women

> woman of 20 who had been known to have aortic incom ence and mitral stenosis for several years, complained of o symptoms of ill health during the last month of her nd pregnancy Pyrexia was not discovered until after the h of her child when *examination showed well-developed* s of subacute bacterial endocarditis. Blood-cultures grew -hæmolytic streptococci.

ubacute bacterial endocarditis occurs *at all ages* but re in children under 5 years (Rost and Fischer 1928) t cases occur in young adults In the present series atients (42%) were aged 20–40 The *youngest patient* a boy aged 8 years The disease is not rare in elderly ents, in whom it appears to be becoming more com . 11 patients (17%) in this series were over 60, f them being among 26 patients admitted since 1949

> he oldest patient in the series was a man of 81 This illustrates *the* insidious course of the disease and the ulties of diagnosis in elderly patients. The patient s ss appeared to follow a fall from a bus ten weeks before ssion. His *only* symptoms were slowly progressive ness and *mental* confusion. On admission he had early r clubbing petechiæ a soft apical systolic murmur and cular fibrillation. He had irregular pyrexia which was r above 99·5°F Three blood-cultures grew *Streptococcus lis*

Symptoms

about four fifths of the cases the course of the illness characterised by remissions and exacerbations The wing history is that of a fairly typical case :

> gardener aged 30 became ill five months before admission ospital. His first *symptom was an attack of* flu He not quite well when he returned to work two weeks later in a further two weeks had a second attack Two days he had transient aphasia. He *began to notice night* ts, loss of appetite and loss of weight, and these symp persisted until admission to hospital sixteen weeks later was off work three weeks. Two weeks after return to work dden pain in his left foot again forced him to lie up He returned to work until two weeks before admission ng this time he felt generally unwell and noticed occa al tender red spots on his fingers. He was finally admitted case of nephritis with loin pain and frank hæmaturia. was found to have classical signs of subacute bacterial ocarditis. Blood-culture on each of the first three days in ital grew *Strep viridans*

a smaller number of cases, particularly in older nts the disease follows a steadily progressive course general symptoms of ill health only

> woman of 65 was ill for nine weeks before admission with ptoms of weakness loss of appetite occasional retching, progressive loss of weight. On admission she had pyrexia F) which had not been suspected before, her spleen was able petechiæ were present, she had a loud apical systolic mur and blood-cultures grew *Strep viridans* on several sions.

A wide variety of diagnoses may be made in subacute terial endocarditis. Sometimes the symptoms are ious enough to cause admission to hospital, but often y are thought to be due to relatively minor conditions such as "flu" "gastric flu," fibrositis, sinusitis, anæmia, pyelitis, and 'nervous breakdown"

TABLE II—SYMPTOMS BEFORE ADMISSION TO HOSPITAL IN 65 CASES

(Figures in parentheses refer to symptoms at onset)

Symptom	*No of cases*	*Total %*
Febrile	49 (32)	75 (49)
Toxæmic	51 (38)	78 (59)
Gastro intestinal	40 (16)	62 (25)
Cardiac	30 (14)	46 (22)
Mental	13 (9)	20 (14)
Embolism and Osler s nodes	36 (10)	55 (15)
Joint pains	10 (5)	15 (8)
Hæmorrhage	10 (3)	15 (5)

In the present series the symptoms which occurred at onset and during the whole period before admission to hospital (table II) have been classified into groups similar to those used by Cates and Christie (1951) General constitutional symptoms of pyrexia or of toxæmia were most common and each was noted in about three-quar ters of the cases These were also the most common symptoms at onset

Febrile symptoms included pyrexia (24 cases 37%) sweats (34 cases 52%) chills (11 cases 17%) rigors (4 cases : 6%) and attacks of "flu" (15 cases : 23%) Toxæmic symptoms were general ill health (23 cases : 35%), weakness (13 cases : 20%) tiredness (19 cases 29%) pallor (10 cases 15%) and loss of weight (38 cases : 59%) Loss of appetite (35 cases 54%) was the most important of the gastro intestinal symptoms others were nausea or vomiting, epigastric discomfort diarrhœa, and constipation Breathlessness on effort (24 cases 37%) and swollen ankles (14 cases 22%) were the most important cardiac symptoms.

Mental symptoms were prominent in 20% of the cases and were variously described as nerves' or a "nervous breakdown ' depression, fits of weeping or 'collapse" The similarity of many of the symptoms of the disease to those in functional complaints is often a cause of difficulty in diagnosis, particularly in these cases One patient was nearly referred to a psychiatrist :

> A man of 53 became ill six months before admission, with symptoms of increasing *tiredness and* depression Two months *later he collapsed and* was put to bed with a ' nervous breakdown.' He became increasingly weak and would have fits of weeping especially when talking to strangers. He took to bed a month before *admission* and ' felt no good ' when he tried to get up Other symptoms were present, but their importance escaped recognition because of the predominant mental symptoms.

Loss of appetite, loss of weight, and sweats particu larly night sweats, were common and *often* prominent symptoms One or *more* of these three symptoms were found in four fifths of the cases.

Either symptoms of embolism or Osler s nodes (table III) were noted by 36 patients (55%), but by only 10 patients (15%) at onset Osler s nodes were noticed in 12 cases (18%) A *history* of Osler s nodes was of great diagnostic value but was easily missed unless a history of pains in the fingers was deliberately sought by the observer This history was obtained in 9 (38%) of the 24 cases examined personally The symptom was sometimes early

> A woman of 67 was admitted for the investigation of pyrexia of unknown origin of six week s duration. The only physical signs were those of mitral stenosis. Blood-cultures

TABLE III—SYMPTOMS OF EMBOLISM AND OSLER S NODES IN 65 CASES

(Figures in parentheses refer to symptoms at onset)

Symptoms	No of cases	Total %
Osler's nodes	12 (2)	18 (3·0)
Definite embolic symptoms	14 (1)	22 (1·5)
Indefinite embolic symptoms	22 (9)	34 (14·0)

grew *Strep fæcalis* on two occasions After the diagnosis was made, careful inquiry revealed that she had noticed transient tender red spots on her fingers at an early stage of her illness

The embolic symptoms could be divided into definite and indefinite Definite embolic symptoms were noted in 14 cases (22%) and were rare at the onset of the disease Cerebral emboli were noted in 4 cases (6%) and renal and splenic emboli in 1 case each 6 patients (9%) described symptoms of small embolic episodes in the limbs Of the 6 patients with congenital heart disease 4 described symptoms of pulmonary embolism

The more common embolic symptoms, particularly at onset, consisted of pain only and have been called indefinite because they were not characteristic of embolism in themselves The pain occurred in the back in 11 cases (17%), in the chest in 6 cases (9%), in the abdomen in 6 cases (9%), and in the limbs in 5 cases (8%) These pains varied in character and severity and were liable to be confused with many other conditions, in particular lumbago, fibrositis, and sciatica Although a common cause of diagnostic error they were, in fact, a most significant feature of the illness A typical case in which pain was a prominent symptom follows

A woman of 67 became ill suddenly, twenty three weeks before admission, with a severe pain in the middle of the back which lasted three weeks and was so bad that she could not walk The pain disappeared but left her feeling unwell. Two weeks before admission she developed a further attack of pain, this time in the left flank.

Joint pains indistinguishable from those of rheumatic fever were noted by 10 patients (15%) Hæmorrhage, usually frank hæmaturia, was noted by 10 patients (15%) Profuse hæmaturia may be a prominent symptom and liable to cause confusion in diagnosis Other symptoms recorded included cough, headache, hæmoptysis, epistaxis, melæna, skin rashes, and amenorrhœa

Physical Signs

The number of cases in which physical signs of subacute bacterial endocarditis were found is shown in table IV The figures given refer to signs found during the first week after admission to hospital only The frequency of the signs is shown for the whole series of 65 cases For comparison their frequency is shown in the 24 personally observed cases and in the 22 cases in which the duration of illness before admission to hospital was six weeks or less

In the whole series one or more of the classical signs (embolism, Osler's nodes, petechiæ, café au-lait complexion, clubbing, and palpable spleen) were found in most cases, but in 13 cases (20%), including 3 of the cases under personal observation, a heart murmur and pyrexia were the only physical signs of the disease during the first week in hospital There were 22 cases with a duration of illness of six weeks or less on adm 10 of these (45%), including 3 of the 6 under per observation, showed no physical signs except a murmur and fever within a week of admission

TABLE IV—PHYSICAL SIGNS WITHIN ONE WEEK OF ADMISSION

Sign	Cases of average duration 10 weeks		Cases of duration 6 weeks or less		Personally observed cases	
	No of cases	%	No of cases	%	No of cases	%
Heart murmur	63	97	20	91	24	100
Pyrexia	60	92	20	91	24	100
Embolism	23	35	5	23	11	46
Osler's nodes	7	11	2	9	4	17
Petechiæ	22	34	5	23	13	54
Café au lait complexion	25	38	6	27	12	50
Clubbing	27	42	6	27	16	67
Palpable spleen	26	40	5	23	13	54
Heart murmur and pyrexia only	13	20	10	45	3	13
Petechiæ Osler's nodes, and/ [illegible]bolism	38	59	9	41	18	75
[illegible] cases	65		22		24	

A heart murmur was present within a week of admission in 63 cases (97%) 1 of the 2 patients with no heart murmur was extremely ill, and disease of the pulmonary valve was found post mortem The other developed signs of aortic incompetence two weeks after admission. In a further 2 cases the murmur did not at first show typically organic qualities

A mitral systolic murmur was the only murmur heard in 26 cases (40%) and was thought to be due to mitral incompetence In contrast, signs of solitary mitral stenosis were found in 2 cases (3%) only Signs of [illegible] incompetence were found in 24 cases (37%) and [illegible] usually combined with signs of mitral valve d[illegible] aortic stenosis was also present in 5 of these cases [illegible] never as the predominant lesion Signs of aortic ste[illegible] alone may have been present in 1 case, but the evid[illegible] was inconclusive Signs of congenital heart-disease [illegible] found in 6 cases (9%) 4 patients were thought to ha[illegible] ventricular septal defect, and 1 a patent ductus arte[illegible] (see table v)

Signs of congestive heart failure were present [illegible] admission in 7 cases (11%) Auricular fibrillation [illegible] present on admission in 3 cases (5%) In 5 cases [illegible] auricular fibrillation developed some time after adm[illegible] but in 4 of these it was paroxysmal and not confi[illegible] by electrocardiography The blood pressure on adm[illegible] was never significantly raised except in cases of se[illegible] aortic incompetence In 54 of 62 cases (87%) it [illegible]

TABLE V—CARDIOVASCULAR SIGNS IN 65 CASES ON AD[illegible]

Cardiovascular sign	No of c[illegible]
Mitral systolic murmur only	26 (40%)
Mitral systolic and diastolic murmur only	4 [illegible]
Mitral stenosis only	2 [illegible]
Aortic incompetence	24 [illegible]
Aortic stenosis without incompetence	1 [illegible]
Congenital heart-disease	6 [illegible]
No heart murmurs	2 [illegible]
Total	65

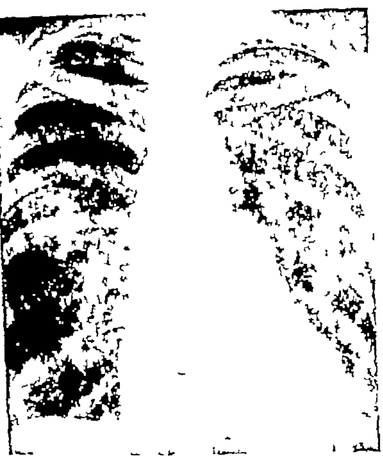
below 160/90 mm Hg Pericardial friction was hea[illegible] 2 patients only 1 of these was moribund, and the [illegible] had associated nephritis

Twice daily temperature records showed pyrexia d[illegible] the first week in hospital in 59 cases (91%) Short apy[illegible]ial periods were present during this week in about a t[illegible]

6 patients (9%) were completely apyrexial during [illegible] first week in hospital 4 of these were terminal ca[illegible] had severe nephritis, and the remaining 1 had been tre[illegible] with penicillin immediately on admission Inade[illegible] courses of penicillin were also an important [illegible] of temporary remissions of pyrexia in several [illegible] cases

It should be emphasised that the physical [illegible] enumerated in table IV were found during the pat[illegible] first week in hospital only, usually on the first cl[illegible] examination Signs of embolism were noted in 23 ca[illegible] (35%) Splenic embolism was most common (9 c[illegible] but the signs of this condition were often equivo[illegible] Cerebral embolism occurred in 6 cases and was of[illegible] fatal The symptoms were those of subarachno[illegible] hæmorrhage or meningitis in 3 patients, of whom 2 d[illegible] shortly afterwards, and of hemiplegia in the remaining [illegible]

More valuable signs in diagnosis were small embo[illegible] episodes in the limbs They occurred in 5 cases and co[illegible]sisted of sudden pain in the limb, associated with s[illegible] erythematous or hæmorrhagic areas in the nearby sk[illegible] These lesions, although similar to Osler's nodes in s[illegible] ways, were usually single, larger, and more persistent [illegible] 1 case a mycotic aneurysm of the radial artery develop[illegible]



1—Subacute bacterial endocarditis showing infarct in right lung rom pulmonary embolism in a woman, aged 40 with patent ductus rteriosus

nbolism of the larger arteries, with ischæmic changes gangrene of the limb, was never seen

Pulmonary embolism characterised by pleuritic pain rexia and hæmoptysis usually in recurrent attacks, is an important diagnostic feature on admission in 4 of e 6 patients with congenital heart disease (fig 1) lmonary embolism was uncommon in the patients with quired heart-disease Only 6 patients with signs of ease of the aortic or the mitral valve developed mptoms suggesting pulmonary embolism at any time hospital In 5 of these cases the symptoms consisted left lower chest pain and may have been due to lenic and not pulmonary embolism

Osler's nodes were seen in 7 cases only (11%) Petechiæ re seen in 22 cases (34%) They were cutaneous in 10 %) conjunctival in 14 (22%) retinal in 10 (15%), ccosal in 7 (11%) and under the nails as splinter morrhages in 4 (6%) The petechiæ were occasionally hite-centred. Confluent petechiæ (purpura) were noted 6 cases (9%) The conjunctiva of the lower eyelid s found to be a common site of petechiæ and one in ich they were easily detected (fig 2) Splinter hæmorrhages were relatively uncommon and were easily confused with the small brown streaks often seen in the nails of healthy patients The detection of petechiæ requires a careful day-to-day search Petechiæ were found in half the personally observed cases within a week of admission

A café au lait complexion was noted in 25 cases (38%) and pallor of the skin in 52 cases (80%) Clubbing of the fingers was seen in 27 cases (42%) but in over half of these an early stage of clubbing only was present This stage of clubbing, aptly described as "pink clubbing" (Matthew and Gilchrist 1948) is often equivocal unless it is progressive or can be seen to retrogress with successful treatment The spleen was palpable in 26 cases (40%) The degree of splenic enlargement was usually slight and sometimes transient Occasionally gross enlargement was present and in 1 case the spleen weighed 675 g post mortem

2—Subacute bacterial endocarditis showing conjunctival petechia in a man aged 39 with mitral incompetence.

Investigations

The results of blood culture are shown in table VI Positive blood-cultures were obtained in 52 (93%) of the 56 cases in which blood-cultures were taken and in 46 (82%) at the first attempt Negative blood-cultures only were obtained in 4 cases, but in 3 of these only one blood culture had been made

There was only 1 case with three persistently negative blood-cultures but cases of this type were excluded by the method of selection unless a necropsy had been done 3 cases with persistently negative blood-cultures in which the diagnosis appeared certain on clinical grounds only were seen at the same time as the personally observed cases but not included in the series If these cases had been included the proportion of cases with persistently negative blood cultures would have been about 10% in the personal series

TABLE VI—RESULTS OF BLOOD CULTURE IN 56 CASES

Organism grown	No of cases
Strep viridans	30 (70%)
Non hæmolytic streptococcus	6 (9%)
Strep fæcalis	4 (7%)
Micro-aerophilic streptococcus	1 (2%)
Hæmophilus influenzæ	2 (3%)
Staph. albus	1 (2%)
None	4 (7%)
Total	56

Anæmia was present in 46 (88%) of 52 cases within two weeks of admission In 21 (40%) the hæmoglobin was less than 10 g per 100 ml In 23 of 40 cases (58%) there was a low colour index (mean corpuscular hæmoglobin less than 27 µµg) A neutrophil polymorph leucocytosis (6000 or more per c mm) was present within two weeks of admission in 38 (83%) of 46 cases and was severe (more than 7500 per c mm) in 27 (59%) The total leucocyte-count was raised (over 9000 per c mm) in 31 of 50 cases (62%) The erythrocyte sedimentation rate (E.S.R.) within two weeks of admission by the Westergren and Wintrobe methods was unequivocally raised in 27 out of 28 cases

Albuminuria was present on admission at routine testing in 23 cases (35%) and was sometimes severe Microscopy of the urine showed a definite excess of red blood cells in 18 of 48 cases (38%) on the first examination within two weeks of admission 7 of these had hæmaturia obvious to the naked eye

Discussion

The most common cause of delay in diagnosis in the present series was the similarity of the symptoms of subacute bacterial endocarditis to those of every day illnesses As a result the early symptoms were easily mistaken for 'flu' or some other common disease. Subacute bacterial endocarditis will only be detected in its early stages if its possibility is constantly borne in mind There are many symptoms which should excite suspicion of its presence Persistent pyrexia or ill health is the most important Others are recurrent attacks of "flu," persistent loss of weight, anæmia, attacks of fibrositis or of pain, rheumatic fever not responding to salicylates, hæmaturia, recurrent attacks of pleurisy from pulmonary embolism, and cerebral embolism

Many other diseases are commonly associated with these symptoms, but the cases in which subacute bacterial endocarditis is likely can usually be distinguished from the remainder by the presence of a heart murmur A heart murmur is almost constantly present in subacute bacterial endocarditis It is usually loud and obviously associated with valvular disease In most cases signs of solitary mitral incompetence or of aortic incompetence are present In a few cases (about 9% in this series) congenital heart disease is found Signs of pure mitral stenosis are rare (Fulton and Levine 1932) and were rare in this series Aortic stenosis without incompetence was also rare

There are other cardiovascular signs in this condition which may also be helpful in diagnosis These have been discussed by Fulton and Levine (1932) Congestive heart failure is relatively uncommon and was present on admission in only 11% of this series Auricular fibrillation is perhaps not so rare as it was once thought (McDonald 1946) but is uncommon and was present on admission in only 5% of the present cases None of the patients in this series appeared to have had established auricular fibrillation or congestive heart failure before the onset of their infection Hypertension is uncommon, unless associated with free aortic regurgitation, and was not found, with this exception, in any patient in the series A pericardial friction rub is also rare Gangrene or major arterial embolism in the limbs was never found in this series and is rare in this disease (Horder 1926) Pulmonary embolism was also rare in this series except with congenital heart disease, in which it was common

In addition to a heart murmur, pyrexia is present in nearly all cases Isolated thermometer readings may be apyrexial, but a short period of observation with twice daily readings should show pyrexia in most cases unless they are terminal or the patients have recently been given penicillin Pyrexia and a heart murmur are the fundamental signs in diagnosis The occurrence of persistent unexplained pyrexia in a patient with a heart murmur is in itself strong evidence of subacute bacterial endocarditis

In suspected cases the clinical history and physical examination will usually provide further evidence Careful questioning is needed to obtain a reliable history, because these patients often do not mention significant symptoms unless asked about them In particular, patients should be asked about recent dental extraction, unusual pains, pain in the finger tips, loss of appetite, loss of weight, and night sweats A systematic physical examination is also important Physical signs of the disease will usually be found except in very early cases Many of the signs—e g , petechiæ, small embolic lesions, Osler's nodes, and sometimes a palpable spleen—are transient, and day to day examination is advisable Even a brief daily inspection of the conjunctivæ and the inside of the mouth, and of the fingers, will often reveal important signs, particularly petechiæ, at these sites Further help in diagnosis may be obtained by examining the urine, making a full blood count, and determining the E S R These relatively simple investigations are useful both in excluding diseases likely to be confused with subacute bacterial endocarditis and providing corroborative evidence of its presence The almost invariable rise in E S R is particularly useful in excluding functional complaints

of subacute bacterial endocarditis can usually be d and doubtful cases reduced to practical by simple clinical methods Further investigation should probably be done in the hospital where the patient will be treated. In most cases the diagnosis can then be established in a short time on the presence of a heart murmur, pyrexia, physical signs, and positive blood cultures

It is important to recognise cases in which pyrexia and a heart murmur are the only physical signs, such formed about 20% of this series and may be expected to form a greater proportion in the early stages of the disease They formed 45% of the cases with a relatively short duration of illness Supporting evidence will often be obtained from the history or from physical signs which develop at a later stage, but the diagnosis in these cases will largely depend on blood cultures and the exclusion of other diseases When the diagnosis depends to a great extent on the results of blood-culture, it is particularly important to try and obtain more than one positive result

The cases in which blood cultures are persistently negative may produce difficult clinical problems Diagnosis when blood cultures are negative can usually be established with reasonable certainty by exclusion, and in most cases by the satisfactory response to a trial course of penicillin The management of these cases when the response to penicillin in usual doses is unsatisfactory owing to a resistant infection is less easy and may be extremely difficult

Cases without clinical evidence of valvular heart-disease constitute a special problem Their early recognition and treatment in the hope of preventing further valvular damage is particularly important At present these cases are rare, but the possibility that they may be common in the early stages of the disease should be considered The diagnosis, in the absence of a heart murmur, may easily be missed, especially if pyrexia is not suspected When pyrexia is present but there is no evidence of valvular disease, bacteræmia may be diagnosed, but it may be difficult to prove bacterial endocarditis This is illustrated by the following case, which was excluded from the present series because the infection was acute rather than subacute

A woman of 50, previously well, became suddenly ill with a rigor She had a swinging temperature up to 103°F Clinical examination showed no abnormality No heart murmur or evidence of heart-disease was found Blood-cultures grew coagulase positive *Staph aureus* Short courses of penicillin and, later, aureomycin were followed by relapse, but the infection was eventually controlled by a long course of penicillin (84 mega units in six weeks) Careful observation showed no evidence of heart-disease until the seventh week of illness when an organic systolic murmur gradually developed at the left sternal edge No other signs of bacterial endocarditis were noted during her illness

Summary

The clinical findings in 65 cases of subacute bacterial endocarditis admitted to hospital between 1936 and 1954 are described 24 of the cases were seen personally

Although these patients were admitted to hospital at a relatively late stage of their illness, this was usually not due to their failure to obtain early medical advice

The importance of recognising the early symptoms of the disease in general practice is emphasised, and these symptoms are described

A heart murmur was present in 97% and pyrexia in 92% of these cases during the first week after admission These are the fundamental findings in diagnosis careful clinical history and physical examination will usually provide further evidence of the disease except in very early cases

In 20% of the cases and 45% of those with a duration of illness of six weeks or less pyrexia and a heart murmur were the only physical signs within a week of admission

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CHLORPROMAZINE IN THE MANAGEMENT OF TETANUS

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RECENT work on the treatment of tetanus has centred on the control of spasm by sedatives and by muscle relaxants, including a combination of mephenesin and phenobarbitone (Godman and Adriani 1949) intravenous mephenesin (Smith 1953) gallamine triethiodide ('Flaxedil') (Smith and Thorne 1952) and succinylcholine (Woolmer and Cates 1952). This work has clearly shown that where sedation is deep and muscle relaxants are pushed till spasm ceases, there is lack of laryngeal control breathing may be obstructed, and tracheotomy is generally needed Forrester (1954), following the methods introduced by Scandinavian workers for the treatment of bulbar poliomyelitis (Lassen 1953 Lassen et al. 1954), treated a case of severe tetanus by continuous intravenous infusion of succinylcholine, combined with artificial ventilation through a tracheotomy tube with oxygen and nitrous oxide The bronchi were aspirated hourly

Such methods can be practised only in large and specialised hospitals nor are they necessary for every case of tetanus In East Africa tetanus is not uncommon some 20-30 cases are admitted annually to Dar es Salaam hospitals. These unfortunate patients may have to be nursed in the noise and bustle of a general ward, and the close supervision needed to ensure adequate doses of sedative drugs is not generally feasible In addition to the basic treatment with antitetanic serum and antibiotics, various sedatives have been used, including paraldehyde, pentobarbitone sodium phenobarbitone sodium and even morphine Of the muscle relaxants tubocurarine proved too drastic, while mephenesin, though useful in full dosage was often discontinued by the ward staff just when it was producing an effect.

Method and Results

Chlorpromazine hydrochloride ('Largactil') is believed to be an antagonist to some central convulsant drugs and to potentiate the action of hypnotics. Because of these two actions we have administered it in combination with phenobarbitone sodium or chloral hydrate in six cases of tetanus.

Chlorpromazine was administered in doses of 50 mg intramuscularly (diluted to 10 ml) or intravenously (diluted to 20 ml.) After such a dose the tetanic spasm was dramatically relieved; the abdominal and back muscles were moderately or completely relaxed convulsive seizures were inhibited, and a lazy sleepiness replaced the anxious tension of the disease. This effect was prolonged for up to twelve hours by simultaneous injection of phenobarbitone sodium gr 3 Chlorpromazine 25 mg or 10 mg by mouth had a less dramatic effect, but proved useful in weaning the recovering patients from the injections

Insufficient cases have been treated to show whether chlorpromazine reduces the mortality from the disease But there is no doubt that it spares the patients much of the acute mental anxiety and physical pain and exhaustion due to the spasms; and the régime does not make inordinate demands on the medical and nursing staff

Illustrative Case records

Case 1—African man aged about 30 was admitted to hospital in the morning complaining of stiffness of the neck and inability to open his mouth since the previous day; he had also had spasms. There was no history of injury or abrasion nor were any noted on examination. He had pronounced neck rigidity and was unable to open his mouth His abdomen and back muscles were rigid, and he had frequent convulsive spasms of the muscles of the face and neck. Tetanus antitoxin 10 000 units was given at once and penicillin 500 000 units twice daily prescribed To control the spasm 50 mg of chlorpromazine was given by slow intravenous injection Very soon afterwards his abdomen became soft and he could open his mouth though his neck remained stiff Phenobarbitone sodium gr 3 was also given and repeated that evening The spasms were well controlled during the day but had returned by next morning when a further 50 mg chlorpromazine intravenously and phenobarbitone sodium gr 3 intramuscularly were administered; the phenobarbitone sodium was repeated six hourly Again his pain spasms, and anxiety were satisfactorily controlled during the day but he unfortunately died in the early hours of the next morning

Case 2—An African man, aged about 45, was brought to hospital complaining of fever aching pains all over the body and stiffness of the neck and jaws for three days. His jaws were clenched and his abdomen was rigid and board like and he exhibited frequent extensor spasms of the trunk and lower limbs, with flexion and adduction of the upper limbs. There was an old 'jigger' (*Tunga penetrans*) sore on a toe and a recent abrasion on his left shin Chlorpromazine 50 mg was given intravenously with almost immediate effect and an hour and a half later he was well relaxed without spasm his abdomen soft, and his mouth opening without difficulty Tetanus antitoxin 10 000 units and penicillin were also given. During the next few days his spasms could be controlled by the following dosage scheme:

2nd day—Chlorpromazine 50 mg intravenously and phenobarbitone sodium gr 3 intramuscularly at 9 A.M. 4 P.M. and 9 P.M
3rd day—As on 2nd day but omitting chlorpromazine at 4 P.M
4th day—9 A.M. chlorpromazine 50 mg intravenously and phenobarbitone sodium gr 3 intramuscularly 9 P.M chlorpromazine 50 mg *orally* and phenobarbitone sodium gr 3 intramuscularly
5th and 6th days.—Chlorpromazine 25 mg orally and phenobarbitone sodium gr 3 intramuscularly twice daily at 9 A.M. and 9 P.M
7th-12th days.—Chlorpromazine 25 mg and phenobarbitone sodium gr 3 evening only
13th day—Drugs discontinued.

Residual stiffness of the muscles of the abdomen and trunk gradually disappeared over the next two weeks, after which the patient was discharged

Case 3.—An African baby aged 12 days had tetanus neonatorum from a septic umbilicus and was said to have been having spasms for two days. She was treated with tetanus antitoxin 10 000 units, Distaquaine penicillin 100 000 units syrup of chloral half a drachm thrice daily and chlorpromazine 8 mg intramuscularly at night The chlorpromazine and chloral gave the infant a quiet night but the effect was wearing off next day and spasmodic convulsions would break through. The same régime was continued for four days, after which only the chloral and distaquaine penicillin were administered. After a further ten days there was only a little residual stiffness

Conclusions

In our experience of these six cases the combination of chlorpromazine with phenobarbitone sodium in adults, and chloral in children, controlled tetanic spasms for eight to twelve hours, but not for longer The patients' anxiety—a notable feature in tetanus—was replaced by euphoria

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SECONDARY HÆMOCHROMATOSIS

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Secondary hæmochromatosis has been described in anæmic patients given many blood transfusions, it differs from simple hæmosiderosis in that fibrosis is present in the liver and other tissues It is thought to be distinct from classical hæmochromatosis because of the severe anæmia, which is rare in the classical disease (Sheldon 1935), and because of the different distribution of age and sex (Schwartz and Blumenthal 1948)

It was first thought that most of the deposited iron came from the transfused blood, but later cases were observed in which the amount of iron found at necropsy was too great to be accounted for by transfusions alone (Chesner 1946, Muirhead et al 1949, Wyatt and Goldenberg 1949, Wyatt et al 1950) So it has been postulated that, in some cases of refractory anæmia, iron continues to be absorbed from the gut even though the tissues are replete (Aufderheide et al 1953)

Whatever the source, it has been assumed that iron can cause fibrosis in the tissues in which it is deposited, but concrete evidence of this is lacking, and it has not proved possible to produce fibrosis experimentally in the tissues of animals by overloading them with iron (Sheldon 1935)

This difficulty is avoided in the theory of Zeltmacher and Bevans (1945), who suggest that some unknown process is responsible both for the anæmia and for the fibrosis in various tissues, and that the iron, whatever its source, is deposited in tissues which are already fibrosed

Though its cause remains uncertain, there is no doubt that fibrosis of various tissues is found in some patients who have been given many transfusions, and, though the very existence of secondary hæmochromatosis has at times been questioned (Kleckner et al 1954), a recent case has established the entity beyond all reasonable doubt (Morningstar 1955)

The case described here is considered to be an example of secondary hæmochromatosis

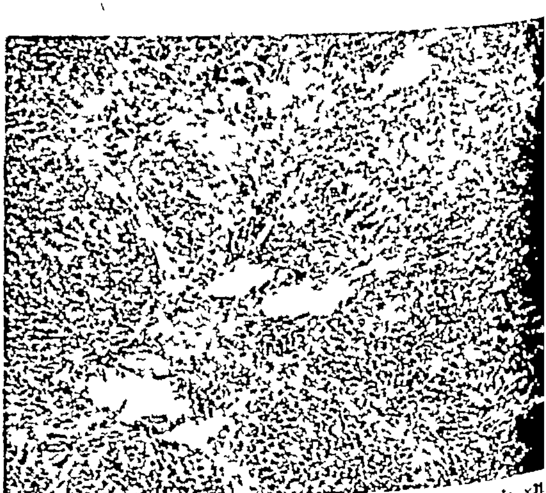
Case-report

A housewife, aged 54, was admitted to the Bolingbroke Hospital on Dec 18, 1947, with six weeks' history of breathlessness on exertion, swelling of the ankles, and paræsthesiæ in the legs She was found to have severe normocytic anæmia, her hæmoglobin on admission being 3 3 g per 100 ml and red cell count 1,300,000 per c mm The red cells showed anisocytosis and poikilocytosis Despite treatment the reticulocyte count never rose above 2 8% Platelet-counts on two occasions were 54,000 and 55,000 per c mm At this time the total and differential white cell counts were normal, but later in the illness there was leucopenia A direct Coombs test was negative The sternal marrow was examined on three
and was found to be hypoplastic, the erythroid series
affected No cause was found for the anæmia,
ot respond to any hæmatinic

Treatment and Course—Thyroid extract was also giv
throughout the illness without effect Consequently th
patient was given blood transfusions during her first admiss
and thereafter every four to six weeks until her death. Dur
her illness she gradually lost her axillary and pubic hair, an
her eyebrows and scalp hair became thin The loss of ha
began, and was well advanced, before much blood had be
given Later in her illness she developed an indefini
eczematous eruption on the arms and legs Then, in the sam
areas, vesicles and bullæ appeared, mainly in circular group
These soon broke down, leaving eroded oozing scaling patche
By December, 1951, she had received 99 pints of bloo
(17 6 g of iron) and her skin had become a faint slate-gre
and for the first time a smooth firm liver edge was felt abo
$1^1/_2$ inches below the right costal margin. Glycosuria w
absent throughout the illness Her final admission was
October, 1953, when her hæmoglobin was 6 7 g per 100 m
and red-cell count 2,700,000 per c mm Her condition so
deteriorated, she developed bronchopneumonia, and desp
treatment with blood transfusions and aureomycin she di
three weeks after admission In all she was given 172 bottl
of blood by transfusion in addition to 1 175 g of iron int
venously In the earlier part of her illness she had be
given at least 1916 tablets of ferrous sulphate—equivalent
121 g of iron

Necropsy—The skin had a faint slate grey tinge On t
arms and back of the knees there was a scaly eruption w
vesicles and bullæ, some of which had broken down. T
skin surrounding the eruption was thin and œdematous T
scalp hair was thin, and the axillary and pubic hair abse
The heart was dilated and flabby The lungs showed bronch
pneumonia at the bases, and the right pleural cavity contai
a little seropurulent fluid The liver was large, smooth, a
mahogany coloured, it weighed 1814 g The spleen was d
red and weighed 170 g The pancreas was mahogany-colour
and weighed 113 g The kidneys, adrenal glands, and gast
intestinal tract appeared normal

Histology (Prof H. A Magnus)—Sections were examin
from liver, pancreas, spleen, heart, kidneys, lung adre
glands, thyroid gland, stomach, a peritoneal lymph-gla
skin, and bone marrow In addition to hæmatoxylin a
eosin, sections were stained for ferric iron by Perl's meth
and for ferrous iron by the Turnbull blue method La
amounts of ferric iron were present in all the tissues examin
but no ferrous iron could be demonstrated, *and no* unstai
pigment granules resembling hæmofuscin were seen T
liver showed well developed portal cirrhosis and a large amo
of iron, much of which was within the liver cells and t
epithelial cells of the bile ducts, but large quantities w
extracellular, lying in the connective tissue The *panc*
showed no fibrosis Much iron was present, mainly within t
cells of the acini, but some was extracellular In th
sections post-mortem autolysis made it impossible to ident
any islets of Langerhans The architecture of the *spl*
was normal, but there was some proliferation of the litto
cells and some slight increase in the amount of stromal fibr
tissue The large amount of iron present was mainly wit
the littoral cells There was a small recent infarct The *he*
showed several small areas of fibrosis No iron was pres



Liver section showing portal cirrhosis (Hæmatoxylin and eosin

he connective tissue but large quantities patchily distri ed, were present in the muscle fibres The *lungs* showed hysema with areas of collapse Considerable amounts of were present mainly in the macrophages within the oli, but some was extracellular in the interstitial tissue the *kidneys* an occasional glomerulus showed ischæmic teration. A relatively small amount of iron was present, fined to the epithelial cells of the distal convoluted tubules. *adrenal glands* contained a very large amount of iron, ch of it in the cells of the zona glomerulosa but there was maller quantity in the cells of the zona fasciculata The a reticularis contained only a very small amount of iron ich was free in the supporting stroma. A large amount of n was present in the medulla both within and without the ls. The *thyroid gland* was very atrophic with some increase the interstitial fibrous tissue and contained much iron, inly in the cells lining the acini The *stomach* contained ge quantities of iron, almost all within the cells lining the ules. No iron was present in the submucous and muscular ers. The *peritoneal lymph-gland* showed irregular fibrosis , the normal architecture was maintained Large quantities ron were present throughout the gland A section of normal showed no iron and no excess of melanin A section of skin lesion showed epidermal hyperplasia with œdema of lermal cells, some of which were degenerate The under g corium showed a non specific cellular reaction. Sections bone-marrow from various sites showed a very aplastic rrow with depression of all the cellular elements Very e quantities of iron were present There was no fibrosis bnormal proliferation of bone

hemical *Analysis* —The amount of iron present in the liver creas spleen, kidneys heart and lungs totalled 18 63 g hich 17 3 g was in the liver It is difficult to estimate the l iron content of the body in such cases, for much of the is deposited in muscle and bone and exact estimation of iron is impossible However using figures arrived at by don (1935) the muscles were estimated to contain about of iron and the bones 1 6 g The remaining tissues con red, at most about 3 g The iron present in hæmoglobin at h was, at most about 1 g This makes a total of 31 g of in the body The anticoagulant and wastage being allowed pint " bottle of blood was taken to contain 380 ml of e blood and the average hæmoglobin content of the blood taken as 14 g per 100 ml. The total amount of iron in 172 les was thus about 30 7 g In addition 1 175 g of iron been given intravenously making a total of 32 5 g This nough to account for the iron found in the body after h, even if none had been absorbed from the gut

tribution of Iron.—This was studied in sections, and the nt present in several organs was estimated chemically results were compared with figures for normal tissues by Muirhead et al. (1949) and for normal tissues and es from patients with hæmochromatosis given by Sheldon). The pattern of distribution of the iron had points of blance to both classical hæmochromatosis and to simple siderosis but was identical with neither The liver reas, and lungs were affected as in classical hæmo- matosis; and in the kidneys the amount of iron and its ive distribution were also the same as in that disease the bone-marrow spleen, and heart were affected to a more often found in simple hæmosiderosis than in chromatosis and as in hæmosiderosis no hæmofuscin detected.

Discussion

this patient the only definite signs of hæmo matosis were a greatly increased store of body iron cirrhosis of the liver but these are the only features ntal for the diagnosis of the classical disease (Sheldon). Diabetes was not present and the slight, though ate slaty pigmentation of the skin remains unex ned, for histological sections showed no deposited and no excess of melanin

he loss of body hair cannot be definitely ascribed to hæmochromatosis but loss of body hair is not ommon in the classical disease (Sheldon 1935)

n the present case as in previously published cases fibrotic changes in the liver were not so severe as in e cases of classical hæmochromatosis But it must remembered that most of the patients who develop ndary hæmochromatosis have comparatively short s whereas it is generally agreed that classical ochromatosis is an inborn error of metabolism which begins in early life So it is not surprising that gross fibrotic changes are the rule in the classical disease, and that less fibrosis is usually found in the secondary form

Summary

A patient with refractory anæmia was given 172 bottles of blood by transfusion, and after death was found to have a greatly increased store of body iron and cirrhosis of the liver

This case is considered to be an example of secondary hæmochromatosis

I am greatly indebted to Prof H. A Magnus, of King's College Hospital for the histological report and much advice I am also grateful to Dr J Barrie Murray and Dr D I Williams for permission to publish this description of the patient who was under their care when I was medical registrar at the Bolingbroke Hospital I also owe thanks to Sister N Williams for help with the case notes and to Mr G Harwood of the department of morbid anatomy, King's College Hospital for the photomicrograph The chemical analyses were made by the Clinical Research Association Ltd.

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CONGENITAL INTESTINAL ATRESIA

OBSERVATIONS ON ITS ORIGIN

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REVIEWING cases of intestinal atresia at Great Ormond Street in 1951 one of us (J H L) was impressed by certain features of the anomaly which suggested that some atresias may be due to interference with the blood supply to a portion of the fœtal gut (Louw 1952) These features, which were present in most of the cases presenting with ' blind ends and applied only to mid gut atresias, include the following

(1) Anomalous vascular supply to the atretic portion. In about 40% there was a V-shaped defect in the mesentery In one case personally operated on it was noted that the anastomotic arcades in the mesentery between the blind ends were deficient and in two others there was thrombosis of the vessels.

(2) Early necrosis of the proximal blind end This occurred quite apart from a complicating volvulus in 20% of the cases as well as in a further 30% with a volvulus In more than half the cases the infant was less than 48 hours old

(3) Postoperative atony and ileus in apparently healthy blind ends anastomosed to the distal bowel. This was a common complication in cases treated by primary anastomosis. It was suggested that the cause was primary impairment of the blood-supply rather than distension alone

These observations have been confirmed by subsequent studies of twenty two personal cases Two in particular have been most instructive in the first the distal bowel contained a segment of gut which appeared to be the remnant of an intussusception and in the second the blind ends were separated by tissue resembling necrotic bowel which had undergone torsion It seemed as if these cases provided evidence of two different mechanisms which might be responsible for interference with the blood supply to a portion of the bowel.

Towards the end of the last century hypothetical strangulation of a segment of the fœtal gut was very popular among Continental workers Several examples were published in which the appearances suggested strangulation by various mechanisms—e g volvulus, intussusception snaring at the umbilical ring kinks and bands (Spriggs 1912) Some workers suggested endarteritis (Davis and Poynter 1922 Spriggs 1912)

Corroborative evidence in favour of the "vascular hypothesis" has recently been obtained from the examination of the mesenteric blood supply in cases of intestinal atresia Gaps in the mesentery and deficient arterial arcades have already been referred to and several other workers have reported similar observations (Spriggs 1912) The most striking finding, however, has been in three personal cases with aplasia of the descending and pelvic colons in all of them there was complete absence of the inferior mesenteric artery

It might be argued that strangulation causes infarction of the bowel, followed by gangrene, perforation, and peritonitis Though this is true in postnatal life, when the bowel contains infective material, it probably does not apply to the sterile fœtal bowel This supposition is supported by the work of Laufman et al (1949), who showed that isolated, devascularised, and sterilised loops of bowel left in the peritoneal cavity of dogs become converted into fibrous bands or disappear entirely It thus seems possible that strangulation of fœtal bowel may end in disappearance of the infarcted portion, with, at the most, a complicating meconium peritonitis

Investigation

Encouraged by these observations, we decided to try to reproduce the anomaly in animals by interfering with the blood-supply to a segment of bowel in the fœtus The experiments were done by one of us (C N B) on pregnant dogs After many disappointments due to anæsthetic and technical difficulties, death of the fœtus, premature labour, and cannibalism, success has now been achieved in two animals The procedure consists essentially in operating on the puppy in utero and ligating the mesenteric vessels supplying a short segment of small bowel The mother is then allowed to go to term

The first successful result was obtained in a pup which, born three days after the operation, soon developed signs of intestinal obstruction At necropsy the proximal bowel was grossly distended and terminated in a bulbous end This was followed by a short segment of necrotic, collapsed bowel in the process of disintegration, and this by normal but completely collapsed bowel.

In the second case the pup was born alive 12 days after the operation and was killed 4 hours later Necropsy revealed an anomaly of the gut identical with that found in infants with intestinal atresia (see figure) The distended proximal bowel terminated in a blind end The infarcted section of bowel was represented merely by a fibrous cord The distal collapsed bowel began in a blind end Between the blind ends was a V shaped defect in the mesentery

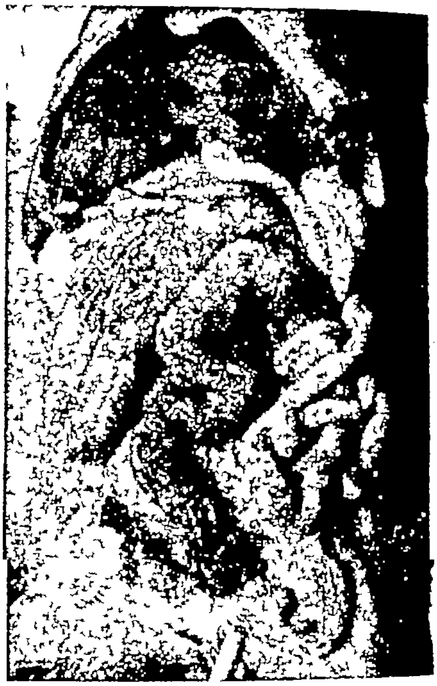
Discussion

These successful experiments, together with the other observations, constitute sufficient proof that at least a proportion of intestinal atresias are due to a "vascular accident" causing infarction of a segment of the fœtal bowel and subsequent atrophy and absorption of the affected segment Possibly meconium peritonitis may complicate such an event in some cases

Further experimental work is being continued on the possible causes of such vascular obstruction in the human fœtus Morbid anatomical findings have already suggested that volvulus and intussusception may be responsible It is therefore noteworthy that in 45% of mid gut atresias there is malfixation of the mesentery (Louw 1952), a factor which is known to predispose to both volvulus and intussusception

The vascular hypothesis of intestinal atresia explains several features which cannot be explained on a basis of Tandler's (1900) popular theory of non-recanalisation of the gut

The occurrence of atresias beyond the duodenum So far can gather, no embryologist has yet satisfactorily ed a solid stage in the jejunum, ileum, or colon.



Proximal bowel, area of atresia, and collapsed distal bowel i no 2.

(2) *The presence of bile in the meconium of some c jejunal or ileal atresia* (Louw 1952) Bile is secreted fr 11th week, whereas the solid stage of the duodenum is p only from the 6th to 8th weeks of embryonic life

(3) *Gaps in the mesentery*

(4) *Multiple atresias*

We do not suggest that Tandler's theory never a but rather that several mechanisms produce int atresias In the case of duodenal atresias (esp the membranous type) Tandler's hypothesis is pro correct, and this is supported by the observatio duodenal obstruction is often accompanied by errors of growth, notably mongolism In the c small-bowel atresias the vascular hypothesis is pro correct, and this is supported by the fact that the an is seldom associated with other malformations

In conclusion we wish to point out that our ob tions have a practical application If vascular obstr is responsible for the atresia, it can be assumed th blood supply to the portions of bowel immed adjacent to the atretic segment is defective (quently, even slight rises of tension in the pre blind end may precipitate necrosis Furthermore timely operation should anticipate such change blood-supply, although sufficient to maintain via may yet be insufficient to cope with the addi demands of normal peristalsis, with resultant ileu all its untoward effects In view of this it was str urged in a previous communication (Louw 1952) the proximal blind bulbous end should always be re in the treatment of intestinal atresias This progr has been followed at Great Ormond Street since time, with a consequent reduction in their mortality from 69 to 33% (Macnab 1955), and our own re here in Cape Town are equally encouraging

Summary

Clinical and morbid anatomical data in support o hypothesis that intestinal atresia may result from i ference with the blood-supply to a segment of the f bowel are presented

Experiments on dogs in which ligation of the mese vessels of the fœtus have produced an anomaly id with congenital intestinal atresia are reported

As a result of these observations it is strongly urged at the proximal blind end should always be resected the treatment of congenital intestinal atresia

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Preliminary Communication

URINARY STEROIDS AFTER PREDNISONE

The demonstration by Nabarro, Stewart and Walker[1] d by Dudley Hart Clark and Golding[2] of the high rapeutic and glucocorticoid activity of prednisone egna 1:4 dien 17α 21 diol 3 11 20 trione) suggests possibility that this activity may be due to conversion prednisone in the body to cortisol and cortisone It med that an investigation of the metabolic products reted in the urine during treatment with this material ht throw some light on the matter

hloroform extracts, prepared before and after enzymic rolysis with β-glucuronidase of urine from a patient iving 75 mg of prednisone by mouth daily have been mined by paper chromatography The neutral fraction[3] taining the free steroids and any chloroform soluble con ents which might be present has been examined by paper matography using the solvent system benzene/50% hanol. The compounds detected by their absorption, cing properties, and NaOH fluorescence have been eluted methanol acetylated and rechromatographed using 1 1 petroleum benzene/75% methanol No traces of cortisone ortisol were observed although at least five compounds present with *absorption in the region of 250–300 mμ.* one of these gave the yellow fluorescence with NaOH al of a Δ^4 3-ketosteroid, and the nature of this compound h was non reducing, is being investigated Two of the r four compounds strongly reduced triphenyltetrazolium T.Z.) and one of these according to the R_f values of the free pound and of its acetate was unchanged prednisone The t was probably its reduction product prednisolone (pregna dien 11β:17α:21 triol 3:20-dione) The remaining two pounds were devoid of reducing activity but after oxidation with periodic acid gave compounds reacting with the erman reagent suggesting that they contained glycerol chains

e enzyme fraction[3] contained large quantities *of the com* is believed to be prednisone and prednisolone as well as of two compounds reacting with the Zimmerman reagent periodic acid oxidation. A fifth compound, a relatively polar reducing substance is being further investigated e was *no* trace of tetrahydrocortisone or of tetrahydro ol.

e thus find no evidence that prednisone is converted he body to cortisol, cortisone, or their derivatives he absorption at 250–300 mμ without a positive um hydroxide fluorescence reaction may be inter ted as indicating that the two double bonds in ring A rednisone remained intact these investigations suggest prednisone is metabolised in part by reduction of 11 ketone group to a 11 hydroxy group, and of its ketone group

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Medical Societies

BRITISH SOCIETY OF GASTROENTEROLOGISTS

THIS society's annual meeting was held at Oxford on Nov 4 and 5 with Prof L J WITTS the president, in the chair,

Changes at Cell-membrane of Smooth Muscle

Dr EDITH BÜLBRING (Oxford) gave an account of her studies regarding ionic and electropotential variations at the cell membrane of smooth muscle A skeletal muscle-cell at rest contained a higher concentration of potassium ions inside than outside the membrane, while sodium ions were *distributed in the reverse manner*: by means of micro electrodes inserted into one cell it was possible to demonstrate a steady potential difference across the membrane of the order –40 to –80 milli volts *the inside of the cell being negative to the outside* During activity the membrane becomes permeable to potassium ions which moved out of the cell and to sodium ions which moved in at the same time the potential fell With the phase of recovery and relaxation the respective ions moved back to their original state of inequality on either side of the membrane A segment of tænia coli was taken for smooth muscle study and one fundamental difference from striated muscle was demonstrated the smooth muscle cell had no steady resting potential it persistently fluctuated between –40 and –80 milli volts together with the respective ionic exchange This was apparently due to the response of that cell to isometric tension Histamine and acetylcholine induced contractions and a reduction of potential even after nervous control was blocked so the ionic movements and potential variations were inherent properties of the cells themselves Adrenaline brought about relaxation and might be the substance permitting restoration of the ionic *gradient* across the cell membrane and thus preparing it for further contraction

Propulsion through Intestine

Prof J H BURN F.R.S (Oxford) *reporting* on the work of D H P Streeten and E M Vaughan Williams, who had studied the propulsive mechanism of isolated intestinal loops in dogs said that the gut becomes atonic after reduction in the serum level *of* sodium chloride The serum potassium then rose: possibly potassium ions replaced sodium under these circumstances so that the gradient between intracellular and extracellular ions was increased Streeten and Vaughan Williams had also studied the effects of morphine amidone, and pethidine by the same experimental method and found that propulsion through intestine was markedly reduced by *morphine* (owing to spasmodic contraction) to a lesser degree by amidone, and least by pethidine Comparing equipotent doses of morphine with pethidine the spasmodic effect was 75 times greater with morphine taking *into account* the larger dose of pethidine required to maintain the same analgesic effect as morphine the difference was of the order of 7 5 times

Histological *Studies*

Attention turned to the stomach with the demonstration by Sir HOWARD FLOREY F.R.S of histological specimens with superimposed autoradiographs. In order to show where mucus was actively secreted he had administered radioactive sodium sulphate to laboratory animals before cutting sections of gastric and duodenal mucosa Radio activity was displayed in the region of the neck-*cell* glands of some *species* and always around goblet-cells but not in Brunner's glands or at the surface epithelial cells From this he concluded that mucous was not secreted by the epithelium or by Brunner's glands or if it was, *then only in a* mucoid form devoid of any sulphonated ester Considering the functions of mucus, he said that it did not act as a buffer and it had no effect on the diffusion of hydrogen and chloride ions, but it might play a part in protecting mucosa and villi by providing a mechanical buffer He thought that Brunner's glands might be under hormonal control and that attention should be turned to them in the quest for knowledge regarding duodenal ulceration

Dr B C MORSON (London) showed further histological sections of gastric mucosa revealing intestinal metaplasia within the human stomach He had examined over 200 specimens removed by operation for duodenal ulcer, gastric ulcer, or carcinoma Metaplasia was present in 65% of specimens with duodenal ulcer, 82% with gastric ulcer, and 92% with neoplasm, which was often to be seen within an area of metaplasia The distribution within the stomach varied with each condition

Site of metaplasia	*Duodenal ulcer*	*Gastric ulcer*	*Cancer*
Pyloric antrum	59 1%	71 4%	87 1%
Lesser curve	15 4%	57 1%	79 5%
Greater curve	9 6%	39 3%	66 7%

The extent of metaplasia within the stomach also varied with the lesion in the order D U G U = 1 2 8, and D U cancer = 1 4 5 The older the patient the more widespread was the condition He had noted in one stomach of a patient with addisonian anæmia that metaplasia was extensive in fundus and body, and this might account for the observation made in America that carcinoma of the stomach in this condition was found with abnormal frequency in the proximal part

Dr R SCHADE (Newcastle upon Tyne) suggested that cytology might prove valuable as an aid to diagnosis of gastric carcinoma He had even seen cells which appeared to presage malignant change though no frank growth had been found, these patients were being kept under supervision

Coronary-artery Sclerosis and Peptic Ulcer

An analysis by Dr GEOFFREY WATKINSON (Leeds) of 12,641 necropsies out of a total of 15,130 deaths between 1930 and 1949 suggested that there was a significant correlation between coronary artery sclerosis and peptic ulcer—particularly gastric ulcer and also ulcer in younger age groups

Hormonal Effects on Gastric Function

Dr J KYLE and Mr R B WELBOURN (Belfast) had found that in rats corticotrophin had no effect on gastric function of intact animals, but hypophysectomy reduced secretion in volume and acid content, both of which could be restored by subsequent administration of cortisone, or corticotrophin if no latent period preceded its administration Comparable results followed adrenalectomy and the administration of cortisone Cushing's syndrome was associated with hypersecretion, judged by a mean elevation of gastric acidity on test meal in eight patients, and this returned nearly to normal after adrenalectomy

Billroth and Polya Operations

Prof J C GOLIGHER considered the Billroth-I operation ill chosen for duodenal ulcer He compared the results of 148 gastrectomies performed thus with 164 by the Polya method, with a follow-up on 138 and 132 patients respectively, all had been done for duodenal ulcer by himself, Prof P J MOIR, or one of three other surgeons The recurrence rate after the Billroth I operation was 15%, after the Polya type 1 5%, the satisfactory functional results were 75% and 89 8% respectively Most recurrent ulcers after the Billroth ations were found on the reconstructed lesser curve ove the gastroduodenal anastomosis

W CAPPER (Bristol) commented on the frequency us regurgitation after high resection and gastroduodenal anastomosis, as compared with its low in after a more conservative resection associated similar anastomosis He thought that this might to an increase in the œsophagogastric angle as a r pulling down the fundic remnant He had also that within five to ten years after a Billroth I op post-gastrectomy symptoms were negligible

Fat Absorption

Dr R SCHNEIDER (Birmingham) had fed unem olive oil to rats and had demonstrated that ab took place despite the absence of bile and pa lipase The same was true of sodium oleate and paraffin, the formation of a solution was theref obligatory, but it was required for optimal ab During absorption the acid value of olive oil wit gut lumen increased sevenfold, indicating the p of a lipase from intestinal mucosa Olive-oil admn in fine emulsion passed into the lacteals without of upper intestinal juices, so did oleic acid, l sodium oleate which needed these juices for its ab Lipid, phospholipid, and fatty acid likewise pas chyle These results were contrary to those fo Prof A C Frazer in previous experiments, h not account for the discrepancy Triglyceride s was necessary to enable fatty acids to pass out intestinal cells, but where did the glycerol come

Dr G N CHANDLER (Leeds) had administ rats olive oil tagged with radioactive iodine Tw and four hours later he had killed the rats, div intestine into 20 segments of equal lengths, and su them to a Geiger count Uptake was greatest third quarter of the intestine, and this area ma its peak absorption even after transposition by operation to a site nearer the pylorus, the p lost if that section was excised

Dr Chandler concluded that the epithelial this site had a specific function with regard absorption, but Dr H G SAMMONS (Birm suggested another explanation—that transport through the mucosa took place more rapidly other than the third quarter of the small bowel

Mr WELBOURN remarked that rats lost fat stools normally, and also after removal of the rumen, why then was fat absorption improv excision of the pylorus or after total gastre Dr SCHNEIDER declared that the loss of HCl by pylorectomy or gastrectomy, but not by rumen might so alter the pH at a lower level in the g favour fat absorption

Serotonin

Dr P J D SNOW (Manchester) said that s (5 hydroxytryptamine) was present in abnormal in blood, plasma, serum, and platelets, and was as 5 hydroxy indole acetic acid in the urine patients with malignant carcinoid tumours It m responsible for the unusual vascular syndrome as with that disease which caused flushing spasmodic) of the face and upper chest, so brought on by small doses of alcohol[1] Dr had, however, seen two patients with carcinoid n no flushing developed despite the presence of 5-h indole acetic acid in the urine Carcinoid pers years before causing death, it was notable that occurred only in the presence of liver metasta usually shortly before death

Leucoplakia

Prof H W ROGERS (Belfast) showed illustrat leucoplakia of tongue and mouth Little could b when the disease had reached an irreversible stage than continued supervision of the patient in o treat carcinomatous change when it arose

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Reviews of Books

orale in War and Work

An experiment in the management of men T T PATTERSON PH D B.A F, retd senior lecturer in industrial relations, Glasgow University London Max Parrish 1955 Pp 256 18s

THIS brilliant and remarkable book is a first hand ccount of a sociological and psychological experiment hich Dr Patterson made during the late war on a ghter station where the accident-rate was the highest nd the operational effectiveness the lowest in the ommand The results were spectacular and their nplications, in our present industrial situation are nportant

The essence of his approach is his concern with such funda ental entities as personal morale, and the drive to identify ork on the one hand with meaningful service to a group and the other with a sense of achievement within the group e goes carefully into the vital importance of team spirit hich he describes as something built up within the group by e fulfilment of rôles of leadership and spokesmanship by dividuals inside that group rather than something imposed om without He shows how inexorably frustration within a oup leads to an aggressive and destructive attitude to those tside even when the expressed concern of the outsiders is help the group to achieve an aim of admitted importance to em all.

He draws a parallel between the sense of frustration and lure of the pilots at R.A.F Bogfield with concomitant judice, resentment, and a negative attitude to other groups the station and the current attitude of the miners towards National Coal Board, of the rival railway unions towards h other and of the dockers towards their own union resentatives as well as to the Dock Labour Board He cuses the comparative ineffectiveness, because of their tial irrelevance of purely financial incentives as a solution. some circumstances these come to be regarded as bribes, be accepted with hostile cynicism and consequently reased resistance to the achievement of their object Since war Dr Patterson s ideas on human relationships have n applied within some of these industries, and have duced a fall in accident rates absenteeism, and sickness, se in productivity and a basic change in mood and itude. Despite results in an individual pit they have yet inspire a single area management committee still less the tional Coal Board

The implementation of Dr Patterson s ideas is impos le without patient and objective observation combined h unobtrusive tact and skill in human contact. They y therefore have been distantly regarded as impracble or, with supreme irony, as uneconomical But to tors, concerned with human happiness and well ng, they are both relevant and stimulating and nand attention

dical and Public Health Laboratory Methods

JAMES STEVENS SIMMONS M D PH D dean and professor of public health Harvard University CLEON J GENTZKOW M D PH D director Bureau of Laboratories Department of Health, Commonwealth of Pennsylvania London Kimpton 1955 Pp 1191 £6 15s

FOR success a laboratory test depends upon sound soning, foolproof technique and very often some ks of the trade which may be incommunicable except personal demonstration It is the omission of these which robs almost all books on technical methods of ir claims to completeness Professor Simmons and leon Gentzkow have written one of the best but the erienced reader will often be tempted to add a foote here and a small correction there The reader s thods are probably no better than those recommended this book, but in his hands they work better and thing gives a reader so much confidence in a book of now how as internal evidence that the author has d every method himself with satisfaction

The book is comprehensive but within the space despite ll type some chapters are cut pretty short The section methods used in veterinary pathology for instance would more useful to doctors if it were a good deal longer Some the best pathologists get into trouble when they essay a necropsy on an animal or bird Prof E C Faust s chapter on worms is a masterpiece of lucid compression. A section on toxicology is unexpected and praiseworthy as are General Hawley s chapters on elementary statistical methods.

The book is expensive, but it offers a great deal of solid information in handy compass It makes little attempt to interpret results: it is a book to be left on the laboratory bench to answer questions as they arise, and it will seldom be found wanting in a sensible answer

Manual of Army Health 1954

Pp 686 Not on sale to the public but members of the medical profession may obtain copies by applying to the Army Publications Depot Kimber Road London, S W 18

IF the young officer joining the R A.M C believes that he has nothing to learn a few weeks spent as a regimental medical officer are likely to surprise him Opportunities for the display of exceptional diagnostic acumen will be rare but he will be expected to have expert knowledge of the inspection of cookhouses the ventilation of barracks, and the smell of drains Treatment of the sick will occupy far less of his time than the maintenance in health of men whose occupation may be either pen pushing in a stuffy office or climbing horrifying crags at sub-zero temperatures. Little of this was in the curriculum, and we take it that the main purpose of this book is to help the Army doctor to find the answers to the problems, not all of them strictly medical, which he will meet every day

It begins with an account of the organisation of the health services of the Army Thorough though this is, it would be more useful if it had been written with more thought for the regimental medical officer The chain of command is viewed from above rather than through the eye of the ignoramus who wishes to know to whom he *should* turn for orders or advice Some reference to the supply of medical equipment would add to its value The chapters on meteorology and climate will be useful to the man who wishes to think out his own answers (and contrary to rumour this process is not always condemned in the Army) Equally useful are the chapters on housing and ventilation, though the relevant sections might have been integrated more closely with the chapters on water supply and drainage Considering the skill and originality of the Army in providing drinkable water under unlikely circumstances, the first is disappointing it lacks the illustrations which may turn bare print into valuable working instructions, and is less impressive than the corresponding chapter in the old *Army Manual of Hygiene 1934* The second is the outstanding contribution to this book Helped by a generous array of pictures, it is a complete yet succinct guide to the disposal of waste matter under all conditions. The chapter on feeding is surprisingly interesting and that on clothing is a novelty in such a publication in its pious wishes for improvement

A long chapter on arthropod pests is handsomely illustrated by blocks prepared for this work. They are good but we doubt whether they will be much help unless supplemented by some brief advice on the methods of examining these creatures with needle and hand lens. Such comments as neurasthenia has been reported in the account of bed bugs are superfluous. Appropriately this chapter leads on to those on insecticides, disinfection and disinfestation. The advice is sound, but as elsewhere in the book it would be improved if the materials and machinery recommended were referred to by their official designations in the Ordnance Vocabulary The common difficulty is to know not what one would wish to use' but what is available The chapters on inspections of personnel and quarters, on medical classifications and on occupational health all contain just the sort of advice that the young officer needs and which he is often too shy to ask. Lastly there is an extensive section on the control of the individual infectious diseases. Much of this is beyond criticism but once again it would have been improved by better integration with other sections of the book: for example swabbing of the contacts of cerebrospinal fever is deprecated on p 444 and advised on p 634 Methods for the destruction of rats as useful at Aldershot as at Kano are concealed in the pages on plague Following the pattern of the *Army Manual of Hygiene* much of what is most valuable is included in appendices: how to work a water truck how to improvise a disinfestor and how to impregnate clothing with insect repellant Perhaps the most useful of all is the olla-podrida of facts, figures, and conversion tables which ends the book The index is better than is usual in Army manuals

Criticism is easy where so much ground is covered But the conclusion can only be that this book fulfils its purpose admirably

Dextran

Its Properties and Use in Medicine JOHN R SQUIRE, M D, F.R C.P, director of the division of pathological studies, University of Birmingham, J P BULL, M D, director, M.R C Industrial Injuries and Burns Research Unit, Birmingham Accident Hospital, W d'A MAYCOCK, M D, Lister Institute of Preventive Medicine, Elstree, Herts, C R RICKETTS PH D, F.R I C, university research fellow, Birmingham Oxford Blackwell Scientific Publications 1955 Pp 91 15*s*

THIS short monograph covers our knowledge of the series of polyglucoses collectively known as dextran It was first observed in refineries as a slime formed during the purification of sugar, and Pasteur recognised that the substance known as native dextran was produced by the microbial action of various cocci, later identified as belonging to the genus leuconostoc

The monograph describes in detail its chemical and physical properties and the clinical and experimental effects following its infusion. In a chapter on general properties of plasma substitutes, eight important positive qualities are listed. It is stressed that when dissolved to make a solution, the substance should exert a colloid osmotic pressure of the same order as plasma and that it should be retained in the bloodstream until its place has been taken by the normal plasma-protein. Desirable negative qualities are that it should not be antigenic or toxic, that there should be no permanent histological changes and no diuretic action None of the substances which have been tried as plasma substitutes fulfil all the conditions laid down, but dextran approaches the ideal more closely than any other

The behaviour of dextran in the body and as an antigen is discussed. The authors recommend that whenever dextran of high average molecular weight is to be used a sample of blood should be withdrawn before the infusion so that dextran-free serum will be available for compatibility tests. Th precaution removes the possibility of errors due to increased rouleaux formation of the donor's red cells Its clinical in "shock" and in *nephrotic states are briefly* discussed.

The book is clearly and concisely written and car the authority of the experience gained by the auth in the Medical Research Council's industrial injuries burns research unit in Birmingham It is an up-to-d record of opinions of the uses of plasma substitutes general and of dextran in particular and will be of va to the specialist The authors hold that, until more known of the functions of plasma constituents, dextr in common with other plasma substitutes, should be u in normal transfusion practice only when it is necess to wait for compatibility tests to be done and w plasma is not available It is also of value where transfusion service is inadequate and in national em gencies For the general reader, the price is high fo short account of a rather limited subject

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Human Physiology (4th ed London J & A Churc 1955 Pp 616 32*s*) —A new edition of Winton and Bayl textbook is welcome, especially since its dimensions have been increased Many chapters have been entirely rewrit and the result is a balanced and readable account of the w *subject combined with a considerable amount of* new infor tion and pointers to future developments. There is a u short bibliography at the end Any student who digests contents of this book should have a sound understandin the fundamentals of physiology

Group Processes (New York Josiah Macy, jun., Foun tion 1955 Pp 334 $5 50) —The transactions of the conference on this subject sponsored by the foundat which was held in New York in September, 1954, have been published under the editorship of Dr Bertram Schaff

Transactions of the Fifth Conference of the Int national Society of Geographical Pathology (Ba Karger, 1955 Pp 572 Sw fr 67 60) —The transacti of this conference, which was held in September, 1954 Washington, D C, have been published under the edi of Prof F C Roulet, the secretary general of the society

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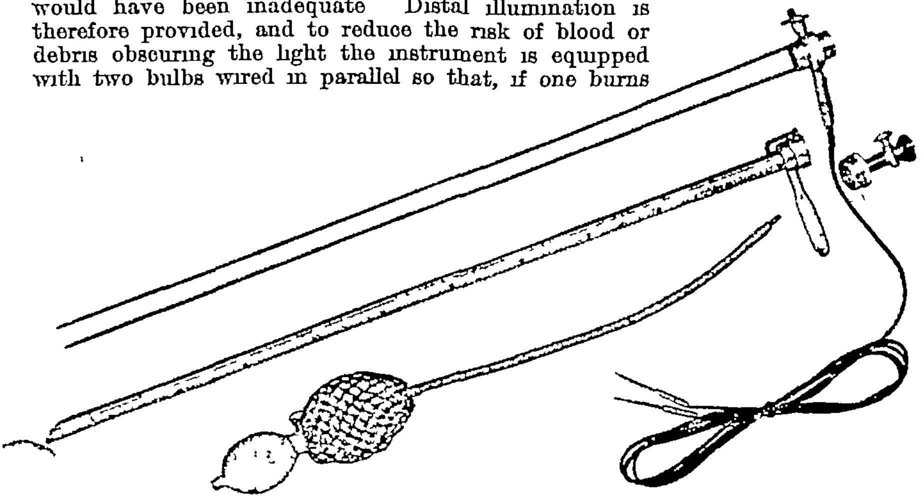

This bulb may also be used f testing the rigidity or mob of the œsophageal wall, and demonstrating the position of lumen when, for example, it partially filled by growth difficult to identify After end copy, if the inflator has b used, it is wise to pass my h ended gum elastic gas catheter to release the air the stomach I usually do after ordinary gastroscopies

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See Lancet May 7 1932, p. 992

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THE LANCET
LONDON SATURDAY NOV 19, 1955

The Use of Cortisone

It is more than seven years since cortisone was st given for the treatment of rheumatoid arthritis,[1] t there is still doubt about the indications for its e in this and many other diseases There are veral reasons for this uncertainty At first supplies cortisone were limited by difficulties in manufacture, d in Great Britain imports were necessarily restricted r economic reasons In time when cortisone became latively plentiful, it was found that in rheumatic ver, for example, careful observation over a period f years was needed to assess whether, when given the acute phase it was more effective than other nds of treatment in preventing subsequent valvular ions And such studies are difficult large numbers patients must be treated with cortisone at different sage levels and compared with an equal number paired cases treated by more orthodox means nally, there has been the psychological difficulty of cepting that cortisone is not some new, all powerful, rative "antibiotic" but only something that supresses the manifestations of disease Disappointent on this account has led to the unmerited jection of cortisone by some people, and many have led to appreciate that it has in fact established elf as a valuable drug Sufficient is now known justify making cortisone more widely available, t a heavy responsibility rests on the general pracioner who uses it, for it is expensive and it has tentially dangerous side-effects Its long continued e in chronic diseases *demands a thorough familiarity* th these side-effects and how best to avoid them p 1078 of this issue Dr R I S BAYLISS discusses detail the use and limitations of cortisone in general actice and gives guidance to those unfamiliar with many possibilities

The indications for giving cortisone by mouth may divided into absolute and relative Absolute lications are those conditions in which cortisone s been found to be of undoubted value and for ich no other treatment is equally effective These clude Addison's disease[2] and Simmonds's disease[3] d the condition following adrenalectomy undertaken retard the growth of an inoperable carcinoma of breast or prostate Here cortisone provides ional substitution therapy In larger—pharmacogical—doses cortisone has been life saving in dismnated lupus erythematosus[4] particularly if given fore the kidneys are involved, and in pemphigus lgaris.[5] Sufficient is given to suppress the clinical manifestations this may mean up to 300 mg daily in divided doses, but as soon as the disease has been brought under control the dose is gradually reduced to the least that will keep symptoms and signs in check Even this maintenance dose may produce side effects, but these disadvantages may have to be accepted considering that without cortisone the patient would die In most cases treatment must be continued to prevent a relapse, but sometimes a remission has been induced for weeks or months Bronchial asthma is only a relative indication, but cortisone may be life saving in status asthmaticus unresponsive to more orthodox treatment[6] Any superimposed infection should be treated with an appropriate antibiotic, usually penicillin, and as soon as the attack has been relieved the dose of cortisone should be reduced from the large amount required initially (usually 200–300 mg daily) and gradually withdrawn over a week or ten days Although its effect is less certain, cortisone is indicated in the early stages of polyarteritis nodosa Congenital adrenal hyperplasia a rare disorder characterised by pseudohermaphroditism in girls and precocious sexual development in boys, responds to cortisone[7], this is important because it demonstrates how cortisone can suppress the anterior pituitary In this condition the adrenal cortex is unable to synthesise hydrocortisone,[8] and the pituitary therefore secretes more corticotrophin in an attempt to evoke more hydrocortisone The adrenal glands respond by producing more androgenic steroids, which account for the virilisation of the patient and the high urinary excretion of 17 ketosteroids By giving cortisone in appropriate doses the activity of the pituitary and the adrenal glands is lessened, the excretion of 17 ketosteroids falls to normal, and the virilising process is arrested[9] This suppressive action on the pituitary and adrenal glands occurs whenever cortisone is given, and explains why it is always important on stopping treatment to reduce the dosage gradually and not suddenly Gradual reduction allows the physiologically atrophic adrenal glands to start secreting again otherwise a dangerous state of temporary adrenal insufficiency may be induced.

The relative indications for oral cortisone fall into two main groups First, there are those conditions in which a satisfactory response is sufficiently common to merit the use of cortisone if other treatment has failed if the severity of the illness justifies the risk inherent in the use of cortisone and if there are no contra indications to its use Included in this group are rheumatoid arthritis,[10] acute rheumatic fever,[11] sarcoidosis (if in the early stages and associated with much pulmonary involvement[12] and/or hypercalcæmia[13]), bronchial asthma[14] (*not* chronic bronchitis and emphysema), the nephrotic syndrome,[15] thrombo

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cytopenic purpura,[16] acquired hæmolytic anæmias,[16] ulcerative colitis,[17] and temporal arteritis Not all these diseases are equally responsive, and in many the place of hormone treatment is still uncertain, but the main reasons for its use are outlined in Dr BAYLISS's paper The management of acute conditions, such as rheumatic fever, and the attitude towards side effects are quite different from those in the chronic diseases such as rheumatoid arthritis As HENCH said at the recent Pan-American Congress on Rheumatology, in acute conditions the aim is prompt and maximum control until the disease ends spontaneously dosage is governed by the severity of the disease rather than by concern over the development of the less important side-effects In chronic diseases the aim is to strike the best balance between relief of symptoms and the side-effects, and dosage is governed more by the avoidance of undesirable effects than by the severity of symptoms There is still much uncertainty about cortisone in the treatment of acute rheumatic fever A Medical Research Council trial[18] indicated that equivalent symptomatic relief was obtained with cortisone or salicylates and that during the limited follow-up period there was no significant difference in the emergence of valvular lesions in the two groups These results may be criticised on the ground that the dose of cortisone was too small and inflexible There is increasing evidence from America[19] that in larger doses, regulated to suppress the activity of the disease, cortisone may prevent permanent cardiac damage HENCH[20] likens rheumatic fever to a violent but short-lived storm during which intensive cortisone treatment must provide maximum protection until the storm blows over This treatment must be "soon enough, intense enough, and long enough" The second group of relative indications for oral cortisone contains a large number of diseases that may respond to some extent but neither consistently nor dramatically They include ankylosing spondylitis, dermatomyositis, scleroderma,[21] and steatorrhœa

The side-effects of oral cortisone must be kept in their proper perspective and not ignored or over-emphasised Particularly important are the reactivation of latent tuberculosis, the onset of peptic ulceration, the masking of a concurrent infection, and the development of mental disturbances[22] Experience has shown that these side-effects can largely be avoided by keeping the dose to the lowest that will produce the desired result

Finally, the application of hydrocortisone to the skin and of hydrocortisone or cortisone to the eye has been very valuable in certain dermatological[23] and ophthalmic disorders This form of treatment is being widely used and has the great advantage that no systemic side-effects develop Such intractable conditions as pruritus ani and vulvæ usually respond in a matter of hours, but a small amount of ointment applied daily or on alternate days may be necessary to maintain relief In iridocyclitis and keratitis, cortisone applied locally will relieve pain and exudation and prevent vascularisation of the cornea

Subacute Bacterial Endocarditis

THE prognosis of subacute bacterial endocarditis has improved dramatically since the introduction of penicillin, but an early diagnosis is still essential if treatment is to give the best results The unmistakable stigmata of the established disease have been fully described[1 2] The onset is usually insidious Symptoms of fever (sweating, chills, and rigors) were the initial complaints in 63% of CATES and CHRISTIE's series[3] in 1951 Symptoms referable to "toxæmia," such as lassitude, malaise, and general aches and pains, commonly accompany the feverish ones There may be flitting joint pains as well, and these do not necessarily indicate coincident rheumatic fever Headache may be an initial symptom in a few patients, but it does not imply they are prone to cerebral vascular catastrophe[3] The effects of arterial embolism usually follow abdominal pain due to splenic, renal, or mesenteric infarction is not uncommon, and neurological symptoms may be the result of cerebral embolism One of the most important features is the Osler's node, a red and tender swelling in the pulp of a finger or toe, and sudden pain, coldness, or sensory disturbances in a limb may sig an embolus Retinal emboli are less common, and pulmonary emboli are most likely in patients wi infection involving a congenital lesion with a l to right shunt The infected arterial emboli m give rise to mycotic aneurysms, although this usually a late manifestation, CATES and CHRIST point out that in some cases the presenting sympto may be those of arterial embolism or of card insufficiency The physical signs in the fully establish case are malnutrition, an "earthy" pallor, anæm cardiac murmurs, petechial hæmorrhages in th conjunctivæ, or other mucous membranes, splint hæmorrhages under the nails, splenomegaly, clubb of the fingers, Osler's nodes, and, possibly, signs cardiac failure Quite often there is evidence of previous embolism in a limb or other artery

The duration of the infection is important prognosis, and patients who have been infected twenty weeks or more have less than a 50% chan of recovery This emphasises the importance recognising the early manifestations of subac bacterial endocarditis, and in an article which publish this week Dr WEDGWOOD examines the in detail Although, as he points out, the ear symptoms may be trivial, patients often seek medi advice early Yet the vagueness of many of the ear symptoms, and the paucity of physical signs, may le to an initial diagnosis of influenza, "fibrositis, anæmia, or even "nervous breakdown" Man valuable weeks may be lost and the patient's chanc of full recovery seriously jeopardised, since th longer the infection goes unrecognised the great the cardiac damage Moreover, the likelihood o heart-failure is proportional to the duration o nfection, and the ultimate prognosis is far worse in atients who already have congestive failure before he infection is treated[3,4] It is disquieting to read hat the average duration of symptoms before admission to hospital in Dr WEDGWOOD's 65 cases was en weeks, with a range of one to thirty one weeks But even when the symptoms are vague, the combination of fever and a cardiac murmur is almost always resent a murmur was found in 97% and fever n 92% of Dr WEDGWOOD's cases within one week of admission In 20% of the cases, however, and in 5% of those with symptoms for six weeks or less, yrexia and a murmur were the only physical signs uring the first week in hospital Changes in the ardiovascular signs are particularly helpful in iagnosis, and change in the character of the murmur uring the illness is highly suggestive of infection he murmurs are usually loud and unmistakably rganic, and in most cases they are due to isolated itral or aortic incompetence signs of pure mitral aortic stenosis being rare[5] Congenital heart-disease accounts for relatively few cases Congestive rdiac failure is rare early in the disease, and was resent in only 11% of Dr WEDGWOOD's series ypertension is also uncommon, but auricular brillation may sometimes appear[3] Careful inquiry ust be made for special symptoms such as pains the finger tips or elsewhere, "rheumatism," orexia, loss of weight, and night sweats The ssociation of a recent dental extraction with the set of malaise and fever should excite suspicion, pecially if the patient is known to have heart-sease Occasionally frank hæmaturia may be an rly symptom. Careful physical examination will ually reveal important signs, even in the early ages of the disease, but, as Dr WEDGWOOD notes, ny of these are transitory (such as petechiæ, small bolic lesions, and splenomegaly), and daily examinan is very important Petechiæ must be sought for, rticularly in the conjunctivæ, mouth, fingers, and ll beds

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The disease is rare in children under five[6] and mmonest in people between twenty and forty is apparently becoming more common in the lerly, and in another article this week Dr ANDERSON d Dr STAFFURTH describe a series of 76 cases confirmed by blood culture or necropsy, of which were over the age of sixty and 5 over seventy ey found that the disease came on more insidiously old people, and that emboli other than a few techiæ, were unusual. Like Dr WEDGWOOD they nd that the diagnosis is often missed because is not considered. WALLACH et al[7] observed that cterial endocarditis in the elderly was usually te rather than subacute and that it often involved lves affected only by sclerotic and not rheumatic, anges. Renal lesions too were less common in the der patients.

The most important investigation is blood-culture enever possible, blood for culture should be taken the height of the fever but positive cultures may be tained when the patient is afebrile[4] In obscure cases, culture of arterial blood or bone marrow[8] may be positive when no organism has been grown from venous blood In coarctation of the aorta, blood should be taken from the femoral rather than the brachial artery[9] Failure to get a positive culture, however, does not entirely exclude infective endocarditis, for 2 of the cases described by NEWMAN et al[4] had negative cultures Other evidence of infection should always be sought A raised erythrocyte-sedimentation rate is almost invariable, and a blood count will show anæmia and some polymorphonuclear leucocytosis in about 80% of cases Albumin and showers of red cells in the urine are less common, but they are very valuable signs

Confusion may be caused by an atypical onset or unusual features Thus, macroscopic hæmaturia and œdema may suggest nephritis, especially when there has already been severe renal damage The absence of hypertension and characteristic changes in the optic fundi should help to avoid this mistake Greater difficulty may be found in differentiating disseminated lupus erythematosus from subacute bacterial endocarditis in which arthralgia is a feature, for malaise, fever, heart murmurs, anæmia, splenomegaly, and renal involvement may be present in both diseases But in the former the characteristic rash of lupus, the leucopenia, the pericarditis, and the lupus-erythematosus cells in the blood should point to the right answer, moreover, hyperglobulinæmia is always found in disseminated lupus erythematosus,[10] and rarely in infective endocarditis[4] Polyarteritis nodosa may also cause trouble in differential diagnosis, but here signs of organic valvular disease are rare and hypertension is common. Subacute bacterial endocarditis may also be mistaken for atypical rheumatic fever or rheumatoid arthritis, and the diagnosis should always be kept in mind in any feverish illness with widespread joint pains or arthritis

Genetics of Sickling

THE sickle cell trait is common among Negroes in Africa and America, and it is fairly common too in some aboriginal communities in Southern India On the other hand it is extremely rare in white Americans and in Europeans, with the exception of a few scattered communities in Greece and Southern Italy Even in those parts of Africa where the trait is very common, affecting 15–25% of the total population, there are remarkable differences in its frequency from tribe to tribe Thus, among tribes living in Uganda, LEHMANN and RAPER[11] found enormous variations in the prevalence of the trait, ranging from 0 8% to 45% As we observed last year,[12] this distribution of the sickle cell gene raises two important questions in human genetics How does a gene which in homozygous form produces a disease that is generally fatal in childhood or adolescence attain such a frequency in certain populations that up to 40% of the people may be heterozygous for it? How is it that such a gene is very common in some populations and virtually absent in others? If homozygous individuals die young each successive generation should show a steady decline in the frequency of the gene But in fact in certain populations the gene has reached and

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maintained a high frequency , so in such populations there must presumably be something that counteracts the heavy pressure of natural selection against the abnormal gene

These questions were discussed by Dr J V NEEL, of the University of Michigan, in his Galton lecture at University College, London, last month There are, he pointed out, two possible explanations for the distribution of the sickle cell gene First, fresh mutations from the normal to the abnormal gene may be so common as to offset the abnormal genes lost in each generation by the relatively early death and consequent infertility of the abnormal homozygotes Alternatively, the heterozygotes may have a higher effective fertility than the normal homozygotes (" balanced polymorphism ") because, on the average, more heterozygotes survive to adult life than do normal homozygotes, or because matings between heterozygotes are more fertile than those between normal homozygotes The genes lost by the infertility of the abnormal homozygotes could thus be balanced by the abnormal genes gained in each generation through the relatively increased fertility of the heterozygotes The mutation hypothesis requires very high mutation-rates, localised to certain areas or populations and specific to a particular chromosomal locus If " balanced polymorphism " is the answer, then individual heterozygous " sicklers " must have up to a 25% selective advantage over " non-sicklers " Either possibility has such significant implications in genetics and medicine that it is important to decide which is the true one

Theoretically, the mutation-rate of the gene in any population can be worked out from the prevalence of the trait and a knowledge of how commonly a person with sickle-cell anæmia has only one parent with the trait (or how commonly a person with the trait has both parents without it) But in practice this is not so easy Where there are doubts about paternity it is often advisable to confine observations to cases in which the mother is the exceptional parent—that is to say, in which the mother of a child who appears to be homozygous for the sickle-cell gene is not herself heterozygous Another possible difficulty is " non-penetrance " in the exceptional parent, perhaps because of a " suppressor " or " modifying " gene , and there is always the chance that the exceptional parent may carry the gene for some other hæmatological defect, so that the child's disease is the result of double heterozygosity In these circumstances, further investigation of the mother's relatives and detailed study of her blood may help Dr NEEL observed that although these inquiries may not prove that an individual case was the result of a mutation, they should set an upper limit on the over-all mutation-rate of the gene in the particular population being studied

In a study on these lines by VANDEPITTE et al[13] in the Belgian Congo, where about 25% of people have the trait, it was found that among 233 mothers of children with sickle-cell anæmia 231 showed the sickling phenomenon and 2 did not The hæmoglobin of the 2 exceptions was normal on electrophoresis, and they had no obvious blood disorders This finding places the upper limit of the mutation-rate at $1\,7 \times 10^{-3}$ per gene per generation This is a very high figure for human mutations, but still only about a tenth of the rate needed to maintain the gene frequency in this population, assuming that the heterozygote was neutral If, in fact, the sickle-cell genes in this population were being maintained by mutation then the mutation-rate would have to be about $1\,6 \times 10^{-2}$ per gene per generation, and VANDEPITTE et al would have found about 18 exceptional mothers Another survey[14] in the same area yielded much the same results Thus it seems that mutation cannot alone be responsible, though clearly many more surveys are required

VANDEPITTE et al emphasised that their estimate only a possible upper limit to the mutation rate and that the true value may be very much lower Judging from the rarity of reports of sickle-cell anæmia in Caucasian people, it seems that here the mutation rate is probably less than 1×10^{-5} per gene per generation Presumably, therefore, we must accept the view that mutation-rates differ widely in different populations, or find some special explanation to account for the exceptional cases.

The alternative of " balanced polymorphism " has been closely examined in the past year or two, particularly since the publication of ALLISON's important findings[15] He gave persuasive evidence[12] that sickle-cell heterozygotes were more resistant to malaria than normal individuals, and consequently had a greater chance of surviving to adult life in malarial countries A lively controversy has since developed, largely over the relative frequency of parasitæmia in sicklers and non-sicklers[16–22] Some workers believe that their findings are consistent with a different susceptibility while others could find no support for ALLISON's hypothesis As Dr NEEL remarked, it has become c that no one's series is quite comparable with an body else's So far only BEUTLER et al[23] have record an attempt to repeat ALLISON's experiment of inoc lating sicklers and non-sicklers with *Plasmod falciparum* They found only very slight and probab insignificant differences in susceptibility between t two groups The main difference between the exp ments was that ALLISON's subjects were all hig immune, while those of BEUTLER et al were en non-immune or only slightly immune Moreo ALLISON used an African and a Malayan strain *P falciparum*, and BEUTLER et al used a Panaman strain Whether these differences account for contrasting results remains to be seen when critical experiment has been repeated

Whatever the result, the demonstration of incre resistance to a disease such as malaria is not in it enough to clinch the case for a balanced polymorphi It must also be shown that there is in consequen difference in effective fertility between the het zygote and the normal homozygote—a differ sufficiently great to account for the observed frequencies If the hypothesis is correct, the het zygous genotype should be commoner among ad in the reproductive period than among infants children , or matings of heterozygotes should on the average, more fertile than other mat There are as yet very few data from which to de whether this is so , but it should be possible to co them If altered resistance to malaria was the c factor in a balanced polymorphism, then stri differences in malaria mortality should be found sicklers and non sicklers Dr NEEL gave an exampl this if sickle-cell anæmia were invariably lethal, 40% of adults had the trait under conditions maximum pressure from malaria, then there mu

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pitte J M. Zuelzer W W , Neel J V Colaert J
1955 10 341

to Legrange J Lambotte Legrange C *Ann Soc*
éd trop 1955 35 47

15 Allison A C *Brit med J* 1954 i, 290 *Trans R Sc* *Med Hyg* 1954 48 312 *Ann hum Gen* 1954 19 39 1954, i 276

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17 Edington, G M *Ibid* p 871

18 Raper A B *Ibid*, 1954 ii, 1162 *Ibid* 1955, i 1186

19 Moore R A. Brass W , Foy H *Ibid*, 1954, ii, 630

20 Foy H , Timms, G L Brass W Moore, R A *Ibid* 195 285

21 Archibald, H M , Bruce-Chwatt, L J *Ibid* p. 970.

22 Bezon A *Méd trop* 1955 15 423

23 Beutler E Dern R. J , Flanagan, C L *Brit med J* 1 i 1189

east 16 deaths per 100 births from malaria before age of reproduction, and all of those who died ld be non sicklers Thus, if there were in all 50 ths per 100 births before the reproductive age n at least a third of these would be non sicklers ng of malaria

urning to work ahead, Dr NEEL suggested that most urgent task was an intensive study of small nogeneous populations, preferably whole villages, widely scattered points throughout Africa, in both larial and non malarial areas The data needed re the age structure of the population the frequency ickling at different ages, the occurrence and density malarial parasitæmia, the types of marriage (with pect to the sickle-cell gene) and the fertility of these rriages, and finally details about malaria as a cause death in sicklers and non sicklers Tremendous des were being made in the control of malaria and a very few years the opportunities for making se critical studies might be very much less There here a better chance, Dr NEEL concluded to lore the concept of balanced polymorphism than ny other situation in any other species

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Annotations

R O S IN MANCHESTER

he first provincial meeting of fellows and members he Royal College of Surgeons of England is to be l in Manchester on Saturday Dec 10 It is a new ture for the college to hold such a meeting outside don The scientific part of the programme includes he morning clinical demonstrations in the outpatient artment of the Royal Infirmary, and in the afternoon, mposium on malignant disease at which Prof Digby mberlain will take the chair and Prof Geoffrey field, Prof Ian Aird Sir Stanford Cade and Dr glas French will speak After tea there will be the ual meeting of fellows and members, the agenda of ch will appear in our advertisement columns next and a dinner in the University ends the day demonstrations and the symposium have been gned to attract not only surgeons but general prac ners and other specialists too and the college council s that a great many members and fellows will be in chester for this important occasion

PREVENTION AND THE PRACTITIONER

s the various aspects of medical practice come under tiny the preventive side is highlighted with increasing ency In the *Medical World Newsletter* for October Observer ' describes the opportunities for pre ive work that come the way of the family doctor points out that contact with other workers is needed nable him to make the best use of them The prac ner who recognises these opportunities will go out is way to make such contact but one has to admit , as things stand at present the practitioner to m prevention means little is unlikely to suffer in tation for that reason, since unfortunately few ents will expect preventive teaching from him

owadays many more medical officers of health are ing steps to help the family doctor who is prepared mphasise prevention some do this by the loan of ealth visitor to work with the doctor in his practice e others encourage his participation in their clinic ures. At the welfare centre the general practitioner meet his colleagues, and while he may learn from clinic staff much that did not form part of his riculum as a student he can in return advise and teach on facets of health care not normally encountered within the clinic walls There are in fact many clinics—pædiatric, antenatal child guidance and the like—where the differing experiences of general practice and clinic meet and fuse, and the value of clinic premises to the community that pays for them could be increased by broadening their use More group teaching for young and old, group discussions group psychotherapy, lectures, and courses could be undertaken if full advantage were taken of the teaching potential of the practitioners in the clinic area Perhaps some would need instruction in how to teach, but it should not be beyond the capacity of public health departments to provide such instruction, for which their clinics provide both opportunity and material

It will always be true however that the premises on which preventive medicine will show its greatest return are the homes of people whether sick or well It must not be long before the health visitor and the family doctor work in close touch with one another with mutual responsibility in the doctor's consulting room and in the homes of the patients Health as well as charity may be truly said to begin at home

ULTRA FINE STRUCTURE OF COLLAGEN

ELECTRON microscopic study of the ultra-fine structure of collagen is being keenly pursued The unit fibril, about 1000 Å wide, of indefinite length and with a regular transverse banding at 640 Å intervals,[1] is now generally accepted as the characteristic electron microscopic picture of this material By the usual techniques teased collagen fibres are used and the individual banded fibrils appear as ribbon like or cylindrical structures With the introduction of microtomes capable of cutting sections down to 0·02 μ thick electron microscopists have been able to study collagen in ultra thin sections Wyckoff[2] using this technique, found that when the fibres were cut obliquely their appearance resembled tubes rather than cylinders Kennedy[3] at the U.S National Institute of Dental Research, using transverse and longitudinal sections of various sorts of collagen from both man and the monkey, has obtained convincing pictures of the tubularity of the individual fibrils Detecting the hollowness of the fibrils has been especially difficult because of the large amounts of adherent ground substance obscuring the microscopic detail This impediment was successfully overcome by prolonged washing of the specimen in water immediately after fixation in formaldehyde In some of the obliquely cut fibres the 640 Å banding could be detected on the inside of the lumen as well as on the fibre surface

The structure of the individual collagen fibre seen under the electron microscope has been further degraded by mechanical chemical, and enzymatic methods and various possible subunits have been detected Any of these methods, but especially the use of collagenase, yields in addition to the usual type of parallel-sided blunt-ended fibres, a much smaller narrower unit which tapers at each end but still shows the characteristic transverse striations. These have been named tactoids and Keech[4] suggests that the collagen fibre is built up of these units dovetailed together so that their striations are all in register Her beautifully illustrated paper indicates moreover that the surfaces of junction between adjacent tactoids are probably areas of weakness in the fibre particularly susceptible to the disintegrating action of collagenase Her illustrations show two further possible subunits liberated by the action of this enzyme—namely, beaded fibrils and the individual beads composing them These beads, with a diameter of 250 Å, are claimed by Keech to be the smallest collagen unit so far detected by electron microscopy

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[1] Hall, C E., Jakus, M A Schmitt F O *J Amer chem. Soc.* 1942, 64, 1234

[2] Wyckoff R W G *In* Connective Tissues Transactions of the 3rd Conference Joseph Macy Jun Foundation. New York, 1952 p 38

[3] Kennedy, J. J *Science* 1955, 121 673

[4] Keech, M E *Ann. rheum Dis* 1955 14 19

The ultra fine structure of collagen is thus gradually being revealed, but the forces that organise and hold together the individual molecules in the form of a banded fibre are almost unknown We are still ignorant as to whether the banded fibre is built of one form of molecular species, or whether the collagen molecules or aggregates are "cemented" together in the fibre by a non-collagenous cement substance The action of collagenase in dissolving collagen without the liberation of free amino acids or small peptides suggests the latter possibility, but whichever structure proves correct the forces responsible for the in-vivo stability of collagen are a matter of paramount importance to students of the connective tissue diseases

CANCER OF THE THYROID

In this country deaths from cancer of the thyroid number only a fraction of 1% of all cancer deaths But in some respects we know more about this form of malignant disease than we do about other cancers, and it is therefore of great theoretical importance It differs from most other cancers in three respects Firstly, it displays a remarkable range of malignancy, from highly anaplastic growths which are fatal within a few months of diagnosis to forms scarcely distinguishable histologically from normal thyroid tissue which may continue for many years (even after they have metastasised) without apparently doing the patient any great harm Secondly, animal work has defined the conditions which lead to the appearance of thyroid neoplasms and has shown that these are to a large extent under hormonal control Thirdly, it is the only form of cancer which has been effectively attacked by internal radiation from an artificial isotope, and it has therefore provided a testing-ground for this new type of therapy All these aspects were brought out at a discussion of the Royal Society of Medicine's section of surgery on Nov 2 Contributions from a pathologist, a physician, and a radiotherapist joined with those of the surgeons to give a complete picture of the disease

Reviewing the experimental conditions which have been shown to cause thyroid tumours in rats, Dr I Doniach included iodine deficient diets, anti-thyroid substances, subtotal thyroidectomy, and radioactive iodine Some of these factors were synergistic, for example, radioactive iodine plus an anti-thyroid substance caused more tumours than either alone Dr Doniach pointed out that the factor common to all experimental conditions leading to tumour production was a high level of pituitary thyroid stimulating hormone (T S H) in the blood This hormone stimulated normal thyroid cells to increase in size and numbers, but apparently occasional cells responded abnormally by tumour formation The simultaneous administration of a carcinogen appeared to increase the number of cells which responded in this abnormal way, and radio-iodine might do the same Thus, for the production of thyroid tumours the stimulus provided by T S H seemed to be required, and there might also be an as yet undefined change in the nature of the cells which were stimulated In rats the conditions which caused benign thyroid tumours to appear, if continued long enough, were usually associated with frankly malignant tumours giving remote metastases The factors governing the change from a benign to a malignant tumour were not well understood and might repay further investigation

These conclusions can to some extent be applied directly to human pathology Broadly speaking, anything wh causes simple goitre will tend also to cause carcin- the thyroid This accords with the well known bservation that a large proportion of thyroid is arise in previously goitrous thyroids Doniach pointed out that the death rate from carcinoma used to be much greater in Switzerland in this country With the introduction of iodised salt Switzerland it was now falling towards the level in B As we suggested recently,[1] the most practical of reducing the incidence of thyroid carcinoma in country would be to encourage the widespread use iodised salt

Dr Doniach also quoted recent experience in Am which showed that irradiation of the infant's thyroid X rays directed at the neck or thymus has been follo in an unpleasantly large proportion of cases, by thy carcinoma in later childhood On the other hand, cases of carcinoma have as yet been reported after treatment of thyrotoxicosis by radioactive iodine may be that the infant thyroid is peculiarly suscep to the effects of irradiation In the present state of kn ledge it seems very unwise to expose young child thyroids to irradiation, whether from X rays or arti isotopes

Current opinion on the best treatment for establ thyroid carcinoma was crisply summarised by Mr Se Taylor Treatment must vary with the histology of tumour Those which were predominantly papillary most commonly found in children, they metastasised local lymph glands, and they had a good prog If possible, treatment should be purely surgical, for the primary tumour (which was often quite small) and affected lymph glands could be completely removed chances of recurrences were remote Follicular ad carcinoma usually arose in those of middle age, it appreciably less benign, and it usually spread by blood stream, with metastases in the lungs and Here the surgeon's task was to remove the normal th and as much as possible of the tumour These cond prepared the way for possible treatment with r iodine, which was more likely to be useful in this than in any other Finally, there were the undif tiated carcinomas, usually found in the elderly, usually rapidly fatal Here the most hopeful l treatment was external radiotherapy, for, as W pointed out, about half of them showed a useful res to X rays

Describing treatment with radioactive iodine, Dr E Pochin said that cases were first selected on a histol basis Undifferentiated carcinomas seldom too radio iodine to a useful extent, and they were the not accepted for treatment except as a last resort, all else has failed Of the more differentiated ty few would take up appreciable amounts of radio- even when the normal thyroid was still present, this response was so unusual that total ablation of normal part of the thyroid should be the first step in form of treatment The ablation should preferably surgical for this saved time, but if this was impo an ablation dose of radio iodine was given The n gland was always more avid for radio iodine than growth, and in addition the tumour's uptake was enhanced by the high level of T S H which was asso with clinical myxœdema Thereafter doses of a 150 ml of radio-iodine were given every few mo Thyroxine could be given between doses to relieve discomforts of myxœdema, but it must be stopp month before the next dose of radio iodine was due successful cases the uptake by the tumour mass grad decreased and the interval between doses could increased The whole procedure commonly took ab two years

The success of this novel form of treatment cannot be assessed in terms of survival rates, for the nat course of these differentiated tumours is very var and they may be surprisingly benign But there doubt that immediate clinical improvement can be achieved, with objective evidence of regressio sour masses. A possible theoretical limit to what can achieved might be set by observing the selective ion of the irradiation on populations of tumour cells. ho iodine will tend to eliminate first those follicles ch concentrate it best, and also those cells which are t radiosensitive. This selection might change a itive tumour which initially had a high uptake into nsensitive one with a poor uptake. The length of treatment would favour a selective mechanism of sort. Fortunately there is not much evidence that vourable selection actually takes place: for decreasing ke by a tumour is usually associated with clinical rovement rather than deterioration. It is, in fact, cult at present to define the factors which limit the ess of this treatment. The importance of the problem nds beyond the actual treatment of a relatively ll number of patients with thyroid carcinoma. For by no means improbable that a chemical substance eventually be found which is selectively concentrated ancer cells in general. A radioactive isotope could be oduced into such a substance and would be carried it into the malignant cells. The experience gained radio-iodine could then prove very valuable in ing the most effective way of using a substance of sort.

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[1] *Lancet*, July 16, 1955, p 125

XERORADIOGRAPHY

nce our first reference[1] to this subject two notable sh papers have appeared. Oliphant[2] has discussed design of the first British xeroradiography unit ble for hospital use, and Hills, Stanford, and e[3] working with this machine, have investigated qualities of xeroradiographs.

ography is a system of photography in which no chemicals are needed to develop the image. It nds on the properties of a group of substances known emi-conductors (selenium is one) which act as ators in the dark, but become conductors when ed to light. A thin layer of selenium on a metal is given a positive electrostatic charge in a light chamber and is later exposed in the normal way. charge is reduced by light or X rays falling on the , and the image is made visible by spraying the e with a fine powder, which adheres according to mount of the residual charge. The xeroradiograph her like an etching, and is viewed by reflected light. ost striking difference from a conventional film is ence of both bone and soft-tissue detail on the plate. The powder tends to concentrate along dges of areas of residual charge, thus increasing the ast between two densities to a degree that is out of rtion to the actual difference in radio-opacity.

ls et al. have studied the variable factors in xero graphy—namely, charging, exposure, and develop times. They found that for any given plate the ng time was the most critical—under-charging ed detail, over-charging caused distortion. The de in charging was small if distortion was to be led. There was a fairly rapid loss of charge from a immediately after charging; this soon became a uniform loss and made it difficult to get comparable s. Both exposure and development times were not al, and a 25% variation in development time was nacceptable. Hills et al. found that the enhance of contrast due to the aggregation of powder along margins of varying densities and the fairly low all contrast between bone and soft tissues were ionally a help (e.g., in showing up small cracks in); but in general detail was better in a conventional . Though it was difficult to assess speed, the xero needed two and a half times the exposure for non n film and up to ten times the exposure for screen films in the thicker areas of the body. Hills et al. concluded that the high tube-loadings and patient-dose restrict the use of xeroradiography, in its present form, to examination of the limbs; but even at present it can, under certain circumstances, equal the qualities of the conventional radiograph and can be an advantage when not all the films taken need be kept. It would be interesting to know what xeroradiography can do with high kilovoltage techniques.

DEFENCE OF RESEARCH

Humanity's Rising Debt to Medical Research was the subject of Sir Henry Dale's Stephen Paget lecture to the Research Defence Society on Wednesday, and he was able to show how astonishingly the debt has increased even since he gave his previous Stephen Paget lecture in 1931. Demonstrating repeatedly that most of the progress of medicine would have been impossible without experiment on animals, Sir Henry recalled how Ehrlich had to abandon his attempted chemotherapy of malaria because "nobody could consider the subjection of human patients, even if they had been regularly available, to systematic trials of the curative properties of an indefinitely long series of new and untested substances." The present prospect of ridding the world of malaria dates from the decision, 35 years later, to test possible remedies on the malaria-like infections of small birds. Similarly the chemotherapy of bacterial infections, which in 1931 was generally considered impracticable, dates from 1935, when Domagk "found the right kind of septicæmic infections in mice for the testing of potential remedies, and a synthetic substance which, when so tested, was found to have a clear therapeutic action." The application of Fleming's great discovery might have been indefinitely postponed if Florey and his team had not made a new and thorough investigation of the properties of penicillin with the help of an adequate series of experiments on living animals; and everybody should understand that further exploration "in this still productive field of life-saving and healing possibilities" could still be delayed or halted by any successful attempt to hinder or prevent such experiments. Describing the improvement of anæsthesia, Sir Henry complained, with reason, that "the essentially humane researches... on which all these beneficent advances are based, are still exposed to a cruel campaign of denunciation and obstruction, the best that can be said for which is, that hitherto, it has been so largely ineffective." One can feel a measure of respect, he said, for people whose imaginative sympathies lead them to reject medical service altogether and to exclude all animal products from their food and clothing—though even such people must be prepared to answer a charge of cruelty by omission, when they refuse the chance of survival, or the relief of pain, for children and others for whose care they are responsible. But he had nothing but hard words for those who, without attempting such consistency, try to persuade or frighten the ignorant into refusing to be protected by immunisation, or use misrepresentation to prevent experimental research, whether this is for the benefit of man or of animals. The cruelty of these activities is, in Sir Henry's opinion, "none the less detestable on account of its origin in a self-indulgent sentimentality"; and he urged his hearers to counter it by joining the Research Defence Society, founded to fight the battles of the men and women who are doing medical research. The society's office is at 11, Chandos Street, Cavendish Square, London, W.1.

Major-General W. A. D. DRUMMOND, C.B., F.R.C.S., has been appointed director-general of Army Medical Services, from April, 1956, in succession to Lieut.-General Sir Frederick Harris.

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[1] Lancet, 1955, i, 97.

[2] liphant, W. D. Brit. J. Radiol. 1955, 28, 543.

[3] Hills, T. H., Stanford, R. W., Moore, R. D. Ibid, p. 545.

Special Articles

THE USE AND LIMITATIONS OF CORTISONE IN GENERAL PRACTICE *

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HITHERTO in this country cortisone and hydrocortisone have been available for use in hospitals only, but now the Ministry of Health are making these compounds freely available to general practitioners This freedom of control is viewed with apprehension by some hospital workers, who have come to appreciate the value of cortisone in the control of many diseases—in some of which its effect may be life saving—but who are now also familiar with its limitations and potentially dangerous side effects General practitioners for their part may rightly hesitate to use an agent with which, through no fault of their own, they have had little first-hand experience Nor is it easy to offer them guidance, because the value of cortisone as a therapeutic agent is still under investigation What is written today may well need modification tomorrow, and if this account of the uses of cortisone errs on the side of conservatism it is because I have deliberately chosen to avoid speculative claims

The Material Available

Cortisone and hydrocortisone are manufactured synthetically and are stable compounds which may be stored at room temperature without any special precautions In man hydrocortisone is the chief secretory product of the adrenal glands, and cortisone is not formed in significant amounts Given by mouth or injection cortisone is converted in the body and has a similar action to hydrocortisone, although the equipotent dose of hydrocortisone is about four fifths that of cortisone Cortisone is ineffective when applied topically for the treatment of skin diseases or injected intra-articularly for the relief of arthritis, and for these purposes hydrocortisone must be used In all other circumstances, including the local treatment of eye diseases, cortisone and hydrocortisone are interchangeable

These compounds are available in several different forms and the following are the most likely to be used by the general practitioner

1 Tablets of cortisone acetate, each containing 25 mg and scored to give 12 5 mg
2 Tablets of cortisone acetate, each containing 5 mg
3 Cortisone acetate 1% eye ointment
4 Cortisone acetate 1% eye drops
5 Tablets of hydrocortisone, each containing 20 mg and scored to give 10 mg
6 Hydrocortisone acetate 1% and 2½% topical ointment
7 Hydrocortisone acetate 2½% eye ointment
8 Hydrocortisone acetate 1% eye drops

Side-effects

Before discussing the indications for treatment with cortisone, it is necessary to describe its side effects Cortisone is a hormone , and given in the dosage required for the treatment of such conditions as rheumatoid arthritis, it may produce side effects which are potentially dangerous The therapeutic use of cortisone calls for a balance between the beneficial effect on the one hand and the undesirable side effects on the other

Adrenal Suppression

Cortisone suppresses the anterior pituitary gland and thereby diminishes the secretion of corticotrophin (A C T H) Deprived of the stimulating action of trophin, the patient's own adrenal glands go into resting phase and become physiologically (but irreversibly) atrophic If cortisone treatment is suddenly there may be a delay before the adrenal respond to the patient's own corticotrophin, and this time he is in danger of acute adrenal insufficiency This explains the sudden unexpected deaths cortisone treatment has been stopped suddenly. It essential when ending the treatment to tail off the gradually over a period of a week, thereby allowing pituitary to secrete corticotrophin again and the patient own adrenals to respond to this corticotrophin.

The other side effects of cortisone are similar to features found in Cushing's syndrome These can be termed toxic effects because they are the norm bodily responses to excessive amounts of adrenocorti hormones The development of these undesirable effects is closely related to the dose of cortisone and, lesser extent, the duration of treatment, hence necessity for the maintenance dose to be as small possible Sometimes in the treatment of potentially diseases it is impossible to avoid producing side-eff and the disadvantages of these must be weighed the fact that without treatment the patient would Similarly in selected cases of rheumatoid arthritis asthma minor side effects may be tolerated if an other incapacitated patient is able to resume work. further side effects are listed here, as far as possible order of frequency

Moon Facies and Obesity

Mooning of the face, and obesity of the trunk neck with sparing of the limbs, are common early effects In some patients acne and hirsuties of the develop, and if the dose is large enough purple appear on the flanks and upper part of the thighs.

Electrolyte Disturbances, Œdema, and Hypertension

Cortisone is a relatively weak sodium retaining mone, but in large dosage, particularly if renal fun is impaired, it causes retention of sodium, œdema hypertension It also promotes loss of potassium the body, and prolonged treatment may induce mu weakness Thus if a patient is having continuous th with doses of 75–100 mg daily it is usual to presc low-sodium diet and 2–3 g potassium chloride da enteric coated capsules

Infections

The bodily responses to bacterial infections are al by cortisone, and the patient is more prone to boil other septic conditions To a greater or lesser d depending on the dosage, the local and systemic rea to infection are masked Thus instances have reported of patients on large doses of cortisone in an acutely inflamed appendix has perforated and tonitis has developed without significant pain without any of the usual physical signs There special risk of quiescent tuberculous foci being reactiv and except in an emergency no patient should be cortisone without a preliminary radiographic exami of the chest

Peptic Ulcer

Dyspepsia and peptic ulceration may develop, and th are instances of gastric or duodenal perforation patients under treatment with cortisone Some wor have sought to prevent this by prescribing antacids a gastric ulcer dietary regime in all patients on prol treatment , others prefer to adopt such measures if dyspepsia develops

Glycosuria

Large doses of cortisone may cause glycosuria induce a diabetic glucose tolerance curve Keto and unless the glycosuria is severe and causing ria it can be disregarded The insulin requirements abetic patients are increased by cortisone

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* on a lecture given in a refresher course for general tioners held at St Peter's Hospital, Chertsey, on 13, 1955

porosis

longed treatment with cortisone causes a gradual of protein nitrogen from the body and in some nts particularly those more or less immobilised by natoid arthritis the resulting osteoporosis may e backache and result in spontaneous fractures of ibs, femur or vertebræ This tendency to nitrogen is partly offset by enhanced appetite

tal Disturbances

n increased sense of well being and even some horia are common in patients receiving cortisone re may also be insomnia associated with increased tal activity In some particularly those who were tally unstable before treatment was started, frank hosis may develop whether this takes the form of as depression or schizophrenia appears to depend the patient's constitutional make-up The mental rbance usually subsides when treatment is stopped, may require admission to an observation ward ents must, therefore be strictly supervised and the reduced at the first sign of any mental aberration

mbosis

tients receiving cortisone have an increased liability rombosis of the calf veins, particularly if confined to

Contra Indications

e contra indications to the use of cortisone can be red from its side-effects They are as follows

Cardiac failure, unless due to acute rheumatic fever one should be administered cautiously to patients with tension.

Chronic renal failure with a raised blood urea level.

Infection uncontrolled by antibiotics.

The presence of a peptic ulcer or a previous history of ulcer hæmatemesis, or melæna.

Any past or present mental instability

haps the most important contra indication is the ce of one of the established indications for its use one should not be the last resort of the thera ally destitute.

Indications

ny different disorders seemingly unrelated in gy and clinical manifestations respond favourably rtisone These may be divided into two distinct s. In the first are diseases that are characterised ilure of the patient's own adrenal glands to secrete ent hormone and which respond to 'substitution py with cortisone in physiological amounts In econd group are a large number of disorders not ated with any adrenal abnormality which respond tisone in much larger—so called pharmacological— Replacement therapy in patients with adrenal ciency is logical Pharmacological dosage—for the of rheumatoid arthritis, for example—is less readily standable, but the benefit is due largely to the nflammatory action of cortisone

ept perhaps in cases of certain skin diseases ioners may wish to seek expert advice before bing cortisone Certainly it should not be pre- d until the diagnosis is sure; and in many of the ons where it is of value the diagnosis can be tituted only by radiography and laboratory ications—for which the patient must usually be red to a hospital. But practitioners will wish to their part in the treatment of patients who have discharged from hospital on continuous cortisone py

Physiological Dosage

Addison's Disease

Patients whose adrenal glands have become atrophic or have been destroyed by tuberculosis derive great benefit from replacement therapy with cortisone. Their sense of well being is improved they are no longer liable to hypoglycæmia and they regain lost weight According to the degree of adrenal insufficiency 12 5 mg cortisone acetate once twice or thrice daily is required The same substitution therapy—usually 25–50 mg daily spaced evenly throughout the day—is given to patients whose adrenal glands have been excised in order to retard the growth of inoperable carcinoma of the breast or prostate, or in the treatment of Cushing's syndrome. This replacement therapy suffices for the exigencies of every day life, but in subjects with normal adrenal glands any stressful situation will evoke increased adrenocortical activity and the patient with Addison's disease requires additional replacement therapy when exposed to untoward events ranging from a heat wave or minor motor-car accident to a visit to the dentist or a surgical operation however minor Thus the patient should be given an emergency supply of cortisone with instructions to take an additional 2–8 tablets (50–200 mg) daily according to the severity of the stress In physiological dosage the salt and water retaining action of cortisone is not great Although all patients with Addison's disease improve greatly with cortisone alone deoxycortone acetate deoxycortone trimethylacetate or fluorohydrocortisone may have to be given in addition to restore to normal the blood pressure and sodium and potassium balances Here fluorohydrocortisone is particularly valuable because it is effective by mouth and as little as 0 25–0 5 mg on alternate days or every third day is often sufficient

Panhypopituitarism

In the same dosage cortisone provides rational substitution therapy for patients whose adrenal glands have atrophied owing to destruction of the anterior pituitary gland This is usually caused by infarction of the pituitary after severe obstetrical hæmorrhage (Sheehan's syndrome), but it may result from pressure by an intracranial tumour In these patients cortisone prevents attacks of hypoglycæmia and coma its effect is no less satisfactory than in Addison's disease

Acute Adrenal Insufficiency

Acute adrenal insufficiency arises rarely as a complication particularly in children of overwhelming infection with streptococci or meningococci The clinical picture is that of the underlying infection, together with sudden collapse and a precipitous fall in blood pressure and other manifestations of shock Replacement therapy with cortisone or hydrocortisone in addition to large intramuscular doses of penicillin to combat the infection may be life saving If possible an intravenous infusion of 100–200 mg hydrocortisone † in glucose-saline should be given together with an intramuscular injection of 100 mg cortisone acetate Thereafter if the child is not vomiting cortisone may be given orally in divided doses amounting to 100–300 mg daily according to the body weight and clinical response

Pharmacological Dosage

In the many seemingly unrelated conditions where adrenal hormones are of value when given in an amount greater than that required physiologically, their beneficial action is probably due to their strengthening the cell membrane and altering cellular permeability The result is reflected most conspicuously in their anti inflammatory action

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† Hydrocortisone (free alcohol)—so called because the steroid is not in the form of the acetate ester—is available as a sterile solution for intravenous administration in ampoules of 20 ml. containing 100 mg

Inflammation is usually associated with a local response (the outpouring of cells and fluid from dilated capillaries) and a general systemic response characterised by such features as malaise, fever, and increased erythrocyte sedimentation rate (E S R) In the case of a bacterial infection the local reaction is designed to confine and eventually destroy the invading organisms The function of the systemic disturbance is less clear, but at least it indicates that the patient is ill Given in large doses—in pharmacological as opposed to physiological amounts—cortisone prevents both the local and the general inflammatory responses

If, for example, a patient with lobar pneumonia were given cortisone in large amounts, the temperature would settle, the E S.R would decrease, and from feeling ill he would have a sense of well being and even some euphoria These improvements would give the erroneous impression that the drug was doing good On the contrary the infection in the lung would be spreading, and cultures of blood for pneumococci would be repeatedly positive Clearly under these circumstances cortisone is merely masking the outward manifestations of the infection

In rheumatoid arthritis the local inflammatory reaction seems to serve no useful purpose and is responsible for the pain, swelling, and tenderness of the joints Here cortisone relieves the symptoms by suppressing the local and general responses, but it does not cure the underlying disease process This effect has been likened to an asbestos suit which protects the wearer from the heat and flames but does not put out the fire There is always the hope, however, in a self-limiting disease that the fire will go out spontaneously or that some other treatment will extinguish it

Dosage

The effect of cortisone lasts for about six to eight hours, and therefore the dosage should be spaced evenly through out the day Dosage can be determined by no rule-of-thumb, and the management of acute, potentially fatal diseases is quite different from that of lengthy chronic illnesses In acute fatal diseases the aim is to suppress the condition by an initially high dosage—200–300 mg on the first day and 100–200 mg in divided doses on the second and third Thereafter the amount is adjusted carefully until it just suffices to control the manifestations Since the disease is potentially fatal, the dose is governed by the severity of the condition rather than by concern over the development of side effects In chronic non-fatal conditions, on the other hand, the aim is to provide optimal, not necessarily maximal, relief The dosage is governed more by the risks of undesirable side effects than by the severity of the symptoms

Collagen Diseases

Cortisone is especially useful in controlling the collagen diseases, of which rheumatoid arthritis is the commonest

Rheumatoid Arthritis

The problem here is to decide at what stage in this protracted disease cortisone should be administered Trials organised by the Medical Research Council have shown that in the early stages, when spontaneous remissions are common, cortisone relieves symptoms no better than aspirin In cases of longer standing, not controlled with aspirin, other drugs, such as phenylbutazone, may be tried, but it is for these that cortisone has been most used Treatment may have to be prolonged , and before it is begun the contra indications to its use must be carefully considered, for it is easier to start than to stop administering cortisone

Cortisone is of particular value in cases where soft tissue swelling, inflammation, and pain are not controlled pirin It is also indicated in that acute type of toid arthritis associated with pyrexia which may mimic acute rheumatic fever but does not respond to salicylates It is useful too, during rehabilitation and in an acute exacerbation of disease

After an initial dosage of 75–100 mg cortisone for several days the patient's symptoms graduall Pain and tenderness of the joints and stiffness early Peri articular swelling is reduced more slowly less certainly The patient has an improved well-being and renewed optimism for the future weeks or months of discomfort and perhaps unem ment As soon as the symptoms have been contr the dosage is reduced gradually—using 5 mg tab necessary—to the least which affords the patient r able comfort Commonly the dosage required to tain the patient completely free of symptoms and therefore likely to cause progressive side-e The aim should not be to free him of all discomfort, to improve his condition substantially without prod significant hypercortisonism The severity of the d fluctuates, and the dosage of cortisone should be adj in parallel Maintenance dosage—the amount r to maintain notable but incomplete symptomatic r varies between different patients , but if prog side effects are to be avoided it should usually not 40–75 mg daily in men, 30–50 mg in premeno women, and 25–37 5 mg in postmenopausal Manual workers often have more pain towards th of the day, whereas in sedentary workers the pain worse in the mornings Thus, although the in between doses of cortisone should be regular, the given may be varied to accord with diurnal variat symptoms By this means patients have been t for long periods without the development of sig side effects If a partial or almost complete re occurs, the dosage of cortisone should be tai gradually and the patient maintained on aspirin, co being kept in reserve for the treatment of any sub exacerbations

Cortisone must be used only in the active phase disease when the symptoms are due to an acute inf tory reaction It will not influence deformity or losis, and should never be given in the later stage the disorder is largely burnt out and the p disability is due more to immobility and stiffne disorganisation of the joints than to pain and from inflammation

Rheumatic Fever

Cortisone relieves the joint pains and pyrexia of rheumatic fever A similar result often follows ad tration of aspirin , the Medical Research Counci showed that for relief of symptoms these two were about equally efficacious Nevertheless in indi cases cortisone may be more effective than aspiri there is increasingly good evidence from Ameri there is less likelihood of residual valvular damage prolonged (six to twelve weeks) treatment with doses of cortisone than after treatment with The development of valvular and myocardial le not closely related to the severity of the acute rhe attack, and hence there may be a place for co in mild as well as severe cases This matter is sub judice , but cortisone is certainly indicat severe cases, particularly if pericarditis or heart-f develop

Other Collagen Diseases

At present cortisone is the only drug that offer hope in *disseminated lupus erythematosus*

This rare, but increasingly recognised, disease usually o in women aged 20–40 and is characterised by some or all of following features arthralgia (indistinguishable from in rheumatoid arthritis), fever, pleural, pericardi abdominal effusion , Raynaud's phenomenon, lymph and hepatic enlargement , butterfly rash over the chee dge of the nose; progressive anæmia leucopenia and ombocytopenia (which may be associated with purpura or maturia) and renal involvement The diagnosis is nfirmed by detection of the so-called lupus-erythematosus ls in the plasma.

ovided treatment is instituted before there is renal olvement (which invariably leads to fatal uræmia), tisone will often control the disease and maintain a ission for months or years

ortisone has also proved of value in some cases of *arteritis nodosa, dermatomyositis scleroderma anky ng spondylitis and temporal (cranial) arteritis* It is ticularly indicated in cases of severe temporal arteritis ere constitutional symptoms are prominent and the ent is in danger of losing his sight

Skin Diseases

phigus and Exfoliative Dermatitis

or these conditions, with extensive areas of skin olved, oral treatment with cortisone or hydrocortisone necessary and has proved life saving Formerly phigus usually ended fatally after six months to two rs, but satisfactory remissions have been achieved h cortisone often in very high dosage continuous ntenance therapy is nearly always necessary to vent a relapse In the pemphigus like eruptions mphigoid bullous erythema multiforme and senile matitis herpetiformis) the effect is also dramatic

exfoliative dermatitis the outlook depends on the erlying cause. Dramatic and permanent cures may hieved when the disorder is due to the toxic action drug, such as gold The idiopathic form also responds continuous maintenance therapy may be necessary, dosage being adjusted to the least which will prevent lapse Where the cause is a reticulosis the skin dition will respond but the prognosis depends on the erlying disease Erythrodermia following psoriasis is h difficult to control and relapses readily when the ge is reduced

many skin diseases topical application of a 1% rocortisone ointment or lotion sparingly twice daily he onset and thereafter once daily or on alternate s if control is maintained has a remarkable effect there is no danger of side-effects

mas, Dermatitis and Pruritic Conditions

many of these conditions topical application of rocortisone ointment has proved of considerable e First the underlying cause must be sought and if ble removed, because the steroid masks the condition does not cure it—although a spontaneous remission persist when treatment is stopped Such intractable irritating conditions as pruritus ani and pruritus a may respond remarkably in a matter of hours; If a satisfactory response is not achieved within four s it is useless to persist with this form of treatment ntile eczema, contact dermatitis atopic dermatitis, seborrhœic dermatitis may all respond to hydro sone ointment Recalcitrant vesicular eruptions the hands are as always, fickle in their response eczema of the eyelids postauricular folds, and tory canal (chronic otitis externa) are often improved matically Where there is much lichenification the nse is less rapid, and a 2.5% ointment may be erred to the 1%. In all these conditions the more al types of treatment should be tried first, and hydro isone ointment not started until the advice of a matologist has been sought

ortisone by mouth may also be effective in other diseases such as acute lichen planus acute urticaria sensitivities, and certain forms of alopecia Here ications are still sub judice and meanwhile expert ice should first be sought

Respiratory Diseases

Two respiratory disorders—bronchial asthma and pulmonary sarcoidosis—may respond to cortisone

Asthma

Cortisone is usually effective and may be life-saving in the treatment of status asthmaticus but it should not be used until more orthodox remedies, including adrenaline 1 minim a minute injected subcutaneously and intravenous aminophylline, have failed Large doses (200–500 mg) are often required initially but the relief of bronchospasm may be dramatic Thereafter the dosage is reduced gradually Any superimposed respiratory infection should be treated simultaneously with an antibiotic—usually penicillin

The value of cortisone in the treatment of severe and recurring attacks of asthma is still undecided When other forms of treatment have failed cortisone will usually give temporary relief with remissions lasting for one to two months At present the consensus of opinion favours repeated short courses of cortisone in these patients but 40% of patients need continuous maintenance therapy to keep them symptom free The undesirable side effects of cortisone administered over long periods must be weighed against the symptomatic improvement obtained and as in the treatment of rheumatoid arthritis it is wise to aim short of complete relief Bronchodilators should be given concurrently and if the factors leading to the asthma are treated and managed the patient can often be maintained on smaller and smaller doses of cortisone.

Cortisone is not indicated and is ineffective, in the treatment of bronchospasm associated with chronic bronchitis and emphysema

Sarcoidosis

A decision to use cortisone in the treatment of sarcoidosis should be made in consultation with a specialist in this field Its use is indicated in the earlier stages if there is considerable pulmonary involvement Since it is thought that in many instances the condition is related to a tuberculous infection antituberculous chemotherapy is usually given concurrently

Eye Diseases

Cortisone or hydrocortisone eye-drops and ointment are of great value in the treatment of non bacterial diseases of the eye—particularly iridocyclitis and keratitis These conditions are often self limiting and the ultimate visual damage, as well as the pain are largely proportional to the intensity of the exudate which cortisone suppresses Local treatment should be applied every one to three hours, in addition to the usual instillation of atropine. In keratitis especially the interstitial keratitis of inherited syphilis, the suppressive effect of cortisone is particularly important since subsequent scarring (and consequent visual loss) is directly proportional to the severity of the intracorneal exudation and infiltration Pathogenic organisms may be present which require antibiotic treatment In iritis cortisone is especially indicated if there is an unusually heavy exudate into the aqueous which may obstruct drainage and cause a secondary glaucoma Its use is of the greatest value in sympathetic ophthalmia in which the prognosis is doubly grave because both eyes are involved

Cortisone applied locally relieves the manifestations of conjunctivitis but here its use should be restricted to cases due to allergy which have not responded to antihistamine drugs

Nephrotic Syndrome

Cortisone is helpful in the management of the nephrotic syndrome particularly in children. Its effect may be partly related to a decrease in the permeability of the glomerular capillaries whereby the heavy loss of protein in the urine is reduced A short course of cortisone may then be accompanied, or followed, by a pronounced diuresis and clearing of the œdema This treatment should be instituted only in hospital, where the clinical response can be closely observed Such treatment enhances somewhat the risk of intercurrent infection, but this can usually be controlled by antibiotics After a remission of several weeks or months the œdema tends to recur, but it often responds to further courses of cortisone, and in some instances lengthy or even permanent remissions are induced

Blood-diseases

Cortisone has proved of value in several hæmatological disorders, but a precise laboratory diagnosis is necessary and in most instances this will require admission of the patient to hospital

Thrombocytopenic Purpura

By its action on the capillary walls cortisone reduces purpuric manifestations in thrombocytopenia, whether primary and idiopathic or secondary to some other disease It is of particular value in bringing acute purpura due to idiopathic thrombocytopenia under control, and thus enabling the hæmoglobin level to be raised enough (perhaps with the help of a blood-transfusion) for splenectomy to be undertaken Many patients with Henoch Schonlein purpura improve with cortisone, but the exact rôle of this agent in treatment is still under investigation

Hæmolytic Anæmias

Hæmolytic anæmias and hæmolytic crises such as may occur in Hodgkin's disease, lymphosarcoma, chronic lymphatic leukæmia, and other malignant conditions may be controlled with cortisone, and similar satisfactory results may occur in other acquired hæmolytic anæmias The dose of cortisone required varies between different patients, and in the same patient at different times Sufficient is given to suppress hæmolysis, this suppression is shown by a fall in the serum bilirubin level and in the reticulocyte-count and by a rise in the hæmoglobin level to 75–80% But, because of side effects, the hæmolytic process can seldom be suppressed completely

Leukæmias and Reticuloses

In the leukæmias and reticuloses the effect of cortisone is on the whole disappointing In acute lymphatic leukæmia a temporary remission may be induced, but the disease becomes increasingly less responsive with each relapse Cortisone often reduces the size of the glands in chronic lymphatic leukæmia (without always influencing the number of primitive cells in the peripheral blood) and in lymphosarcoma This action may be useful in relieving respiratory obstruction due to enlarged mediastinal glands

Miscellaneous Conditions

Cortisone has been used with some success in a large number of other diseases, but except in *ulcerative colitis* satisfactory responses have not been the rule

Systemic cortisone is never indicated in patients with *osteo arthritis*, but in monarticular cases where a large joint is involved intra articular injection of hydrocortisone will cause symptomatic improvement This, however, is of short duration—up to ten days—and such an injection should be made only for special occasions In *acute gout* cortisone relieves the swelling, but a recurrence is likely when treatment is stopped In most instances orthodox treatment should be used and cortisone reserved for the relief of an acute episode which would otherwise prevent the patient from keeping an important engagement

The Future

mitations of cortisone are many Nevertheless in therapeutics is established, and further research into the mechanism of its anti inflam action may reveal much which is now hidden from Steroid chemists are engaged in synthesising comp related to cortisone and hydrocortisone which prove no less effective or more effective than the substances and may have fewer side effects A prednisone and prednisolone, analogues of cortisone hydrocortisone, have been developed These appear have an equivalent anti-inflammatory effect at one quarter the dosage of the parent compounds, b much diminished tendency to cause sodium ret and œdema We are on the threshold of a new important era in the control of some hitherto fa disabling diseases

I am most grateful to several colleagues—part Dr Stephen Gold, Dr Frank Dudley Hart, and Mr P Trevor Roper—who have kindly given advice from expert experience I am also indebted to Merck Sh Dohme Ltd, who have freely supplied large quan of steroids

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GENERAL PRACTICE IN SCOTLAND

AT the end of June this year Scotland had 2568 do undertaking to provide general medical services the National Health Service, compared with 2543 in and 2505 in 1953 These figures are given in the report of the Scottish Medical Practices Committee, remarks that the average number of patients on do lists was 1975 at the end of this June, com with 1981 on the same date last year This av says the report "tends to suggest that the country whole is not suffering from a shortage of general practitioners"

Applications for the 22 advertised vacancies num nearly 900, but many doctors lodged applicatio more than one vacancy, and an appreciable num applications came from doctors already establish practice The ages of the selected applicants r from 28 to 57, with an average of 39

The committee suggests that young doctors see post should not look on advertised vacancies as the or the best method of entry into practice The method—setting up a new single handed practice to be falling out of favour The committee find even with the encouragement of an initial pr allowance, few doctors are willing to face the involved in building up such a practice, either district listed as "under doctored" or elsewhere. is too the practical difficulty of securing a suitable to live in and to work from Furthermore, most already on a doctor's list tend to remain on th unless some change of circumstances necessitates tr Before the start of the National Health Service " was more mobility among patients than the today, when a person who wishes to change his d must make a formal application to the Exe Council"

The committee concludes that probably the effective method of entry into general practice joining in partnership after a preliminary assistant "This can be done, however, only with the co oper of established practitioners, some of whom, it is felt, not fully appreciate the financial benefits whi partnership brings"

"… In England, where rulers rely, not so much upon brilliance of individuals as on the solidity of the nati character, intellectuals are not expected, and do not ex to exercise any corporate influence at all It is only, scientists (a fresh breed of men) who suppose that t opinions on subjects outside their own competence a importance This illusion will pass"—SIR HAROLD NICOLS *Good Behaviour* London, 1955, p 142

In the Mental Hospital *

GROUP WORK-THERAPY IN HOLLAND

JOAN BURR
R.M.N., S.R.N
ISTANT MATRON THE BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL, LONDON

IN a three-week visit to some of the Dutch mental spitals I particularly noticed how much value the tch attach to group work therapy for their patients opposed to occupational therapy in the sense of prac ing arts and crafts under the guidance of a trained rapist In the hospitals I visited the patients pro amme was as follows

10 A.M Dress. Make beds. Help clean ward
0 A.M Breakfast Wash up.
0 A.M.–12.30 P.M Work—with a break for coffee or tea at 10 0 A.M
12.30 P.M –2 0 P.M Lunch on the wards.
0 P.M –5 0 P.M. Work with a break for a cup of tea at 3.30 P.M.
30 P.M. High tea on the wards.
0 P.M.–8 0 P.M. Recreation, games dancing &c
0 P.M Evening drink.
0 P.M Bed.

esides the usual work for patients in the kitchens dle rooms and laundries, and on the farms, the pitals also provide light assembly work on small trical fittings bicycle parts cardboard boxes, or ple gadgets, which are sent in by local factories The ories pay for this work Rugs and mats made in the pitals are also sold to the factories. In one hospital ch was being redecorated all the inside painting for mpletely new colour scheme in two blocks of wards been done by patients under the guidance of hospital One hospital of 1200 patients had a farm supply all the hospital s needs and also selling corn to the l mills. This farm was worked by a farmer and his ly of 4 sons with the help of 30 full time working nts. The kitchen garden for the same hospital was by 1 gardener with 20 full time patients

imple occupational therapy is given to patients who too disturbed or deteriorated to leave the ward but with these patients the Dutch try, whenever possible stitute some work which is of use to the community instance, disturbed patients men and women who ld formerly have been confined to the wards are now ouraged to help in the grounds by carting leaves or s-cuttings in wheelbarrows or moving earth and sand ardening purposes.

embers of each working group are encouraged to h newcomers, rather than leave this to the hospital l. As they progress some patients are put in charge of ers, and each group of 8–10 patients has a leader who sponsible for the team

nder the guidance of a trained occupational therapist ents with an aptitude for embroidery and needle-work ke all the cushion-covers tablecloths aprons, and so in use in the hospital In one ward I saw 40 bed eads in heavy cotton lace made by patients, and eral others had sets of curtains made from plain terial most attractively embroidered by patients.

ndividual occupational therapy, such as basketry ther work tapestry and stool making is done as reation and entertainment in the evening after the 's work is over or by patients who are confined to bed ients who wish to make articles for themselves are ged to do so during this time and not during working rs.

Patients are given pocket money, varying from 2s 6d to 7s 6d per week, which is intended as in our own hospitals to show appreciation of the progress made, and to encourage further effort, but not to represent the material value of the work

By far the greater part of the Dutch patient s day is spent in work which while carefully chosen to match his ability is also for the good of the hospital In many English hospitals the main part of the patient's day is spent in occupational therapy centres with trained therapists Here he is helped to make articles, calling at first for only a limited ability and concentration but for more complicated skills as his condition improves At the same time he is under the observation of people who are aware of his psychiatric condition and can report on his behaviour to his doctors and nurses What he makes is made by himself alone, and is usually for his own benefit and pleasure The community gains little from occupational therapy of this kind, but it helps to restore a patient s self confidence by proving to him that he can complete a piece of work successfully

The Dutch also recognise this but feel that the leisure hours in the evening are long enough for the patient to benefit from individual work They maintain that their intensive group programme, if carried out by an enthusiastic nursing staff, offers a life which is as normal as possible and which is a good preparation for the time when the patient will again face the outside world They attach much importance to the fact that the patient is working, not for himself alone, but with others, in a team towards an end which benefits the community of which he is for the time being a member They also believe that by working in a group the patient is trained to accept some responsibility however little, and to adjust himself to the needs of the community

A hospital which employs only 1 gardener to tend a kitchen garden serving 1200 patients saves on wages; but does this necessarily mean that the patients are being exploited? Or is it, as the Dutch think, more effective treatment than individual occupational therapy?

My visit to Holland was made while I was taking a course on nursing administration at one of the staff colleges of King Edward s Hospital Fund. I am grateful to the governors of my hospital for enabling me to attend the course

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A group of articles chiefly concerned with the value of the occupation and work for mental patients and the means whereby it is best provided.

Public Health

Alcoholism in France

THE perils of alcoholism are forcing themselves more and more on the attention of the French government and people. A determined campaign has now been in progress for more than a year to combat what for its serious effects on public health and even public security, has come to be regarded as an urgent national problem.

As part of far-reaching inquiries (many of them still in their early stage) into the effects of alcoholism each administrative department in France is now obliged to make statistical returns of the number of patients in psychiatric institutions suffering from alcoholic psychosis, as well as the number of deaths due to cirrhosis and acute alcoholism. Every department whose returns show a rate of alcoholism " which exceeds the national three-year average is by law required to set up, without delay, one or several institutions for the re-education of alcoholics' These are either independent centres for 50 to 100 patients or sections attached to a psychiatric clinic or hospital with beds for 25 to 50 They will undertake compulsory institutional treatment.

Among the latest measures taken by the French legislature are a number of decree-laws, passed this summer in execution of the French code of public health, which clarify the conditions and safeguards under which such custodial treatment can be imposed upon alcoholics. These go much further than anything yet contemplated in this country or elsewhere

All administrative authorities, including the police and the prisons, must now report to the health authorities of each department every case which comes to their knowledge, either in court proceedings or in any other way, of persons against whom there is “ grave and precise ” suspicion that they have committed a criminal offence in a state of intoxication, or who might become dangerous to third persons because of alcoholism Where such people are already in prison, this notification to the health authorities is required at least several days before their sentence expires Upon such notification the health authority will undertake, within a few days, a general “ social inquiry ’ into the circumstances of the suspected alcoholic , and they will appoint a doctor from a pre-established panel to make a complete medical examination Powers exist under the public-health code to enforce such an examination in case of need If the doctor decides that the patient is an immediate danger to public safety, the medical report must be delivered within as short a period as 48 hours The report will be considered by a permanent medical commission of nine members appointed by the departmental prefect (the quorum is three of whom at least one must be experienced in psychiatry)

If the commission conclude from the social and medical reports that the suspect is in fact a danger to third persons (regardless of whether he has, or has not, at any time committed a punishable offence), they make a request, accompanied by their reasons, to the local civil court for an order of committal to a re-education centre for alcoholics While this order itself can come only from a law court, eventual release (which may be on trial and subject to conditions such as regular report at the re-education centre) lies within the discretion of the authorities responsible for the treatment But the public prosecutor and the departmental director of public health must be informed of all releases Voluntary patients will also be admitted to these re-education centres and sections, but they must be released immediately upon demand

This scheme of compulsory custody and treatment for alcoholics is novel in its severity, but it seems fairly widely agreed in France that the seriousness of the situation justifies, and indeed demands, severe measures For French public opinion has lately been shaken by the views of certain specialists that as much as “ 75 % of all congenital physical and psychological anomalies among young people, including juvenile delinquency, are in some direct way related to alcoholism among progenitors ”

On the other hand, the National Assembly last week [1] decided to delay until next September the application of another and much less sweeping decree against alcoholism. This would have deprived about a million Frenchmen of the right to distil 10 litres of alcohol without paying tax on it The decree was directed against those people who, though not farmers or fruit-growers, had managed to acquire the privilege of getting 10 litres of alochol distilled from their own products But for reasons which it seems are at least partly political, they will now be able to go on enjoying their bonus until next autumn at any rate

Poliomyelitis

Uncorrected notifications of poliomyelitis in England and Wales in the week ending Nov 5 (44th week) were considerably less than in the preceding week—the first indication that the seasonal decline is now well under way The figures were (43rd week in parentheses) paralytic 154 (189), non-paralytic 105 (140), total 259 (329) But the total was the highest for any 44th week in the past six years Total uncorrected notifications in the 44th week for the years 1950–55 were as follows (percentage of paralytic cases in parentheses) 1950, 206 (72 1%) , 1951, 82 (75 6%) , 1952, 80 (75 0%) 1953, 94 (63 9%) , 1954, 59 (61 0%) , 1955, 259 (59 5%) So far in 1955 the proportion of non-paralytic cases in England and Wales has been about 45 5% This is a further small drop towards a more usual figure but it is still higher than any of the preceding four years, for the whole of which the figures we 951, 41 5% , 1952 20 8% , 1953, 34 6% ,

The Widdicombe File

XXIX SPECIALIST WITHOUT A SPECIALTY?

DEAR YOUNG PEARSE,

Your father, who sounds (from his letter) to be usual tempestuous health, has asked me to drop line about Chest Physicians He tells me, inter much alia very badly written—that you are keen “ take up diseases of the chest as your specialty ’ Th interesting word is the penultimate one , for he imp that there is no question that you should acquire specialty We must accept this , but—if you pardon the cliché—you are still young Have you soon decided not to be a general practitioner? Po you still believe that medicine is a science and th serum potassium, cardiac catheters, and corticoster are more important than sympathy, kindness, and h healing I suspect that your forceful specialist fa has had much to do with it

Now about being a Chest Physician Your fath rightly anxious about the future of this branch medicine There has been talk lately of tuberc dying out and Chest Physicians becoming unemp Of course, much of it is not meant to be taken serio but the idea is worth examining

I doubt very much whether tuberculosis will d quickly as some seem to think The prevalence of pulmonary variety is still high and shows little inclin to decline Better feeding, housing, treatment, chest clinics will undoubtedly harry the bacillus eventually contain it But talk of the conquest tuberculosis and a tuberculosis free nation with decade comes only from journalists, surgeons, or ent astic physicians who lack the most necessary quality the wise doctor—humility Tuberculosis will undoub decrease and may almost disappear, like plague, smal and diphtheria Your son—as far as I know yet unb may on qualifying know as little about tuberculosis knew of chlorosis and cholera But that assumes you will be able to resist matrimony for another years and that your first two children will be daug Give us, in other words, three decades with no wa trade depressions, and tuberculosis may become infrequent as typhoid in this country A small outb will then be a proper subject for a contribution to *Lancet* , and there will be a sententious leader po out the danger of the falling vaccination rate and need for continued vigilance, while deploring the mature closing of sanatoria and their conversion convalescent homes for neurotics

As tuberculosis declines, the work of the chest phys will change He used to be a Tuberculosis Officer the D P H Now he is a Chest Physician with the Mem ship But changing his name and his administr environment has not fundamentally altered his He still deals largely with tuberculosis and is not cerned with the other aspects of chest medicine ex for differential diagnosis and disposal, the lung can and odd shadows going to the thoracic surgeons and bronchitics and asthmatics back to the general pr tioner If he gets an unusual or especially intere patient he may have to send him elsewhere becaus has no beds He may even have no beds for his tube lous patients The position is getting better, and That is Chest Physicians can be chest physicians I am trying to lead up to As tuberculosis declines, chest physician, far from losing his job, should come his own He can forget tuberculosis and study the o equally, and in some cases more, interesting dis that come within his special branch

Recently, I heard a physician—a very eminent one say that the study of chest diseases is the only special at is not special. Neurology, for instance is a pure tellectual exercise in a very restricted field Diagnosis —all, or nearly all. No doubt it has its excitements The e that goes up at the end of a detailed and otherwise rmal examination may give as much intellectual isfaction as the last word in the *Times* crossword zzle But, like the puzzle it is then finished—until next puzzle, clinical or cross comes along Or sider dermatology, an exercise in observation and act description It is a voluptuous specialty for is re not sensuous satisfaction from the rolling Latin mes and the elegant powders, paints unguents and ams—ectodermosis erosiva pluriorificialis and the iters of Saturn Cardiology once a bedside art, is oming an exercise in *techniques—electronics*, sound ording cardiac catheterisation and angiography It paradise for those who like gadgets and making things rk

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[1] *Times*, Nov 10 1955

Have you noticed that the study of diseases of the st is not an -ology? The Americans have tried thisology and œsophagobronchology" I have n seen "pulmonology" Maybe the absence of an gy is merely due to the ugliness of all possible ones t I like to think that the study of chest diseases is too e a subject to be constrained by a single -ology atomically all between neck and navel is fair game roids slip behind the sternum cystic hygromas invade mediastinum, subphrenic abscesses give pleural sions, and the stomach slides into the thorax The y equipped chest physician must have besides an imate acquaintance with the lungs a working know e not only of the heart, its murmurs, rhythms, mal nation and failures but also of the mediastinum phagus, diaphragm, and ribs Moreover, his interest he lungs takes him far afield into general medicine— disseminated lupus erythematosus scleroderma the idoses, reticuloses, myopathies and neuropathies omyelitis, steatorrhœa, uræmia and polyarteritis osa Surely such a subject is a generality

f you were cynical—which I know you aren't—you uld retort that the very breadth of the subject denies separate existence, that if it embraces so much of icine it is the proper study of the general physician I should reply that the good chest physician is indeed neral physician with a little special knowledge The u may still object that the chest physician without erculosis is like a bishop without a see or a Minister hout portfolio—a specialist without a specialty or on for existence And this is more difficult to refute thout doubt fewer chest physicians will be needed if erculosis becomes a rare disease Much will still have be done to keep it rare—B C G vaccination, contact minations, radiographic surveys, and the like But n the number of patients being treated has fallen to w level it may perhaps be expedient to return the vention of tuberculosis to the direct control of the dians of the public health When this stage is reached nd of course it will be a gradual process—specialists iseases of the chest must rest their case for continued stence on the contribution they are making to the y diagnosis, treatment and care of other chest ases. If the specialty dies it will be the fault of its titioners Whether it is desirable that it should live another matter and we cannot discuss that without ling with the general question of specialisation within art of medicine

We must wait and see. I think the chest specialist will ablish his claim But I may be wrong Perhaps as ting lists disappear sanatoria close and medical erintendents compete for custom the chest physicians, ording to age will prepare to play out time or acquire bies They may for instance become specialist consultants in intrathoracic meningocele endometrioma of the pleura sarcoidosis in identical twins, or lung cancer in snuff takers They may collect sequestrated segments peanuts in the bronchi pulmonary paragonimiasis or stamps with the Cross of Lorraine But if they are on a part time contract the hobby must pay, and that is more difficult Possibly some fresh angle on chronic bronchitis would be a good bet Anything new about this, the most common disorder in chest medicine would be welcome for we know little more about it than Hippocrates did

It is a big subject Why not come and talk about it? Come and see a chest clinic working see my few remaining A P.s and P P s and the children having B C G; talk to my invaluable health visitor and care organiser come with me to the patient's home; watch me "supervising" old patients and answering their questions about work housing marriage and babies I think you will see why I like the job for this of all the specialties brings the physician closest to the patient

Ring me up when you get a chance and we will fix a time

Yours sincerely

D A LONGLEA

Parliament

Purchase-tax on Crash-helmets

IN the House of Lords on Nov 10 Lord HAMPTON said the reduction of purchase tax on crash helmets from 25 to 10% was good so far as it went, but it did not go far enough He would like to see it abolished He was fortified in his view by a resolution passed at a British Medical Association meeting in June that these helmets should be free of tax. The importance of this form of protection was first emphasised by the late Sir Hugh Cairns, at Oxford and it was largely as a result of his work that the wearing of these helmets in the Armed Forces was made compulsory Lord AMULREE suggested that if the remaining small purchase-tax was abolished it should be done with some propaganda and a flourish By that means he believed that more young people—and most of the deaths occurred among young people—would be encouraged to wear crash helmets.

Lord HAWKE Lord in Waiting, said that the campaign to wear these helmets was producing results The Road Research Laboratory from a sample check reckoned that about 1 in 3 motor-cyclists now used them Many people had not been deterred by the purchase-tax for 300 000 had bought helmets The new Budget proposals reduced the tax to about a fifteenth of the retail price The Government were in great difficulty because every time they were pressed to remove a particular item from purchase tax one hundred other items were pressed, for equally good, if not better, reasons He hoped that Lord Hampton and his friends would continue to urge motor-cyclists to wear a helmet, and that they would agree to cease arguing against the tax now that it had been so substantially reduced

QUESTION TIME

N.H.S Disciplinary Procedure

Mr ALBERT ROBERTS asked the Minister of Health if he would investigate the operation of the National Health Service Act disciplinary procedure in relation to the services administered by the medical executive council with a view to amending the composition of the appeal panel, in view of the fact that this panel comprised persons appointed by the Minister and that the further appeal from the panel was to the Minister himself—Mr IAIN MACLEOD replied Under arrangements which go back in principle to 1913 and which appear to have worked satisfactorily in the interests of both patients and doctors the responsibility for deciding appeals from the decisions of executive councils on complaints against practitioners taking part in the general medical services under the National Health Service, rests with me and not with a panel The persons taking oral hearings do so on my behalf

Hospital Farms

Replying to a question, Mr **Macleod** said that reports had been received from regional hospital boards on 207 hospital farms Decisions had been reached on 112 of these and discussions were still taking place on the remainder The decisions reached so far provided for the disposal of 14,574 acres of land In 14 cases these decisions involve the complete abandonment of farming activities 9 of the hospitals are mental hospitals, 4 tuberculosis hospitals, and 1 a general hospital

Deaths from Lung Cancer and Coronary Thrombosis

Replying to a question, Mr **James Stuart**, Secretary of State for Scotland, said that there were 1812 deaths from lung cancer in Scotland in 1954, and 1311 in the first three quarters of 1955 During the first three quarters of 1955 there were 6470 deaths from coronary thrombosis, and for the same period of 1954 the number was 6320

Capital Punishment

Replying to a question, Major **Gwilym Lloyd George**, Home Secretary, said that the Government had given further consideration to the report of the Royal Commission on capital punishment in the light of the debate on Feb 10[1] The commission's recommendations might be divided into three main groups

The first consisted of the major recommendations that the age limit below which the sentence of death might not be imposed should be raised from 18 to 21, that in all other cases the jury should be given discretion to decide whether there are such extenuating circumstances as to justify substituting the sentence of imprisonment for life for the sentence of death, and that the test of criminal responsibility laid down (so far as concerns England and Wales) by the McNaughten rules should be abrogated The Government, after full consideration, did not feel able to accept any of these three recommendations

The second group consisted of a number of other less important recommendations which could not be implemented without legislation The Government did not see any prospect of legislation on this matter in the near future, and proposed to defer a decision on these recommendations until an opportunity for legislation could be found

The third group consisted of recommendations to which effect could be given administratively These had, in the main, been accepted and had been, or were being, put into effect As regards England and Wales, he had, in particular, authorised the Prison Commissioners to proceed with the plans for a special institution for the detention and treatment of psychopaths and other prisoners who were mentally abnormal, and arrangements were now in force whereby persons charged with murder were seen by a psychiatrist from outside the prison service, as well as by a doctor or doctors from within that service, in any case where the prisoner's mental state was in doubt

Except where otherwise stated, his remarks dealt with the position in England and Wales Information about the administrative changes made in Scotland were given by the joint under secretary of State for Scotland on Feb 22

Research into Rabies Control

Replying to questions, Mr **Heathcoat Amory**, Minister of Agriculture, said that the results of experiments in other countries over many years into the inoculation of dogs against rabies and of measures to control the disease were studied by the veterinary advisers of the Ministry Practical experience had shown that, while inoculation could be a reasonably effective control in countries where the disease was endemic, it could by no means be relied upon to confer complete immunity An expert committee set up by the World Health Organisation recently expressed the view that countries now free from rabies should continue to prohibit the import of dogs and cats or subject them to a long period of quarantine, preferably six months, at the port of entry He was convinced, so far as this country was concerned, that to reduce the quarantine period or to rely on inoculation as an alternative unjustifiable risk

In England Now

A Running Commentary by Peripatetic Correspo

A Conference of Conference Secretaries has lately held in Harrogate To what this conference directed attention I am not sure It may have been a conference designed to detect and attack the few b ward segments of Western man's life that are not riddled with conferences Or it may have been a practi conference in which the hard beds at Diddleall Spa the dry Civic reception at Waterdown came in for c comment. Or again the conference may have addre itself to some theoretical topic, such as keeping speak to their allotted time

Doubtless this conference was no less fruitful than other But was the choice of venue wise? Surely burghers of Buxton and Bournemouth and Bath hardly have heard with equanimity that the choice this key conference had fallen on Harrogate Might not have been more diplomatic to hold the gathering a town whose claims as a conference centre are less wi known—perhaps Barnsley or Brighouse or Bolton? statesmanlike course would be to allot the task of choo the place for the next Conference of Conference Se *taries to a Conference of Secretaries of Conference Se* taries, and I am unreliably informed that should C S C S be held in Harrogate the delegates would entertained by dancing in the streets of the town's L quarter

There is really no end to this conference busi That at least is the hope in Harrogate—and Buxton Bournemouth and Bath

* * *

When my demob number came up some ten y ago I drove across to the nearby United States Air F base to bid farewell to the mess American hospit can be infectious, so I shouted above the trump of the juke box "If any of the Boys are down my just tell them to drop in" The major grinned " sure, we'll do that, Doc" I turned my mind to pl shares, while Elmer and Bud were swallowed up in Texas Colorful folk those types, but that was the end of the story

One night last week the Boys dropped in They their promise in a big way—with a Superfortre fact My rustic brain-cells jolted back to the sp of failing engines, the queer scrunch of tearing m and the old familiar whoosh of exploding petrol. El parachutes floated down on to the fellside above village, and soon the transatlantic gift of expre illuminated the darkness behind the farm, and learned that all the crew were safe

The Superfort lay tangled on the reservoir bank. rivulet of fire had charred the belt of trees and s the oil and petrol from mixing with our drinking w All seemed well once more, until the weekend bro the vultures People came from far and wide to tra down the reservoir fences and hunt for souvenirs. Mo cranes and enormous star-spangled wagons were hemmed in a long narrow lane by a fleet of native cha parked, abandoned, or broken down The Briga opened the attack, swarming over the wreckage, te out equipment The Occupying Powers sucked of tomato juice with helpless resignation, and had lo reinforced by the village bobby with his bicycle. S bright spark wriggled round the blind side of the sa and tore off a bag of fluorescein from an aircrew survi suit The instructions were plainly printed on the pac so what could be more natural than to throw it into reservoir?

As I have said before, our Allies are such a colo people and they do everything in such a big way Th packets were designed to dye the Atlantic green eno to be seen some eight miles away from ten thou odd feet in the sky The effect in our reservoir impressive The lurid currents swirled gaily thro the filters and far out into the distribution mains be the man with the stop-tap could be found Sun morning found many repentant sinners fearing delir tremens as they turned on the bathroom taps, hypochondriacs were delighted with the flush.

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[1] See *Lancet*, 1955, i 410

de spread by Monday morning to the ends of the system ishing-day produced some pretty pastel shades in drls Alarm and despondency made the phone too t to hold But Time can do so much and now we are lding the usual insipid stuff to our whisky (Bourbon) has been so nice to meet the Boys again

* * *

The best drug for getting rid of ants is chloroform t it should be used with care In my bathroom at hore some twenty years ago there was a minor plague ants. They were black ants about half an inch long d as thick as a match-stick, and they went about their siness by twos and threes without troubling anybody ere were soldier ants among them with formidable ks. They troubled nobody either but they looked as if y could be troublesome if they wanted to make diffi ties and I decided to expel them D D T had not been nted, they enjoyed pyrethrum so I got a couple of ls of condemned chloroform from the hospital and set out them with that They issued from various small les in the floor of the bathroom, so I took a hypodermic inge and injected some chloroform down each hole en feeling virtuous and scientific I undressed and into the bath, a tin bath, that stood in the middle of floor

For about half a minute nothing happened, then m every hole in the floor *myriads of intoxicated ants* red out thousands and thousands of them wildly ited and racing confusedly all over the floor Some of m climbed up the bath and ran demented races round edge and of these a few fell into the water The rious phase lasted for several minutes, then their tion grew slower and less agitated, they stumbled waved their legs feebly coma deepened, and in a few utes the floor was covered with *a carpet of dead ants,* ut half a stone of them by weight.

t was weeks before I saw another ant or any crawling ct But I would suggest to *any other scientific* stigator that there is no need to share the observation mber with the subjects of the experiment. If he es to do so, the observer *should be fully clad*

* * *

he calm surface of our village life has been ruffled by question of rights of way and wrongs of way The r has been quickly, if surprisingly settled; the tion of rights of way will go on for ever

he family of Farmer Brimcombe has lived in the parish nerations The well that supplies the villagers with water one of his fields and *from time immemorial* no difficulty ever arisen. There has always been plenty of water and people have always been able to go and get it But r Brimcombe was *the last of his line* and when he died ner Muddiford bought the farm and the field with the well l. At once he declared that he was not going to have le traipsing in his field *after water so he put his bull in* drive them away The village did not like that or him to show this they burned him in effigy on Guy Fawkes Farmer Muddiford was delighted, *he felt that he had* made a public character a man of real importance, a of historical figure a Guy Fawkes, who would be remem d for ever He took the bull out of the *field and there has* no more *trouble* about the water Very odd these xpected reactions.

rmer Cotleigh s farm lies down *a long and stony* lane th makes rough going to reach the high road but he claims ght of way over a neighbour s field by which he can save two minutes. The question is has he this *right of way* ? mmittee was formed and a chairman appointed to decide ral meetings were held and a representative of the county ncil attended twice Neither Farmer Cotleigh *nor* his hbour who owns the field put in an appearance; they ar reprisals" So who can prove that Farmer Cotleigh has ght of way or has not ? Nothing is settled, nothing *ever* be settled, or can be settled He may have the right, may not have the right but it supplies the village with ersation, and in the local the argument sometimes waxes and much beer is drunk Right or wrong Farmer Cotleigh the short cut and nobody stops him or ever will

* * *

ernard (biting on a fragment of pineapple): "You ve nd put a vitamin in this pudding

Letters to the Editor

POLIOMYELITIS IN SOUTH-EAST LONDON

SIR,—Concurrently with the epidemic of poliomyelitis in North West London to which Dr Breen and Dr McMath referred in their letters in your issue of Oct 29, there has been an outbreak of the same disease of similar magnitude in South East London Between July 15 and Nov 6 the Hither Green Hospital (formerly the Park Hospital) alone admitted 193 *cases of poliomyelitis, of* which 107 were paralytic and 86 non paralytic

The diagnosis of non paralytic poliomyelitis was made only in the presence of the following evidence: (1) fever with clinical signs of meningitis (2) an abnormal cerebro spinal fluid showing 10 or more cells per c mm *a moderate* increase of protein, normal chlorides normal sugar, no acid fast bacilli and no growth on culture *in every instance* (3) a rapid improvement in about one week without any specific therapy (4) absence of lower motor neurone involvement and of all nervous sequels when discharged home three weeks later In addition a large number of these patients came from the same *district* and *sometimes* from the same house or family where paralytic cases had occurred

White-cell counts done in more than two thirds of the cases showed nothing to suggest glandular fever (Incidentally our admissions of genuine cases of glandular fever have not shown an increase above the average for this time of the year) In the absence of better facilities for isolating the virus or determining an increase of antiviral bodies in the patient s serum, there can be little doubt that on clinical grounds and on clinical associations alone these cases of ' virus menin gitis were indeed infections with the poliomyelitis virus

Certain features of the *epidemic* are worth mentioning though similar features have been observed before The outbreak seems to have started in two adjacent London boroughs and to have *spread peripherally* from there in a few weeks like an oil patch During the first four weeks the paralytic and non paralytic cases admitted were almost equal in numbers; *after that* the proportion of paralytic cases increased steadily and so did the severity of the paralysis. With the growth of the epidemic the virus appeared to increase in *virulence*

Dr Breen mentions the absence of polymorphs in the C.S F of many cases This has not been our experience on the contrary a few cases showed a predominance of polymorphs, sometimes as high as 75% giving the fluid a turbid appearance They were all cases with spinal paralysis.

I find it difficult to understand how Dr McMath estab lishes a diagnosis of non paralytic poliomyelitis without an examination of the C.S F We have admitted during this epidemic quite a number of patients with short pyrexial attacks sometimes with pharyngitis, sometimes with doubtful meningeal signs, who had been suspected of poliomyelitis but who showed a normal C.S F They have not been included in the above figures

In conclusion, Sir, I wish to support strongly the plea of Dr Breen and that of Dr Lambert (Nov 5) for increased facilities in the routine diagnosis of virus infections in connection with infectious-diseases hospitals. This applies not only for cases of undifferentiated virus meningitis but also for cases of virus infection of the lymph nodes, the liver the skin and the respiratory tract

Hither Green Hospital
London, S.E.13

L J M LAURENT

INFECTION ACQUIRED IN HOSPITAL

SIR,—Dr Needham (Nov 12) raises an important point and we agree with him that wool is an unsatis factory material for *hospital blankets,* which are (or should be) washed frequently As Dr Needham says, woollen blankets, after repeated laundering become matted and inefficient Furthermore the individual fibres become brittle and easily break forming fragments that are scattered and may convey infection whenever the bedding is disturbed

Synthetic fibre ('Terylene') blankets stand up well to washing and sterilisation by boiling in the laundry They are warm and comfortable in use, but objection has been made that they generate static electricity and are therefore dangerous in the operation theatre In our view this is no disadvantage since, on bacteriological grounds alone blankets should never be taken into the theatre Moreover, it is not sufficiently appreciated that even wool has appreciable powers of generating static electricity

There are also several kinds of woven cotton material suitable for use as hospital blankets One of these is turkish towelling They too may be sterilised by boiling

We are now giving these different types of blanket ward trials, but it is yet too early for us to say how they stand up to long use, repeated sterilisation, and laundering

Public Health Laboratory,
General Hospital
Middlesbrough

ROBERT BLOWERS
J POTTER
K R WALLACE

SIR,—It is indeed encouraging to find appearing almost simultaneously, Dr Leonard Colebrook's article of Oct 29 and Dr W F Wells's textbook [1]

Dr Colebrook adds another chapter to the large volume of evidence incriminating airborne organisms in infections of wounds and burns Fortunately the picture need not be so black as he paints it, for there is also a large volume of published evidence showing that airborne bactericides could be a potent weapon for reducing cross infections It is somewhat surprising that Dr Colebrook should have made only passing reference to American work on glycol aerosols and omitted all reference to British work on phenolic aerosols

Apart from our own published work on air disinfection the Medical Research Council [2] recommended the trial of heat volatilised hexylresorcinol Dickson [3] and McGrath [4] offer good evidence of its efficiency in reducing morbidity from aerial infections, and we have had verbal reports of reduced contamination rates in plasma and ampoule filling rooms of hospitals, blood transfusion centres, and commercial premises

McGrath's results in the Dublin Zoo monkey house are the most striking in that morbidity from upper respiratory infections "almost disappeared, and there has been no case of tuberculosis" following the introduction of resorcinol and subsequently hexylresorcinol aerosols, and the position remains unchanged to date These trials, extending now over six and a half years, seem to have passed unnoticed by the majority of English doctors We suggest that the conditions in hospital practice are similar in many respects to those in McGrath's cases, and that hexylresorcinol aerosols would be equally effective

Dr MacKay, in his letter last week, mentions his work [5] on hexylresorcinol and reiterates that thermal aerosol generators are relatively cheap and simple compared with air conditioning plant [6] A high rate of kill (90–95% in five minutes) is a common finding in the laboratory Removal of bacteria at such a rate by air changes would necessitate one air change every two minutes This would cause great discomfort from draughts, and such rapid air movement might even increase the number of organisms reaching an operation wound or uncovered burn It is open to question whether it would be in the best interest of patients to remain for long periods in bacteria free air The presence of dead or attenuated organisms such as occur in aerosol treated atmospheres may have a prophylactic value

Aerosols again come into the picture with regard to the control of flies The continuous flow aerosol has hitherto been installed in over 50 hospitals in this country, and has proved remarkably successful It is particularly suitable for fly control in wards, since it is silent, and needs no t (and is therefore immune from the possibility of human fa a major factor in pest control), and as it dispences only th pure insecticide the irritation which commonly results fro carriers and solvents does not occur

Finally Dr Colebrook, in his otherwise admira survey of the sources of contamination, omits an impor ant one—the cockroach While no species of cockroa has yet been implicated as a disease vector it is genera accepted that it may, at times, be an important ag in the mechanical transmission of infection on food. Th eradication of these insects is extremely difficult b the installation of continuous flow aerosol equipment h given excellent long term results and has often elimina cockroach populations of both *Blatta orientalis* a *Blattella germanica* The same installations are effective against flies

Avebury Research Laboratories,
Goring on Thames,
Oxon

A H BAKER
F G SAREI WHITFIEL

THE CLIMATE OF DISCOVERY

SIR,—Einstein stated that the most important th in scientific work is intuition Is this where art co into both Science and Medicine, and can the differe between Professor Arnott (Oct 15) and Sir Fra Walshe (Oct 29) be resolved in this way ?

London, W 1

J M ALSTO

PSYCHOSOMATIC PROBLEMS IN POSTURAL RE-EDUCATION

SIR,—I wonder if the profession, generally, realises importance of Dr Barlow's article of Sept 24 If doct could get patients to master the principles which stresses, it would go a long way to minimise the ef of the strain of everyday life

"Good posture" can be taught to the student patient only by learning the fundamentals of m action, called the anatomy of movement For any ac to be carried out perfectly, the activating muscles function just after the contraction of the synergists both these sets of muscles must work on already al prime fixers

There are three fundamental postures that the body adopt—active, inactive, and passive

We divide the human frame arbitrarily into eight m parts attached to eight fixed parts (1) the head on th and trunk, (2) and (3) the shoulder girdle suspende muscles from the skull, the cervical and dorsal spine, an chest wall, (4) the trunk and pelvis, (5) and (6) the on the hip joints, (7) and (8) the whole body on the and feet

In *active posture* all the mobile parts are firmly attach the fixed levels by the prime fixing muscles The po adopted is that of the ape, and is a position of alertn we consider it in detail, it is the position taken up in cond of stress and strain The matador and the trapeze artist adopt this position and it is one in which the prime fi muscles are in slight contraction but the other muscles balanced relaxation

Scandinavian countries are now teaching relaxed po This stipulates that in the erect position the prime fixe all fixed and the patient, as Dr Barlow says, stands as t possible, so that he takes all the body weight off his jo The simile of the motor car in which the tyres are pu up, thus avoiding all strains on the rims of the wheel cl and springs, is a good one

Inactive posture is completely the opposite and means t the person slumps, so that the weight of the mobile parts as a chronic strain on the fixed parts, and the sympto postural strain are produced If we consider the eight le at which this can occur, we can see that many of the ills of body can be accounted for by incorrect posture or sud movements performed off guard, such symptoms may headaches, pains in the neck, pains down the arms brachial neuritis and capsulitis of the shoulders, low b pain with or without sciatica or pseudo sciatica pains buttock, and pains and aches in relation to flat feet ive *posture* is one of complete relaxation when lying or resting back in a chair The full weight of the dent parts of the body is taken by the bed or chair, but dy must be supported in a neutral position—that is to or example the head should not be twisted to one side portant to adopt active posture before actually moving; rise in moving from a passive to an active state we fail the prime fixers and we may do harm at one of these

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[1] Wells, W F Airborne Contagion and Air Hygiene Cambridge Mass, 1955

[2] Studies in Air Hygiene *Spec Rep Ser med Res Coun Lond* 918 no 262 p 314

[3] C *Irish J med Sci* 1953, p 337

J *Ibid*, p 343

J Hyg, *Camb* 1952 50 82

or, A H *Lancet* 1954 1 518

gree with Dr Barlow that the restoration of balanced brium to the body requires not a strengthening of les but an integration of intention

don W 1   W I TUCKER

THE HEAF TUBERCULIN TEST

R,— As the multiple puncture tuberculin test is being more extensively may I advise those using the ratus that in order to obtain clearly defined results essential to use sharp needles. The points of the les supplied are satisfactory for about 2500 tests which they should be sharpened The old set of lles can be easily replaced by a new set which can be ned from the manufacturers The old ones may then e-sharpened and will be ready to use again

n carrying out the test it is important that in addition he needles being sharp they must all penetrate the to a uniform depth It will be appreciated that any ing due to blunt points or uneven penetration of the lles can make the reading of the tests difficult in ons with low tuberculin sensitivity for a positive lt depends on the presence of at least four points of lable induration

Ish National School of Medicine
Cardiff   FREDERICK HEAF

PREVENTION OF GOITRE

R,—It is not my purpose to enter into any lengthy ssion of your leading article of July 16 However sh to reply to your statement But writers of old simply not have mentioned goitre Do you mean nply that British physicians before the eighteenth ury were less observant or less likely to record their rvations than were their colleagues in France many and Italy? Moreover, as in Canada and New and European observers sometimes expressly stated goitre was not present

ou neglected to mention that in Scrimshaw s experi ts the goitres returned in a few weeks after iodine zation (5 mg once a week per child) was stopped ough the salt in use contained as much iodine as you recommend for use in Britain and four times as h as has been credited with marvellous results there.

spite of the experiments of Axelrad Leblond and it still remains true that goitre has not been pro d in animals upon a diet of purified food constituents prevented by the addition of small quantities dine

ally the prevalence of goitre began to diminish before iodised salt was used In Edmonton Canada, dually decreased from 1820 or 1830 to its disappear about 1870 It did not return for some forty years itzerland Piedmont France and the Argentine ublic the decrease began about a century ago In erland, it was more marked among young men een 1905 and 1910 than in any similar period since introduction of iodised salt In the Argentine ublic the diminution in the number of goitres had so great that no separate enumeration was made in as there had been in 1869 and 1895

ruly if one gets to work with a pail when the tide unning out one may convince oneself that one is ring the level of the ocean

w York University
lege of Medicine   ISIDOR GREENWALD

MARGINAL PUNCHED CARDS

SIR,—In view of the timely and helpful article by Dr Maclean Smith (Oct 29) some of your readers may be interested in the design of similar cards which have been in use in this unit during the past year for filing of literature references

The size and punching specifications of the cards are as described by Dr Maclean Smith The numbering at the upper edge provides for coded representation of subject-matter from 0000 to 9999—i e a total of ten thousand subjects on a decimal system Part of the lower edge is devoted to year of publication (indicated by its last two digits)

Separate alphabetical panels numbered 1 2, and 3 allow filing according to first second and third letters respectively of the author s surname, the prefix Mac or Mc being considered as a single letter To save space the alphabetical panels especially panel 2 have been compressed by allocating more than one letter to some of the holes. The design of these compressed panels was worked out in such a way as to cause minimal ambiguity by studying the frequency distribution of the letters of the alphabet in a large random series of surnames

Three holes at the right hand margin specify (*a*) papers of which a reprint is held in the department (*b*) general reviews of a major topic and (*c*) papers consulted only by abstract Three unlabelled holes on the lower edge may be used for other special classifications, according to individual preference The upper left hand corner is cut to aid alignment during filing

The centre of the card contains spaces for title up to four code references to subject matter, author s name source and year of publication, with a large vacant panel for a summary of the paper (continued if necessary on the reverse of the card)

The advantages of this card for filing of references may be briefly stated

(1) References may be readily extracted from the file according to subject author or year Cards need not be filed in a particular order

(2) The use of the decimal system though requiring more space than the 1 2, 4 7 notation mentioned by Dr Maclean Smith enables cards to be extracted by fewer operations of the stiletto

(3) The design of the card allows more than one subject to be coded on the same card without confusion and the names of two or more co authors may be similarly recorded Use of the first three letters of the surname rather than the initial letter only facilitates identification of the name

The cards were supplied to my specification by Copeland Chatterson Co Ltd, 50 Wellington Street Glasgow C 2 I am grateful to my colleagues in the unit for encouragement in the designing of the cards I should be pleased to send a specimen card to anyone interested and I should welcome suggestions for their improvement

Clinical Chemotherapeutic
Research Unit,
Western Infirmary
Glasgow W 1   A I MACDOUGALL.

SIR,—I read Dr Maclean Smith's article with considerable interest, having myself used marginal punched cards for a considerable number of years My method, however differs fundamentally from his because the coding is based on the fact that any number can be expressed uniquely as the sum of the powers of 2

Thus, 60 = 32 + 16 + 8 + 4, hence by taking 3 groups of 5 holes, 60 would be coded as 0-5-123 according to the following numbering of the holes

Group 1		*Group 2*		*Group 3*	
1	16384	1	512	1	16
2	8192	2	256	2	8
3	4096	3	128	3	4
4	2048	4	64	4	2
5	1024	5	32	5	1

In the same way cancer of the stomach M.R C code 1210 = 1024 + 128 + 32 + 16 + 8 + 2 can be coded as 5-35-124 In this way 14 holes gives $2^{14}-1$ coding possibilities—i e 16383 This is more than adequate for the M.R C code

The arithmetic has to be done only once the result being suitably recorded Practice with a few examples will show its simplicity The international statistical classification of diseases can be similarly coded

The card I use is punched to a special design on my own punching machine It has 10 groups of 5 holes, a group of 5 holes having many advantages It is easy to record a vast amount of information on this small card which would not be possible, so far as I am aware, by any other coding method At the present time the card is used to code (*a*) the date, (*b*) the district of the patient's residence, (*c*) the presenting symptom, (*d*) his personal opinion of his illness (alarming or temporarily inconvenient) and whether I agreed or not, (*e*) the signs and symptoms, (*f*) the drug or mixture, (*g*) disease if diagnosed

The system has been evolved to meet the ever-growing needs of a 40-year study of the minor ailments in a panel practice, which I feel I can now confidently describe as a 'study of the science of morbidity" Some of the sequences of this science I have demonstrated graphically over many years

Ever since 1919 I have employed a typist to record the medical histories, at first using shorthand, but for the last fifteen years by means of a 'Dictaphone' The punched cards are the link between the sequences shown on the chart and the history sheets I further feel justified in believing that in the future, by these means, clinical medicine will come to study social health and will seek to interpret the observations in terms of the human cell, thus bringing social medicine into line with all other branches of medical science

With this in view, for the past seven or eight years, after discussing the matter with technicians of the Powers Samas Co , I have sacrificed some of the marginal punching so that the data on these cards can be immediately transferred to central punched cards at any time in the future Search can then be effected through sorting machinery, and who can foretell what the speed of that search will be ?

It is a model of simplicity and can be easily worked by any general practitioner who has the necessary enthusiasm

Halifax A GARVIE

DEATHS AFTER ANÆSTHESIA

SIR,—I have read Dr Lee's letter of Nov 5 with the greatest interest, and I would like to congratulate him upon the establishment of a post operation ward As a corollary to this, the time has come to ensure that no major operation is carried out except under such ideal conditions

London, W 1 B WHITCHURCH HOWELL

LYSERGIC ACID IN MENTAL DEFICIENCY

SIR,—Lysergic acid diethylamide (LSD25) was used as an adjunct in the psychotherapeutic treatment of chronic anxiety tension and obsessional neuroses by Sandison et al [1] Their work led us to treat similarly a series of 16 mental defectives whose symptoms and history suggested that their failure of intellectual and social development may have been due, in no small part, to emotional factors operating during development

The drug was given orally in doses of from 20 to 400 μg in distilled water and was found to stimulate the memories of these patients, but the abreactive effects were limited and in spite of fairly prolonged periods of treatment—up to 26 treatments in three months—no lasting benefit has been observed.

In 7 instances the patients were more talkative and coöperative for a few days after the treatment but relapsed quite quickly The majority experienced physical symptoms such as flushing of the face and limbs, tingling in the arms and legs, choking in the throat, and constriction of the chest

The bizarre hallucinatory experiences recorded by others were noted in only 2 of our 16 cases and in these they were much simpler in character and may well have been the result of inadvertent suggestion on the part of the staff It was observed that under LSD25, most of our patients were easily influenced by suggestion This may be of therapeutic value rather than a disadvantage

No instances of post LSD depression occurred and
patients were apprehensive or fearful during treatment
majority looked forward to it, possibly because of the
amount of attention which they received from the
during this period

Our impression is that while the effects of lyserg
on mental defectives is to stimulate the memory,
general pattern of the resulting experiences is of a
simple order , but is of value as an aid in the ps
therapeutic approach to such cases

Hensol Castle,
Pontyclun, Glam

MARGARET E B DA
T S DAVIES

NEPHROSIS AND MALARIA

SIR,—Dr Gairdner and Mr Shute (Nov 5)
performed a useful service in collecting available k
ledge about malarial treatment of nephrosis in Bri

Their observations on the pattern of events d
induced nephrotic remissions are of great interest
similar sequence may occur during the spontan
evolution of nephrotic disease Thus an adult with
clinical picture of nephrosis, with minimal azotæmia,
been followed for about one year, during which a
rise of blood pressure and blood urea had taken p
For no obvious reason there was then a sudden m
diuresis, resulting in complete clearing of his o
Within a few days, the urine, which had consistently
Esbach readings of 8–12 g per litre, became al
clear of protein Unfortunately the diuresis was ac
panied by rapid deterioration of renal function, d
ensuing from uræmia within approximately one m

Leicester Royal Infirmary H J GOLDSMI

MONILIA ENDOCARDITIS

SIR,—The case reported by Dr Caplan in your
of Nov 5 is probably the first to be proved in
country Last year,[1] I described a case which ma
of the same type , the patient had infective endoca
and nephrectomy was performed for renal artery
tion Prof A C P Campbell kindly examined
removed kidney and found a fibrous granuloma occ
the main renal artery, and other smaller granulom
the hilum, apparently on the course of the lobar bra
of the renal artery The histological nature of
was, he thought, quite incompatible with a *Strepto*
viridans infection, and he found certain structures ha
the appearance of fungal colonies He felt compell
conclude that there had been a fungal endocarditi
embolism of the renal artery caused by an inf
vegetation As the patient recovered, full proof
as Dr Caplan provides was not obtained

W A BOUR
Hove, Sussex

TRANSILLUMINATION OF THE LARYNX

SIR,—Dr Tate will not be surprised to learn tha
observations (Nov 5) on the value of transillumin
when a laryngoscope light fails are confirmed by
experience of other anæsthetists

Some twenty three years ago in similar circumstan
was surprised to find the larynx dramatically transillumi
by the theatre skylight Intubation was carried out wit
aid alone While this was admittedly not within the pro
of the anæsthetist, it did strike me forcibly at the tim
transillumination might be of value in the diagnosis of
laryngeal diseases

Following this first accidental experience of laryn
transillumination by daylight, I have often demonstra
by means of torches and bedside lamps that ext
illumination can be a useful alternative method for
anæsthetist

I cannot, however, agree that light failure is a com
fault in modern laryngoscopes Bulbs rarely fuse

R A , Spencer A M, Whitelaw J D *J ment Sci* 491 Sandison R A *Ibid* p 508

[1] *Brit med J* 1954, ii, 271

tys; their construction is very much more robust n formerly, when a rheostat was essential for their tection As regards electrical contacts, it is surely business of the anæsthetist to see that, like the rest is apparatus, the laryngoscope is functioning properly ore he uses it

ndon W 1 I W MAGILL

AN UNUSUAL EPIDEMIC

IR,—I can now give further details of the epidemic ch I described in your issue of Aug 6

ince then fifty further specimens of serum have been mined and found to be negative for antibodies against A.P.C group of viruses. It must now be concluded this epidemic is not due to any of the known strains the A.P.C virus group, but in view of certain ilarities in the clinical picture to that caused by the C virus group, the possibility that the epidemic may ue to a hitherto unknown strain of this group cannot be excluded. Unfortunately attempted isolation of presumptive virus in tissue-culture has had to be poned owing to the great pressure of work on virus ratories so any identification is at present impossible

seems possible to me that cases similar to these in epidemic may have occurred elsewhere and it would most interesting to hear whether this has been so

ould like to expand slightly the general account of ures met in this epidemic—features not necessarily d in every case for the symptoms have been protean main symptoms have been as follows

Dull frontal headache with retro-orbital pain.

General malaise vertigo and lack of energy and con tation. The vertigo which is a constant feature may fected by posture and be severe at times Incoördination dent in some cases there may for instance be difficulty uring tea into cups at the first attempt and breakage of tery by normally sure fingered people

Eye symptoms. The eyes feel gritty and in most cases water freely Conjunctivitis (usually mild and later ticular) may appear at an early stage sometimes it is teral. Photophobia occurs in the more severe cases at set and diplopia has been complained of in some cases. n is usually affected to some extent usually vision is ibed as blurred

Upper respiratory inflammation is common and the nt may present with a harsh irritating tracheal type of h. Sore throat is usually transient but may persist ing dysphagia, or pain and discomfort in the mornings nings which ease off through the day

Adenitis. This may be general or mainly restricted to rvical chain The glands are firm rubbery to palpation tender

The patient may present with abdominal symptoms uent diarrhoea and vomiting with flatulent distension tenderness over the costal margin on each side Some nts have severe epigastric pain and occasionally pain in ight iliac fossa, which is usually described as colicky uency of micturition with dysuria is an occasional ptom. The tongue is invariably heavily coated

Myalgia, particularly affecting the paraspinal muscles mmon, as is a feeling of weakness and tiredness in the r limbs. Night cramps are also usual and some patients remarked on a feeling of deadness at times in both er and lower limbs, followed by pins and needles' exes in general are sluggish

Skin rashes have occurred in some of those affected se have been morbilliform and transient, lasting 30–48 s, in children aged 3 weeks to 14 years and have been mpanied by a temperature of 99-100 F A few other dren and adults have had irritating raised lumps with ulation, varying from a few to full body coverage and ing several weeks before clearing Several adults had a ite urticarial rash. An enanthem has been more usual ting of red maculopapules on the palate with creamy tic centres.

Many of the patients are sleepy by day and restless ight.

Recurrence of symptoms is common throughout con nce Recurrence may persist for several days, with headache stiff neck watering eyes, sore throat, and dizziness among other symptoms.

11 In different patients the temperature and pulse rate vary from subnormal to 104°F and 130 per min. at the onset

12 Weight loss is usual and may be considerable—e.g., 14 lb over a period of several weeks in a child aged 6 years

13 While the majority of patients recover after several weeks, in a not inconsiderable proportion symptoms persist with exacerbations over a period of months

In conclusion I should like to thank Dr B E Andrews, of the Central Public Health Laboratory, Colindale, for his kindness in examining sera from these cases and Dr D G Davies, director of the Public Health Laboratory, Carlisle, and Dr K J Thomson medical officer of health to the Border Rural District Council, for their continued interest and help

Dalston, Cumberland A L WALLIS

THE EXCRETION OF RADIOACTIVE IODINE IN HUMAN MILK

SIR,—Last week's article by Dr Miller and Dr Weetch confirming the concentration of radio iodine in human milk[1] gives a valuable warning although it is fair to state that few tests of thyroid function now require a dose of ^{131}I as high as 25 μc

In their last sentence—' Radioactive iodine should not be given to a nursing mother' —I believe from the context that the words ' radioactive iodine " may have been used for " ^{131}I ' If a test has to be made in such circumstances it is the outstanding advantage of ^{132}I that this short lived isotope of iodine, used for a two hour uptake test can be given in rather smaller doses than ^{131}I, and causes less than 0 5% as much thyroid irradiation per microcurie as ^{131}I Even if a *nursing mother received an adequate test dose of 4 μc of ^{132}I and did not interrupt feeding* the infant's thyroid on the worst figures given by Miller and Weetch, would only receive 0 04 r e p instead of the 50 r e p from the 25 μc dose of ^{131}I about which they are rightly anxious

Department of Clinical Research
University College Hospital Medical
School London, W C 1 E ERIC POCHIN

ARGENTAFFIN CARCINOMA

SIR,—In their description last week of a case of argentaffin carcinoma, Dr Goble and his colleagues refer to the improvement in symptoms and *the fall in* serum 5 hydroxytryptamine (5 H T) and daily urinary 5-H T excretion after treatment with ^{198}Au, and make the *interesting suggestion* that these changes would be explained by the inactivation of a naturally occurring mono amino oxidase inhibitor Another possibility deserves to be considered

Dr Goble and his collaborators observed a severe temporary granulocytopenia but make no mention of changes in the platelet-count *after* a large dose of radioactive gold this might well have fallen also With much *free 5 H T in the* plasma the platelets would be already saturated and a fall in their number would lead to a fall in serum 5 H T which *might account* for all or part of that observed What effect a fall in blood 5 H T occasioned in this way *might* have on symptoms and 5 H T excretion, cannot at present be said It would be interesting to know whether thrombocytopenia in fact occurred

Finally may I point out that the striking *difference observed* in the 5-H T content of serum derived from blood from the right and left sides *of the* heart accords with the observation by Gaddum et al[2] that the perfused cat lung removes free *5 H T from* the perfusing blood

Department of Therapeutics,
St. Thomas's Hospital,
London, S.E 1 R S STACEY

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1 Honour, A. J Myant N B Rowlands, E N *Clin Sci* 1952 11 447

2 Gaddum, J H Hebb C O Silver A Swan A. A B *Quart. J exp Physiol* 1953 38 255

Obituary

ARTHUR RALPH THOMPSON

Ch.M. Vict , F R C S

Mr A R Thompson was consulting surgeon emeritus to the genito-urinary department of Guy's Hospital. He came to London in 1898 from the Leeds medical school, and took the M B of the Victoria University in 1901 As a student he played rugger for Guy's and also for the Barbarians While holding house-appointments at Guy's, he took the F R C S in 1902 Later he became surgical registrar, and he was the first to hold the post of resident surgical officer Returning to Leeds he was assistant surgeon to the Victoria Hospital for Children till in 1910 he was appointed surgeon in charge of the genito-urinary department at Guy's He retired in 1936

Sir Heneage Ogilvie writes "A R Thompson was the most remarkable and possibly the best-loved figure of his time at Guy's Hospital There are few men in any group who are known to all their contemporaries and fewer still who are remembered by succeeding generations even after the lapse of years 'Rudy' Thompson is remembered, remembered vividly, and remembered with affection by all who worked at Guy's during the first fifty years of the present century

"The nickname 'Rudy' was given to Thompson as a student, and it stuck No other epithet could so aptly describe him it was congruous yet not uncomplimentary He was rude in the Elizabethan and Masonic sense of rugged, fierce, tumultuous, in the sense that Othello used it of himself—'Rude am I in my speech, and little blessed with the soft phrase of peace'

"Thompson was chosen by Sir Cooper Perry, a great superintendent and one of the finest judges of men who ever lived, to found a department of urology of Guy's Perry took the line that a vacancy on the staff of a teaching hospital should be filled by the best man available, whatever his previous training, rather than by him who had the greatest claim on grounds of sympathy or long service He seldom made a mistake He chose Mollison for otolaryngology and he chose Trethowan for orthopædics Ralph Thompson was chosen because he was the ablest man of his generation That he did not succeed in the way Perry had hoped was not due to lack of brains or of skill, but rather of the wiles of the market-place Cooper Perry's successor, Sir Herbert Eason, once remarked to a friend that the trouble with Thompson was that, as a young man, he devoured Boswell's *Life of Johnson*, and tried thereafter to model himself on the great doctor Certainly in his direct and fearless approach to any man, problem, or situation, in his slow careful speech and his somewhat archaic and grandiloquent phraseology, in his outspoken comments and sudden bursts of anger, in his retorts discourteous, even in his carelessness about dress and personal appearance, he was Dr Johnson come to life in the 20th century Alas, the century was wrong for such a character

"Thompson had ability above the average He was at heart an anatomist, with profound knowledge and an original outlook. When, as an orthopædic surgeon, I was given the task of opening a discussion on injuries of the elbow-joint, I had first to ask myself 'What is the elbow-joint?' I found the answer, clear and stimulating, in one of his articles (*J Anat* 1924, 58, 368) His last communication was a paper on Homer as an Anatomist, read to the historical section of the Royal Society of Medicine

"As a urologist his work was original and stimulating Though he never developed a large private practice, he devotedly served the department he had founded, and handed it on in first-class condition to his successor

"He was regarded with universal affection, and particularly by his house-surgeons and dressers, men stout enough of heart to face the shocks and alarms which they knew they would encounter for the privilege of working with a man of more than life size, of living in the company of one whose comments on the passing scene were always enlightening, of being able in the evening to recount to their fellows incidents straight from the centre of [illegible]tion

[illegible] have dwelt overmuch on the uncouth side of [illegible] character and externals , yet an attempt to soften the character and gloss the externals would false impression of a man, who stood out amon contemporaries like a block of granite He was rude, he was seldom discourteous, and never slanderous. was critical, but always open in his criticisms. He but he never hated He was straight, he was loyal he had an unflinching sense of duty. With wom was courtly and gentle He wrote some charming He quarrelled openly, violently, and joyously, b harboured no resentment and he never made a l enemy On the contrary, he had countless frien every walk of life, men who sought his company fo warm shy nature and the kindly philosophy th showed to those whose companionship he valued."

Mr Thompson died at Guy's Hospital on Oct 1 the age of 79 His widow survives him with two so two daughters

WILLIAM MACKENZIE

M.A., M D , B Sc Edin , F R C S E., D P.H

Dr William Mackenzie began his work as a doct Gosforth in 1907 after several postgraduate yea Edinburgh, during which he had taken the double qu cation of F R C S E in 1905 and M.D in 1906 It soon apparent that he was a man of exceptional a for within four years he had established a busy p practice and had been appointed medical officer t Gosforth Home for Crippled Children and ass surgeon to the Fleming Memorial Hospital for Children in Newcastle He soon found the load of too much for his studious temperament, and it is sig that, though he resigned from The Fleming in 191 first annual report to the committee of the cripples contained a plea for orthopædic treatment for the children there This idea was not immedi accepted, but such opposition as there was only stim him to further efforts His tenacity of purpose gre eventually led him to devote his life to the ortho problems of crippled children in the North of Englan

Three influences guided his preparation for the The first was his election to the Newcastle Pathol Club in 1913, for it fostered the independence mind and gave him the intellectual stimulus and panionship which he enjoyed The second inf came from the late Prof Rutherford Morison, with he worked at the Northumberland War Hosp 1915–16 Morison was intensely interested in the posal to start orthopædic treatment at the cripples and he persuaded Mr Sanderson, its founder and chairman, to accept the idea and agreed to b consulting surgeon A visit from Sir Robert Jo 1917 was the third important influence in Macke life Robert Jones not only convinced the comm at Gosforth that orthopædic treatment was nec but offered to arrange a transfer for Mackenzie happened to be home on sick-leave from service in F to Alder Hey Military Orthopædic Hospital, Liv where he could gain practical experience in orthopæd

After the war Sanderson asked Mackenzie to p a scheme for a hospital block, which was open Robert Jones in 1924 Such was the enthusias Morison and Mackenzie that in 1920, as a temp measure, a ward with operating suite and X ray was taken over at the Home for Incurables at S Tongues, and there their first orthopædic operations done Morison's monthly visits continued for many Cases were reviewed, treatments were planned, list of operations was done under his eagle-eye were great occasions for Mackenzie, and set the of excellence on his work

His next objective was to set up orthopædic clin Newcastle and in Northumberland which would be with the work at Gosforth This presented admin tive difficulties, but these were overcome by pers appointments In 1923 the Newcastle Education mittee set up orthopædic clinics in different parts city and Mackenzie was appointed orthopædic su in attendance at these clinics In furtherance county scheme Dame Agnes Hunt visited Newc 1926, and as a direct result the late Miss Ella raised funds and, along with Mackenzie, started an pædic clinic at Alnwick In 1928 the Northumber County Council followed suit and Mackenzie became y orthopædic surgeon for their clinics He thus e the lynch pin in a comprehensive orthopædic ation for children but it was ten years before terlocking nature of his appointments was recog

When the late war broke out he was about to ered a full time post.

1930 the name of the Gosforth cripples home was ed to the W J Sanderson Orthopædic Hospital l and Mackenzie became medical superintendent rthopædic surgeon He soon had little time for e practice, for the care of a hundred children was t responsibility but he wisely invoked the help of gues in medicine and in surgery, and with them he medical officers of the local authorities formed lical advisory committee for the hospital which he l as secretary

ugh he was a keen and studious observer Mackenzie rushed into print With Rutherford Morison he hed an article in 1020 on the treatment of dangle nd in 1947 the *Journal of Bone and Joint Surgery* hed his much-quoted paper on sclerosis of the long a condition better known as osteoid osteoma Rare es fascinated him and his studies of melorheostosis f hyperplastic callus formation in fragilitas ossium ten quoted

l material of an extensive investigation into flat s still unpublished for with the coming of the l world war The Sanderson was taken over as MS hospital the children were evacuated to h Park, near Morpeth, and there was no time for g Fortunately, Mackenzie survived the strain of strenuous years and was able to re-establish the of the orthopædic hospital school at Gosforth when ar ended His retirement under the age-limit was itated by the coming of the National Health e but his pioneering work was well done and he hind him a *comprehensive orthopædic organisation* ool children which compared well with any in the y

I., to whom we owe this memoir, writes Dr nzie s later years were chequered by ill health but ained a living interest in the developments of n medicine and surgery and in literature. It was stimulating to meet him for his conversation oughtful and instructive and tinged with a shy r He never sought the limelight; indeed he was t and often diffident but where his ideals were ned he never gave in '

died on Oct. 25 at the age of 77, and he leaves a and two daughters.

EDITH MARGARET TAYLOR

M.B Lond., F.F.A R C.S

Margaret Taylor anæsthetist to the Elizabeth tt Anderson Hospital and to other London hospitals n Nov 2

daughter of Mr Dennis Ross Johnson of Bristol he educated at Oswestry High School the Francis ol School London, and Newnham College, Cam As a student she did not allow her popularity to her from her work, and she took both parts of the al sciences tripos. From Cambridge she went in to the physiology laboratories at the London School licine for Women where she held a demonstrator- n Prof Winifred Cullis s department After three she went on to complete her medical training at sity College and in 1025 she graduated M B

a year after qualification she held the post of ant resident medical officer at St. Mary s Hospital omen and Children Plaistow and then she returned iversity College as anæsthetics registrar In due she was appointed to the staffs of the Metropolitan at Hospital the South London Hospital for Women the National Hospital Queen Square But her work and her chief interest lay in the Elizabeth tt Anderson Hospital Her skill as an anæsthetist, on her unusually wide knowledge of physiology, appreciated by her surgical colleagues. She also took structive part in the work of the house-committee many of the recent improvements in the operating es were the result of her enterprise and forethought

E. D writes: 'Many past students of University ge Hospital will experience a feeling of acute loss at the death of Margaret Taylor Despite her own busy professional and private life, she seemed always able to receive one with a kind and gracious welcome in surroundings of *great æsthetic pleasure* at her and Julian Taylor s home The radiance of her colouring and elegance of dress captivated all at once. Later the appreciation of her thoughtfulness for others and generosity of spirit aroused a deep affection in those who knew her well She was widely read and had many interests outside her work French cooking, the culture of rare bulbs and flowering shrubs, riding and sailing were but a few of these Every meeting with her had a quality of joy enhanced by contact with her keen mind and shrewd judgment Among her friends and colleagues, the memory of her rare gifts of spiritual and physical grace will long remain

She married in 1020 Mr Julian Taylor, and there are *two sons of the marriage*

MURIEL HELEN DEEM

O.B.E M.D N Z.

Mrs. Helen Deem, who died on Oct. 20 was a daughter of the late Sir Thomas Easterfield, a former director of the Cawthron Institute Nelson, New Zealand She qualified at Otago in 1024, and four years later proceeded M D N Z., a degree held by few women She was the first to gain the Lady King scholarship founded in memory of the wife of Sir Truby King Dr Deem s husband was the city engineer of Wanganui, and on his early death she came to England for further study and took the D OBST On her return to New Zealand she entered the health service, and was soon appointed medical adviser to the Royal New Zealand Society for the Health of Women and Children. This body, less formally known as the Plunket Society was founded by Sir Truby King and it promulgated his strict rules for infant-feeding *He was extremely conservative* and would allow no modification of these rules nor would his committee It was widely held, however, that this admirable society was not, in this particular, moving with the times, and a few years after King's death it fell to Dr Deem to bring it up to date a task which required great tact. Her revision of the society s infant-feeding formulæ was a notable example of transition and progress and it was later accepted by the New Zealand Pædiatric Society as a reasonable basis for infant-feeding throughout the country The widely used height and weight tables for New Zealand infants are also a product of her quest for basic knowledge. Other important work she undertook included the care of premature babies, studies of their later progress, and periodical surveys of breast feeding She arranged for greater use to be made of the clinical resources of the Plunket Society in teaching She also organised a campaign against preventable accidents to children and was lecturer in preventive pædiatrics at the Otago Medical School She was *appointed* O B E in 1052

M McG writes: Dr Deem s absorbing interest was the welfare of the infant and young child, and whatever problem she undertook was pursued with vigour and enthusiasm tempered with sound judgment and meticulous attention to detail She possessed in addition the happy faculty of being able to instil into those associated with her something of her own interest and enthusiasm and thus stimulated a team spirit which was bound to produce results Although her work as medical adviser to the Plunket Society was largely administrative she maintained an active interest in clinical pædiatrics, and her opinion on nutritional developmental and other problems of infancy was often sought by the Government and official bodies Her life has been a full and active one and nothing could match her courage and determination in completing as much of her work as possible during the few short months which she knew were left to her Much has been accomplished—she has pointed the way for further efforts in the future.'

Births, Marriages, and Deaths

DEATHS

STEELE.—On Nov 6 at Penrhyn Lodge Gloucester Gate N W 1 Anne widow of Russell Steele, M D., of Hemel Hempstead in her 93rd year

Notes and News

DOMICILIARY VISITS BY WHOLE-TIME SPECIALISTS

THE Minister of Health has approved[1] a Whitley Council agreement[2] that, subject to certain limitations, whole time consultants, and in certain circumstances[3] senior hospital medical officers, should be paid for domiciliary consultations. A definition of the term "domiciliary consultation" has also been agreed to and will be inserted in the Terms and Conditions of Service.

A domiciliary consultation is defined as "a visit to the patient's home, at the request of the general practitioner and normally in his company, to advise on the diagnosis or treatment of a patient who on medical grounds cannot attend hospital." Visits *not* falling within this definition include (i) a visit made at the instance of a hospital or specialist to review the urgency of a proposed admission or to continue or supervise treatment initiated or prescribed at a hospital or clinic, (ii) a visit made by a chest physician to a patient on the tuberculosis register of any chest clinic, and (iii) a visit undertaken as part of work done for a local health authority. Another limitation is that whole time specialists will not be paid for the first eight domiciliary visits they make in any quarter. The fee for part-timers and (subject to this condition) whole timers will be unchanged at 4 guineas, with an additional 2 guineas where any operative procedure other than obstetric is undertaken or where the doctor uses his own electrocardiograph or portable X ray apparatus, and an additional 4 guineas for any obstetric operation. These extra fees will, as hitherto, be payable only once in respect of each patient for the current illness. When a specialist sees more than one patient in the same residence or institution during the same visit the consultation fee will be 2 guineas for each case after the first, and the maximum will be 10 guineas, however many cases he sees.

Part-timers only will continue to receive payments, additional to these fees and to the normal travelling and subsistence expenses, of 1 guinea for a journey to a place more than 20 and less than 40 road miles away, 2 guineas for 40–60 miles, and so on, with an extra guinea for every 20 miles.

The maximum remuneration for domiciliary visits (excluding travelling and subsistence allowances, additional mileage payment, and fees for the use of the doctor's own apparatus) remains the same—namely, 200 guineas in any quarter or 800 guineas in any year, whichever the specialist prefers.

STUDY, EXPERIMENT, AND DEMONSTRATION

THESE three incisive words sum up the Nuffield Provincial Hospitals Trust's way of tackling a problem, and their third report,[4] which covers the years 1951 to 1955, describes how many of their more senior projects have now reached the third stage. The trustees have taken advantage of this moment of quinquennial stocktaking to thank Mr L J Farrer Brown, secretary of the Trust (and director of the Nuffield Foundation itself), for his share in their work. In recognition of his contribution they have appointed him a governing trustee and he has accordingly resigned the secretaryship.

Many of the important studies sponsored by the Trust, and the practical experiments which have been based on them, have already been described in our columns. Drawn together in this report they make a striking record of courageous ventures based on careful and conscientious appraisal. Thus the new hospital to be built at Alderney will benefit both from the Trust's investigation into the function and design of hospitals, and from the experimental ward blocks built at Larkfield Hospital, Greenock, and at Musgrave Park Hospital, Belfast. The two year nurse training scheme which is being carried out at Edinburgh in partnership with the Department of Health for Scotland has been influenced by the Trust's job analysis of the work of nurses. To the Trust's interest in the services outside the hospitals we owe Dr Stephen Taylor's survey of general practice, and, in bricks and mortar, three experimental variations on the idea of health centres—the diagnostic centre at Corby, the teaching health centre at the University of Manchester, and the three health centres at Harlow New Town. In all these projects the Trust's success in persuading local and specialist organisations to share in the responsibility promises well for the usefulness and expansion

The Trust have not only drawn on outside help in own schemes, they have also been ready to support the of others who share their interests. In 1952 they grant to help the Acton Society Trust to study the tion and administration of our hospital service. This which has now been completed, is to be published as a of pamphlets. The first, *Background and Blueprint*, appeared earlier this month,[5] is (as its title sugg introductory study. Each of the other pamphlets wi with a specific problem of the hospitals. The second instance, will consider the impact on the hospitals changes in organisation which the National Health S has brought, and others will discuss the administrative re ship of the hospitals with the Ministry, and their profes relationship with doctors and with nurses.

A NEW BLOOD-TRANSFUSION CENTRE

THE new North East Metropolitan Regional Blood-T fusion Centre at Brentwood, Essex, which was to be by the Minister of Health on Nov 17, is the second country designed specifically for its purpose. Moreo is the first blood transfusion centre in Britain to start ing almost overnight, and Dr W J Jenkins, the director, encountered some problems for which there no precedents. The chief of these was starting a safe service with a staff largely inexperienced and un the building and its equipment.

The building, made of pre stressed concrete and of expansion, is designed round a central hall which easy access to the blood transfusion vehicles two are fitt refrigerators. From this hall the used equipment though the washing-room and the sterilising plant, an ready for use again, to a store room adjacent to th A cold room leads off the hall, and stores blood at 4 there is also a "deep freeze" room for storing sera at The upper floor consists of spacious and well-ap laboratories for routine blood grouping, special tests, b logical investigations, and research. The centre has steam supply and water softening plant.

Dr Jenkins has a staff of 50, including a chief tec a sister-in charge, and junior technicians. There teams for collecting blood, headed by doctors with th of junior hospital medical officer, and these cover North East Metropolitan Region, collecting an ave 700–800 pints of blood weekly. Half the hospitals region are at present supplied with blood by the Dr Jenkins hopes soon to cover the whole region, will need an increase of staff to at least 120, and the fo of more teams.

SCHIZOPHRENIC ART

AN exhibition called Aspects of Schizophrenic Art open at the Institute of Contemporary Arts, 17, Dove London, W 1. Every drawing or painting is the w patient who was suffering from schizophrenia at the was executed. Naturally, the identity of the artists held—with the exception of Nijinski, whose contrib dated during the height of his illness in 1920. Other come from mental hospitals in England, Scotland, and Many are by patients who have died or recovered hospital, a few are by patients still in hospital w agreed to contribute. The aim of the exhibition demonstrate some of the ways in which this strange affects the capacity for self-expression in art of th are its victims, and in so doing to contribute (it is towards a clearer and more sympathetic understan their plight."

There are examples of the dramatic and rapid ch style and content of individual artists' work, and th section of the exhibition shows examples of schiz imagery, which is sometimes dramatic, bizarre, and These are the qualities which the surrealists env direct access to unconscious fantasy. In all thes there is an attempt to convey something of the uncan of strangeness in which the schizophrenic suffer painting or drawing is not enough words and phrase the pictures—and these may be new words coined to something different from ordinary experience. Wh patient's normal personality is submerged by the repetitive patterns seem to impose themselves upon ms of expression These are illustrated in the section d to schizophrenic stylisation '

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[1] Memorandum H M (55)107

[2] M.D B circular no 27

H B (51)11/B G (51)11 para 4

Report 1951–55 Nuffield Provincial Hospitals Trust Lodge, Regent's Park, London N W 1 1955 Pp 60

[5] Background and Blueprint Acton Society Trust, 39, Street, London, W 1 1955 Pp 45 4

emphasis throughout the exhibition which is open until is not upon the bizarre and the incoherent, but upon liness of imaginative experience which appears to be companiment of this terrible disease.

THE HORSE SHOE CLUB

e Saturday, at Apothecaries Hall in London this club s autumn cocktail party (one of two held every year) rtain doctors from the United States and Canada who rking here for the time being, either in their country s Forces or in civilian posts; and also their wives. The included Dr Geoffrey Bourne of St Bartholomew s al, chairman of the club, Sir Harry Hague the treasurer r Claude Nicol the secretary Some 150 people ed and as many as could do so added to their enjoy of the surroundings by hearing Dr Neville Finzi the discourse on some of the treasures of the Worshipful of Apothecaries

objects of the club are to:

ster friendship between American Canadian and English d women interested in the cure and prevention of disease courage exchange research and clinical appointments between countries (c) Provide hospitality for overseas visitors

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rsity of London

3 W Hinds lecturer in child health and social medicine University of Bristol, has been appointed to the uni readership in public health at the London School of e and Tropical Medicine

title of professor of biology in the university has been ed on Mr G E H Foxon, M.SC in respect of his post 's Hospital Medical School.

rsity of Birmingham

following appointments have been made: Dr W P Ross, lecturer in anatomy Mr T S Donovan part lecturer in orthopædic surgery Dr V H Springett me lecturer in tuberculosis; Mr R R S Strang and O N Strong part time lecturers in diseases of the ear nd throat

rsity of Liverpool

Nov 30 the honorary degree of doctor of laws will be ed on Dr T B Davie principal and vice-chancellor University of Cape Town and formerly George Holt or of pathology and dean of the faculty of medicine University of Liverpool

College of Surgeons of England

Henry Dale O.M., F.R.S. chairman of the Wellcome es, will open the Wellcome Museums at the college n s Inn Fields, W C 2, on Wednesday, Nov 23 at 3 P.M

meeting of the council on Nov 10 Sir Harry the president in the chair reported that he had ted a diploma of honorary fellowship to Dr Fred Coller higan during his recent visit to the United States of ca. An honorary fellowship was also awarded to Sir Stopford vice-chancellor of the University of Manchester diploma will be presented at the annual meeting of s and members to be held in Manchester on Dec 10 P Scott Mason, vice president was appointed Bradshaw er for 1956 Mr A. Dickson Wright Mr F C W and Mr R C Davenport were re-elected and Mr B Butler and Mr S H Wass were elected members of rt of examiners for three years from Dec 8 1955

Nuffield prize in the faculty of anæsthetists was awarded Maurice J W Sando (Adelaide) and Begley prizes mary R Ashby and A R Tanser

lomas of membership and postgraduate diplomas in al radiotherapy and laryngology and otology were ed to the candidates named in our report of the comitia Royal College of Physicians (*Lancet* Nov 5 1955). A diploma of child health was also granted to atherine M. Cadbury

l College of Physicians of Ireland

a meeting on Nov 4 with Dr F J O'Donnell the ent in the chair the following doctors were admitted tes and members:

K Cummins Bridget V Foley E. S Mitchell

Royal College of Physicians of London

On Tuesday and Thursday Dec 6 and 8 Dr Charles Newman will deliver the FitzPatrick lectures. His subject will be the Evolution of Medical Education in the 19th Century The Tudor Edwards lecture will be given on Thursday, Dec 15 by Sir Geoffrey Marshall who will speak on Tudor Edwards s contribution to the study of diseases of the chest The lectures will be held at the college Pall Mall East, S W 1 and will begin at 5 P.M

Royal Faculty of Physicians and Surgeons of Glasgow

On Nov 7 the following were elected office-bearers for the coming year:

President Prof Stanley Graham visitor Prof Stanley Alstead; hon secretary Dr A. H Imrie; hon treasurer Dr J A. W McCluskie hon librarian Dr A. L Goodall representative on the General Medical Council, Dr Andrew Allison councillors Prof. D F Cappell Dr D McKay Hart, Mr Arthur Jacobs Dr Samuel Lazarus Dr W Ferguson Mackenzie Prof W Arthur Mackey, Dr Hector R MacLennan, Mr D C. Miln Dr Gavin B Shaw

Royal Society

A Royal medal of the society has been awarded to Prof V B Wigglesworth F.R.S for his experimental contributions to insect physiology

Medical Research Council

The Minister of Labour and National Service has been appointed a member of the Medical Research Committee of the Privy Council This is the committee under which the Medical Research Council operates

Symposium on Stammering

This symposium will be given at the Goldsmiths College London S E 14 on Monday Dec 12, at 6 45 P.M. by students of Mr H. V Hemery s speech re-education classes.

Royal Society of Medicine

On Wednesday Nov 30 at 8 30 P.M Lord Radcliffe will deliver the Lloyd Roberts lecture to this society at 1 Wimpole Street, London W 1 The title of his address will be How a Lawyer Thinks.

British Diabetic Association

An award of £1000 is offered to a person or persons finding a cure or control for Kimmelstiel Wilson lesion Further information may be had from the association 152, Harley Street London, W 1

Postgraduate Travelling Fellowships

The governing body of the British Postgraduate Medical Federation invites applications for these fellowships from doctors or dentists who are training as specialists and wish to obtain experience of the methods of practice, education, and research at universities or other centres in the United Kingdom and abroad The annual value of the fellowships is not less than £750 with additional allowances Further particulars can be found in our advertisement columns.

Society of Medical Officers of Health

There have been suggestions that this society, now entering its 100th year should adopt a new name to indicate the broader scope of its affairs but it has been decided to retain the present one at least until the centenary celebrations are over At the annual dinner on Nov 10 Dr Charles F White the president said that after that they must again consider finding a new name to embrace all those concerned in preventive medicine Dr White was replying to the toast of The Society proposed by the Minister of Health Mr Iain Macleod Now that some of the more immediate difficulties facing the National Health Service in 1948 had been tackled the Minister hoped to see increasing emphasis on preventive medicine and in particular closer links between general practitioners and medical officers of health. The Guests were welcomed in a cordial speech by Prof R H Parry president of the society in 1948 In his reply Sir Russell Brain, P.R.C.P also looked forward to the era of preventive medicine. But we were a long way yet he said from the point at which we could begin to reduce the number of clinicians Indeed one of the most notable advances in recent years, the fall in infant mortality seemed to be leading to more geriatricians—and more psychiatrists! Turning to the poets as public health teachers Sir Russell said the more you thought about it the more you saw in Tennyson s words: An' I thowt twur the will o the Lord but Miss Annie she said it wur draäins

Society for the Study of Fertility

The annual conference of this society will be held next year on Thursday and Friday, June 14 and 15, in London

National Council for the Unmarried Mother and Her Child

At a meeting of this council to be held on Tuesday, Nov 29, at 2 30 P M at the County Hall, Westminster Bridge Road, London, S E 1, Sir Basil Henriques, Mr J Macalister Brew, and Dr W Lindesay Neustatter will speak on Fathers

Scottish By-election

Dr J Dickson Mabon, who holds an appointment in the department of public health and social medicine of Glasgow University, has been adopted as Labour candidate in the by election at Greenock caused by the death of Mr Hector McNeil

Hospitals' Symphony Orchestra

This orchestra will give a concert at the Royal College of Surgeons, Lincoln's Inn Fields, London, W C 2, on Saturday, Nov 26, at 7 30 P M, when the soloist will be Dennis Brain Tickets (10*s* 6*d*, 7*s* 6*d*, 5*s*, and 3*s* 6*d*) may be had from Miss M A Whipp, lady almoner's department, St Thomas's Hospital, S E 1

A Rauwolfia Preparation

The Rexall Drug Co Ltd have announced (*Pharmaceutical Journal*, Nov 12) that "they have voluntarily withdrawn public advertising of Tranquilex," which is a rauwolfia preparation This decision has been taken, they say, because a recent report indicates that mental depression can be caused in susceptible individuals by smaller doses of rauwolfia than had previously been suspected Arrangements are being made for warning labels to be fixed to stocks of tranquilex already in the shops These will say that the drug should not be taken by people who are depressed and that treatment should be stopped at any sign of depression

National Medical Manpower Committee

Sir Zachary Cope, consulting surgeon to St Mary's Hospital, London, has been appointed chairman of the National Medical Manpower Committee, in succession to Lord Haden Guest who has resigned after serving as chairman of this committee and the former Medical Priority Committee for more than ten years The function of the National Medical Manpower Committee, which was set up in 1952, is to keep under review the best methods of utilising medical manpower and to make recommendations to the Government from time to time One of the matters with which the committee is concerned is the allocation of doctors to the three Services Sir Zachary Cope has been chairman of the Central Medical Recruitment Committee since 1952

Prof L J Witts is to be William McIlrath guest professor in medicine at the Royal Prince Alfred Hospital, Sydney, during August and September of next year

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CORRIGENDUM *Humoral Effects of Metastasising Carcinoid Tumours*—In this article by Dr P J D Snow and his colleagues (Nov 12, p 1004) the third and fourth sentences of the second paragraph under "Chromatography" (p 1007) should read

> ' After drying the papers were sprayed with Ehrlich s solution (2% dimethyl amino benzaldehyde in 5% HCl) and heated to 50°C for 10–15 minutes The spots obtained in this way were usually more intense than those obtained when the paper was allowed to stand at room temperature Semi quantitative estimations

Also under Chromatography, line 10 of the third paragraph of the section on urine should begin ' 200 V, 0 05 M pH 7 5, barbitone buffer) "

Appointments

DAVIES R S G M B Brist appointed factory doctor, Fishguard Pembrokeshire

HALL I M M D Lond honorary physician Hôpital et Dispensaire Français London

JONES U H M R.C.S , D.A anæsthetist Hôpital et Dispensaire Français London

LAWRIE UNA M.B Aberd D P H asst M O Edinburgh

MACFARLANE D A. M B B SC Wales F R C S surgical tutor St Bartholomew s Hospital London.

NETTEN H E M B Aberd D P H asst M O H Greenock

O'[illegible] P F M B N U I D P M senior asst M O Ballinasloe Hospital authority

[illegible] M B Glasg D.P H deputy M O H , West Bromwich

Diary of the Week

NOV 20 TO 26

Sunday, 20th

COLLEGE OF GENERAL PRACTITIONERS
10 A.M (Imperial Hotel, Russell Square, London, W.C.1) E B Hickson, Prof W C W Nixon, Mr A J The Position of the General practitioner Today

Monday, 21st

UNIVERSITY COLLEGE, Gower Street, W C 1
5 30 P M Dr J W Trevan, F R.S Pharmacology of Re Regulation

Tuesday, 22nd

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Keppel Street, W C 1) Dr R D Harkness of Collagen

ROYAL SOCIETY OF MEDICINE 1, Wimpole Street, W 1
8 P.M *Medicine* Sir Russell Brain Dr W Ritchie Dr Henry Miller, Mr J E A O Connell Spondylosis

ROYAL ARMY MEDICAL COLLEGE Millbank, London, S.W 1
5 P M Brigadier Ian Fraser Small Intestine

ST MARY S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P M. Dr R B K Rickford Clinical Significance of version of the Uterus and Treatment (if any)

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
12 NOON (Queen Charlotte's Hospital, Goldhawk Road Prof J Young Maternal Mortality in Great Br

INSTITUTE OF DERMATOLOGY, Lisle Street, London, W C 2
5 30 P M Dr G C Wells The Sebum.

INSTITUTE OF NEUROLOGY
5 30 P M (National Hospital, Queen Square, W C.1) Hamilton Paterson Pain in Relation to Lower

Wednesday, 23rd

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln s Inn W C 2
5 P M Prof B L McFarland The Crooked Tree Jones lecture)

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road
2 P M Dr P M F Bishop Endocrinological Investi

ROYAL SOCIETY OF MEDICINE
5 P.M *Endocrinology* Prof A Querido, Dr I Gilliland trophic Hormone

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28 P Place W 1
3 30 P M Dr G J V Crosby General Practice Public Health

INSTITUTE OF DISEASES OF THE CHEST Brompton Hospital
5 P M Mr D S P Barlow Carcinoma of the Œsopha

ST MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GU 48, Cosway Street Marylebone Road, N W 1
5 30 P M Dr W McIntyre Schools of Psychotherapy

BRITISH ASSOCIATION OF SPORT AND MEDICINE
5 P M (St Thomas s Hospital Medical School, Albert E ment, S E 1) Dr James Cyriax Clinical Exam of the Injured Athlete Manual Treatment or cortisone

BIRMINGHAM MEDICAL INSTITUTE, 154, Great Charles Birmingham 3
8 P M Prof P C P Cloake, Dr R W Tibbetts Mr Turner The Temporal Lobe

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St Street, Glasgow, C 2
5 P M Mr A W Kay Peptic ulcer Therapy

Thursday, 24th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Prof J C McClure Browne Isotopes in the Problems of Pregnancy

INSTITUTE OF DERMATOLOGY
5 30 P M Dr J O Oliver Blood and Bone Marrow Diseases

WEST LONDON MEDICO-CHIRURGICAL SOCIETY
8 30 P M (West London Hospital, W 6) Dr T F Fox Revisited

UNIVERSITY OF EDINBURGH, University New Buildings Place 8
5 P M Prof W Arthur Mackey Death Following O for Mitral Stenosis (Honyman Gillespie lecture.)

UNIVERSITY OF ST ANDREWS Queen's College, Small Dundee
5 P M Sir Harold Gillies Plastic Surgery

Friday, 25th

ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS, 5 Anne Street W 1
5 30 P M Mr Arthur Sutherland Tuberculosis of the metrium (William Blair Bell lecture)

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P M Mr H C Edwards Non specific Granulomata Terminal Ileum Cæcum and Ascending Colon
4 P.M Prof A W Woodruff Filarial Infections.

ROYAL SOCIETY OF MEDICINE
8 15 P M *Obstetrics and Gynæcology* Dr Joseph Bamfo G R Osborn Mr A J Wrigley The Value of Cytology in the Diagnosis of Carcinoma

MIDDLESEX HOSPITAL MEDICAL SCHOOL, London W 1
5 15 P.M Dr Richard L Riley (Baltimore) Exchange Between Alveolar Air and the Blood in Man

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEAS Chandos Place W 1
6 45 P M. Dr C S Nicol Social Aspects of Gonorrhœa

CŒLIAC DISEASE *

WILFRID SHELDON
C V O M.D Lond F.R C.P
-SICIAN FOR DISEASES OF CHILDREN, KING S COLLEGE
-TAL, LONDON ; PHYSICIAN TO THE HOSPITAL FOR SICK
CHILDREN, GREAT ORMOND STREET LONDON

-n three Lumleian lectures delivered by my old -ter Sir Frederic Still (1918) together with the -ford lectures delivered by Sir Leonard Parsons -) constitute perhaps the two most important -h dissertations on cœliac disease in the first half -is century I shall mainly concern myself with -nuing the story to the present day To do so, I shall on the records of 74 children with cœliac disease have been admitted to my wards since 1947 For -ge a number I am deeply indebted to my colleagues -reat Ormond Street who for five years allowed all -ases to come under my care, and later gave me -ion to treat in a special outpatient clinic an addi -l 40 cases that had previously been in their charge

Diagnosis

-iac disease today remains one of a dwindling group -ments that have to be recognised on purely clinical -ds, for there is no laboratory test to give the -osis the stamp of certainty Perhaps this makes the -e all the more piquant and challenging The diag -rests on the views of the clinician as to what consti -the disease. To keep a correct perspective one -t do better than refer to Gee s (1888) original -ption, in which he gave pride of place to the -ge of loose bulky pale offensive motions, and added -ng muscular atony, anæmia abdominal distension, -ssation of growth These symptoms remain today -allmarks of cœliac disease

-l noted that the liver is often so small as to be -pable and although this observation has received -attention it is important to the clinician because -ers a possible point of distinction from chronic -rance of starch In 28 of 60 cases in which I have -ls of the size of the liver at the time of admission it -not be felt at all and in another 12 it was palpable -igh in the xiphisternal notch

-s, too of some historical interest that in referring -cessation of growth Still was the first to remark -e younger bone age judged by the skiagraphic -rance of the ossific centres

-irteen years later Parsons (1932) in describing the -chemistry and fat balances, recorded the impact -chemical investigation on our knowledge of cœliac -e.

-most noteworthy advance since then has concerned -ent, which in turn has altered the prognosis and -ese two aspects that I deal with here.

Treatment

-e of Fat

-dren with cœliac disease always show great diffi -in tolerating both starchy food and fat, and restric -f one or other or both in the diet has characterised -arious treatments.

-hough protein is well tolerated Macrae and Morris -, Andersen (1947) and Frazer (1952) on the grounds -creased excretion of nitrogen defective absorption -a, and hypoproteinæmia in the face of a thera -c response to high protein diet have intimated that -ect in protein metabolism also exists

-e looseness of the motions, the gaseous abdominal -sion, and the ease with which diarrhœa can be -ked when complex carbohydrates are added to the diet have led to treatments in which restriction of starches has been held to be of primary importance Dr Christian Herter was the pioneer of this approach, and his pupil Dr John Howland (1921) stated that ' carbohydrate is the one which must be rigorously excluded , that with this greatly reduced the other elements are almost always well digested even though the absorption of fat may not be so satisfactory as in health " Howland s fellow pupil, Dr Sidney Haas, restricts carbohydrates to those contained in fruits vegetables, and protein milk and it was he who demonstrated (Haas 1924) the value of ripe banana, which has since been so prominent in treatment Fanconi (1928) recommended a closely comparable diet

Meanwhile in this country Still and Parsons regarded the withholding of fat as of primary importance although the difficulty with starches was recognised and their avoidance at the beginning of treatment was advised Still observed that bread was particularly badly tolerated To describe the lot of the child with cœliac disease under these conditions I cannot do better than quote from Still s lecture

> " Wasted and feeble the child passes an invalid existence with intervals of improvement followed by a relapse, until, as a result of rigorous dieting the stools gradually become more normal and the child eventually struggles back to health able to take food more or less like other people but handicapped in growth by the lost time during which the development has been arrested Even such a favourable result, however is not to be expected in all cases, for the relapses with increased looseness of the bowels are exhausting and may end fatally

One cannot fail to note the importance that was attached to the quality of the stools indeed for many years the reduction of fæcal fat that followed removal of fat from the diet, which was, of course, an inevitable consequence, was regarded with much solace Looking back to that period we get a strong impression that the treatment of the stools bedevilled the treatment of the child Miller must have had this in mind when he wrote

> It is unwise perpetually to starve the patient of fat treating the stools and not the child In active stages of the disease however the fat in the diet should be reduced (Miller et al 1920)

In the early days of fat balances Macrae and Morris (1931) showed that an increased intake of fat by children with cœliac disease led to an increased absorption, and Parsons (1932) stated that fat-absorption could be as high as 83% in spite of a high output of fat in the stools. Yet the significance of this seems to have been overlooked, for he maintained his objection to dietary fat thus depriving the child of the opportunity of absorbing four fifths of it

Although fat balances in young children with cœliac disease will always present a heavy nursing problem the technique devised by van de Kamer et al. (1949) of using wet stools and expressing the result as a series of three-day sliding means has gone far to ease the difficulties and their use has done much to place our new knowledge on a firm basis

When one recalls Still s description of the outlook for children with cœliac disease, the sense of ineffectiveness when faced with their care can be imagined. Was the withholding of fat really necessary, or might the mismanagement of fat possibly be secondary to intolerance to starches ? With the aid of fat-balances this was put to the test by giving a diet that contained unrestricted fat but in which starches were either given or entirely withheld The result of this experiment which has already been published (Sheldon 1949), showed that when starchy foods were withheld fat-absorption increased significantly An unexpected and incidental finding was that the children receiving a normal fat-intake without starches improved almost fantastically and were

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* Charles West lecture delivered before the Royal College of Physicians of London on Nov 15 1955

TABLE I—CALORIES NEEDED TO ENABLE CŒLIAC CHILDREN TO GROW

Age (yr)	Caloric intake per lb of		No of cases
	Actual weight	Expected weight	
1–2	62–122	45–79	18
2–3	57–90	40–52	6
3–5	45–76	34–56	13
5–7	38–90	27–51	6
7–12	38–67	22–38	6

quickly made happy and active At last the régime of rigorously excluding fat appeared to be doomed.

A year later evidence came from Holland that the deleterious factor in starchy foods was contained in the protein fraction of wheat and rye flour, but before elaborating this I ought to mention three other lessons that arose from our investigations

In the first place there was no reliable correlation between the amount of fat absorbed and the amount in the dried stool, a conclusion that had already been reached by Cooke et al (1946), hence in previous years it had been undoubtedly fallacious to allow the figure for fæcal fat to dominate treatment French (1955) expressed the situation well when he said that estimations of fæcal fat should be abandoned as evidence of steatorrhœa, both in diagnosis and in charting recovery

Secondly, if a wasted child is to thrive, it is not enough simply to provide a diet of correct quality, quantity, measured by the calorie value, must also receive close attention This is a situation to which pædiatricians are already accustomed when striving to nourish an infant after a prolonged attack of gastro enteritis and when advising on the feeding of healthy infants The calorie intake of children with cœliac disease on the old low fat régime received but little attention, probably because appetite remained so feeble that a target in terms of calories was out of the question The position today is different, for on a modern diet these children soon develop a good appetite Table I shows the calorie intake that we found necessary to enable children with cœliac disease to grow In general, the greater the degree of emaciation the higher must be the initial calorie intake, and almost always it needs to be higher than would be accorded a healthy child

The third point arises from the second A diet without any starchy foods reduces the variety of the menu, and in consequence a few of the children did not attain a high enough calorie intake to enable them to gain This was overcome by augmenting the diet with and steadily increasing the amount until the calorie level was reached, at which point the began sharply to rise This is shown by fig 1, refers to a girl, aged 5 years, who had had cœliac since the age of 15 months Glucose was added to her starch-free diet, but it was not until her intake had been worked up from 72 to 90 calories lb of body-weight, and the daily allowance of had reached 5 oz that her weight steadily incr Fig 1 shows the general point that weight g wasted children depends mainly on an adequate c intake It also illustrates how well children with c disease tolerate and utilise glucose, a feature also by Andersen and di Sant' Agnese (1953) To my this must throw some doubt on the widely held view the flat blood-sugar curve, so common in cœliac d is due to defective absorption of glucose

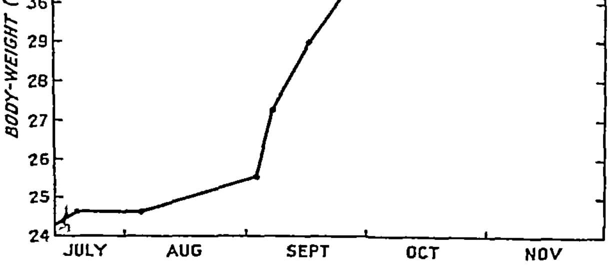

Fig 1—Use of glucose to achieve caloric intake needed to enable a 5 years, with cœliac disease to grow normally on starch

Gluten

Reference has already been made to the work Holland

Dicke (1950) claimed that the substance injur children with cœliac disease was contained in wheat flour, but wheat starch—i e, wheat flour from which the tein fraction called gluten has been removed—was har

Weijers and van de Kamer (1950) showed that the effect of wheat flour lay in increasing the excretion of ated rather than unsaturated fatty acid, and they con

TABLE II—ADVERSE EFFECT OF GLUTEN ON ABSORPTION

Case no	Age		Duration of cœliac disease		Fat absorption (wheat-starch
	(yr	mos)	(yr	mos)	Without gluten
1	2	3	1	2	91
2	10	5	9	0	89
3	7	0	4	6	93
4	4	2		3	92
5	3	2	1	2	92

that some of the excreted fat had been mobilised fr body's fat-depots

Though opinion on the question of active fat-ex into the bowel remains divided, the harmful e wheat protein in cœliac disease has been confir several countries

Frazer and his colleagues (Anderson et al 1 Birmingham showed conclusively the evil influence of on fat-absorption and added that this was irrespect agenisation. At Great Ormond Street confirmati obtained in 5 cases (table II)

Even more striking was the havoc wrought to be the addition of gluten, which was in some children great to render fat-balances impracticable Confirmation h come from Ragazzini et al (1953) in Italy, Gret Imerslund (1953) in Norway, and Kramick and D (1954) in Germany

The dramatic response that is sometimes seen w diet simply devoid of gluten is given to a g wasted child with cœliac disease is well illustrat the photographs of a boy, aged 10 years, treated i way by my colleague Prof A A Moncrieff, to wh am indebted for the case The photographs (fig 2) taken at an interval of only two months, the spe improvement being quite remarkable, indeed fur comment on the benefit of withholding gluten almost superfluous

Gluten contains two proteins, gliadin and glut which possess different solubilities in alcohol attempts have been made to decide which one is re sible for the untoward effect of gluten van de K et al (1953) concluded that the harmful action mainly be sought in the gliadin fraction We have components coeliac chil giving 5 g ly to the nger children 10 g daily to e aged more n 5 years but results have been at all tive Glutenin harmful and vered fat rption in 3 lren and in 4 ers gliadin rted alike it The diffi y, however of ining either tin free from amination by other may contributed uch equivocal ts.

he proteins of flour include iadin, which is ted to contain gher cystine nt than does gliadin and telin and Dicke et al (1953) suggest that oat is injurious to children with cœliac disease his proves correct the diet must be modified dingly but in my experience the children seem to ate oat flour satisfactorily, except those who dislike ste To investigate this point more closely the fat-nces of 6 children with cœliac disease were determined e III) Two ounces of oat flour daily was probably uch for the sixth child making her slow over her s and slightly increasing the number of her stools therwise oat flour appeared to have no untoward al effect If a child likes it we allow it in the diet

s the objective today in treatment is to give a diet h strictly avoids gluten but is in all other respects al The diet therefore includes flours other than of wheat and rye. Wheat starch, because it has d harmless, is given, and with the use of special s it can be made into bread, cakes, and biscuits details of such a diet have been fully described here (Sheldon and Lawson 1952 Sheldon 1954) and not be described again here Vitamin supplements B complex, C and D should be given

lthough most children with cœliac disease can be ferred quickly and easily to a standard gluten diet, in a few the illness may have already become so e that a probationary period on a much simpler e g, skimmed milk Prosol, glucose, and banana purée—may be required and a month or more of skilful nursing may be needed before a full gluten free diet can be tolerated For the child who presents with œdema and perhaps ascites associated with hypoproteinæmia one or more transfusions of plasma may be necessary, as in 3 of my 74 cases Of complications other than œdema, tetany deserves the greatest respect, and intramuscular calcium should be supplied until the serum calcium level has been restored to normal

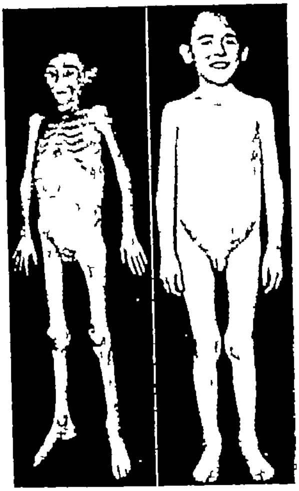
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Fig 2—Remarkable improvement on two months gluten-free diet in a boy aged 10 years with severe cœliac disease.

BLE III—EFFECT OF OAT FLOUR ON ABSORPTION OF FAT

Age (yr	mos.)	Duration of cœliac disease (yr	mos)	Fat-absorption (%) (8-day balances) on gluten free diet: Without oat flour	With oat flour	No of days before balance	Oat flour (oz. daily)
4	3	3	10	85 3	97	7	2
1	5		4		93	10	1
2	10	1	10	87·0	87	14	1
7	2	1	8	93 0	93	26	1
10	4	9	4	91 0	88	14	2
4	2	3	[illegible]	91 0	88	7	2

Anæmia

Success can also be deferred if anæmia is overlooked Broadly speaking, I have relied on medicinal iron when the hæmoglobin has been above 65% but when it has been below that figure one or more blood transfusions have been given The more rapid recovery from anæmia which transfusion offers not only speeds the well being of the child including appetite but also quickly increases resistance against infection and facilitates recovery should infections arise My impression is that the value of blood transfusion in these children is not sufficiently realised, of the 74 cases admitted to my wards transfusion of blood was thought necessary in 18 (24%)

Prognosis

What has been the impact of the new dietary treatment on prognosis? Hardwick (1939) found a mortality of 15% in 544 published cases, but today cœliac disease has virtually ceased to be fatal Earlier workers emphasised that survival was often obtained at the cost of stunting of growth which is of course a matter of height rather than weight, and that care with the diet might be necessary for years. In the words of Sir James Goodhart, these children were made 'safe but not sound"

With mortality virtually annihilated more stringent criteria must now be applied to distinguish between survival and cure, and for the child merely to arrive at a modus vivendi should not continue to be regarded with complacency The important contribution by Bennett et al (1932) revealed how cœliac disease might linger into the idiopathic steatorrhœa of adults and Cooke et al. (1953) found that of 100 adults 43 had had an onset in childhood As regards the effect of a gluten free diet in idiopathic steatorrhœa of adults all one can say is that the published results appear to have been very variable, and one may wonder whether with time, the condition can become irreversible, although French (1955) points out that recovery may take much longer in the adult than in the child, and he suggests that failure with a gluten free diet may be because the treatment has been abandoned too soon.

Frazer (1952) has pointed out that exclusion of gluten leads to a reduction in fæcal fat, a return towards normal of the radiographic appearance of the small intestine, and a gradual improvement in the chylomicron count and the glucose-tolerance test When, however Gerrard et al (1955a) reinvestigated 32 children treated by the older methods not one was found completely free from symptoms. There was too an over all significant reduction in height and weight below normal and only 6 showed a normal glucose-tolerance curve Survival rather than cure seems a fitting description for these children

Whether a normal glucose-tolerance curve should be insisted on before speaking of cure is difficult to decide At Great Ormond Street we repeated the glucose-tolerance tests on 30 children with cœliac disease 4 had had their disease for six years or more and had never received a gluten free diet 3 of these showed flat curves—i e., an increase of less than 40 mg of blood-sugar per 100 ml. Of the remaining 26 children with a duration of disease from two and a half to eleven years all had undergone a period of gluten free treatment, but at the time of the test all had been returned to a normal diet 17 of them still had a flat curve The children had been admitted to hospital in the evening and their glucose test done next

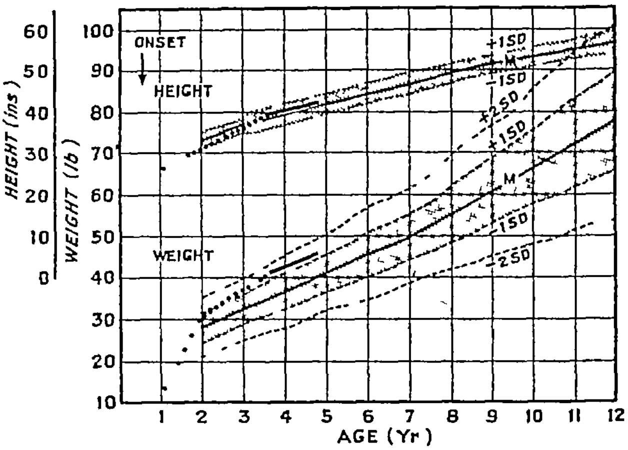


Fig 3—Growth of child with cœliac disease which came on at the age of 7 months after $2^1/_2$ years on gluten free diet (interrupted lines) height and weight were above average and were maintained thus during the next year on gluten containing diet (solid lines)

morning and in view of the high proportion of flat curves we wondered whether psychological influences due to the test being done so promptly after admission could have affected the results However, 13 control children, carefully selected to avoid any with pyrexia, recent infection, or metabolic disorder, were examined in precisely the same way, and 10 of them showed a normal rise in the blood sugar level

It would be interesting to know whether healthy adults who give a history of cœliac disease in childhood have a normal glucose tolerance, until such information is available it may be unwise to demand a normal glucose tolerance as a criterion of recovery Certainly the conclusion reached by Cooke et al (1953), that in idiopathic steatorrhœa of adults there is no correlation between glucose tolerance and the clinical state, seems equally applicable to cœliac disease

Growth

An important aspect of prognosis concerns growth, for a legacy of stunting cannot be regarded as a satisfactory outcome Even if early cases grow normally when on a gluten-free diet, while in late cases growth is accelerated, as Gerrard et al (1955a) have shown, the question of how long such treatment must be continued to ensure that normal growth shall continue after reversion to a normal diet calls for an answer

Both Hardwick (1939) and Gerrard et al (1955b) have recorded the average deviation below standard height and weight in groups of children with long standing cœliac disease, but although their figures have statistical significance they afford little help when an individual for some children are inherently tall and some are
One really needs to be able to compare the height weight of each child against his personal measurements This is being studied at the founded by Dr Charles West, where a separate chart devised by Dr Lawson is used for each child cœliac disease The chart shows the mean height weight from 1 to 12 years, and also one standard for height and two standard deviations for weight. treatment on a gluten free diet, in the first six weight is usually gained rapidly, and height above average rate, but thereafter each child tends flatten out into his personal channel of standard and subsequently his movement into a higher or channel can be followed and the influence of change diet be recorded

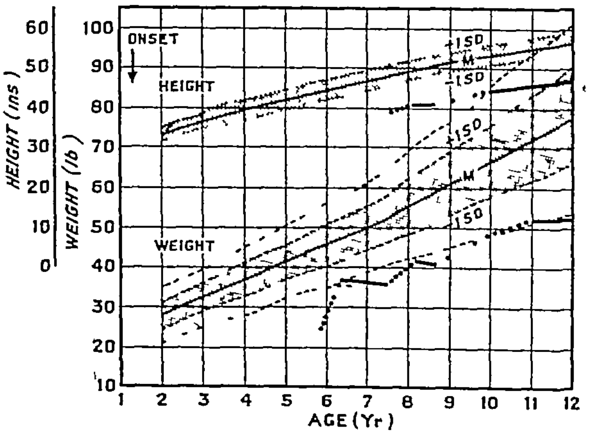
Figs 3–7 illustrate some of our findings. On the the interrupted line represents a gluten free diet and subsequent solid line a diet containing gluten

The charts of 114 children have been analysed. method adopted has been to express increments of and weight as a percentage of the mean increment the same time The figure of 100% implies that is exactly keeping pace with the mean rate of grow

The results of the analysis are shown in fig 8 On without gluten, after the initial spurt in growth du first six months, both height and weight contin increase at a rate above the average until gluten restored to the diet, whereupon the increments in and weight fell away In several children the inter with growth was sufficient to make us reinstit period on a gluten free diet, when once again accelerated This second period varied from four to three years, yet, when for a second time glut reintroduced, the rate of growth in two thirds children again dropped below the average

It has been suggested that a gluten free diet on be maintained throughout the years of growth, findings are not quite in accord with this, because children with cœliac disease, after a period on a free diet, continue to grow satisfactorily when has been reintroduced The difficulty lies in det those children who will behave in this way

Of the children whom we replaced on a glut diet, in a few the reason lay in a return of sympt cœliac disease when they had been given gluten, the majority the sole reason was that growth checked, there has been no other clinical evide relapse, and the falling off in the rate of growth, esp height, would have been easily overlooked witho regular charting of the growth record



of child with cœliac disease which came on at the age
ths : repeated introduction of gluten-containing diet (solid
cessation of growth

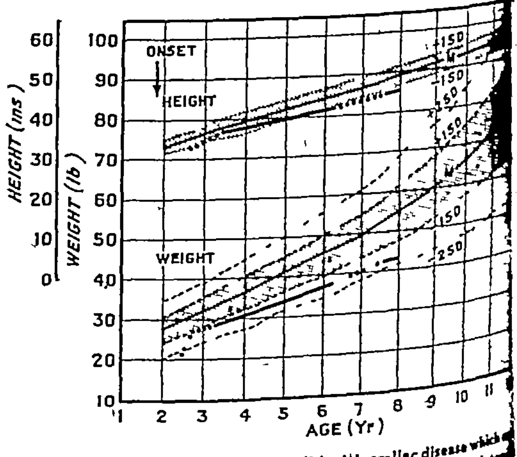
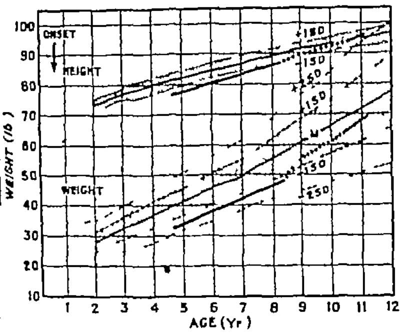


Fig 5—Growth of inherently small child with cœliac disease which on at the age of 1 year 11 months : a second period on diet (interrupted lines) did not accelerate growth



—Growth of child with cœliac disease which came on at the age months : first solid lines show growth on gluten-containing fat-free for more than 3 years, whereas 2 years on gluten-free diet (inter- ted lines) was accompanied by accelerated growth

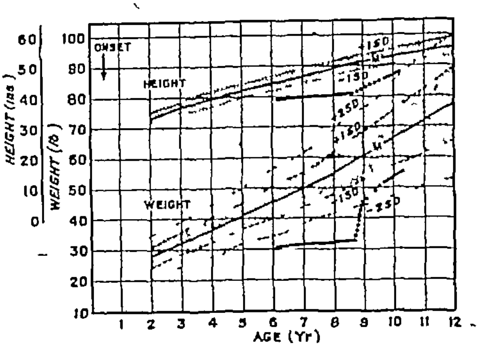


Fig 7—Growth of child with cœliac disease which came on at the age of 6 months : first solid lines show growth on gluten-containing fat-free diet ; gluten-free diet (interrupted lines) led to a spurt in growth but disastrous effect of early treatment on growth was probably too great to enable him to make up for lost ground.

therefore a return to a normal diet is to be attempted ig childhood and if at the same time satisfactory th is to be achieved, it appears essential to keep a watch on the height and weight gradients, com g these with the gradients while the child was ving a gluten free diet so that if growth definitely off it may be started again by restoring the special before too much has been lost

Action of Gluten

e mechanism by which gluten exerts its harmful nce is not understood The fact that it operates is way in so few children suggests that other condi may first of all have to be satisfied but we do not what these may be Of my 74 patients 9 began to symptoms while away from home in a residential ution, but whether this indicates a psychological or whether epidemic gastro enteritis was the ng point, I cannot tell Ebbs et al (1950) and ren and di Sant Agnese (1953) consider that the ons of children with cœliac disease show a sufficient nce of the disease and of diabetes mellitus to point underlying hereditary trait

ser (1953) suggests that there may be an allergic on to gluten in the small intestine leading to sed secretion of mucus, which Frazer et al (1949) shown to be the cause of the deficiency pattern seen logically after a meal of barium and that excess ous may account for delay in absorption But if is an allergic factor it can be only a local affair n de Kamer et al. (1953) obtained negative skin with glutenin and gliadin and in several children ve have skin tested with gluten by both scratch and ermal techniques the results have been uniformly ive.

some children cœliac disease dates from acute o-enteritis, which may in some way disturb the ochemical conditions in the intestine and thus are the ground for cœliac disease Attempts to e pathogenic bacteria from the stools have usually d fruitless, and it seems that if the intestinal flora a part it is through the medium of saprophytes tempt was made in 3 children to modify the intes flora with aureomycin which so noticeably lessens our of the stools in pancreatic fibrosis It was given ods up to six weeks at a time when the diet con d gluten. The results were disappointing : though erage fat absorption was not appreciably affected tools worsened appetite was lost and the weight lly fell. Afterwards each child responded as soon as n was withheld

That cœliac disease is never observed in a baby that is being breast fed is understandable because the diet is then free from gluten , but although cœliac disease may appear as soon as gluten is introduced into the diet, the onset may be deferred for a year or more beyond this point ; indeed it is conceivable that gluten intolerance does not arise until cœliac disease has already developed

We do not know whether cœliac disease is ever met with in children who have never had gluten , but if gluten intolerance is an essential, cœliac disease should only be found in those parts of the world where gluten is eaten I am grateful to Dr W R Aykroyd director of the nutrition division of the Food and Agriculture Organisation of the United Nations, for supplying me with figures showing the consumption of wheat in different countries Inquiries were then sent to doctors interested in nutrition and pædiatrics in several tropical countries

Cœliac disease is met with in Colombia Costa Rica, and Mexico where wheat forms part of the diet It does not occur or else is not recognised in Senegal, the Belgian Congo Uganda, Kenya, Eritrea, South India, Malaya, Thailand, Formosa the Phillipines, the Celibes, Sangir and Fiji, except for an occasional case in a European child and in these countries if wheat is eaten at all it is only by Europeans and families of a high income group

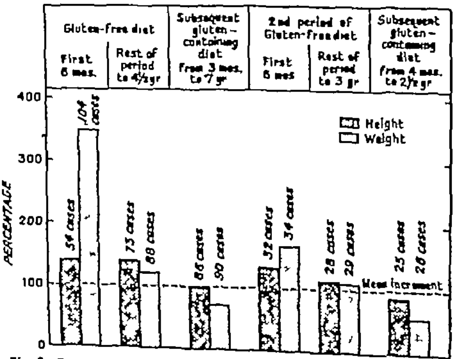


Fig. 8—Percentage increment in height (hatched histograms) and weight (stippled histograms) of children with cœliac disease on gluten-free diet and on gluten-containing diet.

I am of course well aware that medical records in Central Africa and the Far East do not approach Western standards, but at all events it can be said that the inquiry does nothing to undermine the important rôle played by gluten

Other Questions

Glucose Tolerance

Is the flat glucose tolerance curve really due to delayed absorption? May and McCreary (1940) thought that this was so and attributed it to defective gastro-intestinal motility However, by using techniques devised for us by Prof A L Frazer, we have shown (Sheldon and MacMahon 1951) that glucose leaves the stomach of the child with cœliac disease at a normal rate, hence delay in emptying of the stomach cannot be invoked as an explanation It is known that, when glucose is introduced directly into the duodenum, the resulting blood-sugar curve tends to be flat, suggesting defective absorption but there is no doubt about the therapeutic benefit of glucose Emery (1947) has suggested that the flat curve is due to avidity of the liver for glucose, and in this connection the unusually small liver in many of these children may have some significance Though most workers incline to delayed absorption as the explanation, this is not finally proved

Phosphorylation

Since phosphorylation plays a part in the absorption of fats and glucose, a defect in this mechanism might be of significance, but there is no good evidence that such a defect exists Morris and Peden (1937) and Hardwick (1939) have reported that the serum alkaline phosphatase level, in the absence of cœliac rickets, tends to be low, and they attribute this to cessation of growth, which seems likely enough The serum alkaline phosphatase level has been estimated for me in 17 older and growing cœliac children, aged 3–9 years, and found to be within the normal range, the figures being 12–28 King-Armstrong units Fisher and Neill (1955) call attention to the intermittent presence of phosphorylethanolamine in the urine of some children with cœliac disease and their relations Since this substance acts as a substrate for phosphatase, its presence in abnormal amounts might suggest either a low production of phosphatase or a limitation of its enzyme action Dr L I Woolf searched for it in the urine of 8 of my patients and found it in all, but he regarded the amount as above normal in only 1 Thus what evidence there is indicates that phosphorylation should be judged not guilty

Vitamin B

Deficiency of vitamin B as a causal factor of cœliac disease has been suggested May et al (1942) reported that intramuscular therapy with crude liver and vitamin B complex led to clinical improvement and improved absorption of vitamin A and glucose During the next few years the treatment was given a wide trial, but, in spite of a few favourable reports (Paterson et al 1944), the daily injections into the tissues of these thin and unhappy children proved so irksome that it was generally abandoned More recently it has been stated that the worst effects of wheat flour could be checked with nicotinamide (Weijers and van de Kamer 1950)

The occasional occurrence of a megaloblastic anæmia that quickly responds to folic acid further involves the vitamin B complex This type of anæmia was present in 7 of my 74 cases Until, however, it has been firmly established that vitamin B will allow a child with cœliac disease to tolerate a completely normal diet and to grow at his expected rate, it seems wiser to regard vitamin B deficiency as a secondary phenomenon, although none the less one that must be provided for in treatment

of Starch

h there has been general confirmation of the Farber et al (1943) that children with cœliac

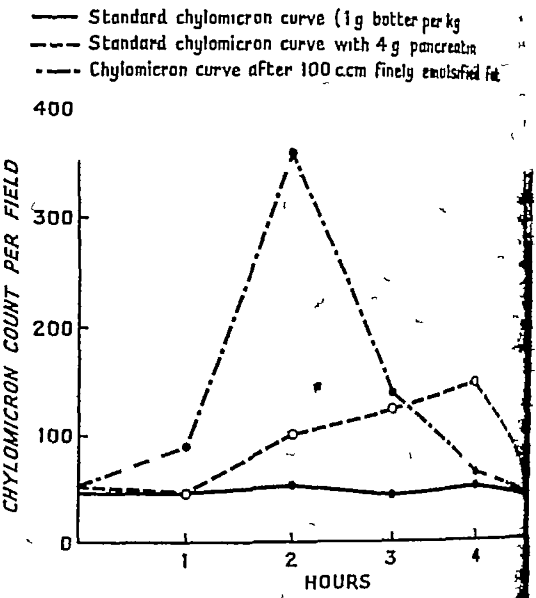


Fig 9—Chylomicron curves from a boy, aged 2 years, wh
pancreatic lipase.

disease produce the three pancreatic enzymes in amount, Andersen (1947) finds that the amount of lase is often reduced, but her conception of cœliac d would not receive general acceptance in this country, to her steatorrhœa is not an essential symptom, cœliac disease and intolerance towards starch app be synonymous terms to her There are, however, distinctions, for though starch intolerance co expected to cause fermentative diarrhœa, abd distension, and loss of weight, it would be unlik cause steatorrhœa, a small liver, a flat glucose cur intolerance to gluten The following case may se an illustration

A boy progressed well until starch was introduced diet at the age of 4 months, whereupon his stools became frequent, and undigested but not pale, he ceased to gain and his abdomen became distended On admission to h two months later, in addition to the previous sympto liver was easily palpable and his glucose tolerance was He improved and gained weight as soon as starch wa bidden, and two months later he was able to tolerat amounts of wheat, rice, and potato A fortnight later gluten was added daily to his diet and continued for without harmful effect, and at the end of this pe fat-absorption was 95%

To say that he was an early case of cœliac diseas that the withholding of starch, and therefore of for two months led to cure would only be permiss steatorrhœa is regarded as unessential to the dia and this would not conform to the disease which described

Steatorrhœa

Even if steatorrhœa is held to be an essential fe it remains but a symptom and may arise from causes The most important of these is panc fibrosis, which is seldom difficult to distinguish, for history is different, and there are laboratory mea which the diagnosis may be confirmed Simple intole of fat with consequent steatorrhœa is also met particularly in infancy and after gastro enteritis, responds to curtailment of dietary fat Frazer and colleagues have described one such case, and anoth which persistent steatorrhœa from the age of 2 m was unrelated to gluten but relieved by bile salts et al 1955)

In 2 of my patients also steatorrhœa bore no rel to gluten boy, aged 10 years had had recurrent symptoms of rative colitis for five years, eventually complicated by hosis of the liver His fat-absorption was as low as 54% under the influence of 1 g of bile salts daily his absorption in a month to 83%

he other child illustrates a selective absence of creatic lipase

rom birth his stools were greasy with oil droplets separ g on the surface When first seen at the age of 2 years again at 5 years, his duodenal juice contained trypsin and lase but no lipase. His chylomicron curve was completely Professor Frazer kindly supplied us with a solution of in a fine emulsion, and when this was given into the denum, the chylomicron curve showed a *rise* of 315 omicrons in two hours. The effect of pancreatin was less ng—90 chylomicrons (fig 9) The boy has remained ancreatin *and continues to grow at a normal rate*

ar as I am aware this case is unique, although Lowe May (1951) have recorded a child in whom trypsin e of the pancreatic enzymes was missing, and ther in whom only amylase was absent

Conclusions

any children with cœliac disease are strikingly lerant of gluten. Whether this is true of all is perhaps uch a matter calling for clarification of terminology is for scientific inquiry Intolerance purely towards r starch or fat should not be confused with cœliac se Starch indigestion is *most likely to cause* culty in differential diagnosis and it is here that t seems to me the introduction from America of term 'cœliac syndrome' has added nothing but usion

razer and his colleagues (Ross et al 1955) feel the time ome to separate off a *group of* patients with cœliac se and to call their disease 'gluten induced cœliac se,' and I *think* the cause of clarity would be served ome such title Since gluten however, *has not yet* shown strictly to induce cœliac disease although erance to gluten is undoubted, the more simple term tten intolerance" *is perhaps a better description*

e lot of the child with cœliac *disease is decidedly* ter than when Still gave his Lumleian lectures but is no time for complacency for there remains much we do not understand

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SERUM-CHOLESTEROL, DIET, AND CORONARY HEART-DISEASE

AN INTER RACIAL SURVEY IN THE CAPE PENINSULA

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Throughout the Western World there is anxiety over the high and apparently increasing death rate *from* coronary heart-disease * Those in the professional executive and more highly skilled occupational classes are particularly susceptible (Registrar General 1954)—men our community can little afford to lose Wide differences in susceptibility to the effects of coronary heart-disease exist between different countries *or* races while within the same country a difference in prevalence has been noted during certain periods, such as the last world war (Malmros 1950, Strom and Jensen 1951)

Apart from age and sex, many factors probably *govern* this susceptibility Genetic influences, exposure to infections and the geographic and climatic environments have been *advanced as adequate* explanations for the differing incidence from race to race Keys, on the other hand has demonstrated that, in those countries where the death rate from coronary heart-disease is low, the population consumes less fat and exhibits a low mean serum cholesterol level (Keys et al 1952, Keys 1954a and b Keys, Fidanza, et al. 1954 Keys Vivanco, et al 1954 Keys and Anderson 1954) In fact a statistically *significant* relationship has been demonstrated between the death rate from coronary heart disease the mean serum-cholesterol level, and the proportion *of calories* derived from total dietary fat

In Cape Town we are in the favourable position of having a *multiracial* community living in the same climate, with each race in the main adhering to its traditional customs, particularly as regards diet. In part the dietary habits depend on purchasing power; but even among the poorer Europeans the mean percentage of calories derived *from fat* is more than double

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* Here we use this term in the sense of the effects of myocardial ischæmia arising from *narrowing* or occlusion of a coronary artery due to atherosclerosis and/or thrombosis

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that of the Bantu (Batson 1953) The consumption of fat by the Cape Coloured lies midway between The evidence, too, indicates that the morbidity and mortality from coronary heart-disease differ widely in these three racial groups

We report here our findings in an inter-racial study in middle aged men

Socio-economic Backgrounds

Bantu

In Cape Town the Bantu usually occupy the lowest socio economic plane, providing mainly the unskilled labour Those who earn least, usually heavy manual labourers, come to the city from the rural areas for short periods (six months to two years) hoping to save enough money to meet certain needs of their homes in the reserves They want food that is both cheap and bulky, and nearly all of them rely much on maize-meal porridge and bread—often eating little else This diet is low in both fat and protein and in addition it has a high residue (Walker and Arvidsson 1954) As the Bantu climbs the socio economic scale, his diet still has the same basis of mealie meal and bread but tends to contain slightly more fat and protein at his work he may buy *vet-koekies* (fat cakes—dough fried in oil) and fried fish With a further increase in wages he may be able to afford meat, usually cooked as a stew, and dripping, mixed with his maize meal porridge or applied to his bread.

There are, however, Bantu born and brought up in the city, whose education and diet approach those of the poorer European Many of these are officials in Native Administration, chefs, cooks, shop owners, and waiters There are very few Bantu in the professional class as yet

Cape Coloured

The Cape Coloured community originated mainly from European, Hottentot, and Malay admixture Only within the last few decades could any Bantu blood have been added A section known as the Cape Malays (of Moslem faith) are said to be relatively pure, being descendants of the artisans imported from Malaya by the Dutch East India Company in the 17th century, and their technical skill has been handed down from generation to generation (In this survey most of the Malays had to be obtained from the tailoring trade and thus represent the more sedentary section) For religious reasons the consumption of alcohol in the Malay group is said to be nil Many non Malay Cape Coloured people, however, consume a great deal of wine and spirits In the socio economic scale the Cape Coloured is intermediate between the Bantu and European, with overlapping on each side They compete in both the unskilled and the skilled labour market, and, compared with the Bantu, a far greater proportion are professional men As a population they are more stable because there are no migrants

There is less monotony in their diet than in that of the Bantu The Malay approaches the Indian in his liking for spices and curries, and boiled green vegetables are rarely eaten Otherwise the diet of the Coloured is more like that of the European

European

In general the Europeans are economically privileged We had considerable difficulty in finding middle aged European men earning less than £50 a month Most of these were unskilled dock labourers whose work could hardly be called heavy manual labour Such men usually live in subeconomic housing estates where rents are low and the family do not need to attain the standard of living set by the European white collar workers, so they probably have as much money available for food as have white collar workers with twice their income

Even at the lower economic levels, Cape Town Europeans consume more than twice as much fat—me[illegible] in the percentage contribution towards the [illegible] as do the Bantu, while the Cape Coloureds come in between (Batson 1953) The diet and the mode of life of the average Cape Town European is unlike that of people of Western European residing elsewhere in the world

Cases Studied and Methods Used

The sample obtained during February-May, consisted of about 600 adult males actively eng their accustomed occupations in industries where groups of men representing the three main racial were employed simultaneously Each man was gi careful clinical examination, and certain anthropo measurements were made, including skin folds to the amount of subcutaneous fat (Brozek 1953, 1953) A 9 lead electrocardiogram was obtained, and socio economic status was assessed Facts about income, occupation, family size, consumption of to and alcohol, degree of responsibility, and exte physical activity at work were ascertained In addi the nature of each person's diet was assessed, partic as regards consumption of fat containing foods intake of fat was further subdivided into that animal and that from vegetable sources Figures de the degree of consumption of fat can be regarded as quantitative only, because it was assumed that person consumed an "average" helping An ox sample and a plain sample of venous blood com the examination

This report deals with certain of the above aspect is concerned exclusively with 383 men aged 40–58 with present or past evidence, clinical or electro graphical, of angina pectoris or of myocardial inf were excluded, this involved 9 Europeans, 5 Coloureds, and 1 Bantu (who had inconclusive el cardiographic changes only) Another European excluded because a xanthomatous nodule was fou his right elbow and 1 European, 1 Cape Coloured 1 Bantu were excluded because of diabetes me No subject had to be excluded because the hæm and hæmoglobin level were outside the normal In no case did the iodine slide test (Mallen et al Woolf 1951) reveal unsuspected liver disease The cholesterol in the serum was analysed in duplicate b method currently used by Keys and others in Minn Great Britain, Italy, Spain, Yugoslavia, and S (Abell et al 1952 modified by Anderson and Keys The cholesterol content of the α and β lipop fractions separated on filter paper by electrophores measured in a like manner Duplicate samples dispatched by air to the laboratory of Physiol Hygiene in Minneapolis The total lipid in the was measured by the elution technique of Swahn (1 The erythrocyte sedimentation rate (E S R) (Win 1946) was estimated to exclude unsuspected disease

Findings

There was good agreement between the resul cholesterol determinations done in Cape Town and t done in Minneapolis on the duplicates (r = 0 98 126 pairs of analyses) This agreement applied to the total cholesterol and the cholesterol in the α

TABLE I—MEANS AND STANDARD DEVIATIONS FOR CLINIC HEALTHY MEN, AGED 40 TO 58, IN CAPE PENINSUL

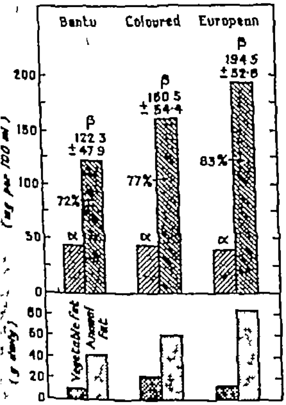
Item	Bantu	Coloured	Europ
No of men	132	115	111
Age in years	45 8 ±5 5	46 5 ±5 0	[illegible]
Total cholesterol in serum (mg per 100 ml)	166 3 ±47 2	204 1 ±51 8	231·0 ±
% of total cholesterol in β lipoproteins (mg per 100 ml)	71 0 ±10 1	70 8 ±9 9	[illegible]
Total serum lipids (mg per 100 ml)	393 0 ±138 0 (N = 65)	544 2 ±188 1 (N = 63)	850·5 ± (N =

otein fractions. As the Cape Town determinations al cholesterol were done on fresh sera, these levels ed here.

of Race

r exclusions due to probable ill health, there ned 304 men aged 40–58 These were subdivided basis of race and the mean total-cholesterol level serum is given for each race in table I The differ in means between the races are highly significant 001)

re are highly significant differences too in the bution of the cholesterol within the α and β lipo in fractions, the European having 82 6% (±7 15%) total cholesterol in the β fraction and the Bantu (±10·1%) The Cape Coloured again lies in en—76 8% (±9 9%) The mean absolute cholesterol in the α lipoprotein fraction (about 40 mg per 100 hows no racial difference As shown in fig 1, these ct inter racial differences in the total cholesterol levels are due to differences in the absolute cholesterol content of the β lipoprotein fraction



—Mean consumption of fat and mean serum-sterol levels (in α and β lipoprotein fractions) men in Cape Town: 132 Bantu 117 Coloured 114 European Means and standard deviations β lipoprotein cholesterol were as follows: tu 122 3 ±47 9; Coloured 160 5 ±54 4; and pean 194 5 ±52 8.

Effect of Raised E.S.R.

One third of the Bantu sample had an E.S.R. of 10 mm or more in one hour, whereas only 12½% of the Cape Coloureds and 3½% of the Europeans had similarly raised E.S.R. No cause for this was obvious in the people erned. Analysis with due allowance for race revealed ghtly lower mean serum-cholesterol level in those u and Cape Coloureds with E.S.R. of 10 mm or more hour (table II) These differences were not signifi (0·5>P>0·4 for the Bantu and 0 9>P>0 8 for Cape Coloured sample) Consequently these people not excluded from the survey

of Socio economic Status

pite the considerable inter racial differences in mean m-cholesterol levels there was considerable overlap race to race. Income was then selected as a basis urther subdivision within each race As regards the tu, a stepwise increase in the mean total-cholesterol in the serum and the cholesterol in the β lipoprotein ion in particular paralleled the ascent from low to income. The same trend appeared in the Cape ured, and to some extent in the European though the latter group the mean serum cholesterol levels almost identical in the low income and middle me groups Otherwise at the same income level, pective of race almost identical total-cholesterol and holesterol levels were found (fig 2)

come being used as a basis again, it was found that increase in income was associated with an increase in consumption of fat—particularly fat of animal origin The striking parallelism between the increase in cholesterol levels and the increase in consumption of animal fat with a rise in income is shown in fig 2 Again as in the case of the serum cholesterol, the mean consumption of animal fat of subgroups at the same economic plane was much the same irrespective of race Furthermore it was evident that Europeans with low and middle incomes, who could not have been separated on the basis of cholesterol levels, consumed similar amounts of animal fat To date the small group of 17 Cape Malays studied have a higher mean serum cholesterol than Cape Coloureds of the same economic class, and their consumption of animal fat is also higher The differences, however, are not significant. In no group did any parallelism emerge between the estimated intake of vegetable fat and the mean total cholesterol or β lipoprotein-cholesterol levels in the serum (figs. 1 and 2) But it will be noted that the vegetable fat values are very low, and no great reliance can be put on them as the small amounts present in fruits, nuts and cereals were not taken into account.

TABLE II—MEANS AND STANDARD DEVIATIONS FOR SERUM CHOLESTEROL AMONG BANTU AND COLOURED MEN CLASSIFIED ACCORDING TO E.S.R.

—	No of persons	Serum-cholesterol level (mg per 100 ml.)	
		Total	β lipoprotein
Bantu			
E.S.R <10 mm in 1 hr	88	168 3 ±40 5	71 7 ±10 6
E.S.R. 10 mm or more in 1 hr	44	164 2 ±18 0	72 1 ±9 0
Coloured			
E.S.R <10 mm in 1 hr	103	201 6 ±53 0	0 8 ±0 8
E.S.R. 10 mm or more in 1 hr	15	200 3 ±61 6	77 0 ±10 6 (only 14 persons)

Discussion

In Cape Town the death rate ascribed to coronary heart-disease, in persons aged 35 or over, is more than twice as high in those of pure European descent as it is in Cape Coloureds (Cape Town 1946) In the Bantu townships of this city registration of a death as due to coronary heart disease is exceedingly rare: possibly 1 to 3 are so registered each year (Cape Town 1952) The comparative rarity of coronary heart-disease is reflected

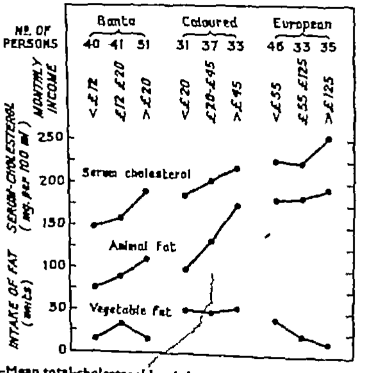


Fig 2—Mean total-cholesterol levels in serum and mean weekly intakes of fat (1 unit of fat = 3 15 g) of three racial groups classed according to monthly income: Bantu less than £12, £12–20 and over £20; Coloured less than £20 £20–45 and over £45; and European, less than £55 £55–125 and over £125

in our hospital statistics, clinical observations, and post-mortem studies, and in attendances at our cardiac clinic (Vogelpoel and Schrire 1955) Similar views are held about Bantu elsewhere in South Africa (Becker 1946, Elliott 1953, Higginson and Pepler 1954) and in Uganda (Davies 1948) The small experience of this survey confirms these views In our series only 1 Bantu had to be excluded because of probable past experience of heart disease due to coronary atherosclerosis, whereas in the European sample the number was 9 and in the Cape Coloured it was 5

The relationship between a high serum-cholesterol level and predisposition to coronary heart-disease is now well established The remarkable parallelism between the Cape Town racial experience of coronary heart disease and the mean levels of serum cholesterol in table I is consequently worthy of note It is possible therefore that in the reasons for the inter-racial differences in mean serum cholesterol level may be found the reasons for the differing racial susceptibility to coronary heart-disease

GENETIC OR RACIAL FACTORS

Brink (1949) reported that the Bantu possess an extra coronary artery Elliott (1953) has discussed the evidence against this being a factor of any importance, and Singer (1955) has found the same coronary-branch anomalies in European hearts Despite the significant difference in mean serum cholesterol levels between the Bantu and Cape Coloured samples, subdivision of the racial groups on the basis of income revealed approximately identical levels for Bantu and Cape Coloured subjects at the same economic level. It is unlikely that genetic factors account for this, because no appreciable Bantu admixture with the Cape Coloured community has occurred until the last few decades, if then At the same economic level, however, the Cape Malay, said to be genetically distinct from the Cape Coloured, exhibits a higher mean serum cholesterol level In view of the presence of more obviously influential environmental factors, it is unnecessary at this time to speculate about conceivable genetic factors (Glass 1955) These views are in agreement with comparisons on population subgroups in other countries, such as Spain (Keys, Vivanco, et al. 1954), Italy (Keys, Fidanza, et al 1954), and in South Africa (Walker and Arvidsson 1954)

ENVIRONMENTAL INFLUENCES

In the present study geographic and climatic environments cannot be invoked to explain the inter racial differences in the serum cholesterol levels, as has been suggested in other population surveys Likewise variables of age and sex are excluded by the composition of the sample Certain other definite environmental factors, however, distinguish the three racial groups

Exposure to Infection

The incidence of parasitic and bacterial infection is certainly higher among both non-European groups than among Europeans, and possibly higher among Bantu than among Coloureds A raised E S R (estimated to disclose unsuspected active disease in these apparently healthy men) was commonest in the Bantu ($33^{1}/_{3}\%$), less common in the Cape Coloured ($12^{1}/_{2}\%$), and rare in the European ($3^{1}/_{2}\%$) Mass radiography had been done at their places of work in most instances, and the subjects of this survey had not originated from areas where tropical disease is endemic If infection is responsible for these raised sedimentation rates, it is unlikely to play a part in the low serum cholesterol levels, for we were unable to show that the differences were significant The correlation both here and in other parts of the world between the incidence of parasitic and bacterial infections and the experience of heart disease due to coronary osis would suggest that if infections or infesta- any part at all they protect against severe coronary atherosclerosis—a conclusion which is neither justified nor otherwise acceptable

Personal Habits and Social Customs

Generally the Cape Coloureds, having adopted main the Western European way of life, stand the European than do the Bantu The alcohol probably decreases through the groups following order Cape Coloured, European, Bantu, Malay (the last being abstainers) The smoking of the upper-income Cape Coloured groups do not recognisably from those of the European, but the smoke pipes much more than cigarettes

Physical and Mental Activity

There is reason to believe that the degree of phy activity may influence the development or effe coronary heart disease and the level of the cholesterol (Morris et al 1953, Biörck et al. 1954). Cape Town the Bantu form, in the main, the manual-labour force, whereas the Europeans are sedentary, even in their mode of travel In consi the possible effects of physical activity allowance be made for the increased caloric consumption heightened physical activity demands There are difficulties in assessing the effects of physical activity for that matter, occupational trends (Registrar-G 1954) in that it is usual for sedentary workers to more money and carry more responsibility

Mental stress has often been thought to have a coronary heart disease, though there is no conv evidence of this (Arnott 1954) In any case it difficult a factor to analyse comparatively in the racial groups If supervisory responsibility at w taken as a measure of mental stress, then the Eu is more exposed in Cape Town On the other the non-European bears more of the stresses panying poverty and insecurity

Diet

In general the dietary customs of the three groups are different, and there is a great deal of ev for a major effect of diet on the serum-cholesterol and on the development of coronary heart-disea customary Bantu diet is rich in carbohydrate but fat, protein, and many vitamins It is held (Brock that chronic protein malnutrition accounts for th that throughout Southern Africa there is a fair inc of testicular atrophy, gynæcomastia, and fibrosis liver in apparently well-nourished Bantu (Gillm Gillman 1951) These features were not evident the subjects in this survey The iodine slide test, as a screen for occult liver disease, gave no p result, and Walker and Arvidsson (1954) could significant differences between the mean serum-chol levels of their Bantu groups with and without p tests for liver disease

Excess of calories and its expression in relative o cannot be of more than secondary importance A Englishmen and Italians studied (Keys and Keys the Italians were more obese, but the Englishmen higher mean serum cholesterol and a greater inc of coronary heart disease due to coronary atheroscl Where this disease is very common, as in the U.S.A. distribution of relative obesity among patients coronary heart disease differs little from the distrib among the healthy population (Keys 1954a, 1955) preliminary data on obesity and serum cholesterol in the European and Coloured population in Cape T are in general agreement with the above views.

Of all the dietary items for consideration, it proportion of fat in the diet that bears the relationship to the frequency of coronary heart-d and the height of the blood cholesterol This relation is highly consistent over the whole range of diet populations studied, from 8% of calories derived n Japan (Keys and Anderson 1954) to more than in the U.S.A The fall in mortality from coronary -disease in Norway during the war coincided with l in consumption of fat (Strom and Jensen 1951 1952) Very low serum-cholesterol levels were rved during the war among persons on scanty low fat ns (Brull et al. 1945 Simonart 1948, Gsell 1948) a significant rise in mean serum-cholesterol levels ermany from 1947 to 1949 was attributed by Schettler 0) to increase intake of fat

om Batson s (1953) survey of the diets of the main ulation groups in the Cape Town area it appears that he average the Bantu gets about 17% of his calories fats, a figure to be compared with about 25% for Coloureds and 35% for the Europeans of low economic ns. Our own survey does not enable us to express intake of fat exactly in this way, but our samples of l evidently conformed roughly to this pattern The opeans with a high income undoubtedly derive a er proportion of calories from fats than do the other opeans but whether the figure equals the 40+% ently recorded in the U.S.A. (see Keys 1954b) cannot said The average serum cholesterol level for the bined European men is slightly lower than the age for men of the same age in Minnesota, and corresponds well to what is known of the diets lved

different populations there is a striking correlation reen the mean serum cholesterol level and the per age of calories derived from fat The same striking lation is noted in our three groups On subdivision ach of our racial groups on the basis of income two ds emerged As the income increased within each l group the mean serum-cholesterol rose and the h consumption of animal fat increased. At the same me level, irrespective of race the mean serum sterol levels were almost identical as were the ls of consumption of animal fat

no instance did the mean consumption of vegetable correlate well with the mean serum-cholesterol levels he subgroups This adds weight to the studies of n et al. (1952) and Kinsell (1954) on vegetable fat ing and the studies by Donath et al (1953) and lingo and Stare (1954) on true vegetarians. Possibly importance should be attached to the nature of table products in the diet to account for the con g views held on this matter (Mayer et al. 1954 ns et al 1955) Furthermore diets rich in animal are characterised by liberal quantities of animal ein foodstuffs with resulting vitamin changes and by easing quantities of starch and cellulose Further k is indicated along these lines

e reason why the dietary fat tends to control the d-cholesterol and lipoprotein levels and hence to mate coronary heart-disease is apparently the simple that fats as such are insoluble in blood plasma or watery media in the body Lipoproteins are readily ble To be absorbed and transported about the fats must be combined with cholesterol and ins in the soluble form of lipoproteins (Russ et al Oncley and Gurd 1953)

he close parallelism between the incidence of coronary rt-disease, the serum-cholesterol level and the entage of fat in the diet supported by experimental theoretical evidence for a true causal connection, s the greatest hope for effective prevention and rol of the morbidity and mortality from coronary rt-disease. Certainly few problems merit more nsive study at present

Summary

A study was made of the bodily characteristics serum lesterol and serum lipoprotein levels, diet and personal bits of 383 men, aged 40 to 58 residing in the Cape Peninsula These men were selected as being reasonably representative of three racial groups—Bantu Cape Coloured and European—which differ strikingly in the prevalence of coronary heart-disease 9 Europeans 5 Cape Coloureds and 1 Bantu were excluded because of evidence for probable coronary heart disease, and 4 men were excluded on other medical grounds.

Highly significant differences in the mean total cholesterol level and particularly in the cholesterol level in the β lipoprotein fraction of the serum were found when the men were classified according to their racial origin The Bantu lay at one extreme and the Europeans at the other The Cape Coloureds were between

There are large differences between these racial groups as regards their average diets particularly the habitual consumption of fat The fat consumption of the Europeans is more than twice that of the Bantu with the Coloured group intermediate

Further subdivision within these three racial groups on the basis of income revealed that with an increase in income from subgroup to subgroup two consistent and paralleled trends emerged:

(1) An increase of the mean total cholesterol in the serum and particularly of the β lipoprotein fraction

(2) An increase in the consumption of food containing fat, particularly animal fat

At any given income level, the mean level of total cholesterol and of β lipoprotein cholesterol, was much the same for the three races and so was the mean level of consumption of animal fat

The results of this survey support the hypothesis that the dietary intake of fat influences the level of the serum cholesterol particularly that in the β-lipoproteins, and in turn may be one of the major factors influencing the pathogenesis of coronary heart-disease.

This study was undertaken as part of the programme of the Research Unit in Clinical Nutrition supported in the University of Cape Town by the Council for Scientific and Industrial Research Part of the cost was defrayed from the research funds supplied to Dr Ancel Keys from the National Dairy Council Chicago and the American Heart Association New York.

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Finally we should like to record our appreciation of the magnificent response to our appeal for volunteers by the male community of Cape Town and to the various organisations and industries including Rotary the City Corporation, the South African Railways and Harbours, and others which sacrificed man hours for the sake of this survey

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MYOCARDIAL INFARCTION

ITS RACIAL INCIDENCE IN CAPE TOWN

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In Cape Town there has long been an impression that coronary heart disease is very uncommon in the Bantu and more common in the European than in the Cape Coloured population (Bronte-Stewart et al 1955) We have tested the validity of this impression by a preliminary analysis of the electrocardiograms of adult inpatients and outpatients attending Groote Schuur Hospital With its 842 beds and 300,000 outpatient attendances yearly, this is the main hospital serving the 500,000 population of Cape Town, which is divided among Europeans, Cape Coloureds, and Bantu in the ratio of 2 2 1

The clientele of the hospital is selected, because a means test prevents the attendance of all but the poorer section of the community Almost all the non-Europeans are eligible, but only the poorer Europeans Hence the hospital incidence of coronary heart-disease reflects the true incidence of this disease more accurately for the non-European than for the European population In 1953 and 1954 attendances of adults at the medical outpatient section totalled 84,704, of which 45,506 were of non-Europeans Of the 38,235 adults admitted to wards 19,458 were non-Europeans

Findings

During 1953 and 1954 the number of electroc grams requested for adults was 5004 Twice as were requested for Europeans as for non E (table I), though more of the latter attended the This suggests that attention is more often directed the heart in the European

Of the 5004 electrocardiograms 550 showed the ch pattern of myocardial infarction—448 (81 5%) Europeans, 100 (18 1%) in Coloured, and only 2 (0 4 in Bantu (table I)

Rigid criteria were used in the diagnosis of myoc infarction. Abnormal T wave and S-T segment changes were never accepted In anterior infarction wide or Q waves in the precordial leads (V1 to V7) or diminution R waves across the precordium were required in addition T wave inversion or S T segment change In posterior tion a Q wave of at least 0 04 sec in width or a Q wave dee than 30% of the R wave in AVF was accepted In the pr of right bundle branch block a Q wave of 0 04 sec. in or abnormally wide Q waves in the precordial leads ind infarction Infarction was very seldom diagnosed presence of left bundle branch block, the presence Q wave and gross S T segment depression over the ventricle were then demanded

TABLE I—RACIAL INCIDENCE OF MYOCARDIAL INFA DETERMINED ELECTROCARDIOGRAPHICALLY IN ATTENDING GROOTE SCHUUR HOSPITAL

Race	Racial distribution of electro cardiograms		Racial distribution of infarct patterns		Percentage of races in 550 infarcts	Perce
	No	Ratio	No	Ratio		
European	3309	1 95	448	4 4	81 5	[illegible]
Coloured	1471	1	100	1	18 1	[illegible]
Bantu	224		2		0 4	[illegible]
Total	5004		550			

Although more Europeans were electrocardiogr than non-Europeans, the ratio was only about and cannot be offered as the sole explanation for striking difference found in the racial incidence of cardial infarction That there is an actual differe shown by expressing the number of infarctions percentage of the total number of electrocardio taken for each racial group Thus 100 electrocardiog of Europeans included 13 54 infarctions, 100 ele cardiograms of Coloured included 6 80 infarct and 100 electrocardiograms of Bantus included infarctions Furthermore it is unlikely that age accounts for this differing incidence, because χ^2 an reveals no statistical difference in the age distribut myocardial infarction by decade between 30 and in the two groups (table II)

Conclusion

5004 electrocardiograms of adults attending Gr Schuur Hospital were analysed to determine incidence of myocardial infarction

TABLE II—DISTRIBUTION OF MYOCARDIAL INFARCTION DECADE FROM 30 TO 59 IN EUROPEANS AND NON EUROPE (0 2>P>0 1)

Age (yr)	Europeans	Non Europeans
	No	No
30–39	16 (6 75%)	7 (9 72%)
40–49	85 (35 86%)	33 (45 83%)
50–59	136 (57 38%)	32 (44 44%)
Total	237	72

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lectrocardiographic evidence of myocardial infarction very uncommon in the Bantu, being found in only f 224 electrocardiograms

lectrocardiographic evidence of myocardial infarction found more commonly in the Cape Coloured than he Bantu, and more commonly in the European than he Cape Coloured.

he higher incidence of infarction in Europeans than the non Europeans was not due to a significant erence in age-distribution of the population studied

e wish to thank Prof. J F Brock and Prof Ancel Keys their interest and encouragement We are especially eful to Dr B Bronte-Stewart for his criticism and help the statistical analysis. One of us (L. V) was in receipt grant from the Council for Scientific and Industrial earch through its Clinical Nutrition Research Unit

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GHT THORACO-ABDOMINAL APPROACH FOR THORACIC ŒSOPHAGECTOMY

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HE approach to thoracic œsophagectomy mainly led for carcinoma, has never yet been quite satis ry, except for lesions of the cardia In these cases t oblique anterolateral thoracotomy in the bed of the th rib is extended through part of the abdominal wall rds the midline This gives excellent access to the r third of the œsophagus and to the stomach It owever, almost impossible to reach the upper third te thoracic œsophagus by this way If the anasto s has to be done above the aortic arch, it is necessary ake a second intercostal incision in a higher rib usually the fourth, using the same skin incision

any operation for carcinoma of the œsophagus it is to obtain a generous clearance above the main th because of the submucous lymphatic drainage therefore the anastomosis above the aortic arch is ally to be preferred Mobilisation of the middle of the œsophagus has to be done from the left of the e arch The crucial point for operability of growths e middle third is often the degree of infiltration and rence around the tracheal bifurcation and the right bronchus. The most important step in the tion is the removal of the growth and for carcinoma e middle third of the œsophagus this is done more factorily from the right side than the left

e usual right sided approach to œsophagectomy h is now commonly completed in one operation ts of an upper abdominal incision and separate right al thoracotomy If the stomach is mobilised before thoracotomy the growth may be found to be rable, and all this effort is misdirected If the chest ened first and the growth is found to be operable, stomach must then be mobilised and a return made he chest for the anastomosis Usually this means the patient will have to be turned twice instead of Turning the patient during a long and serious ation may cause a substantial deterioration in the iovascular condition

right thoraco abdominal incision similar to that for the left side, gives an exposure which is hampered the bulk of the liver and would probably make mobi ion of the stomach or of an intestinal loop difficult

Present Procedure

lthough excellent results may be achieved by the e mentioned methods, I have used what I believe to be a new approach in my last six thoracic œsophagectomies and three attempted œsophagectomies

The patient is arranged supine on the operating table with his right arm abducted to 90° and a small flat pillow or folded bath towel placed transversely under the lower part of his thorax

The approach is made in stages

(1) After a usual skin preparation the line of the incision is infiltrated with $^1/_4$% lignocaine and 1/300,000 adrenaline A left upper paramedian abdominal incision is made from midway between the umbilicus and costal margin up to the left side of the xiphoid cartilage The abdomen is opened and a search made to exclude secondary deposits in the liver or in the glands around the cœliac axis. The operation can then be abandoned if necessary

(2) The incision is extended in the midline up to the level of the *fourth costal cartilage* and the sternum is split in the midline with a Lebsche chisel to the same level The length of the bone which has to be divided is only about 5 cm.

(3) A right submammary incision is made from the mid line to the mid axilla over the fourth costal cartilage and rib This incision is deepened through pectoral and serratus anterior muscles, and the lower borders of the fourth costal cartilage and rib are stripped. The rib bed is incised and the pleural space opened After the internal mammary vessels have been secured the right half of the sternum at the level of the fourth interspace is cut transversely to join the midline section.

(4) A rib spreader may now be inserted in the intercostal incision and fully opened the separated angular sternal fragment being readily displaced downwards. The lung can be held forwards, downwards, or upwards by an assistant giving thus a remarkably good access to the whole length of the thoracic œsophagus, which can be palpated allowing its operability to be estimated. If there is doubt the mobilisation can be *started and if found* to be impossible discontinued and the wound closed Alternatively a palliative operation can be planned

In cases in which the growth is mobile a return may be made to the abdominal part of the wound

The spreader placed in the midline between the sternal fragments affords an excellent approach to the upper part of the stomach and the œsophageal hiatus. The stomach is mobilised *from the cardia* to the region of the right gastric and right gastro-epiploic vessels A small pyloroplasty can be done to counter the spasm otherwise produced by vagotomy Next the œsophageal hiatus in the diaphragm is widened by a small incision between sutures through the *anterior* fibres so that it will admit three finger tips. The lower part of the œsophagus is mobilised through the hiatus. The *stomach* can now be drawn down a little and the cardia divided on the stomach side with the aid of de Martel's intestinal clamps The *proximal* end of the stomach is now closed in a usual manner and the clamp removed The intercostal incision is again spread and the œsophagus mobilised from below upwards, so that the growth and glands are stripped up to the apex of the chest The cardia with its de Martel clamp can be easily and cleanly slipped through *the hiatus* into the right pleural space The body of the stomach is next pulled up through the œsophageal hiatus into the *right* pleural space bimanually and there is no difficulty in drawing the fundus up to the extreme apex of the pleural space

The anastomosis can be done in the plane of the first rib the end of the œsophagus being sutured to a small opening in the fundus of the stomach. A little traction on the mobilised œsophagus is a help and an assistant can control the position of the *fundus* with a small sponge in a sponge-holder

If extra clearance from a growth or a stricture is needed the œsophagus can be freed a little way into the neck and drawn further down

The technique of making the anastomosis depends on individual preference the following method is suggested

The end of the œsophagus can be sutured to the margin of an incision 2–3 cm long in the fundus of the stomach Continuous 20-day catgut may be used for the main suture line through all coats, and interrupted thread mattress sutures are convenient for support in the seromuscular layers. The œsophagus should not be cut completely away until the inner layer of the anastomosis is nearly completed, because it can be used by the assistant to apply gentle traction A few sutures to stitch the anterior mediastinal pleura to the stomach wall add to the security of the anastomosis An additional assistance to the anastomosis is to pass a Ryle's tube down to the obstruction before the operation begins, and to thread it through the anastomosis, leaving it in situ after the end of the operation.

Should a Roux en Y loop be preferred to œsophago gastrostomy, the preparation and use would be equally accessible

Closure of the wound presents no difficulty, but care should be exercised over the reapposition of the sternal fragment Three simple stainless steel wire sutures through the sternum may be used, and three catgut pericostal sutures assist the reapproximation of the ribs The intercostal layer, the peritoneum, and the posterior rectal sheath may be repaired with continuous 'Mersilene The pectoralis muscle and fascia and the anterior rectus sheath have been repaired with fine continuous stainless steel wire The risk of contamination by infected material from the œsophagus or the stomach during this rather long and complicated operation cannot be ignored, and antibiotics should be placed in the pleural space and wound layers as a prophylactic measure The pleural space should be drained through an axillary intercostal space for 36–48 hours to a bottle with a water seal

Assistants

Two assistants are necessary, one being placed to the operator's left but on the cephalic side of the patient's extended right arm, and the second standing on the patient's left

An emphysematous lung reduces the pleural space and the room for manipulation Excessive retraction of the lung may impede the filling of the right atrium and lead to a fall of the pulse pressure The anæsthetist and the assistants must be aware of this danger

Anæsthesia—This approach does not create any special problem for the experienced thoracic anæsthetist

Case-reports

CASE 1—A woman, aged 56, with a squamous carcinoma of the middle third of the œsophagus, 30 cm from the incisor teeth

Operation (Jan 20, 1954)—Exploration revealed malignant infiltration of the posterior wall of the trachea, although this had not been detected on bronchoscopy, and the operation was abandoned A Souttar's tube was placed in the stricture as a palliative measure The patient left hospital in fair condition but died soon after of carcinomatosis

CASE 2—A man, aged 46, with a squamous carcinoma of the middle third of the œsophagus, 25 cm. from the incisor teeth

Operation (Oct 27, 1954)—Total thoracic œsophagectomy and end to side œsophagogastrostomy Convalescence was complicated by a wound infection, but this healed after excision and secondary suture The patient left hospital with good function, and no recurrence has been detected to date

CASE 3—A woman, aged 40, with a squamous carcinoma of the middle and lower thirds of the œsophagus 36 cm from the incisors

Operation (Nov 17, 1954)—Exploration showed advanced metastases in glands round the cœliac axis, and the operation was abandoned The patient left hospital in fair condition but died shortly after from carcinomatosis

CASE 4—A woman, aged 20, with multiple corrosive strictures of the œsophagus, starting 21 cm from the incisors

Operation (Dec 1, 1954)—Total thoracic œsophagectomy with end to side œsophagogastrostomy Convalescence was uncomplicated, and the patient left hospital with good function and has remained well

CASE 5—A boy aged 16, with multiple corrosive strictures below 25 cm from the incisors

n (Feb 9, 1955)—Total thoracic œsophagectomy side œsophagogastrostomy Convalescence was by an empyema and a temporary leak from the anastomosis After drainage of the empyema the has soundly healed and the lung expanded The returned home with good function

CASE 6—A man, aged 42, with squamous carcinoma œsophagus at 31 cm from the incisors

Operation (Feb 17, 1955)—Total thoracic with end to side œsophagogastrostomy Convalescence uncomplicated, and the patient left hospital well and good function So far there has been no recurrence.

CASE 7—A woman, aged 52, with squamous carcino the œsophagus 33 cm from the incisors

Operation (March 16, 1955)—Exploration showed adva metastases in glands round the cœliac axis, and the oper was abandoned. The patient returned home in fair cond and died shortly after from carcinomatosis

CASE 8—A man, aged 55, with squamous carcinoma of œsophagus 30 cm from the incisors.

Operation (Aug 17, 1955)—Total thoracic œsophagect with end to side œsophagogastric anastomosis. The pa returned home a month after operation without complica

CASE 9—A man, aged 71, with squamous carcinoma c œsophagus 30 cm from the incisors

Operation (Aug 31, 1955)—Total thoracic œsophaget with end to side œsophagogastric anastomosis. The pa is well with good function, and the wound healed two after operation

Discussion

Three of the patients were found to be inoper and no major palliative operation for their growths thought to be advisable They have since died.

Two had severe corrosive strictures Both are well, but one had a complicated convalescence wi empyema and temporary leak from the anastom now both well healed

Four have had resection for carcinoma and are and well ten months, six months, four weeks, and weeks after operation The first of these patients wound infection which required revision and secon suture This infection was attributed to contamin from the growth, which was particularly heavily inf

A tenth patient, a boy aged 16, with a granulom stricture at and below 16 cm from the incisors wa operated on Thoracotomy showed that the extended into the neck For a first stage procedur thoracic œsophagus was excised and both its ends closed A gastrostomy was done at the same opera On a following day a Roux en-Y loop was mobilised so also was the cervical œsophagus through a left ob incision in the neck The loop was passed beneat sternum up into the neck after the method of Rob and Sargeant In an effort to find healthy tiss the anastomosis the œsophagus was trimmed be the cricoid cartilage, but the wall was thick and unhe An end to end anastomosis was done with difficulty

It was not surprising that this leaked tempor but seven months after the operation the fistula gastrostomy were soundly healed and the jejunal functioned well In the light of these experiences, necessity for total œsophagectomy arises, I resection of the thoracic part and preparation Roux-en Y loop by the right thoraco abdominal app described above, together with synchronous exp and excision of the cervical œsophagus in the left the neck by an assistant The anastomosis shoul done with the loop of small bowel brought up behin sternum

It is well known that successful œsophage requires tremendous attention to preoperative pre tion and postoperative care The operations are ex and tedious, but I believe that this approach prove to be an advantage to both patient and sur team

Summary

An approach for thoracic œsophagectomy is descri

The approach is through left paramedian and fo right intercostal incisions, which are joined through mum This wound can be widely spread in two ections.

The advantages include mobilisation of the œsophagus m the right side without need for turning the patient ing the operation

he length of the thoracic œsophagus which can be loved is unrestricted

DIOPHOSPHORUS IN THE TREATMENT OF CAPILLARY NÆVI

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r capillary nævi Brain and Calnan (1952) state e usual capillary nævi occur as small or large macules ints varying from the palest pink through shades of to the deep purple of the port wine stain mark and deeper the colour the worse the prognosis. Many he pale pink birthmarks affecting the middle of the of the neck and of the forehead tend to disappear itaneously in a matter of weeks or months Some of red marks will fade but the deeper red marks and e marks persist ' A similar observation on those ks affecting the nape of the neck was made by dey (1940)

r investigation was confined to the deeper red and e marks, which is what we mean here by capillary

he use of radium β ray plaques for treating superficial ns of the skin has diminished in England during the decade for two reasons the ease with which low age X rays can be applied, and the fact that many of existing radium β plaques are old and unreliable in output of radiation The Ministry of Supply, which years ago took over the construction and supply ll radioactive appliances felt that the use of radium the construction of β plaques was not justified after advent of emitters of pure β rays without gaseous hter elements. However it was some time before Ministry solved the problem of separating the opes from the Harwell piles and of their loading into able containers In any case the use of a rigid type plaque of relatively small size restricts the usefulness ch plaques to the treatment of small areas on flat or ghtly curved surfaces

hen radioactive phosphorus became available in concentrations at low cost an improved type of P plaque became feasible Radioactive phosphorus emits pure β rays with a maximal energy of MeV and a mean effective energy of about 400 kV n 1948 the technique of making β ray plaques with (Low Beer 1946) was modified at St Bartholomew's pital London as follows

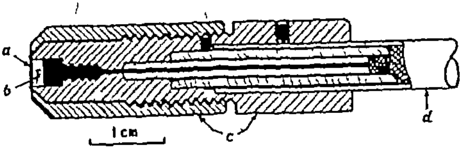

Fig 1—Section through ionisation chamber for measuring dosage from ^{32}P β-ray plaque: *a* thin front wall equivalent to 23 μ of tissues; *b* air volume 4 mm in diameter and 1·5 mm thick; *c* perspex; *d* cable to measuring instrument.

A piece of blotting paper of the same shape as, and slightly larger than the lesion to be treated is ruled off into 0·5 cm squares A drop of ^{32}P solution is dropped on to the centre of each square from a syringe (ours delivers 0·008 ml. per drop) The blotting paper is then dried in an oven at about 90°F When dry the blotting paper is loaded again, this time in the reverse direction to compensate for any unevenness in absorption or distribution during the first loading If necessary to get the required quantity of ^{32}P per sq cm the process can be repeated

The dried blotting paper is then mounted on lead which is 0·22 mm thick and has a sticky adhesive surface This lead acts as the protection medium for the back of the plaque. The front surface which is to be the active treatment surface is covered with one or two layers of 'Alkathene' sheet 0·004 in. thick.

A window frame of lead with an adhesive surface of the size of the active area is made and placed over the front of the plaque effectively sealing off the alkathene As a final precaution against contamination of the staff or patient with ^{32}P the edges of the lead are sealed with Cellotape The sealing of these plaques has been so effective that they can be used with impunity even on moist surfaces without contaminating the patient

Plaques constructed in the above described manner give an output of 1000r an hour at the surface of a patient if loaded to a density of 265 μc of ^{32}P per sq cm of the plaque surface The dosage rate is measured with an ionisation chamber (fig 1) which has a front wall of graphited cigarette paper which weighs 2·3 μg per sq cm and only stops about 2% of the β rays Radiation intensities of about 3000–4000r an hour are usually aimed at so that the treatment time is short and well tolerated by children

^{32}P has been loaded into flexible plastic at Harwell (Sinclair and Blondal 1952), but the output intensities are in our opinion too low—600–800r an hour

The longest range of radiation of ^{32}P emitting β rays with a peak energy of 1·7 MeV is about 8 mm in the tissues, but the average energy is such that at a depth of 0·8 mm in the tissues the dosage rate is only 50% of that at the surface (fig 2) This restricts the application of these plaques, in our opinion to lesions not thicker than 1 mm., unless one is prepared to give a necrotising dose to the surface layers

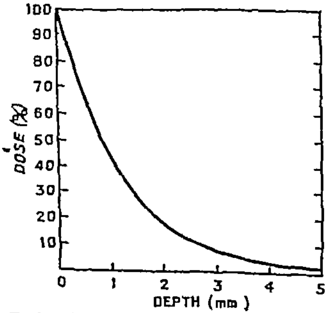

Fig 2—Relation between dose of β rays received by tissues from P plaque and depth from surface of skin.

The short range of the β particles makes the treatment of lesions lying over bone particularly safe, compared with treatment with radium plaques or with X rays, and damage to the epiphyses of bones can be eliminated It must, however, be remembered that, if an eyelid is being irradiated with one of our plaques, the underlying eye will receive a large dose, which may later produce a cataract Therefore, when treating an eyelid, one should protect the eye with a lead 'Perspex' eye shield

Method of Treatment

In a sheet of lead 0 2 mm thick, with an adhesive surface, a central hole is cut so that the area of the lesion to be irradiated is defined by sticking the mask on to the patient's skin The plaque is then placed over the lesion and strapped on If the surface area is curved, the plaque is flexible enough to be shaped to fit snugly into any cavity or over any protuberance of the treated area This shaping should be done with the operator wearing lead rubber protective gloves This flexibility of these plaques is one of their main advantages Up to now plaques as large as 15 × 15 cm have been constructed and used It is safe to treat areas of this size on small children because, owing to the short range of the radiation in tissue, the effect on the hæmopoietic system is negligible Local applications containing metallic oxides or salts, crusts, and exudates should be removed from the skin before the application of β-ray plaques, because foreign matter will absorb much of the radiation (Anderson et al 1954)

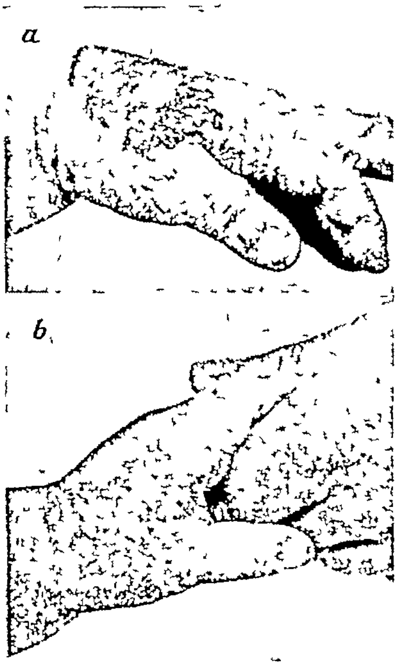

Fig 3—Capillary nævus: a, before treatment, b, 5 months after treatment with ^{32}P

Discussion

The plaques were originally made for treating superficial malignant lesions, such as Bowen's disease and other intra epidermal epitheliomas not thicker than 1 mm The experience gained in treating these suggested that the plaques might be used to treat nævus flammeus, particularly those extensive ones which, on children's faces, can be so disfiguring, giving rise to psychological problems and causing much distress to the parents

Very little information seems to have been published on the dosage in r given to such lesions treated with radium β plaques Exposure times for particular plaques were often cited, but these times mean nothing except in comparing treatments with the same plaque

Investigation of the outputs of radium β plaques from different centres (British Empire Cancer Campaign 1953) showed that plaques of allegedly the same mg per sq cm and same filtration gave outputs varying as much as 4 to 1, a ratio which, if the time of exposure used on the low output plaque was transferred to the high output plaque, would in many cases produce deep necrosis

From observation of the treatments in malignant cases it obvious that reactions were less per r for β rays X rays One would expect this because the g tissues receive a larger dose from X rays than from β rays Despite this experience we decided to start treating capillary nævi with doses which could not produce severe reactions and to increase the dose gradually until we attained the required effect

On areas as large as 100 sq cm single doses of 450r and 700r produced no skin reaction but one of 900r did Instead of increasing the dose we then followed the normal radiotherapy practice of delivering it in fractions over a few days In a group of malignant cases treated at St Bartholomew's Hospital this fractionation produced a better cosmetic result We worked up from 2 × 450r to 2 × 700r to 3 × 450r, and we feel th would be possible to go to 4 × 450r without produ severe reactions

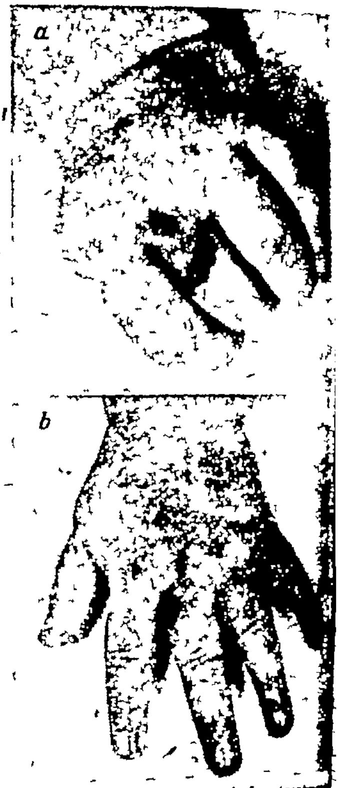

Fig 4—Capillary nævus: a before treat b, 9 months after treatment with ^{32}P

In many of the cases treated the areas had b previously subjected to extensive treatment w thorium-X with negligible improvement. The received from such treatment cannot be estimated it depends on the method of painting on the thoriu and how long it stays there The dose may exceedingly large and may be due to absorption in tissues owing to cracks in the skin (British Empire Ca Campaign 1953) In view of the uncertainty of this the radiation given with the β plaques has often less than we would have liked to give

Results

17 cases were treated with ^{32}P at Great Ormond St Hospital for Sick Children between March 4 and Nov 1953 The results appear be encoura but a long fol up of these c for signs of atrophy is es tial The cos result of la doses of ^{32}P in treatment superficial sk carcinomata lowed up years has been cellent In fa the caverno type, which p tically alwa involutes spo neously (Lu 1938, Brain

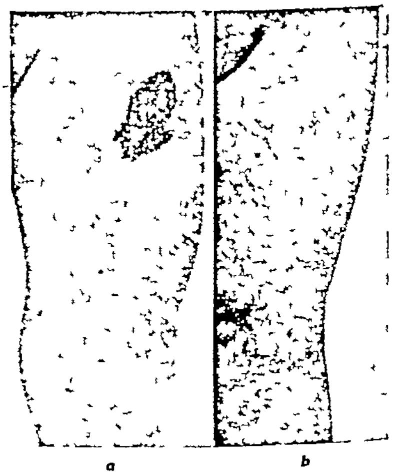

Fig 5—Capillary nævus: a before treatment, b, 9 months after treatment with ^{32}P

nan 1952, Walter 1952) and is often too thick to be ited with β rays, will *not* be treated, but we feel that ger doses up to 1800–2250r fractionated over a week y be safely tried in capillary nævi, which are often gically disfiguring and for which no other treatment rs such improvement without damaging the skin

According to the children s mothers the resulting thema began on or about the seventh day after atment, except in 2 cases in which it is said to have rted on the second and third days 15 children showed ns of erythema when examined on the twenty first y In only 2 cases was scaling of the area reported all the cases the erythema had faded by the twenty ghth day So far 4 of the 17 nævi have virtually dis peared (as in figs 3–5) 11 are definitely paler and still ding and in 2 cases the results are not available

Summary

P β-ray plaques have proved useful in the treatment superficial vascular nævi, including capillary nævus, art from the immense psychological effect on the rents that something is being done.

The plaques are easy to handle, can be shaped to fit o cavities and over protuberances, and can be made ge or small as required

They should not be used to treat lesions thicker than nm.

If eyelids are being treated, the eyes must be protected

Doses up to 3 × 450r have been given to nævus mneus as large as 200 sq cm without any resultant ere skin *reactions and have produced fading of the* ons.

Time alone will show whether there are any late skin nges with this dose but after two years none have n observed

e are indebted to Dr R T Brain for permission to lish, and to Mr Derek Martin of the photographic depart nt, Hospital for Sick Children, Great Ormond Street for photographs.

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RUBELLA AS A CAUSE OF MENTAL DEFICIENCY

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ENTAL retardation is due to genetic and environmental rs. In the case of low grade defectives structural age in the brain is usually demonstrable *In a* ority of such idiots and imbeciles this damage is due nfection

Among infections which are important in intra uterine the effect of syphilis has long been realised but this ase is a very unusual cause of mental defect in this ntry today The rôle of other infectious diseases is certain Burkinshaw et al (1953) have shown that oplasmosis seldom causes mental defect Gregg 41) focused attention on rubella and there is now no ot that rubella in an expectant mother in the first months of pregnancy can seriously damage the bryo In some cases the effect is lethal and the result abortion If the infant survives, it may have mental cataract deafness, or heart defect By analogy with damage due to rhesus incompatibility (Gerver and Day 1950) it seems likely that, even where the infant is considered to be normal minor cerebral damage may reduce intelligence

Estimates of the frequency with which infants exposed to risk are damaged vary Few will agree with the view put forward in the United States by Wesselhoeft (1949) and others, that the likelihood of damage is so great that abortion should be induced as a routine measure whenever an expectant mother has had rubella in early pregnancy

Brown and Nathan (1954) found that 4 of 13 infants at risk had congenital deformities.

Grönvall and Selander (1948) in Sweden, found 28 cases of maternal rubella in more than 20 000 pregnancies: 2 ended in abortion 25 healthy infants were born and only 1 was malformed

A study of an epidemic of rubella in Sweden (Lundström 1953) suggests that abortive attacks without clinical signs in an expectant mother can also cause embryopathy the incidence of lesions in the embryo probably varying from one epidemic to another and with the mother's health and nutrition.

Incidence of Rubella in Mentally Defective

The importance of rubella in mental deficiency is difficult to assess The accompanying table shows details of 8 mentally defective children of mothers with a history of rubella In 7 of them the mental deficiency is thought to be due to the maternal rubella These 7 form about 0·9% of 791 mentally defective children in the Fountain Hospital group Mongolism is responsible for 105 cases (13%) of mental deficiency in the same population Rubella appears to be slightly more important than gargoylism as a cause of mental deficiency in the London area The records of these children have been compiled over about six years, during which time no child with mental deficiency attributed to rubella has died, whereas many mongols have died The proportion of mental defect due to rubella would therefore be still further reduced if the known cases were compared with a series of consecutive admissions

Most of the children admitted to the Fountain Hospital are aged less than 5 years on admission, and most of them are either imbeciles or idiots The number of cases discovered with a history of maternal rubella therefore indicates only the incidence of the severer degrees of brain damage and does not cover the minor degrees in children classed as educationally subnormal or higher It is also probable that there are in the population of this hospital other mentally defective children whose defect is due to rubella but has not been diagnosed as such some mothers may have had abortive attacks of rubella and in others the rubella may not have been recognised

The patients may remain in the hospital until the age of about 16 and in the case of many of the older children no specific question about rubella during pregnancy has been asked Adequate histories however including this specific question, are available for almost all of the 790 new cases admitted during the past six years (this figure includes 60% of the *present inpatient* population of the hospital group)

In all 7 of the present cases the children were born in the three years 1943–45 The reason for this is not clear A more careful search in those years is not the reason in fact history taking was more searching subsequently There may have been a greater incidence of rubella a heightened virulence of the infection, or possibly an alteration in the dietetic habits of expectant mothers towards the end of the war

Clinical Picture

The table shows that there is no very constant clinical picture beyond the association of mental defect with cataract in 4 of the 7 cases.

ANALYSES OF CASES

Case no	Date of birth	Stage of pregnancy when rubella developed	Present age (yr)	I Q	Ears	Eyes	Motor system	Other remark
1	Nov 24, 1944	3rd month	10	16	Deaf	Normal	Normal	Anæmic, rather schi
2	Oct 28, 1944	1st month	10	10	? Deaf	Blind cataract, microphthalmia	Crawls, cannot walk	Very thin and weak
3	April 3, 1943	5th month	11	16	? Normal	Normal	Normal	Rather schizoid
4	Jan 10 1943	1st month	11	12	? Deaf	Blind, cataract microphthalmia nystagmus	Cerebral palsy, spastic	Congenital abnormality of heart (? pulmonary ste-osis)
5	Jan 24 1945	2nd month	9	56	Normal	Blind, cataract nystagmus	Normal	Mother thought it was ordinary measles had and did not medical advice
6	April 20 1945	2nd week	9	4	? Deaf	Blind cataract, microphthalmia, nystagmus	Cerebral palsy hypotonia, tendon jerks absent	Very underdevelo physically
7	Oct 20 1950	Doubtful	4	12	? Deaf	Blind cataract, microphthalmia	Cannot sit or stand	Another child is affe this is probably not to rubella
8	Sept 16, 1945	2nd month	9	17	Normal	Normal except for strabismus	Normal	Some facial and d deformity

The relationship with deafness has been established by many workers—e g , Ivstam (1951) In the present series only 1 child is definitely considered to be deaf The uncertainty about the 4 shown as doubtfully deaf is due to the fact that at a low mental level, with limited responses to stimuli of any description, deafness is very difficult to establish with certainty

The motor lesions are not characteristic 2 children have cerebral palsy (i e , they are more handicapped in their motor accomplishments than other idiots of the same level, and they have neurological signs) , 1 child showed the usual features of spastic diplegia and 1 was grossly hypotonic In all 7 cases there was a degree of the infantilism which goes so commonly with severe mental defect

The mental state was not easy to assess in view of the eye, ear, and motor lesions In the 4 children shown as blind there was no useful vision despite operations, and in 3 the eyeballs were much shrunken In spite of the difficulties, however, it can safely be assumed that 6 of the patients were idiots, since at no time, over years of observation, have they shown any evidence of higher intelligence The other patient, a boy, is just within the educationally subnormal range but, in view of his double handicap, has remained in the occupation centre for the blind Apart from intellectual limitation there are no special psychological features common to this group None of these patients has had epilepsy The 6 idiots require every attention like small babies The other boy (case 5) is clean in his habits, talks, walks well, is coöperative and friendly, feeds himself, helps in dressing, and plays games with the other children

Case 7 was excluded from the series because the history of rubella is doubtful in her case, and a sibling has a cataract and a cerebral abnormality , this is probably an instance of familial cataract and is not due to rubella

Comments

Since the end of the last century there has been a tendency to emphasise the importance of genetic factors in mental deficiency This trend is still apparent in modern textbooks Wyllie (1953) cites Tredgold's (1929) view that 80% of mental defect can be classed as "primary"

Penrose's (1954) more critical approach has shown that much of the evidence of hereditary factors previously accepted is of little value, and that in perhaps only a
all cases do genetic influences seem to be most
it

As time goes by, additional environmental factors the causation of mental defect come to light No one of these, so far as we know, is responsible for big group, but there seem to be a great many sep environmental factors each of which makes a contribution to the sum total of cases of impaired m function Maternal rubella early in pregnancy is es lished as one such environmental factor, Lunds (1952) found the highest incidence of abnormalities the second month but thought the true incidence in first month might be higher still Rubella is not a m factor but probably produces every year a small nu of the total of mental defectives

With the increasing realisation of the importance the environment in producing mental defect the pros of prevention of at least some cases have become brig This also applies to rubella Attempts at both active passive immunisation of the mother have been m Though the prophylactic value of γ globulin is still to question (Anderson and McLornan 1953) batches at least appear to have been effective (Bass et 1949, Korns 1952) J C McDonald (personal commun tion) states that the results of the use of γ globul Britain to protect women exposed to rubella early pregnancy are encouraging

In view of the frequent occurrence of cataract in present syndrome it is interesting to compare the attributed to rubella with the general incidence cataract among mentally defective children This as tion is common, and it seems that noxious factors can damage the rapidly developing brain are also to injure the lens in early life Apart from the m cataracts which are such a common feature in mong (Lowe 1949) 61 patients at the Fountain Hospital been noted as having gross and obvious cataract in past six years, but only 7% of these are due to rub

Unfortunately, only 1 (case 5) of these 7 children be considered as trainable This group is, however sample of the most severe consequences of mate rubella and cannot be regarded as representative poor success of eye surgery in these patients should be taken as a contra indication, since it is impossib assess accurately the child's general capacity at the age when treatment of cataract is usually undert and even a small amount of vision will greatly facili the task of training In the same way it is essential test as early as possible all suitable patients for hear though this may be difficult where vision is also impa since the peep show technique is not then applicable

Summary

history of rubella in early pregnancy was obtained n the mothers of 8 patients at the Fountain Hospital ubella was thought to be responsible for mental ect and other anomalies in 7 of these cases.

hese patients were found among 791 mentally ective persons mostly children They make up 0 9%

ll 7 children were born in 1943–45, 6 are untrainable ts 1 is above imbecile level but is blind 4 are nd through cataract deafness was established with tainty in 1 case

There is no distinctive clinical picture apart from the mbination of mental deficiency and cataract with sibly deafness.

Maternal rubella is one of the very many causes of ntal deficiency and brain damage which are being overed It accounts for only a small proportion of cases of mental defect

wish to thank Dr L T Hilliard for advice and help . M. Marrs for psychological examination of the children l Mr L. Mushin for the eye reports.

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FAMILIAL HEMIPLEGIC MIGRAINE

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EMIPLEGIC migraine is an unusual variant of migraine with a strong familial tendency in which the mon visual aura is either superseded by or passes hemiplegia, usually with associated hemianæsthesia if right-sided, aphasia

rks (1910) published a history of hemiplegic migraine members in 3 generations of a family Dynes (1939) in ther and her daughter ; Symonds (1952) in a father and n, and in 3 males in 3 generations of another family and ty (1953) in 3 further families.

e report here another family in which 9 members in erations were affected.

lthough the associated family history of other and usual forms of migraine and the occasional occur of these in the same individual who has the hemi variety support the diagnosis of migraine never many features are unlike those of classical aine Thus the headache may at times precede the plegia, and some residual sensory and motor loss persist for days Neurological signs may also spread e non hemiplegic side for a time and the attacks be accompanied by severe confusion and even coma ite these seemingly alarming developments the ition remains benign and complete recovery from attack is the rule

The *family history may be of decisive diagnostic value*, for the complaint tends to have a high familial incidence, and the pattern of attack to be strikingly similar from case to case in the family However, when seen as a sporadic case and even at times when seen in the family setting the condition calls for very thorough neurological investigation, including angiography and possibly air encephalography before its benign nature is accepted

Apart from the diagnostic problem, hemiplegic migraine also poses a problem in the pathophysiology of migraine It is now widely held that the altered physiology under lying classical migraine consists of spasm of branches of the internal carotid artery, causing cortical ischæmia, which produces the signs of the aura followed shortly by distension mainly of the external carotid *system* which causes the headache

Such *a mechanism does not adequately* explain the picture of hemiplegic migraine Here the headache may precede the neurological signs and these may last occa sionally for several days. If vascular spasm alone is causing these some permanent neurological sequelæ would be expected and these are rarely, *if ever*, recorded Two explanations have been offered (1) the neurological signs are partly due *to thrombosis* of the finer terminal arteries of the originally spastic vessels which *finally recanalise* and (2) the signs are due not so much to spasm as to cortical œdema which may be localised or widespread and possibly precipitated by preceding spasm

The following case is thought worth recording because it draws attention to an unusual syndrome in which the alarming acute phase appears to belie the ultimate good prognosis The case illustrates well the *clinical* features of hemiplegic migraine and the strong familial tendency, and *angiograms* provide evidence of the possible mecha nism of the attacks

Case report

A regular soldier aged 22 was admitted to hospital for investigation of attacks of headache associated with weakness of the right side of his body and *inability* to speak Attacks began at the age of 14 and were repeated three or four times a year until in the past four *months* he *had six* attacks. All the attacks were alike and began suddenly with right frontal throbbing headache About three-quarters of an hour later dots of bright light going round in circles were followed by blurring of vision in the whole visual *field of* the right eye not confined to the right homonymous field However although the patient stated this quite firmly *later examination* during an attack revealed a right homonymous hemianopia and it seems probable that this was what he *had noticed* earlier Within a few minutes his right arm and leg went numb and useless. The numbness was accompanied by *pins and needles* and the uselessness forced him to unbutton his uniform with his left hand although normally he did this with *his right* At that time he could think clearly but could not say what he wished and other people could not understand him. *He then lay* down sleeping intermittently for 5–7 hours and after vomiting found his speech and right limbs *were normal again* but he was left with a generalised headache for two days. He was right handed and on admission was *well and symptomless*.

On examination he was placid with rosy *complexion*, slow *speech* and moderate intelligence. His blood pressure at rest was 125/80 mm. Hg Nothing abnormal was *found* in his *central nervous system*, and his body was symmetrical Radiography of chest and skull was normal *Electro-encepha lography showed* a diffuse and mildly paroxysmal disturbance without lateralising features. A left carotid *angiogram* (Dr P W E *Sheldon*) showed the arterial branches rather smaller than usual but no other abnormality

Omnopon gr ⅓ and hyoscine gr 1/150 three-quarters of an hour before angiography but spoke and moved normally immediately before it The nursing orderly who brought him back in the ambulance about half an hour after angiography noticed that he did not reply very well to questions.

An hour and a half later he was drowsy but roused on being addressed or on vomiting. His speech was limited to "yes" "no" and "pardon," and he could not say his name He responded to simple commands but showed perseveration His optic fundi had normal vessels and discs He had right homonymous hemianopia, his pupils were equal and external ocular movements full He had weakness of the right side of his face, mainly the lower half Posture was poorly maintained in both right arm and leg, with weakness in the distal muscles of his right arm Tone was equal and normal, reflexes were symmetrical, the right plantar response was extensor, and the left was flexor

Twelve hours after angiography he was still dysphasic and perseverating In reply to a request for his name he gave it hesitantly and could not name or indicate the use of a pen

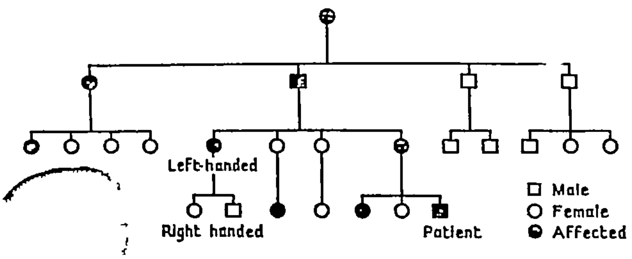
Twenty four hours after angiography he could speak normally and recalled having been shown the pen and having had dysphasia and dyspraxia He complained of generalised headache, worse in the frontal area and aggravated by coughing, his face was flushed, but he was without pyrexia or neck stiffness He found that the print on the right side of a page was not quite clear, and, although individual words made sense, he could not read whole sentences, but he placed the hands of a large clock immediately and correctly to show different nominated times, and there was no field defect to confrontation A slight weakness of the right side of his face remained, and his outstretched right arm showed less well maintained posture and greater rebound than did the left His legs showed no difference neurologically, all his tendon reflexes were equal, and his plantar responses were flexor

Forty eight hours after angiography his headache had almost disappeared, and he had no difficulty in reading and no abnormal physical signs He said that this attack was like the ones he usually had

A week later angiography of his left carotid artery showed no difference in vessel calibre between the two sides Angiography was done at 2 45 P M after the usual premedication, and half an hour later the patient complained of right-sided headache and blurring of vision in the right eye At 3 30 P M he could speak normally and asked for some tea, but by 4 P M he had aphasia and right sided signs as before By 7 P M he had vomited and could speak normally, give his name and address, and recount the afternoon's happenings He had no abnormal physical signs

Treatment and Progress —His attacks increased in frequency to one a week (previously they had averaged one every three months) while taking isopropyl noradrenaline 20 mg by mouth at the first warning of an attack, and again if necessary three quarters of an hour later On this régime there was a slight reduction in the length of attacks, but this was not very obvious The noradrenaline was then omitted and he was given phenytoin sodium gr 1½, t d s and was free from attacks for two months He reduced the dose on his own initiative and, while taking it irregularly, has had no attacks for a further two months

Family History —His mother, aged 47, was right handed and in good health and was seen when she visited her son She described attacks exactly similar to his and said that they began when she was aged 14 and recurred four or five times a year Examination revealed no abnormality. Her complexion and facial appearance were strikingly like her son's One of the patient's sisters, aged 13, was right handed and in good health, had had "bilious vomiting" as a child, and had had only one attack of migraine with motor and sensory loss and aphasia, a year ago This differed from those of her mother and brother in that the neurological symptoms were bilateral, but such variation in hemiplegic migraine has been recorded Further inquiry produced from the patient's parents, both intelligent people, the family tree shown in the accompanying figure In all 9 affected members of the family the attacks were strikingly similar One aunt was left-handed, and her attacks were of left sided hemiparesis with aphasia The condition appears to be inherited through a recessive gene and is not sex linked



Discussion

The occurrence in this patient of an attack apparently precipitated on two occasions by angiography once more suggests that vascular spasm may be a causal factor hemiplegic migraine, since angiography is known to be accompanied at times by constriction of the vessels injected The delay, of over an hour in one instance, between the injection of contrast medium and the appearance of symptoms does not necessarily argue against such a mechanism, because the cerebral dysfunction produced must be due to a relative ischæmia resulting from the spasm, and the time of development of a critical level of ischæmia will depend on features additional to the spasm, such as the amount of collateral circulation

Angiography of both right and left carotid ve each produced symptoms of left-hemisphere dysfunct It therefore seems necessary to postulate a local ca factor in the one hemisphere, either making it m susceptible to the effects of spasm of its nutrient ve or making the vessels more liable to constriction T calibre of the arteries shown by angiography was suf ently narrower than usual to call for remark How since this was noted equally on both sides it cannot the basis of any local factor, which, if it be of a struct vascular nature, must be beyond the range of pre angiographic demonstration Some local factor is suggested by the frequency with which the hemip occurs on the same side both in individuals and in fa subject to hemiplegic migraine

In addition to the mechanism of inception of an at there is the problem of what pathological proces repeatedly produce a severe local cerebral dysfun which may last as long as three or four days wit leaving permanent sequels Wolff (1948) noted that some patients with prolonged attacks of migr hardening of the superficial temporal artery and eryth of the overlying skin followed and persisted for hours after an attack Histological examination in case showed this to be due to œdema in the vessel with reduction of its lumen If this occurs as a s to the initial spasm in hemiplegic migraine, it provide a mechanism for prolonged partial ischæm the areas concerned, and also possibly cause a compa change in adjacent cerebral tissue to the erythema over the temporal artery This might be responsib the pleocytosis noted in the cerebrospinal fluid dur attack in some of these patients (Symonds 1952, W 1953), but both the kind of cerebral dysfunction can produce such prolonged but reversible effects and nature of the local factor remain uncertain The possi should be considered that activation of some inhib mechanism rather than reduction of normal cell act may be responsible, the benefit of hydantoinates in s cases of hemiplegic migraine, as in the present case, m argue in favour of this point

Summary

A family subject to hemiplegic migraine is repor

Although the clinical picture at the height of an at is alarming, the prognosis is good, and none of the are persistent

The implications of such cases for the ætiolog migraine is briefly discussed

One of us (J N B) has to thank his commanding o for permission to publish We are also indebted to Dr Ritchie Russell for the opportunity of studying this case

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UNSHOT WOUNDS IN A HÆMOPHILIC PATIENT

SUCCESSFUL TREATMENT BY ANIMAL ANTIHÆMOPHILIC GLOBULIN AND SURGERY

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When a patient with hæmophilia is injured or requires n operation a situation of great danger has arisen In cessible lesions, such as bleeding tooth sockets, hæmo sis can usually be secured for a time by temporary cal pressure and a coagulant dressing; but bleeding om larger or inaccessible wounds is likely to persist less the coagulation defect of the circulating blood n be at least temporarily corrected In favourable rcumstances this may be achieved by transfusion of y large amounts of either fresh blood or fresh plasma chiller et al 1948 Walker 1955) but a much more fective method is to administer an active concentrate antihæmophilic globulin (A.H.G.) Available human A.H.G preparations have only a low activity but highly tent animal material has been prepared by Bidwell 955a and b) and used clinically by Macfarlane et al 954) The level of circulating A.H.G. falls rapidly angdell et al. 1955), therefore any surgical operation st be done as soon as possible after an adequate level A.H.G in the circulating blood has been obtained

So far it has not been found possible to prepare animal A.H.G free from antigenic properties. This usually ders its use impracticable for more than about seven ten days This difficulty has been partly overcome by use of A.H.G prepared from different species At sent effective A.H.G. in useful quantities has been ained only from beef and pig blood Therefore it is essary to make a plan whereby *all* surgical treatment ll be completed and wounds, if possible, healed within period of effective action of the A.H.G. used This iod is limited to two or three weeks with materials present available

As an illustration it is thought worth while to report ingle successful case in detail The mainstay of treat nt was animal A.H.G. prepared as described by Bidwell 55a and b) This must be distinguished from Cohn's tion I (Cohn et al. 1946), a human preparation which ften referred to as antihæmophilic globulin in America addock et al 1948 Wright et al 1948 Vermooten 0) and is of very low activity

Case report

hæmophiliac aged 22 sustained gunshot wounds on 6 1954 He had a family history of hæmophilia seven mbers of the present generation being affected (fig 1) In ast he had had only relatively minor hæmorrhages, none iring blood transfusion. On the present occasion a shotgun 410 inch bore was accidentally discharged in a gunsmith's p, where he was employed as a sales assistant. The shot fired at fairly close range from behind causing a deeply grazing injury to his left loin and several puncture wounds scattered over the medial side of his left elbow He was admitted to the Norfolk and Norwich Hospital under the care of Mr C Noon

On examination he had in his left loin a large bleeding wound which involved the muscle layer with some loss of superficial tissues. There were also numerous puncture wounds with bruising over the medial surface of his left elbow where several pellets could be felt underneath his skin

Oct 6 the wound in the loin was excised several lead pellets and the cardboard wad were removed and the wound was packed with gauze Profuse bleeding followed this operation.

Oct 7 a transfusion of 3 pints of blood was given before the wound was opened again and repacked.

Oct 8 There was again persistent hæmorrhage A further transfusion of 1 pint of blood was given and the wound repacked.

Oct 12 since there was still profuse bleeding the wound was sutured and a rubber drainage tube inserted. Two further pints of blood was given

Oct 16 since there had been further copious bleeding from the wound in the left loin, 3 pints of blood was transfused. A large clot of blood was removed from the wound and hæmostasis secured by coagulating diathermy The gentle oozing of blood was stopped with Oxycel gauze Interrupted sutures were placed over a rubber drain and the wound was repacked. In the next few days 4 more pints of blood was transfused

Oct 23 there was further copious bleeding and the wound was once more packed after removing some blood-clot and arrest of the bleeding by diathermy 'Coagulen' (Ciba) 20 ml. was given by injection in four doses of 5 ml six hourly

Oct 27 bleeding recurred and 1 pint of fresh blood was transfused. Another large clot of blood had formed in the wound and was removed The bleeding points were under run with sutures, and the wound was packed once more with gauze A plaque containing 60 mg of radium was applied over the wound for twelve hours.

Oct 28 treatment was started with adrenochrome monosemicarbazone ('Adrenoxyl') by injection and by mouth and a pint of fresh blood was transfused.

Oct. 29 and 30 on each day 1 pint of fresh blood and 1 pint of stored blood were transfused The total volume of blood transfused by this time was 20 pints in twenty four days

Treatment with A.H.G.—On Oct 30 Dr R G Macfarlane was asked for a supply of beef A.H.G. Since this material cannot be given without special precautions and laboratory tests, members of the pathology department of the Radcliffe Infirmary travelled to Norwich with the necessary apparatus and material. The diagnosis of hæmophilia was confirmed The clotting time (Lee and White) was 9½ minutes (normal 5–10 minutes) prothrombin consumption test 67% level of A.H.G. nil It was decided to give A.H.G. intravenously and to inspect the wound afterwards. Beef A.H.G. 400 mg in 15 ml. of distilled water was injected slowly into an intravenous infusion of physiological saline solution the injection taking about 10 minutes. Soon after this injection was begun the patient showed a severe reaction, complaining of constriction in the throat, generalised pins and needles, and the sensation that he was swollen all over Objectively his breathing appeared normal, but he was first flushed and later cyanosed His wound was dry and was bandaged up again. After this had been done it was noticed that the intravenous infusion had stopped It was restarted by vigorous 'milking down' of the rubber tube which caused the sudden introduction intravenously of about 3 or 4 ml of the A.H.G. solution. The patient became rigid and unconscious, and a petechial eruption appeared over his chest and shoulders He regained consciousness about 15 minutes later

Oct 31 in the morning profuse bleeding began again, and it was thought that the patient lost about 3 or 4 pints of blood, so 1 pint of fresh blood and 4 pints of stored blood were transfused It was now that the reason for his severe reaction to the beef A.H.G. was appreciated; seven days previously he had been given injections of Coagulen (Ciba) a preparation obtained from ox platelets. This had sensi-

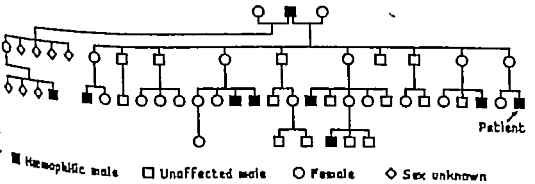

Fig 1—Patient's family tree.

tised him to ox blood proteins An attempt was made to desensitise him with small doses of beef A G H, but each subsequent intravenous injection of beef A H G was accompanied by a slight reaction, even when given slowly

Nov 2 it was arranged to transfer the patient by air to Oxford In the morning 200 mg of beef A.H G was given intravenously in 40 minutes, with a slight reaction, after which 1 pint of fresh blood and 1 pint of stored blood were transfused The patient was admitted to the Radcliffe Infirmary under the care of Dr P C Mallam. His hæmoglobin then was 74%, and his plasma A H G level 14% of normal The journey by air had been uneventful, and there had been no further bleeding Another pint of fresh blood was given during that night

Nov 3–5 there was no more bleeding, and the patient's general condition improved considerably *Daily injections* of beef A H G were given, with some reaction during or after each dose It was thought unwise during this time to disturb either the wound or the dressings The patient had pain in his left elbow and painful paræsthesiæ in his left hand A hæmatoma was found overlying the brachial artery in the cubital fossa

Nov 5 it was apparent that no satisfactory response could be produced with beef A.H.G, probably because the patient had been sensitised to beef protein, so the administration of beef A H G was stopped Dr Macfarlane, Dr R Biggs, and Dr E Bidwell decided to try to prepare A H G from pig blood to overcome this obstacle, and this work was at once started (Bidwell 1955b) This difficult technique was evolved with such enthusiasm and determination that the first small supply of pig A H G was available for testing on Nov 9 It was the use of this pig A H G that brought the case to a successful conclusion

Nov 6 at 4 P M steady slow bleeding began from the wound It was hoped that this might cease spontaneously It did not do so, and it was later found that bleeding, once started, never ceased without active intervention Although 1 pint of fresh plasma and 2 pints of fresh blood were transfused slowly, bleeding continued

Nov 7 it was estimated that by noon the patient must have lost 5 pints, so it was decided to arrest the bleeding surgically

Operation—Special consideration was given to the anæsthetic It was thought that minimal cyclopropane would be ideal because, to conserve veins, no intravenous injecti could be permitted. Induction must be quick and easy, recovery instantaneous and free from hangover, other nutrition, general condition, and morale would suffer, we anticipated, correctly, that frequent operations would necessary The patient was lightly anæsthetised and his wou inspected It measured 10 × 10 cm, the edges were ab 1 5 cm. deep, and the floor consisted of unhealthy granulat tissue, among which were three definite bleeding points in line of the intercostal bundles These were under-run w catgut and covered with human fibrin foam soaked in hum thrombin The wound was packed with alginate gauze wool. A wide canvas sling was placed under his waist and lower part of his chest and kept taut by two 7 lb weights pulleys, as is done in the treatment of fractures of the pel He was transfused with 5 pints of blood and 1 pint plasma

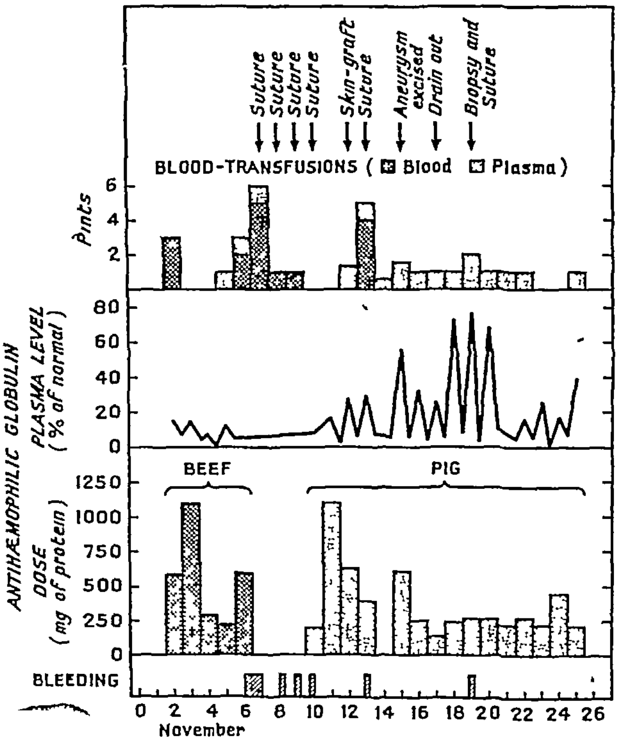

Fig. 2—Treatment and course.

Nov 8 at 4 45 P.M bleeding started again. At 8.15 one of the vessels tied the previous day was found spur and was again under-run. The wound was repacked as be

Nov 9 bleeding began at 6 30 P M, at 10 30 P.M. this *found to come from the same vessel as before* The dela each occasion was not due to any hope that the bleeding w stop spontaneously, for by now we knew that it would Since at the time no animal A H G effective in this patient yet available in sufficient quantity, it was necessary to blood donors and to give fresh blood before operating It *thought inadvisable to tie off a vessel containing* only un fied hæmophilic blood, because no effective thrombus fo and, when the ligature loosens, bleeding starts again. On occasion hæmostasis was secured and the wound packe before, but instead of the pelvic sling, which was unsatis tory, a two way stretch bandage was applied This was worse because it quickly rolled itself into a rope at the waist By next morning it was so uncomfortable that it had to be cut and the pelvic sling reapplied On this day the first small supply of pig A H G became available, and a skin sensitivity test made with it was negative

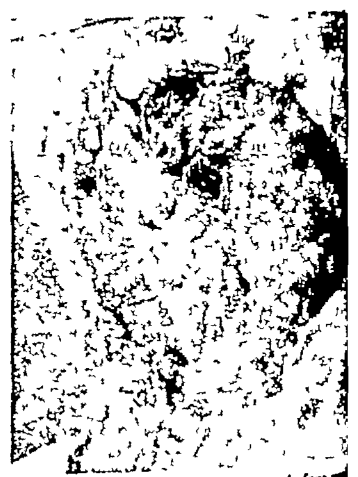

Fig. 3—Gunshot wound in back just before

Nov 10 pig A.H G 10 mg was given intravenou test dose and, there being no ill effects, was followed mg, with no untoward reaction Fifteen minutes la plasma A H G level was only 3 7% of normal. At bleeding started again and was stopped in the same w before, after which a one way stretch Rowden Foote ba was applied This proved satisfactory and was used throu the rest of the treatment. The wound looked much hea

Nov 11 pig A H.G 1200 mg in saline solution was and the plasma A.H G level rose to 17% of normal. were technical difficulties in giving the pig A H G intrave At first this was suspended in 10 ml of saline solutio injected slowly This suspension was so sticky, howev the piston of the syringe frequently jammed All fu injections were therefore given in a large volume by venous drip Since the patient's plasma A.H G level did rise as much as had been hoped, it was decided that mi the pig A H G with fresh human plasma might improve results This seemed to be the case The subsequent doses of pig A.H G and the patient's plasma A.H G levels shown in fig 2.

Nov 12 the patient was tolerating large amounts of A H G well Since this happy state might not last long in *of probable antigenic properties* of A H G, it was decided the wound (fig 3) should be covered with a skin graft

4—Healed shrunken gunshot wound of back (right-hand rule measures 6 inches)

Grafting—Mr H K. McComb cut a large sheet of split-skin ft from the patient's left thigh. The blood from the donor e clotted remarkably quickly bleeding not being abnormal. rt of the graft was perforated in many places and applied the granulations on a piece of Jelonet fixed by tie-over tures placed near the wound margin. Fluffed gauze packing ked in streptomycin solution was applied and pressure intained with a sheet of 'Lastonet' glued to the skin Wool d a one-way stretch bandage completed the dressing The nor site was painted with human thrombin and dressed in usual way The remainder of the split skin was stored in refrigerator It was thought that possibly the large amount pig A.H.G., which had raised the patient's plasma A.H.G. el so little might have been largely consumed in the mation of the granulation tissue especially since consis ntly higher levels were obtained after the wound had been vered with the graft

ov 13 twenty hours after the graft had been applied eding started again—from under an overhanging infected n edge The blood fortunately had stripped off only about xth of the graft The clot had otherwise accumulated on the surface of the split skin beneath the jelonet. The bleeding point was under run and the wound repacked.

Nov 14 everything seemed at last to be under control but the patient had more pain than usual at the site of the wound in his left elbow where signs of a small arteriovenous aneurysm involving the median nerve were found

Nov 15 the aneurysm was found to have doubled in size and the median nerve was further involved The arterio venous aneurysm was evidently expanding rapidly and would have to be dealt with. The hæmophilia was reasonably under control temporarily (the plasma A.H.G. level was 32%) but even this degree of control could not be maintained for long and might break down at any time It was therefore decided to excise the aneurysm

Excision of Aneurysm (Nov 15)—With a pneumatic tourniquet in position, the aneurysm was exposed (fig 5) The median nerve incorporated in its medial wall was freed. Numerous venous tributaries were divided and tied with fine thread The sac was separated from the brachial artery, which had a hole 1·5 mm. in diameter in its wall A portion of the brachial artery 3 cm long was resected and the proximal and distal ends were tied There was no abnormal bleeding and the cavity was packed with a piece of human fibrin soaked in human thrombin. The wound was closed round a fine Penrose drain A very faint radial pulse could just be felt after the dressings were applied and the hand was pink and warm.

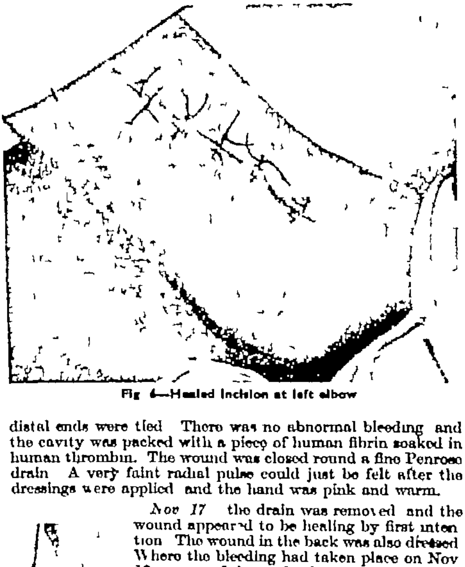

Fig 6—Healed incision at left elbow

Nov 17 the drain was removed and the wound appeared to be healing by first intention The wound in the back was also dressed Where the bleeding had taken place on Nov 13 an area of the graft about 5×1·5 cm, was found to have been rejected Some of the stored skin was applied to this area Over the rest of the surface the graft had taken well

Nov 19 at 3.30 A.M. blood was seen oozing again from the wound in the back. At 10.15 A.M. this was found to be coming from the same unhealthy overhanging skin margin where the last hæmorrhage had arisen Excision of this area was thought to be unwise. A biopsy specimen was taken and the bleeding points were under run. The specimen consisted of granulation tissue with an artery showing thrombosis organisation and early recanalisation This was the last occasion on which hæmorrhage took place

Nov 20 urticaria of the face followed the intravenous injection of pig A.H.G. but next day there was no reaction

Nov 22 there was a rigor during the injection; but on the days following there were no ill effects.

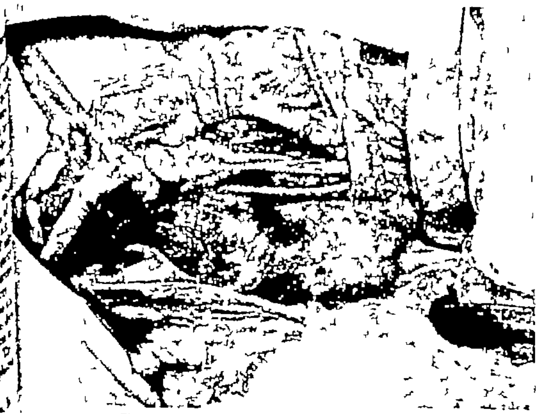

Fig 5—Arteriovenous aneurysm at left elbow

Nov 25 all the wounds were dressed The graft looked healthy, except where there had been hæmorrhage, this area was granulating The incision in the arm was healed (fig 6), and the stitches were removed No further A.H G was given after this day The donor site on the left thigh was dressed for the first time, it was healed and healthy

Dec 2 the back was dressed again, and it was most remarkable that there appeared to have been no progress whatever in the granulating area since the administration of pig A H G had stopped on Nov 25 The graft, on the other hand was consolidating well, and the area of the grafted wound was contracting rapidly

Dec 9 the back was inspected again the granulations were grossly exuberant, overhanging the healthy grafted area in a flap 15 mm wide and 3 mm thick These granulations were œdematous and appeared unhealthy This seemed to support our previous idea that this man was in some way unable to form normal granulations in the absence of A H G and that much of the A H G might have been used up in forming granulation tissue 'Furacin' ointment was applied to these unhealthy granulations

Dec 11 the granulation tissue had shrunk and looked much healthier, and more furacin was applied

Further Progress —There was further improvement during the next few days, and more stored skin was applied to this area on Dec 15 The rest of the stored skin, taken on Nov 12 and now five weeks old, was examined histologically and reported to be perfectly normal and apparently viable Nevertheless on Dec 20 this last graft also was found to be completely rejected, and the granulations were in their former unhealthy and exuberant state The area of the granulating unhealed surface appeared not to be contracting at all, although the grafted healed area was still decreasing There seemed to be no alternative but to treat the granulating wound in the old fashioned way with daily dressings of furacin, lotio rubra, and crude cod liver oil in rotation, with daily infra-red irradiation The granulating area contracted very slowly, and it was not until Jan 7 that the wound was completely healed (fig 4) The patient was then discharged home with no residual disability other than the loss of about 10° of extension at his left elbow

Comments

The bleeding on Nov 13, twenty hours after the application of the graft, when a reasonable degree of correction of the coagulation defect appeared to have been obtained, should be regarded as a secondary hæmorrhage, such as is always likely to take place from an old septic wound of this type It was impossible to maintain a constant effective level of A H G in the circulating blood (fig 2), so secondary hæmorrhage may be more likely to occur when the A H G level is low

A contrast is afforded by the excision of the arterio venous aneurysm This clean surgical wound, made when there was an effective level of A H G, healed normally by first intention, although extensive dissection was required and many vessels were divided

The manifestations of hæmophilia seem to vary in different patients in a peculiar way which is not entirely understood It is therefore not altogether certain that these results could always be reproduced exactly in other patients with a different type of lesion

Summary

The clinical management of a young hæmophiliac with gunshot wounds is described

The surface wound was covered with an autogenous skin graft, and an arteriovenous aneurysm of the left brachial artery was excised

The success of these operations is thought to be due to the administration of animal antihæmophilic globulin

The use of this material raises new problems in surgical management, which are discussed

We are grateful to Dr P C Mallam, under whose care this as admitted, for permission to publish these details iring care of Dr R G Macfarlane, Dr Rosemary Ethel Bidwell, and their staff the most important part of this man's treatment was carried out, and they us advice in the writing of this paper

It gives us pleasure to thank Prof T Pomfret Kilner, Mr H K. McComb and Mr F L F Innes, who c the skin grafting under his direction, Mr C Noon. kindly gave us details of the treatment at Norwich, Dr R H Cowdell who supplied histological reports (included), Mr E L Tugwell, who took great with the clinical photographs, and many other members the medical and nursing staff who helped with the treatment of this patient

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Medical Societies

CENTRAL SOCIETY FOR CLINICAL RESEARCH

THIS American society met in Chicago on Nov 4 5 We publish short accounts of some of the papers

Pharmacology of Mecamylamine

Dr **Ralph Ford**, Dr **Edward Dennis**, and Dr **John Moyer** (Houston) discussed mecamylamine ('Inversine' secondary amine, which is the first known ganglion blo agent to be completely absorbed by mouth Given parente to dogs, it produced complete ganglionic blockade at of 0 5 mg per kg The cardiovascular and renal hæmody effects were the same as with hexamethonium and pentol Mecamylamine was given orally to 30 hypertensive pat The average single dose necessary to produce ortho normotension was 19 mg (range 5–40), with an onset of of forty five minutes (range thirty to ninety), and a dur of action of twenty four hours (range eighteen to thirty The intravascular dose required to return the upright b pressure to normal was the same as the oral dose, indic complete absorption The response was variable from p to patient, but within the same patient it was reprod from day to day Side effects were constipation, dry m blurred vision, impotence, or muscular weakness, but no these was nearly so prominent as with the available qu nary ammonium compounds There was no depression of blood flow or glomerular filtration rate Dr Ford and colleagues believed that this was the drug of choice in treatment of patients with severe hypertension

Primary Aldosteronism

Dr **Harriet P Dunstan**, Dr **A C Corcoran**, Dr **Gordon L Farrell** (Cleveland) reported that function was tested in 3 patients with primary aldosteron due to adrenal cortical tumour and in 1 in whom this cond was strongly suspected High levels of aldosterone dis were found in their urine by differential paper chrom graphy and by bio assay These patients, like Conn's, unable to form concentrated urine and this defect was reference to other renal functions, disproportionately Urines were persistently alkaline The $T^c_{H_2O}$ was negative and, with 'Pitressin,' returned to a normal, posit level In spite of hypokalæmia, plasma K clearances were and in 1 patient approximated to the rate of glomer filtration Hypertension was relieved in 2 patients by o tion and improved in the 3rd In 1, there was an unexp increase in renal vascular resistance and decrease in However, $T^c_{H_2O}$ in this patient became positive at 37 minute per 100 ml of C[illegible] ; plasma K became mal, with decreased K clearance and the urine became

he abnormalities in K clearance suggest that aldosterone y act by increasing the degree of ionisation of intracellular The renal water defect resembles that seen in the so-called abetes insipidus' produced by deoxycortone in dog rat and by hypokalæmia in the dog This condition hown to differ significantly from true diabetes insipidus patients with long-continued hypertension, excretion of aline urine with a disproportionate reduction in concen ting power was found to be diagnostic of primary osteronism

Aldosterone in Addison's Disease

Dr Robert M Salassa Dr Randall G Sprague (Roches) and their colleagues reported that aldosterone was given 3 patients with Addison's disease in doses varying from to 800 µg per day The effects on electrolyte and nitrogen ances, exchangeable body sodium and potassium, and total ly water were observed The administration of aldosterone alted in retention of sodium and chloride increase in total ly-water and increased excretion of potassium. The normal electrolyte and water balances of addisonian crises e corrected. Daily administration of 400 and 800 µg of osterone resulted in retention of sufficient sodium and ter to lead to mild oedema of the ankles and face No ificant changes in nitrogen balance were observed and re was no gross alteration of cutaneous pigmentation. Mild ges in carbohydrate metabolism were noted

Continuous Fructose Feeding in Diabetes

r John A Moorhouse (Chicago) said that 8 diabetic ents had been studied to determine the effects of con ous feeding of fructose over long periods. By means of an gastric tube and standard speed pump an adequate and balanced synthetic liquid diet was given round the clock abolished the usual interprandial demand for calories body stores of sugar fat, and protein, and also obviated y of the difficulties of the usual type of balance studies diet consisted of a solution of carbohydrate (either glucose ructose in isocaloric amounts) emulsified fat amino acids, mins, and minerals A constant rate of absorption of abolites was maintained for days or weeks as desired and s were reduced to a minimum The tolerance of patients the procedure was excellent

rst insulin was stopped and after a control period inuous feeding was started with either glucose or tose all other constituents were kept constant Periods lucose and fructose feeding were compared by suitable blood metabolic balance studies In diabetes of moderate rity fructose feeding was accompanied by a well-defined in both blood and urine levels of glucose and acetone ositive nitrogen balance with retention of phosphate and ssium was observed In severe diabetes however fructose ared to have little or no effect on glycosuria and ketosis patient with acromegaly and insulin resistant diabetes, ne levels in the blood and urine fell to normal on fructose ing, but there was no effect on glucose levels. The rvations supported the unitary theory of action of insulin he cell wall.

Pantothenic acid Deficiency in Man

r William B Bean (Iowa) and his colleagues had studied mal subjects on a diet devoid of pantothenic acid to which added ω-methyl pantothenic acid, an antagonist. Burning esthesia, muscle weakness, abdominal discomfort vaso- or instability infections, and depression developed abolic disorders included histamine refractory achlor ria, altered glucose tolerance with prolonged high blood ar levels, increased insulin sensitivity and diminished openic response to corticotrophin There were erratic nges in acetylation and in excretion of 17 ketosteroids and er-soluble vitamins Severe hypopotassæmia suggested ocorticoid dysfunction. Serum sodium, calcium, and phorus did not change appreciably Inability to handle a er load (abnormal Kepler Power test) appeared Some of abnormalities returned to or towards normal when panto- nic acid was substituted for the antagonist in the recovery iod. This may have been a true pantothenic acid deficiency the possibility that ω methyl pantothenic acid is a general oplasmic poison has not been excluded

Selenium Cystine in Leukæmia

Dr Austin S Weisberger and Dr Leif G Suhrland (Cleveland) said that selenium cystine (identical with cystine except that selenium replaces sulphur in the molecule) was effective in low concentrations in decreasing the influx of *l*-cystine into leukæmic leucocytes in vitro The total leucocyte-count and spleen size rapidly decreased in 2 patients with chronic myeloid leukæmia and in 2 patients with acute leukæmia. Selenium cystine had no effect on 1 patient with chronic monocytic leukæmia The most striking effects were observed in acute leukæmia In one patient the leucocyte count decreased by 200 000 cells per c.mm. within one week and as much as 75 000 cells per c.mm. within twenty four hours In chronic myeloid leukæmia the immature granulocytes disappeared more rapidly than mature granulocytes Responses were obtained in patients who were refractory to other agents Thus, 1 patient with acute leukæmia who had become refractory to cortisone aminopterin, and 6 mercaptopurine responded to selenium cystine This patient subsequently appeared to become sensitive again to 6-mercaptopurine. Toxic manifestations attributable to selenium cystine included nausea, vomiting anorexia, alopecia, and loss of finger nails all these changes were reversible when the drug was discontinued No hepatic or renal damage was encountered

Chlorpromazine and Brucella Endotoxin

Dr Robert S Abernathy and Dr Franz Halberg (Minneapolis) had noted that endotoxins prepared from gram negative bacteria when injected into mice cause hypothermia granulocytopenia and granulocytosis, diarrhœa, vasomotor collapse and death They demonstrated that chlorpromazine and adrenocorticosteroids gave significant protection against endotoxins *Brucella melitensis* endotoxin was injected intravenously or intraperitoneally into mice The leucopenic effect of endotoxin was suppressed but not abolished by chlorpromazine The combination of suboptimal amounts of chlorpromazine and 9-α fluorohydrocortisone gave added protection. A functioning adrenal cortex did not appear to be indispensable for chlorpromazine protection against endotoxin.

Experimental Hydrallazine Disease

Dr Phillip Comens (St. Louis) recalled that hydrallazine hydrochloride (Apresoline) a vasodilator drug used in treatment of arterial hypertension produced a collagen like syndrome clinically similar to systemic lupus erythematosus. Daily doses of 10–12 mg per kg body weight for one to eight months were given to dogs, who lost weight and became weak. Anæmia leucopenia hypocholesterolæmia and hyperglobulinæmia developed. Electrophoretic patterns showed increased β γ and α_2 globulins with decreased α_1 fractions as compared with normal dogs. L.E. cells and hæmatoxylin-staining bodies appeared. Necropsies and renal biopsies were consistent with lesions of disseminated lupus.

Diagnosis of Phæochromocytoma

Mr O M Helmer, PH.D (Indianapolis) described a simple and clear-cut bio-assay of adrenaline and noradrenaline by their action on spirally-cut strips of rabbit thoracic aorta. Only very small amounts of urine were necessary because of an unknown factor or factors in urine which enhanced the contraction induced by adrenaline The urine from 2 patients later proved to have phæochromocytoma had concentrations of catechol amines 10 to 100 times that found in normal urine The contraction produced by their urine could be abolished by pretreating the strip with dibenamine indicating the specificity of the test.

Vitamin B_{12} and Folic Acid

Dr John W Harris (Cleveland) described 2 patients with megaloblastic anæmias," who had severe glossitis, atrophy of lingual papillæ and cheilosis during therapy with small daily doses of vitamin B_{12} folic acid promptly reversed these deficiency manifestations. He claimed that the administration of small doses of vitamin B_{12} precipitated and aggravated the folic acid deficiency and believed that this was additional evidence for a reciprocal relation between vitamin B_{12} and folic acid in the metabolic chain resulting in the production of nucleic acids.

Reviews of Books

Psychiatry Today

4th ed D STAFFORD CLARK London Pelican Books
1955 Pp 304, 2s 6d

SINCE lay readers are fascinated by psychiatry, it is the duty and opportunity of medicine to use that interest profitably—in particular, to show mental illness as an alarming but intelligible circumstance, and the sufferer from it as a person who can be helped A good deal of the fascination is a product of fear In overcoming this, and in learning something of the modern approach to mental illness, the public could do much worse than allow Dr Stafford-Clark to conduct them His book is sensible, humane, and accurate, and written in very pleasant English His preliminary short history of the subject might raise a few medical eyebrows among those who do not know just how black the record of prejudice over mental disorder was—and is In dealing with psychodynamics he describes, it seems, roughly his own choice among conflicting views The clinical descriptions are excellent, and well designed to avoid convincing the neurotic reader of his own impending insanity

The chief weakness of the book is the chief weakness of Western psychiatric thought itself—the lack of effective emphasis on a society or a culture within which the patient lives out his entirely separate and entirely individual mental ontogeny Neither comparative animal psychology nor comparative social anthropology enter as fully into the picture as they now enter into the study of character structure "The patterns of behaviour displayed by members of different societies tend to differ only in so far as they are acquired in response to environmental pressure , in this case the pressure of the cultural or political standards of the society concerned " The word " only " involves a considerable limitation of the resources which psychiatry can exercise in prevention and cure This may be typical of much clinical thinking, but it is still of ill omen where the writer is dealing with topics such as delinquency, and it limits the prospect of what we might expect from psychiatry in the future The lack is even more evident in the section on the " wider implications " of psychiatry, as, for example, in the statements that ' Freud and Marx rejected belief in God while clinging implicitly to a system of ethics whose basis they explicitly denied " , and that psychiatry should cease to " provide its own basis for human ethics and values " These remarks seem to pay too little regard to the origins of moral attitudes in human societies, and they weaken the author's (perfectly valid) contention that there is nothing in psychological theory to preclude the holding of religious beliefs

But it would be unreasonable to ask a book of this size to discuss the phylogeny of moral behaviour, and it contains more than enough excellent expository matter to make it useful and welcome It is one of the few books of its kind which is really instructive without giving alarm to anxious people

Cough Syncope

VINCENT J DERBES, F A C P , professor of medicine, Tulane University of Louisiana School of Medicine , ANDREW KERR, jun , M D , assistant professor of medicine, Louisiana State University School of Medicine Springfield, Ill Charles C Thomas Oxford Blackwell Scientific Publications 1955 Pp 182 34s

COUGH syncope is uncommon, but it has been well known for many years, and was certainly recognised by Charcot and probably Sydenham before him After a bout of coughing the patient falls unconscious (without tongue-biting or a fit) for a few seconds or a few minutes It is especially prone to attack overweight men with emphysema, who are inclined to excessive smoking, drinking, and exuberant laughter Falstaff could hardly have escaped an odd syncope or two

Dr Derbes and Dr Kerr have written a full and very readable account of the condition They prefer the name " cough syncope " to the alternatives " cough syndrome " or " laryngeal vertigo " They deal with the history, symptomatology, and treatment, and discuss possible causes Their useful review of a fascinating su includes detailed histories of 35 of their own cases

Biochemistry of Autotrophic Bacteria

HOWARD LEES, PH D , Department of Biological Che
istry, University of Aberdeen London Butterwo
1955 Pp 112 21s

AUTOTROPHIC bacteria obtain their energy either fr light or from simple inorganic reactions There is (as y no evidence that they play a part in animal patholo but their activities in the world at large are so widespr and diverse that they must be looked on as an essen element of life as we know it This book is written the student of biochemistry, and the morphology natural history of these bacteria are incidental to subject It is a model of what a specialised textb should be—lucid, readable, well referenced, and h The printing and binding are above the normal stand

Surgical Physiology of the Adrenal Cortex

J D HARDY, M S , M D , F A C S , professor of surg
University of Mississippi Springfield, Ill Chark
Thomas Oxford Blackwell Scientific Publicat
1955 Pp 208 42s

FOR many surgeons the task of keeping up with complex developments of corticotherapy has been al impossible, and they will welcome this monogr Professor Hardy has considered every aspect of adr function and its relation to surgery

The first half is concerned mainly with the effect of oper and accidental trauma on adrenocortical activity , know of this subject appears to be limited to observations whic be interpreted only with uncertainty and surmise S ground is reached in the chapters on adrenocortical hy plasia and hypercortism, which provide the highlights o work, being concise and clear Brevity has perhaps been ca too far in the section on adrenalectomy for malignant neopl which occupies only two pages for here lie some of the difficult decisions a surgeon has to face, and a fuller discu of the pros and cons would be of value The indications contra indications in the use of corticotrophin and cort in surgery are adequately covered in the final chapter

Introduction to Chemical Pharmacology

R B BARLOW, M A , D PHIL, research fellow,
University School of Medicine London Methuen
York John Wiley 1955 Pp 343 35s

THE importance of both physical and organic chem to the pharmacologist needs no emphasis , and fo part the chemist must give a sympathetic understan to the problems of the biological scientists, espe when he is trying to make pharmacologically compounds It is hard to say whether this book be more help to the chemist or the pharmacolo Certainly both should read it, because it does try to together two sciences which, though superficially different, are in fact closely allied

The chemical structure action relationships of drug adequately dealt with for the groups discussed. The would have been more useful if greater consideration had given to the underlying physicochemical aspects of action , and in a new edition this might replace the app which deals very briefly with some aspects of general ph logy Some controversial parts of the subject are pe treated too simply For example, the results of labora tests for analgesic potency can rarely be applied to pat who are in pain, and this makes the testing of analges more difficult affair than Dr Barlow indicates Metho measuring drug action are dealt with briefly There are e lent bibliographies, and the diagrams and figures are drawn and informative

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Congrès français de médecine—*The proceed* of this congress, which was held in Algiers earlier this under the presidency of Prof E Benhamou, have been published in three volumes Each deals with one o main themes of the meeting—*Les thromboses artérielles* (Pp Fr 3200), *Le maladies avec auto anticorps* (Pp 280 Fr 1 *Les nouveaux antibiotiques* (Pp 302 Fr 2300)—and volume may be bought separately They are publishe Masson of Paris

THE LANCET

LONDON SATURDAY, NOV 26, 1955

Coronary-artery Disease

In the golden period of discovery the causes of the at fevers were elucidated largely by epidemio ical methods Today we have come to recognise it these methods are equally applicable to non ectious disorders,[1] and we are hoping that they will eal the origins of some of the other major sources norbidity and mortality More and more attention being paid, for example, to the epidemiology of onary-artery disease

or a long time the vital statistics of all the industrial l countries in Western Europe and North America e been showing an increase in deaths attributed to onary disease This increase cannot be taken at face value with a higher proportion of elderly sons in the population one would expect a higher portion of deaths from this cause and with more eral recognition of the disease one would expect appear more often on death certificates Never less, all cardiologists whose experience goes back ty years or more seem to agree with the vital isticians that the higher mortality rates reflect a increase in coronary-artery disease, and also that ng people below the age of 40, are now affected h more often than formerly Beside this we have et the fact that clinicians with experience in the t have long held that the disease is rarer in tics than in Europeans—to an extent that cannot wholly explained by the Europeans having longer Support for this opinion comes from patho al studies showing that the inhabitants of the nese island of Okinawa have little atheroma or nary-artery disease[2] In Africa, the post-mortem ings of HIGGINSON and PEPLER[3] at Johannesburg ate that severe atheroma is far less common ng the Bantus than in American and European itals In our present issue Dr VOGELPOEL and SCHRIRE from analysis of electrocardiograms at pe Town hospital conclude that myocardial tion is likewise less common in the Bantu In this issue, Dr BRONTE STEWART, Prof ANCEL a, and Professor BROOK say that, whereas in Cape n Europeans the mortality ascribed to coronary t-disease is similar to that of Europeans in tern Europe and North America, such disease as to be a rare cause of death in the Bantu while Cape Coloured community occupy an intermediate ion. In our own country[4] the vital statistics a well marked association between social class the proportion of deaths reported as due to nary-artery disease this proportion being much er in the professional classes than in the manual kers, though the difference appears to be easing Among manual workers the disease is to be much less common in Southern Europe h in Great Britain and North America and ugh on such a point statistics can be misleading at the symposium on arteriosclerosis held in Minneapolis[5] last September PAUL WHITE said that after recent visits to hospitals and clinics in Southern Italy and Sardinia he was confident that there is far less coronary artery disease there than in the United States MORRIS[6] points out that the U.S.A , New Zealand, England and Wales Denmark, and Norway form a series with a descending mortality from coronary artery disease , and there is also interesting evidence that when Norway was occupied by the Germans during the war there was a considerable decline in deaths from this cause[7]

An association is apparent between, on the one hand, the prevalence of coronary artery disease in a population, and, on the other hand, the average level of blood cholesterol Thus, KEYS et al[8] review studies of blood cholesterol in the U S.A , Italy, Spain, Sweden, Great Britain South Africa and Central America which show that high levels are usually found in persons over 40 years of age in populations with a high prevalence of coronary artery disease The data from Cape Town now provided by Professor BROCK and his associates are further evidence of a relation between blood cholesterol level and such disease (In this study, as in others,[9] the serum proteins have been separated on filter paper by electrophoresis, and there is no doubt that the excess cholesterol is carried in the blood in the β lipoprotein fraction.) Admittedly, it would be easy to demonstrate that a high mortality from coronary artery disease is associated with many other features of civilised life—a high prevalence of motor-cars, for instance But the hypothesis that a high blood cholesterol is part of the chain of causation gains support from the fact that in patients with proven myocardial infarction the level of cholesterol in the blood is raised[10–12], and the presence of large amounts of cholesterol in atheromatous lesions is also consistent with a causal relationship

KEYS[13 14] has shown that in man the level of cholesterol in the blood does not vary with the amount of cholesterol (as such) in the diet, but with the amount of *fat* in the diet It is well known that the serum cholesterol level can be rapidly reduced by KEMPNER's[15] rice diet or by a vegetarian régime,[16] and recently AHRENS et al[17] have demonstrated that it is also lowered when plant fats are substituted isocalorically for animal fats in human diets Professor BROOK and his colleagues found wide differences in the intake of fat in their three separate Cape Town communities a high intake was associated with a high blood cholesterol and a high prevalence of coronary disease, but the association with plant fats seemed to be much less close

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[5] The proceedings of this symposium are shortly to be published by the University of Minnesota Press

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Annotations

"FAIR COMPARISON"

FOR a country like ours, it is essential that the Civil Service should continue to recruit people whose brains and devotion will create and maintain efficiency In presenting their report on Civil Service rates of pay, the Royal Commission[1] point out that financial considerations are not the sole or even always the principal attraction to the service tradition, family background, and sense of vocation may all play a part It will not be efficient, they agree, "unless it contains in all or most classes a certain number of men and women of the highest ability, and a high proportion of at least average ability in the relevant field, all possessing the appropriate qualifications and experience" But they do not think that, either to ensure adequate recruitment or for any other reason, the service should itself set standards for the remuneration of various kinds of worker, "giving a lead on such matters to the country as a whole in order to further a political or social objective", for to do this would endanger its non-political character Instead, in the commission's opinion, the aim should be to have a Civil Service "recognised as efficient and staffed by members whose remuneration and conditions of service are thought fair both by themselves and by the community they serve" As an advance on the principles or formulæ previously applied in deciding what Civil Servants should be paid, they propose fair comparison—"fair comparison with the current remuneration of outside staffs employed on broadly comparable work, taking account of differences in other conditions of service" In settling rates in detail, internal or vertical relativities should be used as a supplement, but should never be allowed to override the primary principle

So that, in the future, fair comparison can be applied with greater accuracy, the commission advise that a fact finding unit—separate from the divisions of the Treasury which negotiate or decide conditions of pay and service—should be set up to make a continuous and detailed study of pay and conditions Meanwhile, in making their own recommendations for changes in pay, the commission have necessarily had to adhere largely to the approach followed in the past, and as regards the medical Civil Service these recommendations represent, not surprisingly, a compromise between existing scales and those suggested by the doctors themselves through the Civil Service Medical Officers' Joint Committee They do, however, preface their figures by the following general statement on the character of Civil Service medical work as they see it, in relation to medical work elsewhere

> "While it is reasonable in our view to have some regard to the standards of remuneration of general practitioners and consultants in the National Health Service, we think that the type of work and conditions of employment of the practising doctor differ materially from those of most Civil Service medical officers The typical practitioner is commonly drawn to his profession by a sense of vocation for that profession The pattern of his working life is entirely different from the more equable conditions surrounding the administrative or quasi administrative duties, important as they are, of medical officers in the Civil Service There seems therefore to be a considerable element of self selection at a reasonably mature age among those doctors who decide to enter the Civil Service rather than to serve the community through the exacting but, to many, more satisfying demands of active practice Considerable weight should be given in settling the remuneration of this class to the standards obtaining for doctors in salaried employment in the more comparable conditions of local government service and in the rapidly growing field of industrial medicine"

The Joint Committee, for the doctors, had argued the duties of medical officers require a clinical ba ground, and often clinical acumen The range of work, it said, had greatly widened since 1939 example, the duties in the Ministry of Health involved the examination of difficult and intractable cases in general practice and also the proper influencing conduct of the N H S Translating its opinions money, the Joint Committee took as its first key po the post of chief medical officer at the Ministry, for wh it proposed a salary of £6000, based on the income of a part time consultant with a top merit award Princip medical officers, it said, should have £3500—co sponding to the pay of a full time consultant with the smallest merit award For the medical officer (b grade) a salary range of £1600–2800 was asked, on the basis of current incomes in general practice The Roy Commission, however, do not think that the medi officer's maximum need match that of the practit with a maximum list, and they propose a salary scale £1650 (linked to age 35), rising by £75 a year to £1 and then by £100 a year to £2250 For the chief me officer of the Ministry of Health they hold that the pr comparison should be with a *full-time* (not a part-ti consultant, and they recommend that the present of £4000 should be raised to £5000—not excluding possibility that the medical work of the Civil Service develop to an extent justifying the creation of a po posts with a salary equal to that of a permanent secr (for which £6000 is now recommended) On a ba internal relativities the commission's other prop include certain senior posts now with salaries of £ £2850, and £3000 to be "broad-banded" at £3250– principal medical officer, £2850, senior medical o £2600

It will be noticed that the Royal Commission's offer the least advance to doctors in the basic gr medical officer, who would rise only from £1595–21 £1650–2250 This, however, was to be expected, higher rate for this grade was announced only eig months ago, leaving the remuneration of the grades to be decided later[2] Whether this starting can be regarded as satisfactory depends, in our view, largely on the prospects of promotion within the se which have not latterly been good enough We are to note that the commission draw particular atte to the arrangements for special merit promotions re introduced by the Treasury, for we believe that future good of the service will depend to no small e on frequent use of this provision

A SECOND CAREER

EMPLOYERS have always been anxious to find the man for the job, but the inquiry[3] which Mr F Le Clark and Miss Agnes Dunne have made for the Nu Foundation suggests that they will now have to more thought to finding the right job for the man ascertain the ages at which people retire from Mr Le Gros Clark and Miss Dunne have examined t for age and occupation compiled in the Censuses of 1 1931, and 1951, studying 32 occupations which bet them cover about a quarter of the occupied male p lation As might be expected, conditions vary sedentary craftsman who makes, say, watches or m instruments remains at his bench long after the signal has had to leave his box and the coal-face worker mine But taking our elderly workers as a whole of them retire today in their mid-sixties than tw years ago, and in 1951 only 48 7% of men aged 65 were at work compared with 65 4% in 1931 Be ion and superannuation schemes changing methods roduction, and the strains and stresses of two wars all possible and reasonable grounds for this earlier ement. But industry can ill afford to lose these enced workers so soon and many of them could profit to themselves, their health, and the nation ain at work if they could move to a lighter job At ent some of them find more or less suitable openings themselves but the problem is a growing one and Le Gros Clark and Miss Dunne believe that about 00 alternative jobs of this kind will be needed ually over the next ten years They think that the e has come for an inquiry into the jobs available and mmend setting up social agencies to help the elderly ker to find a second niche

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[1] of the Royal Commission on the Civil Service 1953–55 an Sir Raymond Priestley) Cmd 9613 H.M nery Office Pp 238 6s 0d

[2] See Lancet 1953 i, 868, 878

[3] Ageing in Industry Nuffield Foundation. Nuffield L Regent's Park, London, N W 1 1955 Pp 146 6s (post free)

PERCEPTION AND IMPERCEPTION

HE physiological basis of mind has been much studied considered in recent years Indeed, the physio ical (as opposed to the metaphysical) interpretation mental function has tended to dominate scientific ught. This development was probably inevitable a field where new clinical and experimental tech ues have for the first time permitted reasonably trolled investigation of the activities of the 'silent' as of the brain To this may be added the effect of superficially convincing work of the cyberneticists le of whom have been led to assert that an electronic aratus will one day be devised to perform all se functions which we regard as the activity of the d.

ut even if such a machine can be produced neither evidence nor the known electrophysiological facts constitute definitive proof of the philosophical ity of mind and matter Whichever school one support to attempt to resolve the question of dal activity as a problem either in physiology alone n psychology alone, or to suggest that one approach ore 'fundamental' than another, is to create an icial schism which makes it impossible to interpret bral and mental activity satisfactorily In his dsley lecture given to the Royal Medico Psycho cal Association on Nov 10[1] Sir Russell Brain drew ation to this danger of regarding physiology and hology as antithetical As an integrated medical sopher he used the subjects of perception and rception as the text for a discussion of the true d brain relationship

e must be careful he said not to confuse physical e with perceptual space our perceptive worlds private to each of us, though each one stems from appreciation of a common physical world Nor we think that there is any clear distinction between objective and subjective parts of our private per ual world, for the information obtained via the roceptors is immediately modified by the behaviour he exteroceptors themselves the coldness of a is identical with a fall in temperature of the fingers perceptual world is then doubly subjective, it is a construct of the subject's brain based upon ory experience from the subject's body

urning from the philosophy of perception to the rpretation of various forms of imperception one sees acceptance of this reasoning makes for a satisfying rpretation of hallucinations Because of bodily rder a person perceives in his perceptual space ges which do not represent objects existing in physical ce ; but to him they are perceptually real The ry fascinating disorders of the body scheme, including ntom limb the duplication of limbs and the various body agnosias are beautifully explained by their status in the perceptual as opposed to the physical world For the clinical neurologist this concept is of particular value for the rational explanation (though not the cure !) of certain bizarre sensory symptoms which appear to have no organic basis psychogenic pain, bizarre generalised paræsthesia, and relative alteration in size of various parts of the body may be acceptable as modifications of the perceptual body

Sir Russell had some interesting comments upon the relation between art and feeling The work of art represents a perceptual form of a physical object embodying the artist's feelings but at the same time involves the communication of ideas whose reception in turn depends on the perceptual world of the percipient The fetishist endows an object in his perceptual world with abnormal emotional qualities which are incommunicable Certain artists may in fact fail to communicate their feelings. The current exhibition of schizophrenic art may justifiably be regarded as an example of these fascinating effects of disorders of the perceptual world

In drawing the threads of his thesis together, Sir Russell indicated the anatomical bases of the perceptual disorders and propounded a holistic view of nervous activity, indicating that these disorders must take into account the patient's perceptual psychology emotional background, and past experiences 'The neurological account requires the psychological for its completion,' and even the greatest devotee of the neurophysiological approach to psychiatry will often admit that speaking to the patient is in some circumstances the best method of treatment '

THE COLLEGE OF GENERAL PRACTITIONERS

DURING its third working year the College of General Practitioners[1] has established itself firmly at home and has extended its influence abroad The policy of decentralisation by development of faculties is being steadily pursued following the advice of the foundation council that 'it will be largely through these regional faculties, and the boards of these faculties, that members will be able to help and be helped by the College'[2] Of the 27 active faculties 5 are overseas and 4 more overseas faculties are in formation The next stage is to be the foundation of overseas councils of the college in Eire Australia and New Zealand on the model of the college's council in Scotland This network of councils and faculties, extending through the Commonwealth and beyond, offers unique opportunities for exchange of ideas and for coördinated work In different parts of the world general practice has evolved on different lines yet unlike the entrant to some specialised fields of medical work the intending general practitioner seldom gains preliminary experience of practice in other countries This work of the college may encourage exchanges of practices and travel in sabbatical years and thereby reinvigorate general practice at home. To those responsible for the research work of the college the growth of linked organisations on this wide scale offers peculiar opportunities for studies of comparative morbidity and other epidemiological investigations

The criteria for membership of the college have become stricter during the year, and a committee set up to study the practicability of an examination has reported its findings This committee finds that an examination in general practice is practicable and suggests methods for its institution and conduct A provisional syllabus has been drawn up which lists the clinical, technical, medico

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The lecture is we understand to be published in the *Journal of* al Science.

[1] Third annual report of the College of General Practitioners 14 Black Friars Lane London, E.C 4 Some details of the third annual general meeting appear on p 1130

[2] First annual report of the college *Practitioner* 1953 171 suppl. p 1

legal, and administrative subjects which a general practitioner in the British Isles may encounter significantly often in his professional life This list—perhaps the first major attempt to set down in black and white the wide range and scope of the family doctor's responsibility and skill—will inevitably be altered in detail, both in the light of home experience and by overseas councils, but in defining general practice in this way the college has shown that, if ever admission by examination is adopted, those admitted will have to prove their competence not only in the science but in the art of good general practice

Whatever doubts may have been felt when the new college joined its established seniors in 1952, it is now clear that it has revealed, and is meeting, a need for academic self expression long latent in general medical practice Perhaps it is this that gives the council's report a maturity beyond its years, with, at the same time, vitality and energy appropriate to its sturdy youth

FAT EMBOLISM

FAT embolism has been known as a complication of trauma for many years, but there has been much argument about how often it occurs and how important it is is a cause of symptoms or death In 1952 Musselman et al[1] reported fat embolism in as many as 57 out of 109 patients admitted to hospital with moderate or severe injuries, and they considered it to be a major cause of death in 6 of the injured On the other hand, as recently as 1951 Whitson[2] argued that fat embolism was not important and suggested that the term be used no longer as a diagnosis Pathological studies, however, such as those of Robb Smith[3] and Warren,[4] have established the reality of the condition, and today most people believe that fat embolism is an important, though occasional, cause of death from trauma

Speaking to the section of orthopædics of the Royal Society of Medicine on Nov 1, Prof R I Harris, of Toronto, directed particular attention to the clinical recognition of fat embolism He pointed out that it was not restricted to accident cases, but could follow orthopædic operations,[5] especially when there had been extensive interference with bone marrow, though sometimes fat embolism followed manipulations involving little damage to bone Moreover, in a series of thoracic operations, McKeown[6] has recently reported the presence of fat, and sometimes of bone-marrow, in the pulmonary vessels of resected specimens in 14 out of 41 cases, there was no clinical evidence of fat embolism Professor Harris went on to describe the various "syndromes" associated with the massive entry of fat into the circulation Sudden death on the operating-table could be due to overloading of the pulmonary circulation with fat Respiratory distress and fever some days after the operation or accident was more usual X ray evidence of consolidated lung often suggested pneumonia, but the true diagnosis might be indicated by petechial hæmorrhages in the skin (particularly in the axilla) or in the retina It was important to look for these hæmorrhages, which might be caused by breakdown products of minute fat emboli Professor Harris regarded these hæmorrhages as a more reliable guide than the presence of fat in the urine or sputum In his experience, pulmonary fat embolism was occasionally associated with severe and extensive hæmorrhage into the lung tissue, and this could then dominate the clinical picture Cerebral symptoms, usually developing some days after the injur small vessels became plugged by emboli, were oft important indication of serious fat embolism F in coronary vessels were also important, and could c early death after an accident or operation In the pos mortem examination of these cases, frozen se specially stained for fat, from lung, myocardium, brain tissue, were essential to the proper assessment the rôle of fat embolism

Evidence has accumulated to show that non traum fat embolism is possible, probably as a result of chem alteration of circulating blood lipids Kent[7] sugg that diabetes may be a predisposing factor He comp the lungs of 53 diabetic patients who were examined p mortem with those of a similar group of non-diabe Patients known to have had a physical injury within th weeks of death were excluded from each series 24 of diabetic group and 11 of the controls showed fat em While most of these emboli were slight and probably little significance, it is interesting to note that Hedr in 1916, examining post mortem material from 60 betics, found 1 example of unexplained severe embolism, to which death was attributed

There is little to say about the treatment of embolism The injection of emulsifying agents has been effective,[9] and is not without risk The immobi tion of fractures and the use where possible of a tourni during orthopædic and other operations reduces danger of dislodging fat

PROFESSOR WYNN'S RETIREMENT

> "To have played an active part in the work of a Me School and University for a continuous period of sixty y must be an achievement well nigh unrivalled, partic when the whole career is distinguished by serious contr tions to research in its early stages, by remarkable s in teaching later and by fruitful and constructive w administration during a perplexing period of rapid c and progress"

IN these words the fine contribution made to the Birmingham University by Prof W H Wynn is s marised, by the official *Gazette*, on his retirement f directorship of postgraduate studies in the faculty medicine Entering the Birmingham Medical Scho 1895, Wynn won medals, founded the students' repre tative council (later the guild of undergraduates), rec the degree of M SC at the first graduation ceremony the university, and in 1904, at the age of 26, joined staff of the General Hospital, which he was to serve physician for forty two years On becoming prof of medicine in 1926, he gave up much of his large cl practice so as to concentrate on teaching and adm trative work in the medical school and university was," says the *Gazette*, "one of the small and res group who ensured the success of the plan to bu Medical School and a Teaching Hospital in the cl possible association with the University and he sh none of the drudgery and controversy that the sch involved in its development" Recalling also his inte in the problems of infection, his help to the late Sir J Robertson in establishing the tuberculosis service Birmingham, and his early recognition of the importa of clinical pathology and bacteriology, his colleague that he is "no narrow specialist" his studies experience have been refined "by extensive reading medical history, by music and the theatre, by gen affection for the young and eager interest in their tho and aspiration" In completing his unusually academic career, Dr Wynn will know that both in and outside his university this affection is returned

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Special Articles

CANCER OF THE FEMALE BREAST, MORTALITY, AND THE MENOPAUSE

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STUDIES of cancer morbidity are making it possible to struct more accurate age-distribution curves of the dence of cancer at various sites than has hitherto n possible

lemmesen (1951) showed, from statistics compiled in Danish Cancer Registry in 1942–44 that the age dence of cancer of the female breast differed from the incidence of cancer in other sites: there was a d increase with advancing age up to 45 followed a decrease between the ages of 45 and 54 and another d increase after the age of 55 A similar trend has been reported from England France Switzerland, America Typical curves of the relative incidence in four countries are shown in fig 1

he influence of the female hormones on the growth spread of mammary cancer is well known, and the ormal trend in the incidence between the ages of and 54 ' suggests a relationship between cancer of breast and the menopause, physiologic changes bly hormonal in origin slow up the rapid rate of ase in cancer of the breast that is found prior to period '(Dorn 1955)

Present Investigation

he survivors of 10,025 women with cancer of the ast who had received no previous treatment were stered under the Cancer Registration Scheme of land and Wales between 1945 and 1947 and had followed up for five years since the start of treatment classified by age groups

he prognosis of cancer of the breast being largely rmed by the clinical stage reached by the growth n treatment is begun, to assess results it is desirable each clinical stage be considered separately There the present series was further classified into the wing four stages:

ge A the primary tumour is freely movable on the wall or on contracted muscle; the skin may be involved only if it is directly continuous with the tumour and is no clinical evidence of invasion of the lymphatic m.

ge B As A but with invasion of the lymphatic system.

ge C the primary tumour has invaded the chest wall muscle or the skin is extensively involved and lymph may or may not be invaded

ge D there is evidence of metastases in distant organs.

se stages derive from the original definitions used at the inception of the Cancer Registration Scheme in 1945 New definitions are now under discussion.

The proportions of cases in the various stages were A 28% B 19% C 42%, and D 10%

260 untreated patients were excluded from the analysis of stages A, B, and C The five year survival rates were corrected for age by the method of Berkson (1942), all untraced patients being counted as dead Rates based on less than 100 cases are shown in italics in the accompanying table

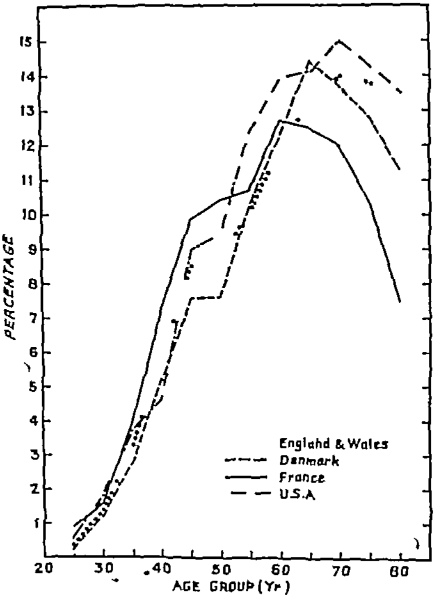

Fig 1—Morbidity of cancer of the female breast in different countries by age-groups: England and Wales 22,174 cases cancer-registration scheme 1945-49; Denmark 4579 cases (Clemmesen 1952) cancer registration scheme 1943-47; France 4563 cases (*Denoix 1954*); U.S.A., 3237 cases (Dorn 1944)

The cancer morbidity rates presented here are the average annual registration rates per million of population at risk for cases registered in 1945–49 22 174 cases were so registered and an estimate based on the mortality figures suggests that there were at least *50 000* cases in the same period Except at the very oldest ages where

REGISTRATION RATES AND 5-YEAR SURVIVAL-RATES FOR CANCER OF BREAST, BY STAGE AND AGE-GROUP

—	Age-group (years)														No of cases
	15–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85 or more	
tration rates (per million women living)															
ll cases	*3*	13	55	130	237	346	355	420	489	510	572	567	473	341	22 174
tage A	*1*	*5*	20	48	83	119	108	123	135	169	151	140	93	*46*	6437
tage B	*1*	*4*	11	32	59	86	78	81	90	88	87	72	*82*	*16*	4198
tage C	*1*	3	17	41	77	113	131	170	213	239	277	297	270	*156*	8721
ar survival-rates (%) (corrected):															
ll cases (treated and untreated)		*41*	35	39	41	45	35	33	38	36	35	36			10 025
tage A — Treated cases only			60	67	66	74	61	58	67	65	69	63			2765
tage B — Treated cases only			*42*	38	46	32	47	42	48	47	48	*45*			1841
tage C — Treated cases only			*10*	18	25	21	20	22	22	25	26	27			3924

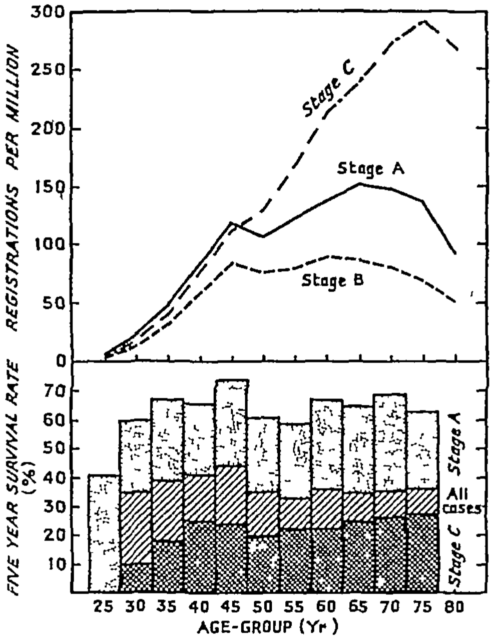

Fig 2—Registration rates and 5-year survival rates of cancer of the female breast at different clinical stages by 5 year age-groups

under-registration is probably greatest, there is no reason to doubt that these rates bear a constant relation to the real incidence rates, and that at all ages under 75–79 the true rate is about double the registration-rate (Registration has improved considerably in recent years, coverage now being much greater)

The results of this analysis are shown in the table, where both the relative incidence indicated by registrations and the five-year survival-rates are given for all cases of breast cancer registered, and for treated cases in each of the three earliest clinical stages separately, in quinquennial age-groups

The registration-rates in the clinical stages are shown graphically in fig 2, which shows that the reduced registration rate between the ages of 50 and 54 occurred only among cancers registered in stage A or stage B There was no such reduction as regards cases registered when the growth had spread locally beyond the breast or when metastases had developed Analysis of the survival rates in the different age-groups shows that, compared with the rates in the age group 45–49, those in the following decade are considerably lower for the whole series of treated and untreated cases the survival-rate fell abruptly from 45% at age 45–49 to 35% at age 50–54 and 33% at 55–59

Among the treated cases the survival rate fell at the same place in each clinical stage, the fall being greatest in stage A (from 74% at age 45–49 to 61% at age 50–54 and from 61% at age 50–54 to 59% at age 55–59), and least in stage C (from 24% at age 45–49 to 20% at age 50–54 and 22% at age 55–59) After the age of 60 the survival-rate reverts to a higher level but, except in stage C, did not again reach the rate found in the 45–49 age group

Discussion

Bloom (1950) has shown that a larger proportion of tumours of low malignancy are found in the earliest compared with the later clinical stages This finding supports the suggestion that "the apparently curable stage-I cancers may consist of slowly metastasising tumours, whereas those first seen in the late stages may mostly be rapidly invasive and metastatic tumours whose brief initial stage escaped notice" (*Lancet* 1954)

present series the postmenopausal changes in ration rate of cancer of the female breast are seen most clearly among cancers registered in the stages The coincident fall in survival rates affect stages but especially the early ones Both of suggest that the proportion of breast cancers of malignancy drops suddenly at this period, and growth starting after the age of 50 is more prob of lethal type than one starting immediately bef age It seems probable, as has been suggested Clemmesen (1951), that these are "indications of different kinds of breast cancer sensitive to fe hormones to a different degree," with the added cond from the present observations that the growths w are more sensitive to hormonal influence are of a lethal type and tend both to grow more slowly an metastasise later than the less sensitive types of gr

Analysis of incidence and survival by ten year groups might not reveal the differences shown here, it is only when very large numbers of cases are coll over a limited period of time that such results ca valid No single institution could produce the nece data , it is *only possible to do so under a national* of cancer registration

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COLLEGE OF GENERAL PRACTITION

The third annual general meeting of the colleg held at B M A House on Nov 19 The president William Pickles, was in the chair

THE YEAR'S PROGRESS

Presenting the annual report, Dr George Abercro chairman of council, said that four new overseas fac had been formed—in Eire (Cork), in Western Au (Perth), and in New Zealand (Christchurch and Dun An Australian council of the college was being pl The *Research Newsletter*, under the successful edit of Dr R M S McConaghey, had been greatly en and was now printed and sent quarterly to every m and associate

The examination committee had published its r It had shown that if, at any time in the futu examination was considered advisable as a meth entry to membership of the college, it could be Any proposal, however, would have to be passed special resolution (of which due notice would be by a majority of not less than three-fourths of the cast at a general meeting of the college The qu whether or not an examination would be re remained for earnest and thoughtful consideration

Referring to the reports from the 27 facultie Abercrombie said that no-one could read them wi a sense of pride and satisfaction that so much had accomplished by the faculties in so short a time all been done by the initiative of faculty boar requesting and securing the cooperation of unive hospital, and other authorities The North Mid faculty was the first faculty of the college to hav invited by a university (the University of Sheffiel send a representative to sit on its medical-st selection board

Reports from the research committee, the u graduate and postgraduate education committees the board of censors, all showed much progress. A re of members of the college who are willing to teach stu was being prepared The response to the questi on the continuing education of family doctors exceeded expectations A suggestion had been next year the James Mackenzie lecture the annual ral meeting, a college dinner, and various conferences it possibly be expanded into a "clinical week ged to coincide with hospital postgraduate courses perhaps with the Medical Exhibition

r Pickles was re-elected president of the college 1955-56

HONOURS

Abercrombie congratulated Dr Pickles on his admission e honorary fellowship of the Royal College of Physicians dinburgh, and on being the first recipient of the James kenzie medal presented by the council of that college to e physician engaged in family practice who has made the test contribution to medical science. He also con ulated Dr C A. H. Watts, who delivered the John heson Shaw lecture to the Royal College of Physicians of burgh on Nov 11

he Butterworth gold medal was presented to the college Mr J W Whitlock, managing director of Butterworths, medical publishers for an essay on the influence of e conditions on the physical and mental health of children ng their first five years of life" Dr D W MacLean dinburgh, received the first prize the gold medal and the ish *Encyclopædia of Medical Practice* Mrs Beatrice ls, of Ibstock, Leicestershire received the second prize 0 book token. The subject for the 1955-56 medal and l will be published early in the New Year

R J Minnitt of Liverpool, was presented with the lation Council award (1955) a small silver gavel on an ed base for "work of the highest merit in the realm neral practice

THE NEW COUNCIL

e following faculty representatives were appointed to the college council (1955-56):

Batten	D L Crombie	W S Gardner
A. Elder	K. M. Foster	J M Henderson
W Marien	R. A Murray Scott	G Swapp
Gillie	S Freeman	K A Mackay
Ait	R Harkness	J Campbell Young
T Sanctuary	K. M Cobban	L Masterson
Tait	J N M. Parry	J P J Little
Napier	R Scott	W A Conolly
S McConaghey		

resentatives from certain overseas faculties will be appointed

elve members were elected by ballot

Abercrombie	J H Grove White	E Charlotte Naish
Barber	H. L Glyn Hughes	R J F H Pinsent
T	J H Hunt	F M Rose
Grant	J M Hunter	G I Watson

meeting of the new council Dr Abercrombie was ted chairman Dr Rose vice chairman Dr Glyn Hughes treasurer and Dr Hunt hon secretary Dr W V lls was appointed as an additional member of council

James Mackenzie Lecture

Nov 19 at B.M.A House, Dr G O Barber gave econd James Mackenzie lecture His subject was *al Education and the General Practitioner*

Barber thought there were three qualities that al education should aim to instil: professional humanitarianism and organising ability (in that of priority) Some might question the giving of place to professional skill rather than humanitarian but sound academic knowledge was the first tial. Hence the general practitioner just as much e future consultant must continue to be taught the us branches of medicine and surgery by the ialists But (and it was a big but ") the student be given a much broader view of disease than he d possibly get in hospital alone The conditions h produced illness and the first symptoms and signs ease were all to be observed *outside* the hospital most important service that a doctor could do for patient was to recognise illness at the very earliest ible stage and it was these early stages that were picuously lacking in the teaching of students On other hand academic skill without humanitarianism a barren thing Humanitarianism was the sum of those qualities apart from professional skill which one looked for in a good doctor, whether general practitioner or consultant, the qualities you looked for when you were selecting the man to whom you would entrust the health and happiness of your family

Organising ability was really the application of academic skill to a series of varying situations. General practitioners still had to contend with primitive conditions under which they must set about practising the academic skill they had acquired in hospital, and it was neither fair nor sensible to launch them without some preparation for the enormous change in the technical application of medicine But Dr Barber went on, he had never thought that all this side of general practice should or ever could be taught to the student in hospital Those responsible for the education of future general practitioners should open the student s eyes to the need for this particular experience and then see that he can get it

As the demand grew for general practitioners to give students a short glimpse of their work more and more must volunteer for this duty And when we take them it must be with a very definite idea as to what we are trying to show them" Some students seemed to think that the ordinary stuff of the day s surgery was really a series of trivialities and certificates it was that impression that had to be corrected However trivial the patient s complaint appeared he must never be allowed to go until the question can this be an early case of serious disease ?" had been satisfactorily answered Moreover the student should be shown that an accurate knowledge of the patient s heredity and environment was as important as all the diagnostic and laboratory aids And he must learn to help the patient to bare his mind" as readily as he will bare his chest ' He must be given a good impression of the relationship between the general practitioner and the hospital He must never get into the habit later of sending his patients to hospital and then forgetting them

Turning to the medical curriculum, Dr Barber said that there was so much knowledge to be imparted nowadays that there seemed a very strong case for teaching mental discipline on subjects which in themselves would be of value to the graduate later on If this principle was accepted, the preclinical subjects must be pruned right down and only included in so far as they gave the student an idea of the function and the structures of the body and of those substances which affected it

When we come to the clinical period, ' Dr Barber continued I want to say with the very greatest of diffidence that the most important thing is to teach our teachers. ' When every teaching consultant had had a glimpse of the scope of general practice then there would be little need for this kind of discussion

Sir James Mackenzie had taught that a proper understanding of health and disease could be gained only by observation of the fluctuations of function in an individual throughout the years *and that this* particular side of medicine could be learnt *only* through general practice This was a part of undergraduate education which could and should be put into *the* hands of responsible general practitioners Dr Barber declared It applied to the undergraduate whatever his *future* branch of medicine, for it would give him a truer picture of medicine as a whole and his particular *part in* it

The First Dinner

At a dinner in Apothecaries Hall on Nov 18 Dr Pickles welcomed some of the friends of the college and Mr Dickson Wright replying gaily *for them*, declared that but for the grace of God he would still have been a general practitioner himself Sir Heneage Ogilvie a supporter from the beginning spoke of the immense importance of what the college stands for and can do and Dr Ian Grant described it as the manifestation of a new spirit in British medicine To Dr Pickles, Dr Abercrombie and Dr Hunt, with their colleagues on the council the company expressed its congratulations

GENERAL MEDICAL COUNCIL

OPENING the 191st session on Nov 22, Sir DAVID CAMPBELL, the president, said that the Special Committee on Public Health, which had been considering revision of the Rules as to Courses of Study and Examinations for Diplomas in Public Health, had found that there was a consensus of opinion that the subjects of instruction prescribed in the existing rules were satisfactory and did not require substantial amendment There had, however, been criticism, on two grounds, of the *certificate* in public health for which provision had been made for the first time in the rules adopted in 1945 In the first place, little advantage was taken by medical practitioners of the provision enabling them to obtain a certificate in public health, without subsequently proceeding to take the diploma Secondly, the necessity for arranging, in accordance with the rules, a separate preliminary course and a separate preliminary examination for the certificate had tended to make the teaching of the curriculum for the diploma somewhat less flexible and less effective than it could be if a single unified course were substituted for the existing preliminary course and final course The revised rules drafted by the committee made no provision for a separate certificate in public health Apart from the rearrangement of the course which this change permitted, the curriculum proposed did not differ substantially from that provided in the rules adopted in 1945 The revised rules had been generally welcomed by licensing bodies After certain modifications had been made to meet criticisms of detail, the council adopted the revised rules

In October the council had issued a list showing the variations in approved hospitals and recognised house officer posts in Great Britain and Ireland since the second edition of the printed list was published in October, 1954 There was a net increase of 15 in the number of approved hospitals, bringing the total to 742 The number of recognised posts had increased in medicine and its specialties by 38, in surgery and its specialties by 27, and in midwifery by 11 There were also a further 5 posts recognised as conferring experience in both medicine and surgery The increase in the number of recognised posts in medicine was especially welcome The total number of recognised posts in the United Kingdom at present was 1246 in medicine, 1519 in surgery and 363 in midwifery, 22 posts provided mixed experience

* * *

THE NUFFIELD ORTHOPÆDIC CENTRE

Lord Nuffield has given £200,000 for the further development of the Nuffield Orthopædic Centre at Oxford

The *Times* recalls that the first of all Lord Nuffield's many gifts to medicine was a contribution, nearly thirty years ago, to the repair of the Wingfield-Morris Hospital (then no more than a collection of war-time huts), and since that time he has given the hospital some £220,000, besides establishing the department of orthopædic surgery there, and endowing, in 1938, the professorial chair now held by Prof Joseph Trueta The proposal that the hospital with its clinics, and the department with its research laboratories, should jointly receive the name of Nuffield Orthopædic Centre, was made by Trueta's predecessor in the chair, the late G R Girdlestone, and it was formally accepted by the Oxford Regional Hospital Board on Nov 11 The new gift will enhance the value of the hospital as a centre of practice, research, and teaching, but the name of the Wingfield Morris, which has such happy associations for so many people, retained for the present as a sub title on the

Medicine and the Law

Coroner's Criticisms Rebutted

A general practitioner was called to a woman aged 76[1] The doctor suspected that she had to take her life by aspirin poisoning and thought might have taken up to 50 tablets He arranged her admission to Hill End Hospital, St Albans, and the duty officer there of her medical history The officer, a psychiatric registrar, decided not to wash the patient's stomach The patient subsequently died

At the inquest the coroner was satisfied that was due to poisoning by self-administered aspirin, he returned a verdict of suicide while the balance the mind was disturbed He expressed, however, doubt as to whether adequate attention had been to the deceased on admission, and he wrote to Mid Herts Group Hospital Management Committee order that the matter might be "further examined a medical aspect"

The coroner's letter mentioned that the duty officer not take a second opinion before deciding not to wash the stomach The coroner wondered "whether the fact this case was admitted late on a Saturday night might have been a reason for failure to take some further He also suggested that the case, being an emergency should have been sent to the St Albans and Mid Herts

The coroner's letter was referred to the Advisory Committee, whose reply expresses grave that the coroner saw fit to criticise the medical of this patient

It would not, they say, be proper for the members committee, either collectively or individually, to the treatment of a patient, such treatment is the responsibility of the doctor in charge of the case, but appear to be no grounds for criticising the treatment reason why a practitioner of the status of this duty officer should have sought a second opinion committee also see no justification for the suggestion treatment is any less adequate on a Saturday night, deplore the fact that such a comment was made majority of attempted suicides in the area are St Albans City Hospital, and the committee agree disposal, but the decision in each case must be left general practitioner concerned, if necessary in with the hospital

Damages for Unlawful Injection

A boy aged 17 has been awarded damages a doctor who gave him an injection against his will[2]

In 1953 the boy escorted his younger brother to a clinic The boys belonged to a family where there had tuberculosis, and the doctor and a nurse considered test was necessary on the older boy The boy refused to to an injection but was apparently led to believe the parents had consented

An action for damages against the doctor and the Anglian Regional Hospital Board was heard in County Court last week The learned judge said that perfectly clear to him that the doctor and the nurse acting in the best interests of the boy But even in the an individual was not forced to submit against his some foreign substance being injected into his body because someone in authority thought it good for him to

"I think the damages for assault must reflect regard as the serious impropriety of forcing an injection the boy in the absence of an emergency," said the "I think the damages are a little aggravated by the fact the boy was tricked into thinking that his parents consented. The damages must be more than a simple ment of the pain of a pinprick"

The judge assessed the damages for assault at 25 For psoriasis, which the boy alleged had developed the injection, he awarded £200

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[1] *Herts Advertiser*, Nov 4, 1955
[2] *Manchester Guardian*, Nov 19, 1955

In the Mental Hospital *

PROJECT FOR A MENTAL-HEALTH VILLAGE SETTLEMENT

F HOUSTON
M.R.C.S D.P.M
ANT PSYCHIATRIST FULBOURN AND ADDENBROOKE'S
HOSPITALS, CAMBRIDGE

ANY of our mental hospitals are a hundred years old belong to the custodial period of psychiatry If a ophrenic entered a mental hospital it was intended he should remain there for the rest of his life locked a ward of 50–80 patients in dull monotony relieved n occasional walk round the prison like concrete tyard Is it surprising that the patient became more more retarded and degraded the paranoid more noid and the violent more violent ? By incarcera we were aggravating the natural progress of the ss

last a new era is dawning and the doors of despair being unlocked Warlingham Park Mapperley, eton Hospital Melrose and Crichton Royal, fries, have led the way All sorts of group activities pringing up physical training music, art dancing drama are being developed day hospitals have come being, admission without formality is allowed ome hospitals, and outpatient clubs are being ed

t despite the advances made the chronic schizo nic who has recovered from the acute phase, but is well enough to return to the ordinary community is kept in hospital Before long his family may close anks against him his wife may divorce him and hance of recovery is lessened True if he is in a ressive hospital, he may work on the farm in ns, or in the occupational therapy department ng carpets, brushes and baskets. But this is a long from a normal home life, with the stimulus and tive of earning a living wage, and the feeling of self ct and self reliance it brings

hange in the existing structure of the mental health e might serve the interests of the patients as well ening overcrowding Some experiments in other tries and other specialties are encouraging

THREE EXAMPLES

colony of Gheel in Belgium contains approxi ly 15 000 people in what is to all appearances an ary agricultural village But among the inhabitants certified mental patients are boarded out from a al observation hospital when their acute psychotic is over They live with the farmer and his family ng on his land or helping with the housework, and armer is paid an allowance for them by the govern t. This village however retains much of the old dial attitude towards mental patients and depends much on charity for the patients and not enough on liance

Israel, in the village of Kfar Shaul, there is another al health village settlement built on different lines is a communal settlement where all patients are the maximum amount of freedom They are oyed in constructive occupations such as carpentry repairing and farming The hospital which occupies of the village, has special departments for the tuberculous and the aged It has 250 beds. This village sells its produce on the open market.

Nearer home the Papworth Village Settlement for tuberculous patients is an organisation which might be copied in the mental health service

At Papworth the patients work their own industries making furniture and motor-car bodies printing and bookbinding and producing travel goods for export They have an annual turnover of £500,000 and compete on the open market supplying Government contracts and many West End London stores. Though they began in a small way and obtained voluntary contributions, their industries section is now financially sound

AN EXPERIMENT PROPOSED

A similar project could be started, as an experiment at any mental hospital As a first step the occupational therapy department could expand its carpentry section, under the guidance of a trained carpenter responsible to the occupational therapist They could repair all hospital furniture building their own workshop and benches They could make furniture for the hospital—lockers, screens &c —and could sell their produce, first to the staff then to the public Female patients could concentrate on dressmaking knitting machines costing £18 or more could be used to make knitwear

At the end of a five year period the aid of a local manufacturer could be enlisted for clothing or furniture, and he would lend more machinery Second hand 'Arcon' type prefabs costing £250 each could be put up in the grounds suitably situated for utilising available central heating and electricity Four to six selected well behaved patients could be moved into them or a patient with his relatives. The patients would be paid for their work at trade union rates, and as at Papworth would pay rent for their prefabs which would cover all revenue expenditure

In time if the settlement succeeded the old central building of the hospital would be emptied into these prefabs, and could be converted partly into the factory building and partly into an acute treatment centre or ward for sick and senile patients. The village industries, once expanded could be adapted to build new cottages as well Admittedly this is looking ahead, for it took nine years at Papworth to reach this stage with the help of a Government grant of £10 000

The money for a scheme of this kind need not come only from Exchequer funds. In the present shortage of labour other sources would become interested when it was realised what a vast source of energy lies untapped and dissipated in the mental hospitals of this country A sales manager would be necessary, as in modern times it often costs more to sell an article than to make it

MEDICAL PROBLEMS

Living under these conditions a higher proportion of chronic schizophrenics would I believe become well enough to return to ordinary life Among those who could not do so there would be the patient who is still hallucinated has a few fixed delusions slight scatter some emotional blunting and feelings of passivity, but is nevertheless able to function at a high level The relatives of such a man might be willing to live in the village with him knowing that its sheltered environment would help to prevent excited outbursts and disturbed behaviour

Selection of cases for such a community would be made by experienced psychiatrists If domestic conflicts had been the cause of the patient's breakdown, his relatives would be advised against coming to live with him On the other hand experience has shown that the families of such patients are often unstable and would themselves

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roup of articles chiefly concerned with the value of tive occupation and work for mental patients and the ans whereby it is best provided.

benefit greatly from the group psychotherapy they could receive while living in the community This in turn would help the patient

Maxwell Jones (1955) often draws members of the family into group psychotherapy, and advises the admission of wife or husband into the social rehabilitation unit at Belmont Hospital Stengel (1948) found group therapy helpful for schizophrenics Scheidlinger (1948) holds the re creation of a family setting to be the primary dynamic element in group psychotherapy

The patient would reap the benefit of constant psychiatric attention, so that any acute relapse could be prevented, and further separation from the family avoided wherever possible It is better for the patient to work out his conflicts in a sheltered environment near his family, and learn to accept his ambivalence towards them, than to avoid and repress these conflicts The families themselves could be employed in the industries section of the village

Would this emotionally unstable community be a good one in which to bring up children? Obviously not But, as the fertility rate of schizophrenics is less than half the fertility of the general population (Kallmann 1939) and schizophrenia is often associated with testicular atrophy (Hemphill 1944, Hemphill et al 1944), the fact that children must be excluded would not be a serious obstacle to such a project

The mental health village settlement could learn from any mistakes made at Papworth in the early days As most patients would be physically fit, it would have an even greater chance of success than Papworth

I am grateful to Mr B Tallyn, O B E, the managing director of the industries section of Papworth Village Settlement, for information about the settlement, which I have visited

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Personal Papers

CHILD AT HOME

As a health visitor I have been troubled by the lengths to which people will go to prevent children from being separated from their parents, even when the home conditions are appalling I have felt that those concerned often attach a wholly unrealistic importance to "mother love," in the name of which children are left to grow up as best they can in squalid surroundings—neglected, dirty, and often ill treated, with the minimum of supervision from authority Anything to keep the family together! The article on Separation Experiences and Mental Health by Dr Howells and Miss Layng[1] will be welcomed by many like myself who had impossible childhoods because adults, relatives, and others hesitated to "interfere"

I am fortunate in being able to remember my childhood clearly, and particularly the important part played in it by the occasional kindness of strangers as well as the sporadic help of relatives Such help might well come nowadays from the friendship of an understanding adult giving perhaps "day foster care" as suggested in your article

My parents were separated from the time I can remember, and I was left with mother, who in her despair [illegible] in general progressed from casual drinking to being perpetually drunk. When she drank she became either ferocious or maudlin, both of states I dreaded so much that I urged her to go drinking until she became unconscious and there peace in the house I would then make a careful to make sure there were no cigarette-ends left around to set the place on fire, prepare myself a settle down with a book or home work This wa usual routine from the time I went to school My ch hood emotions, centred around mother, were confi hatred, disgust, and pity

Before I went to school I spent long days alone a little black cat for company and my toys Mo usually came in after dark and I would hear her voi in the hall I learnt to go to bed and pretend to be as hoping she would not hear the cat purring at my fe she would beat us both with a clothes brush, as she sidered cats in bed to be unhealthy I never told mot but a neighbour would slip in sometimes when she out to bring me a cake, stroke the little cat, or admire way I had set out my toy farm She always whisp and I knew she was afraid of being caught visiting Even now I remember with gratitude the feeling security associated with her visits—a sane adult disordered world There were others later on— elderly ladies who used to ask me round and gav cooking lessons, another who let me play in garden and hid me in the garage if my mother ca pursuit

My grandparents lived about five miles away lovely Georgian farm house, and once a week grandmother would drive round to see us, sigh unhap stay about half an hour, and leave me half a c I knew she was worried about me but that she di know what action to take As I grew older—I have been about 7 or 8—she told me I could al come to the farm if things got too bad and stay night I took full advantage of this, running away frequently, and I remember the panic of tearing the station road Once in the station all was well, station master hid me in his office, denied having me if mother had discovered my absence and chase, paid for my ticket, and put me safely on train Soon I would be happily seated in the farm k to which I had been dispatched by grandmother tea, being mothered by cook and fed sumptuo Usually mother would follow by the next train or and I would hear her shouting angrily at my gr parents, but cook would tell me not to worry, that I was quite safe with her She would settle an armchair with a couple of cats and *Peg's Paper* I would feel completely untroubled and secure child's capacity for brief happiness is extraordin I do not know how I would have managed wit these respites from tension and fear As it is, I am with a fixation on Georgian houses and cats, no d symbols of security and affection The Georgian h are less trouble than the cats, who know there is mystic bond between us and single me out when I go for their undivided attention

Although one can draw no conclusions from an isol case I do feel sure that children living under emot strain are helped by any genuine kindness or int shown in them by an adult, and even more reliev they can be removed from their surroundings even brief periods

My eventual release came when I was 12 father, whose existence I was hardly aware, decided I should to boarding-school I can well remember the relief being separated from mother, my pleasure in the c well ordered peace of school routine, and the joy feeling of liberation into a new life

[1] J G, Layng, J *Lancet* Aug 6 1955, p 285

In England Now

Running Commentary by Peripatetic Correspondents

PACE-TRAVEL will soon be here and the Ministry of alth doubtless realises that all tourists from Outer ce will be entitled to treatment under the National alth Service The literature on the flora and fauna of sister planets suggests that any of our guests who are isposed will present a problem to the doctor whose wledge of astronomical pathologies is limited.

tructurally these future visitors offer a series of phological Enigma Variations being (as the Devil arked of the Ten Commandments) rather a mixed ”

onsider first the Beings who are anatomically similar to elves, only much more so Incredibly beautiful and of sb physique they are grave-eyed and calm browed with ing and strictly hygienic robes and that Fabian outlook h characterises their classless, sanitary and pale pink roid. They and their more florid fellow travellers from Red Planet are unlikely to be granted visas for the United es; so many may visit these islands. In any event they will to see the London School of Economics and to hear Hadj an a straight-from-the-shoulder talk on the Nationalisation he Martian Canal System and his instructions for intro ing a 40-hour week to a planet each of whose years, and equently weeks, is equivalent to 5½ earthly ones After his they will probably require treatment for confusional s, when their reputation for being physically almost structible will invite the most satisfactory surgical rations.

any of the other extraterrestrial excursionists will make reations of Hieronymus Bosch & Breughel G.m.b.H. able a comic strip Chitinous coverings palps, antennae edentulous slobbering mouths are fitted to all standard ls, while a hankering after human haemoglobin is dis ingly common Demands for dentures and bottles of il will cause Parliamentary Estimates to rocket

nts, forty feet high, composed of quartz and exhaling onia gas, will test the equanimity of the Buckingham e sentries and cause disquiet in surgery waiting rooms he doctor will only have to diagnose animal vegetable ineral and refer these cases to the Royal Veterinary ge the Ministry of Agriculture, or the National Coal d.

re difficult as patients will be the Pure Intelligences, ing only as ill-defined clouds of radioactive particles will blow every fuse in the house and explode the ion set when they attend the surgery for their cyclotron py or bottle of Mist Radio-isotope Co

peaceful contrast the little people with a shrill honous cry who emerged from a flying-saucer in France year will be indistinguishable from many earthly ts.

e doctor s big moment will come when his space-ship ns from a domiciliary visit and he collects his back and mileage allowance for a journey of several light-s. That should pull out the plug from the bottom Central Pool and assure a well-endowed retirement.

* * *

have been digging out a compost heap, untouched ive or six years. Under the top layers of half-digested ish I came to a pit of wonderful rich brown humus. removed this into a wheelbarrow every spadeful ght back vivid memories. Some small heads and s, impervious to decay, denoted a period before omatosis put paid to rabbit pie Then came a wish e, recalling a New Year's day luncheon party when, ite vigorous tugs and pulling all round the table, ould not break and was thrown out into the refuse ket. A red rubber ring made me think of hot summer s spent bottling fruit while surprisingly clean and y pieces of tinfoil chocolate-wrapping winked up e in the sunshine knowing they should never have there at all Then came the great find—a table the steel obviously stainless, and the handle tly discoloured Spurred on by this find, I dug and e but the rest was just a mass of perfect mould ought how strange it is that time alone aided by on, should transmute such unattractive horrors—fish bones, meat innards every form of fruit and vegetable peeling—into the delicious sweet-smelling earth ready to feed the roses for next summer s flowering

* * *

You can see we are a dull lot in our department if you come and look at our animal house There are a few mice, a number of sinister-looking variegated rabbits, and an altogether excessive accumulation of plain white rats. No tropical fish, no snakes, no piglets In other departments one can entertain visiting firemen for hours merely by taking them to see the baboons or the porcupines, but the entertainment rating of our animal house is nil

The whole thing is a great trial to our patient and industrious administrator In spite of a number of years spent in tracking down mysterious leaks of D.C. current, distributing cleaning materials, cataloguing the Professor s library, and reprimanding our recalcitrant students, she retains an incurably romantic disposition in respect of this matter of animals. When we called on her the other day to ask about our dirty windows we found her just finishing a telephone conversation

Well," she was saying, "if you don t know when the frogs are going to come in, could you at least put me on the waiting list for salamanders?' She put down the telephone and showed us a catalogue she had received that morning "Why don't you try something different? she asked, and we thought we could detect an incipient curl of the lip It was indeed a stirring catalogue We reluctantly rejected the Elephants (each £750 F.O.B. Singapore), the Tigers (each £325–£350), and the Black Panthers (£325), all in Splendid Health and Condition and our eye wandered down through the Slow Lories the Binturongs, and the Ursine Tree Kangaroos (each £10) to the Black Headed Munia and the Green White Eye Brows (each 10s.) We considered a pair of Red rumps at £5 or a pair of Twentyeights at £14 10s., and noted with interest that the prices of Lions Giraffes, Zebras, Hippopotami, and Shetland Ponies were all subject to market fluctuations. Finally we settled for a couple of Turtles for Aquariums (small)—each 6s

But we fear that our enterprising order has done little to improve matters. As we left, the phone rang again It was pathology, wanting to borrow some mice. Our administrator was quite sharp with them

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Our M.O.H. a regular peripatetic, usually secretes a few pearls of wisdom in his annual report on our state of public health. In the volume for 1954, under the section on clean food and its handling in house and warehouse, we read Every link in the chain of infection must be remembered that chain hangs as a symbol over every water-closet in the district.

Ours has a handle

* * *

It had been a long holiday and we had just enough money left to see us home We stopped to fill up with petrol for the last time. Nine gallons should be enough to get us there," I said 'and I can do it with a shilling left over' But, said my wife 'we must have bread—and milk—for tomorrow's breakfast ' When we had laid aside enough for these necessary supplies, we found that we could only manage eight gallons of petrol So we had a whip round and recovered the pocket money from the children We put in the nine gallons and set off The journey was unusually peaceful It took me some time to realise that this was because there were no intermittent demands for ice-cream The children knew that it was no use asking

It seems that unwittingly we have scored a psychological bull s-eye Since we arrived back home the children have become money-conscious Instead of 'can I have an ice Mummy?' it is now can we afford any ices today?' and the two older children have separately inquired 'Where does the money come from that Daddy gets out of the bank? Even the five-year-old seems to be enlarging his wordly horizon Daddy, he asked, the other day are income-tax a special kind of tin tacks?

* * *

What is a skean dhu?

A pigeon that goes to Switzerland for its Christmas holidays.

Letters to the Editor

AN INCOMPLETE VICTORY

SIR,—Dr Anthony Ryle has raised a very important question in his letter of Nov 5 If the problems of tuberculosis control are to be solved successfully they must be tackled much more energetically than hitherto One of the major difficulties is the "chronic infector pool" and many patients who came into this category are to be found in common lodging houses and reception centres throughout the country According to the National Assistance Board's 1954 report the night attendance for hostels under the Board's care varied from 2402 in February to 1776 in July

In Camberwell there is the largest reception centre in Great Britain The average night attendance varies between 603 in February and 410 in July (1954 figures) Because Dr J C Hewetson, visiting medical officer, was worried about the incidence of tuberculosis among the men who reported sick to him, it was arranged for one of the South East Metropolitan Regional Hospital Board's mass X-ray units, under the direction of Dr J M Morgan, to carry out a survey In May, 1955, 175 men were examined, and 13 new cases of pulmonary tuberculosis were found in men over the age of 45 It was possible to arrange for the admission to hospital the next day of those in need of treatment This is a prevalence of 87 per 1000 It should be noted that the prevalence for the same age group among the general population in the County of London is 2 per 1000

It is probably not possible to calculate from national figures the total turnover of new men going through the hostels but it is thought to be high, since a large number of the men are immigrant labourers (mostly Irish), men only temporarily out of work, or who may be having difficulties with their families or are in some way under duress, and go to these reception centres only for a short time These patients are usually younger people and if they acquire infection from the older chronic patients they may well take their infection either to their new job or equally important, back to their home

I would suggest that there should be a national Mass X ray Day for the inhabitants of these reception centres, hostels, and common lodging-houses the actual date would *not* be made known to the inhabitants, otherwise the hostels might well be empty ! If all the directors of mass X ray units would coöperate, a survey could be carried out on these men on a given day, preferably in the winter, when the population in these dwellings is high In this way some idea of the incidence of disease in this particular population could be obtained Furthermore, cooperation could be obtained from owners of the common lodging-houses which are maintained under licence Even if it were not possible to examine the inmates it would be possible to obtain a "bed-return" of the day on which the survey was made in order that further estimates could be made of the population at risk

Patients in a different type of institution, the Rowton House, would be more difficult to examine because separate accommodation is provided These buildings are licensed as private hotels but if the cooperation of the superintendents were invited it would probably be forthcoming

Once the men with evidence of tuberculosis have been identified, seen by the chest physician, and, if necessary, notified, it should be possible to compile a register which could be circulated to all chest physicians in whose area there are lodging houses and hostels This register would in no way be a breach of confidence because it would be circulated to doctors only It would then be for the chest physician to make what arrangements he felt were necessary to ensure that any patients on this register should be referred to him if they visit the lodging houses in his area It would soon become obvious to these men that the services of chest physicians were available to them and, if our experience in Camberwell is any guide, it would probably be found that they are quite accept treatment and stay in a sanatorium until been made much better Even if they do not stay for long, it would probably be possible to give them chemotherapy

If the disablement rehabilitation officer visiting the torium works in close liaison with his opposite number the lodging-houses and reception centres are situated, it be possible to salvage a number of these men and get into gainful employment It must be admitted that th who for various reasons, have been in reception for a short time, are more likely to respond than those been circulating in these institutions for a number of It must be remembered that the older men occasional public transport and *certainly go to cheap* restaurant cafés for their meals

There is also a need for increased special hostel modation or segregation within a hostel for men who known to have active tuberculosis If at the same it is possible to find work for them in some form sheltered workshop, then the draining of the ch infector pool could begin

Camberwell Chest Clinic,
London, S E 5

KENNETH MA

CONSULTANTS IN DERMATOLOGY

SIR,—Very many senior registrars with higher med qualifications and general medical experience hav addition received a full training in dermatology recommended by the Royal College of Physicians have for some few years been awaiting the consu posts for which they are so well *fitted* and to which are entitled

It is disturbing that there should still be del creating the number of consultant posts necessary reasonable service to the community, and it is imp that posts should be advertised as including one or sessions in venereology, so excluding properly tr dermatologists It is, however, more disturbing to that some regional boards are considering the ap ment to consultant dermatological posts of cons venereologists employed by these boards but insufficient work in venereology

If this manipulation of posts by the administr in the health service is allowed thus to interfere with establishment of proper medical services it is a m of grave concern to the public The community is en to be served in this large and important specialty in other branches of medicine, by persons who are perly trained and experienced On the other hand senior registrars who have devoted this time to longed and proper training are entitled to a fair consultant appointments

The quality and pattern of services in a specialt fixed for twenty or thirty years by any part appointment today The harm and disservice may be done to medicine by irregular and imp appointments cannot be exaggerated

It is to be hoped that the Minister will not counte such practice by regional boards in spite of the hi desire to allow boards reasonable autonomy

JOHN T INGR

Leeds

BREAST CHANGES IN FIBROCYSTIC DIS OF THE PANCREAS

SIR,—I am anxious to discover whether any of readers have found a swelling of the breasts or pigm tion of the nipples in cases of fibrocystic disease of pancreas, since I have now had three such ch between the ages of 3 and 5 years

In the first child the nipples were pigmented a deep b colour similar to that seen after the administration of bœstrol, but there was no chance that this drug was The other two cases showed less deep pigmentation there was some enlargement of the breasts When I first patient I thought *that* these breast changes m the result of the prophylactic aureomycin which he had receiving during the winter, but stopping this drug amatic change and the next two children were not ing this drug at the time when the breast changes red.

nquired from Lederle Laboratories Ltd whether they eceived any similar reports with this drug, and found they had not The only possible connection they could at was the finding of light sensitivity in some patients ing aureomycin during a trial of its value in ey

Eric Stroud of the department of child health in Cardiff hown me an infant of 6 months who had a similar gement of the breasts and he suggested that the condi might be related in some way to the known abnormality andular tissue in fibrocystic disease of the pancreas.

mouth HUGH JOLLY

USE OF CORTISONE

r,—I feel that the recent decision of the Ministry of lth to allow the free prescription of cortisone and rocortisone is a somewhat unwise one at present

do not of course deny the benefit conferred by these lances to patients whose illnesses demand their use; but e present state of our knowledge I can only conclude there will be a great danger of irresponsible prescribing se drugs. In addition to their specific uses in Addison's se hypopituitarism, after bilateral adrenalectomy and ther forms of replacement therapy they are also very cious, albeit only symptomatically in a large number of r conditions. These are illustrated in your timely leading le and in Dr Bayliss's article last week

e side-effects of cortisone and allied substances are iple and may have serious consequences, but I do not y way suggest that these are out of the control of the ral practitioner He is often the first to recognise the l symptom or sign of potentially dangerous maladies, these may be absent in those receiving cortisone

cortisone is freely prescribable many sufferers from ling but non fatal conditions will demand it from their rs. The doctor will know that their symptoms will be ed by it and it will be hard to refuse

my opinion the diagnosis and treatment of those patients hom cortisone is indicated should continue to be under control of hospitals. There are relatively few such nts, and in any case they need to have occasional hospital ltation to assess progress and the development of effects, if any

conclusion Sir I would suggest that the decision lease cortisone for general use is at present an tunate one from both pharmacological and human points. Until we know more about the uses of this the safer alternative would be to make it available ll hospitals

don N W 11 D S NACHSHEN

PREVENTION AND THE PRACTITIONER

r,—For the past four and a half years I have practised precept mentioned at the end of your annotation week. I have eliminated ordinary surgery attendances have done all my work in the homes of my patients ve a small list spread over a wide area of country do my own dispensing for three-quarters of my

sages arrive in various ways, but the great majority in during my surgery hours, when it is known that I answer them personally and often say when I am likely rive at the house Urgent calls, of course come at any and take precedence over routine work Not much mileage is involved because the house-bound who to be visited generally live near the potential surgery

he scope of my work is not limited in any way and les full domiciliary midwifery The effect of health ation, so easily carried on in the home is most clearly n by the steady decline in items dispensed each month in the elimination of placebos and nostrums from my order

re I am single-handed and unable to afford ancillary tration is run on up to-date office lines. I have two breaks each year one of them educational and the locums who have come to do my work have found the scheme easy to run.

Hutton le-Hole
Yorks
RICHARD N THEAKSTON

MYASTHENIA GRAVIS AND HYPERTHYROIDISM

SIR—Dr Tabachnick (Nov 12) discusses the possible ætiology of myasthenia gravis and the relation of this condition to hyperthyroidism He concludes from his experimental data that the most acceptable hypothesis is diminished synthesis of acetylcholine We should like to point out that this view is not compatible with our own findings using decamethonium in myasthenic patients

Briefly we found that patients with mild and localised myasthenic weakness show diminished sensitivity to decamethonium, but those with generalised signs do not have this tolerance. Furthermore whereas in healthy persons decamethonium produces a neuromuscular block by depolarisation, in myasthenic patients the block is of the "dual type[1] Zalmis[2] has described a similar type of neuromuscular block in animals.

These findings suggest that the underlying dysfunction in myasthenia is an alteration in the manner of response of the motor end plate to acetylcholine, rather than any change in the amount liberated at the nerve ending

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H C CHURCHILL-DAVIDSON

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A T RICHARDSON

SIR—Dr Tabachnick in his most interesting letter, makes two suggestions which do not conform with experiences in clinical anæsthetic practice Furthermore I believe that he has inadvertently misquoted MacLean[3] as saying "that hyperthyroidism lowers the raised cholinesterase level of myasthenia gravis" MacLean simply postulated that in hyperthyroidism acetylcholine is present in excess owing to the absence of adequate amounts of cholinesterase MacLean did not state that the cholinesterase level was raised in myasthenia gravis and the evidence suggests that the level is normal in this condition[4] My own experience, and that of others[5,6] suggests that in hyperthyroidism the majority of patients have a raised not lowered cholinesterase level.

Dr Tabachnick suggests that hyperthyroidism leads to a relative overabundance of a depolarising substance and that hence, these patients might be sensitive to the effects of depolarising relaxants but in practice I have found that in hyperthyroidism patients are resistant to the effects of at least one depolarising relaxant—suxamethonium (succinyldicholine)

All these facts can be reconciled in one hypothesis though like others this will doubtless be open to criticism:

If in hyperthyroidism there is a raised production rate of acetylcholine (as Dr Tabachnick shows may well be possible) then the rise in cholinesterase levels which I and others have found may be secondary to this; but the raised cholinesterase level may still incompletely compensate for the increased acetylcholine production As MacLean remarks, the excess of chemical transmitter then present might produce (by persistent depolarisation) an incipient or actual neuromuscular block and consequently might be the factor responsible for the muscular fasciculations tremors, and myasthenia type weakness in hyperthyroidism. Theoretically this thyrotoxic myopathy should be cured by anti thyroid treatment and should

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1 Churchill Davidson H C Richardson, A. T *J Physiol* 1953 122 252
2 Zaimis E J *Ibid*, p 238
3 MacLean H C S *Lancet* 1954 i 1296
4 Maclean, B Wilson, J A. C. *Ibid* p 950
5 Antipol W Tuchman, L. Schifrin A. *Proc Soc exp Biol N Y* 1937 36 46
6 Lehmann H *Proc R Soc Med*. 1955 48 624

not respond to neostigmine [7] In those cases where neostigmine has been of benefit,[7] the mechanism may be akin to the paradoxical reversal of suxamethonium by neostigmine in anæsthesia, which I have noted previously,[8] and which has since been confirmed by others [9]

If this state of excess acetylcholine balance, which presumably is present in hyperthyroidism, is superimposed on true myasthenia gravis (where conditions leading to a relative lack of acetylcholine appear to be the underlying cause), then normal balance may be resumed Hence the alleviation of true myasthenia gravis by hyperthyroidism, and the worsening of the myasthenia by anti thyroid treatment

By this argument, in fully compensated patients with hyperthyroidism (i e, where the rise in acetylcholine production is matched by a secondary rise in cholinesterase) the balance would be preserved Consequently such patients would be unlikely to show symptoms of acetylcholine excess, nor would the condition alleviate true myasthenia gravis Is this the explanation of the considerable divergence of findings as regards the effects of anti thyroid treatment on the signs of myasthenia gravis in proved cases of combination of the two diseases [3, 4]

Dr Tabachnick's further postulate—that hyperthyroidism should be associated with a resistance to depolarising relaxants—is not borne out in practice with suxamethonium, probably because the common associated rise in cholinesterase levels is responsible for the rapid hydrolysis of the drug I have no knowledge of the resistance of thyrotoxic patients to decamethonium, a drug which is not hydrolysed by cholinesterase, and it would be of interest to know what others have found in this respect

Portsmouth R J HAMER HODGES

SIR,—We have read with great interest the informed comments made by your correspondents on this subject Certain points appear to call for replies, either in amplification of our earlier views or in relation to new matters raised Dr Tyndel (Nov 12) has brought up a nice semantic point in reconsidering the implication of the word *gravis* The historical background to the term is beautifully elucidated in his letter but we are sure that he will agree that usage is one of the most potent forces in philological evolution and that current usage does attribute to the adjective gravis a serious prognostic import, quite independent of any archaic diagnostic derivation The persistence in some textbooks of psychiatry and neurology of a warning against the confusion of myasthenia with psychogenic symptoms or even malingering is very reasonable but irrelevant to the semasiological issue

As to the use of corticotrophin Our reading of the literature has led us to the conclusion that not even the term "controversial" need be applied there, and since we did not ourselves employ it in the treatment of our cases we could offer no first hand comment on a form of therapy which had proved largely ineffective in the opinion of others

Dr Tabachnick discusses the possible relationship between myasthenia gravis and hyperthyroidism This subject has interested us profoundly and we hope shortly to report our clinical experiences Meantime we should like to point out that not everyone can agree with the assertion that when hyperthyroidism and myasthenia co exist, there is no muscular weakness If Dr Tabachnick scans the literature more widely he will find a number of cases in which the myasthenia appears to have been adversely affected by the hyperthyroidism

FERGUS R FERGUSON
L A LIVERSEDGE
E C HUTCHINSON

Department of Neurology
Manchester Royal Infirmary

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[7] McEachern, D Ross W D *Brain*, 1942 65 181

[8] ...es R J H *Lancet* 1953 i, 143

[9] ...hill Davidson H C *Proc R Soc Med* 1955 48 621

OCCUPATIONAL TREATMENT OF PSYCHOTICS

SIR,—In their admirable article (Nov 12) Dr C and his colleagues quote Galen as having written in 172 "Employment is nature's best physician, essential to human happiness" Would the add to my debt to them by giving the actual where this wise saying can be found?

London, S W 1 SELWYN SELWYN-CLARKE

A REPORT FROM HOSPITAL

SIR,—Hospital administration by laymen has much in the news May I therefore report a incident?

As an industrial doctor, I was asked if I could adv management of the organisation in which I work ab patient in hospital I accordingly wrote to the surgeo whose ward he was and, at the same time, wrote to the p asking for his permission for the report to be given. surgeon promptly and very courteously replied and as to write for an official report to a gentleman who appea be the administrative chief of the hospital. This I di again wrote to the patient to ask for his permission fo report to be made In due course I received a letter fr house surgeon giving me a useful report about the p The letter, however, was not sent to me direct but w warded under cover of a letter from the administrator

Not to be outdone in what I now take to be the c etiquette on these occasions, I wrote to thank the h surgeon but sent the letter to the administrator wi request that he would pass it on

London, N 1 R E W F

NEW SHORT-ACTING THIO-BARBITURAT

SIR,—Nobes [1] reported a series of 11 cases thetised with sodium 5 allyl-5 iso butylthiobarbit now known as thialbutone sodium I have used 'T thal' brand of thialbutone sodium in over 100 case this drug appears to have a definite place in ana and surgical practice

It has proved extremely useful for external version viding ample time and relaxation, and the unpre mother can go home within 2 hours It is equally for orthopædic manipulations, reduction of fractures, &c only reservation being that in the elderly less resilient lethargy may persist for 12–24 hours It is also us short procedures such as dressings, cystoscopies, remo retained products, and diagnostic dilatation and cur

Success largely depends on the induction, which intravenous injection, and it is of prime importance th should be completed before anything is done which is li rouse the patient The maximum dose for an adult in a 10% solution (10 ml) given over a period of minutes The first part of the injection (between 1 ml 4 ml) is given rapidly over a few seconds, and af pause of $1^1/_2$ minutes the rest is given over the next minutes. The size of the first injection depends o age and condition of the patient and whether or not he the habit of taking alcohol or sedatives—e g, aspirin, p barbitone, or "sleeping tablets" The young robust p the alcoholic, and the drug taker all need a large initial whereas the old, the frail, and the abstemious require one The rate of the subsequent injection is dictated by patient's reaction to the drug With the correct r injection the patient may yawn once or twice and drop off to sleep, if not stimulated or disturbed, but if the op begins too soon or the patient is kept awake by chatter, it be impossible to get him deep enough without adding drug If the injection is given too quickly the patient sneeze, cough, or retch

Thialbutone can be supplemented by another barbit or an inhalation anæsthetic Once it was given for examination under anæsthesia which proceeded to c section, and supplemented with nitrous oxide and methonium bromide ('Brevidil M') it gave an excellent comparable in every way to the sequence of hexobarbit ous oxide, and suxamethonium bromide which I use as a line for cæsarean section. When followed by nitrous le/oxygen anæsthesia to supplement its effects recovery ot delayed and there are all the advantages of an intra ous induction with the rapid recovery of nitrous oxide. oes not appear to have any advantage over the established nturates for induction for major surgery

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[1] Nobes, P *Lancet*, 1955, i, 797

lith the help of Dr Gordon Chorley, Dr A T Nesling Staff nurse J A Littlejohn of this hospital blood sure readings and pulse rates were recorded every minute ng induction and maintenance of these cases. The records that there is a slight transient fall in systolic pressure change in diastolic, and a slight slowing of the pulse ng induction. The blood pressure returned to normal minutes after the start of the injection and the pulse rate in 2 minutes The fall in blood pressure is slight and has called for measures to combat it. Once the blood sure starts to rise it appears that the patient is ready for ation.

slight transient slowing of respirations and reduction in h has also been noted but there were no signs calling for the inistration of oxygen in over 100 patients whose ages d from 17 to over 70

ere is considerable individual variation in the reaction he drug and it seems that the amount of the initial tion related to the patient's physique and habits is the rtant factor in judging this

se remarks apply to the unpremedicated patient or the nt who has had nothing but atropine In patients who been premedicated with Omnopon and scopolamine ropine and morphine hypotension and bradycardia may ore striking and long lasting; and although recovery of ousness may not be delayed a period of lethargy and hypotension may ensue for 12 hours or more

ere has been no vomiting in patients who have not prepared and have had a meal that day and patients have retched during induction have not been sick, ugh 2 patients who were ' prepared vomited slightly ming round (they had had an opiate)

e important things to remember are: (i) the initial must be given quickly (ii) it should be adjusted e patient's condition and habits, (iii) the remainder d be given slowly pause being made to allow any hing sneezing or retching to settle and the injection nued more slowly (iv) no operations should begin the whole dose has been given and the patient is ing quietly If these precautions are disregarded is a danger of a useful drug getting into disrepute e it has had a proper trial

rs. May & Baker supplied the Transithal'

ester Royal Hospital. J SHEGOG RUDDELL.

ENURESIS

—Dr Mark Bonnin, in his letter of Nov 12 seems ve failed to appreciate that in your leader[1] it was ctly stated that the conditioning approach to the ment of nocturnal enuresis originated by Mowrer[2] d widely in the U.S.A

e our paper[3] appeared there have been very many ts and inquiries for the apparatus made and sold by the ational therapy department of the Colony for Epileptics it is produced at a tenth of the price mentioned by onnin.

s difficult to devise a suitable durable and comfortable n which the patient may sleep Even using nickel wire a fairly rapid corrosion and we are now experimenting conducting rubber

Crosby's[4] original apparatus the arousal stimulus was the shock, and rather complicated electrodes were fitted e patient. We have found the bell perfectly satisfactory t obviates the use of genital electrodes and the shock of which I feel are *psychologically bad*

me time ago a follow up of 70 cases treated by this od showed that 75% were cured and in many of these it proved effective when all other forms of treatment had failed

The Orphan Homes of Scotland Bridge of Weir Renfrewshire. J ROMANES DAVIDSON Medical Superintendent.

[illegible] 1955 i 391

wrer O H, Mowrer W M *Amer J Orthopsychiat* 1938 126

ddison, J R, [illegible] *Brit med J* 1950 i 1345

by N D *Med J Aust* 1950 ii 533

THE FORGOTTEN PATIENT

SIR—In replying to an article written by a medical man about his own specialty I may show lack of discretion But as one of thousands of laymen who give much of their time to helping to care for the mentally afflicted I view this kind of article with alarm and resentment because I know the damage they can do I am sure that they are usually written with the best of intentions but that does not make them any the less mischievous and misleading to the would be nurse to the relatives of patients, and to the general public, when they consist of half truths or paint a picture in lurid colours.

I am not qualified to rebut Dr Bickford's statement that ' psychiatrists have failed to cure and discharge their patients," which seems to presume that they could cure but do not. But I do know the concern and distress it could cause in the mind of a person having a relative in a mental hospital, and the kind of reaction that might arise Further if we are to accept this contention then we public representatives ought to be asking ourselves why public money is being spent on public servants who are not doing their job to the best of their ability

Whatever may be Dr Bickford's experiences in his own hospital, or elsewhere he is grossly overstating some of the facts so far as the South West Metropolitan Region is concerned—a region that has far more mental health beds than any other hospital region Take for instance his claim that in many hospitals droves of patients labour in the fields and cow houses' A recent return in our region showed that in the 24 mental hospitals and mental deficiency hospitals that had farms attached or adjacent to them 418 patients were engaged on farm work *of one kind or another*, and 265 patients were engaged in hospital gardens—a total of 683 The number of patients in those 24 hospitals at the time of the return was 31 173 A ratio of 1 110 4 engaged on farm work as such Droves" hardly seems the right word

The Old Folk—I am in full sympathy with Dr Bickford's desire to serve the interest of old people who could be removed from a mental hospital if there were some other accommodation they could go to, and we have given the problem a great deal of attention and made it a point in our evidence to the Royal Commission on the Law relating to Mental Health But in his anxiety to make a convincing case he is creating the impression that many old people who are not mentally ill are forced into mental hospitals, merely because there is nowhere else for them to *go*

During our examination of the problem in our region we found that the 17 mental hospitals concerned had a total of 9887 patients over 65 years of age Of these 971 were fit for other *hospital* accommodation and 2348 were suitable for local authority welfare accommodation But of the 3303 admissions of patients over 65 years of age in 1953 only 455 were suitable for other hospital accommodation and 105 for welfare *institutions* and even some of those were borderline cases In other words the great *majority* were rightly *admitted* to a mental hospital because they needed that form of treatment but have so far recovered after treatment that they could leave now if there were other accommodation for them

I know this is not a matter to be complacent about but it is mischievous and wrong to suggest that most elderly people are forced into mental hospitals wrongly Moreover Dr Bickford did not mention that there are a number of old people in other accommodation who should be receiving psychiatric treatment and nursing

Absence of Incentive to Discharge Patients—As to the general charge that "doctors have little incentive to discharge their patients"—to which the obvious retort could be that the care and cure of their patients is their primary responsibility—it requires but little imagination to see the effect of this on patients or relatives who are being advised by their doctor to seek mental hospital treatment There is enough ignorance, prejudice, and misunderstanding already about the care and treatment of the mentally afflicted without statements of this kind being made to lend further colour to them—particularly at a time when great strides are being made in the direction of creating confidence in, and acceptance of, earlier diagnosis and treatment of mental instability

Again I must talk about what we are doing in the South West Metropolitan Region, even at the risk of being thought boastful Since April, 1953, we have reserved parts of several of our mental hospitals for the admission of non statutory patients—i e, patients without even the requirement of signing a "voluntary" order, who can walk out of the hospital at a moment's notice if they desire Up to Sept 30—two and a half years—3680 patients had been admitted to these beds, and a large proportion of these had been discharged as sufficiently recovered as not to require further hospital treatment The average length of stay of these patients has been approximately six to eight weeks The original number of such beds provided was 330, but since Oct 1 it has been increased to 688, and it will steadily rise as more accommodation becomes available

The more such facts are known and emphasised, the greater the confidence in psychiatric diagnosis and treatment and, if this leads to greater cooperation between hospital, patient, and relative, the greater will be our service to suffering humanity

The Committee—My only comment about the kind of committee members described by Dr Bickford is that either he must be grossly exaggerating or else he has an extraordinary preponderance of stupid and gullible people serving on the committees of which he has experience Whatever other faults they may have, failure to visit every part of their hospital regularly and frequently, and to become very vocal about matters they think need remedying, cannot be laid at the door of the majority of members of hospital management committees that my mental-health committee control

R SARGOOD

Chairman, Mental Health Committee,
South West Metropolitan Regional
Hospital Board

MUSCLE IMBALANCE IN SCOLIOSIS

SIR,—In the article by Mr Riddle and Mr Roaf (June 18) there are certain features which should not go unchallenged. First, there is the conclusion that, apparently because "the spinal muscles were significantly stronger on the convex side at the apex of the curve," the cause of the curve was this over activity The authors do not mention the possibility that the overactivity is a result rather than a cause

There seems to be confusion, too, in differentiating between inherent "strength" and the amount of activity at rest or during specific movements These are *not* synonymous, though under certain controlled conditions they can be correlated The suggested treatment—i e, to "excise alternate laminæ and transverse processes at the apex of the curve on the convex side"—must therefore be highly questionable It would be very interesting to know if the surgeons who referred patients have taken the advice of the authors in this regard Another serious omission appears to be the absence of fibrillation potentials of denervation on the so called weaker side Surely it is pertinent to note the presence the absence of this one sure electromyographic sign of tion

Finally, we must conclude from the significant of data with needle and surface electrodes that requires greater expansion before any of the con can be considered valid Of course it has been long that an imbalance of muscle activity, especially rotators, is the probable underlying cause of However, the evidence presented in the article manipulated by the skilful antagonist of this theor such there be, to refute this belief rather than

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J V BASMAJI

THE RING AND THE SWOLLEN FINGER

SIR,—Many methods have been used to remove r from swollen fingers For lesser degrees of swelli little soap may suffice, or a thread wound round distal part of the finger With gross swelling methods may fail and the patient may plead th ring be cut off At times a painful struggle may fo ending with some damage to the finger if su instruments are not available A description of a si technique for the removal of rings from grossly sw fingers and its application in two cases may be of int

CASE 1—A housewife, aged 28, had fractures of th forearm The displacement was corrected, plaster-of- applied, and her wedding ring removed She was se the following evening when she was wearing the ring 4th finger of the right hand She stated that even normal conditions there was difficulty in putting the r this finger, which was now grossly swollen, congested painful The usual methods having been tried wi success, a solution of 2000 units of hyaluronidase in 1 water was injected subcutaneously into the proximal p of the swollen area and under the ring, on the dors sides of the finger, which was massaged gently to spre injected solution A thin rubber tube was then w round the finger, commencing at the tip and conti proximally up the finger, up to and including the ring. was left in situ for 5 minutes When it was remove swelling had been dispersed sufficiently to permit the drawal of the ring without difficulty

CASE 2—A van driver, aged 51, had been struck dorsum of the left hand with a starting handle The bruising over the 3rd and 4th metacarpophalangeal and 4th proximal interphalangeal joint The 4th finge a heavy signet ring and was grossly swollen distal A procedure similar to that used in the first case was out and the ring removed with ease

An important contra indication to this method be evidence of sepsis in the affected digit, when would be a danger of spreading the infection

I have not seen this method recorded elsewhere should like to draw attention to it because it may injury to the patient and the ring

I should like to thank Mr H W C Bailie, F.R.C. permission to publish these cases

Coleraine Hospital
Northern Ireland

R J W RID

TUBERCULOSIS OF THE PUBIS

SIR,—Bevan[1] has lately pointed out that the bone is an uncommon site for tuberculosis and that abscess formation from such a lesion seems pec rare In view of this apparent rarity I would like to describe a further 4 cases which have occurred hospital since 1948

A woman of 50, with a tuberculous left hip and spine, had a sinus in the left labia Subsequent X ray ex tion showed destruction and irregularity of the sym pubis She was sent to a sanatorium where rest and ch therapy resulted in healing of the sinus.

A woman of 31 presented with a painless spherical about $1^1/_2$ in. in diameter attached to the posterior of the left upper border of the symphysis pubis. examination showed widening and partial destruction some new bone formation of the symphysis pubis. Ther an associated metastatic osteolytic lesion with a sinus e proximal phalanx of the left hallux. Her condition did improve with conservative measures, including strepto n and isoniazid and she was finally transferred to a torium where the pubic cold abscess was curetted and cavity packed with bone chips. Subsequent X ray films ted solid fusion across the symphysis.

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[1] Bevan, P G *Brit med J* Oct. 1, 1955, p

woman of 65 presented with a painful inflammatory ling over the inner and upper aspect of the left thigh in adductor region which was incised and drained. Subent X ray examination of the pelvis showed an osteolytic n of the symphysis pubis and left ascending ramus with ularity and destruction of bone Culture of the pus ed tubercle bacilli. A small sinus persisted for many ths but finally healed without any further operative ment on chemotherapy

man of 22 a physical training instructor complained ain in the region of the right adductor tubercle This ition was regarded as a probable traumatic periostitis, X-ray examination during the next twelve to eighteen ths showed there was an infective osteitis of the pubis with sible pulmonary lesion. His symptoms eventually sub l after a prolonged period of rest and a course of tomycin and p-aminosalicylic acid

kney Hospital,
London, E.9 — R F READ

ARGENTAFFIN CARCINOMA

R,—The observation by Dr Snow and his colleagues 12) that some patients with metastasising carcinoid ours are extremely sensitive to alcohol is of great est to those engaged in the prevention of alcoholism ice observations, such as these and others (e g , iol induced pain in Hodgkin's disease[1]) may help ventually to find a means of readjusting physio al imbalance as a cause of alcoholism The advent disulfiram ('Antabuse) has stimulated interest in stances or ailments causing 'aversion'' to alcohol h include hydrogen sulphide, tetraethyl lead[2] gkin s disease, cyanamide the edible mushroom inus *atramentarius*, animal charcoal and pyrazolone ratives An article discussing the anti alcoholic' erties of all these is appearing on p 98 of the national *Journal on Alcohol and Alcoholism* 1955

worth, Middlesex. — H PULLAR STRECKER.

R,—Dr Stacey suggests in his letter last week a thrombocytopenia might explain certain anomalous hemical changes reported by Dr Goble Dr Hay myself (Nov 12) We found however that platelet nts remained within normal limits throughout the ssion induced by ^{198}Au, and at no time was there clinical evidence of thrombocytopenia

our view, even if thrombocytopenia had occurred uld not possibly account for our findings, for the wing reasons :

ydroxyindoleacetic acid (5 H.I.A.A.) levels indicated that release of 5-hydroxytryptamine (5-H T) into the circula by the tumour mass remained approximately constant e platelets absorb free 5 H T from the surrounding plasma, their production been diminished a temporary rise in free na 5 H T level would have occurred. Although this t have been reduced to pre-thrombocytopenic levels the mono-amine oxidase mechanism, giving rise to a eased *total* serum-5-H T level there would have been no tion in free plasma 5 H T and consequently no reduction nary 5-H T excretion. And since the weight of pharmaco al and clinical evidence suggests that 5 H.T is the humoral t responsible for many of the clinical findings in the taffin-carcinoma syndrome neither would there have any remission of symptoms, for it is difficult to see how duction in platelet bound 5 H T alone could give rise to this

onsequently we considered that some enhancement the mono amine oxidase mechanism possibly by porary inactivation of an inhibitor might explain puzzling biochemical findings accompanying the ical remission these findings consisted in a constant urinary excretion of 5 H I A A despite decreased serum and urinary 5 H T levels, and not decreased 5 H T levels alone as stated by Dr Stacey

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UNRESTRICTED VISITING IN A CHILDREN'S WARD

SIR,—We read the article by Dr Campbell and her colleagues (Nov 5) with envy and admiration—envy because they have had eight years of unrestricted visiting as opposed to our two years of a similar kind of experiment. We have been admitting mothers of children of the fretful age into our cubicles where we have just room for an adult bed beside the cot The mother is by her infant or child day and night There are no amenities specially designed for mothers Their meals are brought to them by nurses or orderlies as if for a patient They are not at first asked to do anything but stay with their child They are not prisoners in their cubicles but they seldom in fact want to be away for more than a brief rest

These mothers see the whole treatment of their child and take part in it as far as possible helping in many small useful ways They also see some of what goes on in the ward as a whole If we were to try to illustrate here some of the great benefits all round that have resulted, we would find ourselves reiterating all the points so excellently put in the article from Queen Victoria Hospital Melbourne

There are, of course, things which apply specially to the smaller children When treatment is complex or disturbing nursing may sometimes be more difficult owing to the clinging attitude of the child to the mother We have not yet had enough experience to make any generalisations about this except to say that we think it does not matter whereas when the child has to endure these things alone and cannot cling to anyone harm may be done

By publishing articles and letters from time to time on this subject, you Sir are doing a lot to break the still frozen attitude of many of our hospitals towards nursing by the mother free visiting or even daily visiting, and to parents in general.

The work of the nursing staffs of hospitals in the care of sick children has been a magnificent achievement, and it is well known that this covers not only bodily care but mental comfort to the utmost that the unnatural conditions of a children s ward will allow But it has too long been a tradition to present to visiting parents the picture of an orderly ward with children wanting for nothing as far as outward attention goes and to spare them the pain of seeing what children sometimes have to endure in the form of medical or surgical treatment To work in the constant presence of the parents has long been regarded as impracticable, but it is not, as Dr Campbell and her colleagues have shown and we also have found The first step in getting over the old prejudice and towards the whole hearted acceptance of parents in the child's illness is to realise that in our treatment of sick children we have nothing to hide We may fear our work being misunderstood by onlookers, but that possibility is something that can be dealt with

Children s Department,
Amersham General Hospital
Bucks

DERMOD MACCARTHY
MARY LINDSAY
I MORRIS

SIR —I was very interested to read the article by Dr Campbell and her colleagues The Children's Department of Pembury Hospital has also allowed unrestricted visiting for the past six years and as in the Australian experiment we have found it an unqualified success Our experience has been so similar to that described in the article that no comment on it is required.

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[1] Bichel, J , Bastrup Madsen P, *Lancet* 1953 i 761
[2] Walker G, Boyd, I H. *Ibid* 1952 ii 467

I should like simply to add one point To the medical and nursing staff, contemplating the introduction of unrestricted visiting it might appear that the wards will for ever be infested with hordes of visitors In actual fact it turns out quite differently, and instead of the periodic invasion at set visiting-times there are always a few visitors, who do not interfere with the running of the ward at all

Children s Department,
Pembury Hospital, Kent

N M JACOBY

IMMUNOHÆMATOLOGY

SIR,—In your leading article of Nov 5 you say

"An example is the drug sensitivity caused by 'Sedormid' or quinidine, these drugs probably modify platelets, thus producing iso antibodies, later auto antibodies develop, by a process of which we know nothing, and these antibodies act only in the presence of the sensitising drug"

Could some of the evidence be given showing that two sorts of antibody are developed in patients sensitised with these drugs?

Department of Chemical Pathology,
Westminster Medical School,
London S W 1

DAVID MARRACK

*** In the leader we were drawing mainly on the findings of M Stefanini and of J F Ackroyd, whose articles we cited To our regret we did not make this clear at all points —ED L

BACKACHE AND POLIOMYELITIS

SIR,—It is surprising that so little stress is laid on the symptom of backache in the diagnosis of anterior polio myelitis in its pre paralytic phase

If it were more widely recognised that pre paralytic poliomyelitis sometimes manifests itself by backache and mild pyrexia, and that complete rest in bed in this pre paralytic phase lessens the chance of severe paralysis, many fatalities from this disease might be avoided

Among the hundreds of cases of "pyrexia of unknown origin" that were admitted to hospital in North Africa in the late war, it became possible to diagnose both poliomyelitis and variola because of this symptom, before the full clinical picture showed itself In my experience considerable backache is uncommon in other feverish illnesses

Bedford

J H EASTON

PHENYLBUTAZONE FOR HERPES ZOSTER

SIR,—In the treatment of herpes zoster no remedy has proved fully satisfactory I have tested the value of phenylbutazone, with promising results

A woman, aged 60, who had had thoracic herpes, suffered severe postherpetic neuralgia which was unrelieved by various different measures 3 ml of a 20% solution of phenylbutazone was injected intramuscularly, and within twenty four hours the pain was much reduced After a second injection the patient, who previously had been unable to sleep because of pain, was able to sleep After the fourth injection the pain ceased completely, and it has not recurred

In view of this dramatic success further cases were treated in this way In the first 11 cases there has been no failure, and it has proved unnecessary to give more than four or five injections of phenylbutazone Oral administration of the drug has not proved satisfactory

These results suggest that phenylbutazone should be administered at the start of the illness

Nicosia Cyprus

GEORGE PARTELIDES

C E RHODES

SIR,—The medical profession will have noted with pride the posthumous award of the Albert Medal to the late Surgeon Lieutenant Charles Eric Rhodes, R N V R, as recorded in your columns a fortnight ago

Eric Rhodes was an enthusiastic member and some time secretary of the United Hospitals Sailing Club, and the ub has started an appeal for funds to help his wife ghter A plaque recording his heroism is to be the clubhouse at Burnham on-Crouch

Many of your readers may wish to contribute to appeal Donations should be sent to me at Un College Hospital Medical School, London, W C 1

M L ROSENHEIM
Hon Treasurer, United Hospitals Sailing C

CHRISTMAS GIFTS FUND

SIR,—I would like to remind your readers who not yet responded to the President's appeal (Oct p 773) that it is our custom to distribute the gifts days before Christmas I hope that all who can will their contributions, marked "Christmas Gifts," to Secretary, Royal Medical Benevolent Fund, 1, B House, Manor Fields, Putney, London, S W 15, as as possible

F A Ju
Hon. treasu

Public Health

Smog in the North-West

SOMETHING like the notorious London smog of Dec 1952, covered Manchester, Salford, and surro areas on Thursday, Nov 17, and less densely on Nov The fog seemed to be rather less thick than the Lo smog, it was dirty grey, without the yellowish ti the London variety We are indebted to Dr J L B medical officer of health for Salford, for the follo details

In Salford the concentration of smoke was heavy Thursday morning and late afternoon, an average of 2 per cubic metre being recorded The following table that the sulphur oxide concentration several times ex the highest level recorded in the London smog (1 34 par million)

Time (Nov 17)	*Smoke (mg per c m)*	*Sulphur (p p*
10 00–11 00 A M	3 06	0 7
11 00–12 00 NOON	2 20	1 3
12 00– 1 00 P M	1 89	1
1 00– 2 00 P M	1 89	1
2 00– 3 00 P M	2 02	1 3
3 00– 4 00 P M	2 20	1 3
4 00– 5 00 P M	4 67	1 5
Average	2 67	1 3

The average smoke concentration in Salford for Nov 1954, when conditions were by no means ideal (thoug from obvious smog), was 0 63 mg, sulphur oxides p p m On Friday, Nov 18, the corresponding figures

Time (Nov 18)	*Smoke (mg per c m)*	*Sulphur (p p*
10 00–11 00 A M	3 16	1 3
11 00–12 00 NOON	3 46	0 61
12 00– 1 00 P M	5 16	1
1 00– 2 00 P M	3 06	0 6
2 00– 3 00 P M	2 53	0 4
3 00– 4 00 P M	1 95	0 7
4 00– 5 00 P M	2 30	0 615
Average	3 09	0 8

It can be seen that the smoke pollution increased sligh Friday and the concentration of sulphur oxides dec appreciably Saturday, Nov 19, was generally misty only clear in patches in the area It was noticeable t Thursday and Friday the fog was not so uniformly dens the great London smog, indeed there were patches area of the Manchester conurbation where it was compara clear It was also clear on Saturday, and Sunday showed improvement During the forty eight hours at 11 30 A M on Monday, Nov 21, the concentration of was 1 06 mg per c m and sulphur oxides 0 415 p.p.m. inversion phenomenon characteristic of the London smog noted There was a layer of cold air up to 800 feet, cyclonic conditions prevailed and there was little movement of the smog during the first two days

The full effects of the smog on health may no apparent for some time, but it was at once clear th caused distress to people who had to go about business It certainly merited something more than description given in the report[1] on the London sm ttle more than a nuisance to healthy persons. al hospitals have reported a slight increase in the ission rate for respiratory and cardiovascular disease suddenness of the onset of the smog was doubtless onsible for the fact that few smog masks were seen ; a brisk demand for them was reported on the second

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[1] Mortality and Morbidity during the London fog of Dec 1952 Report by a committee of departmental officers expert advisers appointed by the Minister of Health

a part of the investigation into the effects of the in Salford Dr Burn is writing to local doctors to them about their experiences

Poliomyelitis

he seasonal fall in the notifications of poliomyelitis inues. Total uncorrected notifications in England Wales for the week ending Nov 12 (45th week) were h week in parentheses) paralytic 127 (151) non lytic 99 (105), total 226 (259) The proportion of paralytic cases is still higher than usual though it declined in recent weeks

t a meeting of the American Public Health Associa in Kansas City last week a team of experts declared the Salk vaccine was now safe [1] It was reported no suggestion of danger had been found in any h of vaccine made by any manufacturer since the y rules were revised on May 13 The new rules had weakened the vaccine ; one dose seemed to be as tive now as three were last year Preliminary results 11 States showed an attack rate 2–5 times greater nvaccinated children

Fluoridation of Water-supplies

fore authorising the four demonstrations of the idation of water-supplies which are being arranged in and and Wales the Minister of Health made a close y of the research which had been carried out in rica and he satisfied himself that there was every ication for the demonstrations. He thought it right ive the Standing Medical Advisory Committee an tunity of putting their own views on record, and now been advised by the committee that : ' Despite years of observation and investigation there is ientific or medical evidence at present available ating that there is any risk in drinking water ining added fluoride in the concentration of one per million '

public meeting at Watford on Nov 10 passed a ution opposing a scheme to introduce fluoride into town's drinking water as an experiment in the ntion of dental decay [2] In the discussion, the ments against fluoridation were given as nervous medical damage destruction of confidence in the r health services councillors making medical ions for others a community at loggerheads, and l of the right to decide what one takes into one's

Statistics of Incapacity

e Ministry of Pensions and National Insurance has ed statistics about sickness and injury among the ing population Most of these figures do not justify al publication but requests for information received time to time from medical research workers, medical rs of health, and others suggest that it would be ul to distribute the figures to those likely to be ested. The first collection of statistics (for 1950) was two years ago to medical officers of health of counties, ty boroughs, and (in Scotland) large burghs and to iduals of whose interest the Ministry had become Its reception warranted the preparation of a er digest of statistics for 1951–52 ; and a new tion, relating mainly to 1953–54 is just ready

e statistics are based on medical certificates sent to Ministry with claims to benefit They do not include es of two or three days for which no claims are or sickness in certain persons not eligible to claim as a measure of the incapacitating sickness among working population they are incomplete The duction to the digest is designed to aid intelligent pretation of the tables and to prevent misleading usions being drawn from them

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[1] *Times* Nov 10 1955.

[2] *Ibid* Nov 21 1955

Parliament

Bill to Abolish the Death Penalty

IN the House of Commons on Nov 16, Mr SYDNEY SILVERMAN was given leave under the ten minute rule to introduce a Bill to abolish, or for a period suspend, the passing and execution of the death sentence on conviction of murder and to substitute an alternative penalty For the past 25 years the House he said, had had no substantial doubt as to the side which it supported in this matter If effect had not been given to the desire to see this evil thing removed from the Statute Book it had been due only to the obstinate and relentless opposition of the Home Office He did not know what dark secret, noisome influence it was in the Home Office that seduced every Home Secretary in turn, but it was known from the announcements made last week [1] that every one of the major unanimous recommendations of the Royal Commission for whose report the House had been asked to wait, had now been rejected by the Government He did not think that the House really wished the matter to stand where the Home Secretary had left it without further discussion and examination He knew that there was hardly a Member of the House who did not in his heart believe that this reform must come and must come quickly The Bill was given a first reading

QUESTION TIME

Ban on Heroin to be Retained

Mr H M KING asked the Minister of Health what reply he had given to recent protests of the medical profession made to him against the proposed banning of the manufacture of heroin —Mr IAIN MACLEOD : That I did not feel justified in departing from the advice I had given to the Home Secretary after consulting the Standing Medical Advisory Committee

Harmful Publications

Replying to a question, Major GWILYM LLOYD GEORGE the Home Secretary said that since the Children and Young Persons (Harmful Publications) Act came into force on June 6 only 1 complaint had reached him. He understood that 3 other works had been brought to the attention of the Director of Public Prosecutions and that in none of those cases did the Attorney General consider that proceedings were called for

Ban on Agene

Replying to a question Mr HEATHCOAT AMORY Minister of Agriculture said that the arrangements made by the flour millers and flour importers provided for nitrogen trichloride in any form to cease to be used in flour by the end of this year

Extraction rate of Bread

Dr BARNETT STROSS asked the Minister whether he was aware that flour used in baking standard national bread was at times of a higher extraction rate than is laid down by regulations and what steps were being taken to ensure that the regulation was complied with.—Mr AMORY : I am aware that, because of certain technical difficulties which have arisen in the practical application of the provisions of the Flour Order the present situation is unsatisfactory This was one of the considerations which led the Government in May to appoint a panel to make an independent assessment of the composition and nutritional value of flour of varying extraction rates

Amalgamation of Forces' Medical Services

Replying to a question whether in order to save medical man power and public money he would consider amalgamating the medical services in the three Fighting Services and forming one defence medical service Mr SELWYN LLOYD said that the amalgamation of the medical services of the Armed Forces was rejected by the Government of the day early in 1948 It was one of the matters which had been examined by the committee under Lord Waverley on the medical and dental services of the Forces. Their report was now being considered In due course the Government's decision on this would be announced.

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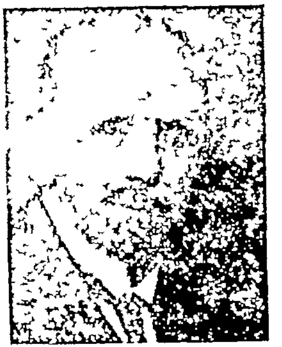
[1] See *Lancet* Nov 19 1955 p. 1088

Obituary

HANS FINSTERER

M D Vienna

Professor Finsterer, a former president of the International College of Surgeons and a former surgeon-in-chief of the Viennese State hospitals, died in Vienna on Nov 4 For surgeons all over the world his name will at once call to mind the operative treatment of ulcer hæmorrhage from stomach or duodenum, special techniques in gastroduodenal resection, his unabating enthusiasm in promulgating by precept and practice the advantages of regional anæsthesia in abdominal surgery, and (least worthy of all talismans for securing surgical immortality) a simple type of abdominal retractor



He was born in 1877 at Weng in Upper Austria, where his father was a farmer In 1902, after graduating in medicine at the University of Vienna, he became an assistant to Hochenegg at the second surgical clinic of the Allgemeines Krankenhaus Apart from an interlude of three years which he spent working under Hacker at Graz, he remained with Hochenegg, and in 1913 he was appointed to a lectureship in surgery at the university

During the 1914–18 war he worked in a garrison hospital in Vienna In 1920 he was appointed professor extraordinarius For the next fifteen years or so he worked only in private hospitals, and he used to bemoan his limited facilities for preoperative investigation Perhaps because he was not attached to any of the great teaching centres, he gave much of his time to postgraduate education This interest enabled many foreigners to study his technique, and T H S recalls how in the 'twenties and 'thirties it was the fashion of many young, and not so young, surgeons to visit Vienna to see Hans Finsterer at work.

"His handling of gastric lesions was something from which everybody could learn, and he was above all a great exponent of local anæsthetic technique in the performance of gastrectomy Visitors to his small hospital or private clinics were usually allowed to assist, and one wonders how great is the debt of gratitude owed to him for his teachings in this type of work His results from early operation in cases of severe hæmatemesis were incomparably better than any other method could show at that time, and it was not only the excellent results that he obtained in gastrectomy but the impetus he gave towards surgical safety in the upper abdomen "

H C E , another of these surgical visitors, gives a lively picture of a morning spent with Finsterer

"At whatever time one arrived to see him operate, one was always late, or so it seemed Billed to start at, say, 7 30 A M , he would already have his first case under way before that time, so that at one's first attendance, when one was still not fully conscious, one saw a pair of hands belonging to a short, round shouldered figure, with kindly eyes peering through spectacles above a mask The hands were clothed in white cotton gloves superimposed over rubber gloves The cotton gloves were used to swab, and were repeatedly changed throughout the operation Few words were spoken by him as he worked Despite the handicap of two pairs of gloves covering the stumpy fingers, the precision of movement was masterly Though the operation often took a long time—one in which he removed an immense growth of the colon previously turned down as inoperable by another surgeon took $5^1/_2$ hours—one's interest never flagged He was not a slow operator The time he took was due to his meticulous technique and to the fact that his extirpation of cancer was radical

'His operations were always performed under regional and splanchnic block, the effect of which would wear off after o hours or so The patient would then complain in no tain terms, and a nurse carrying an ether bottle would ear to subdue him The patient having been quietened, the nurse would disappear, and the patient would consciousness with the operation still in progress If nec the ether experience would then be repeated

"The operation completed, and the operation ma removed, one saw a kindly bearded face Finsterer wo then disappear to dress, and in a few minutes would reappe in the shabbiest suit imaginable He would don a so raincoat and a dilapidated felt hat, and prepare to ru another hospital On the first occasion I accompanied h we boarded a tram—no chauffeur driven limousine f Finsterer—and as we strap hung, he produced a brown-pap pack from his raincoat pocket in which were two bread r which he proceeded to eat then and there This w his breakfast "

Between the two wars Vienna was no lo wealthy, and Finsterer worked under handicaps w might have deterred a lesser man C A. P relates h he used instruments and equipment old and in disrep which obviously he was unable to replace

"Yet he managed" (C A P continues) ' to have th essentials The keynote of his work was this recogniti what is vital in human operations and what allows of indiv variation This was the secret of his brilliant results. was an unassuming kindly man, an introvert rather th extrovert, and he was forced into prominence by the merit of his contributions to surgery It is gratifying his worth was recognised in 1935 by his appointme surgeon in chief of all the official State hospitals of Vienn

Essentially a man of peace, Finsterer was w absorbed in the problems of surgery and he undisturbed by vicissitudes in the political enviro of his land Yet during the late war he suffered other Austrians, and his friend G G -T has a photo taken during the Russian sweep through Austr which " a sad and wan little Finsterer contrasts wit warrior Sergei Yudin standing beside him " To Fin as a surgeon G G -T pays the following tribute

"He will be remembered longest for his work in advo and practising surgery in the treatment of ulcer hæmo his demand for early operation if these cases were to be his insistence on that 'fatal third day,' when the scales b heavily loaded against successful surgery, and above uncompromising insistence on the employment of region splanchnic anæsthesia for these most anxious cases.

"Like many Continental surgeons he made every e conserve the sphincter in operations for cancer of the r perhaps thereby neglecting the pathological findings English school of proctology One of his last paper with the interpolation of a piece of small intestine to the gap between the proximal colon and the ampulla rectum—an operation justified not only by the recovery but by the end results

"Throughout his whole career he was an intr advocate of regional anæsthesia in abdominal surgery candidates for laparotomy were refused admission surgical beds under his control unless they were wi forgo general narcosis The diminished mortality of g tomy performed under regional anæsthesia was suffi impressive to attract to his operating theatre surgeon every land, including surgical travelling clubs from B He was no supreme surgical craftsman, he had no univ chair, yet from his private clinics he delivered a me the surgical world. His 'resection for exclusion' op for unresectable duodenal ulcer remains an importa tribution to surgical technique He visited my own op theatre on several occasions, and he was always a w guest in England His interest in surgical problems r undimmed till the end It was good to have known trusty, friendly Hans Finsterer "

ARCHIBALD DODD

M D Lpool, D P H

Dr Dodd, who retired earlier this year fro appointment as medical officer for the Fylde di of Lancashire, died at his home in Kirkham on Oc He went to school at St Helens, where his father became mayor, and continued his studies at Liv University, where he graduated M.B with h in 1927 After experience in hospital and as ship's su he spent some years in general practice in Manch and later in Liverpool but he gave it up for ns and entered the public health service He took .P.H. with distinction in 1937 and the M.D a year He held appointments as assistant M.O.H for nhead and as deputy M.O.H for Dewsbury before tered the service of the Lancashire county council ng the late war he served as a hygiene specialist was granted the honorary rank of lieut.-colonel

D I and J W P write "Archie Dodd was big of and generous of heart we who knew him well his early student days enjoyed his friendship and l company He was sympathetic with the less nate and as might be expected of one with such an and gifted nature, he soon gained the confidence affection of all with whom he was associated Though alth dogged him he loved the country and country uits and found much that was congenial to him in ancashire appointment."

Dodd leaves a widow and a daughter

SETON SIDNEY PRINGLE

O.B.E M Ch Dubl F R C.S I

Seton Pringle, who died at his home at Kilmessan leath, on Nov 10, during a distinguished career in surgery had received the highest honours which his agues in Dublin could offer him

orn in 1879, he was educated at Campbell College, ast, and at Trinity College Dublin He graduated in 1902, and took the M B the following year As udent he gained the Fitzpatrick scholarship, and he awarded the Hutchinson Stewart scholarship for nguished answering in the final M B examination 1905 he was elected F R.C S I., and in the succeeding s he was appointed surgeon to Mercer's Hospital, lin, and the Cork Street Fever Hospital He was examiner in surgery for the Royal College of Sur s in Ireland During the first world war he was eon to the Red Cross Hospital, Dublin Castle, and 1917 to 1919 he was officer commanding the Irish Allies War Hospital with the rank of lieut -colonel In he was appointed surgeon to the Royal City of lin Hospital, and he was consulting surgeon to many ts, including the Rotunda Hospital the Royal Hos for Incurables, the Drumcondra Hospital and the l Victoria Eye and Ear Hospital In 1925 he was inted honorary lecturer in the pathology of bone in ty College, Dublin a personal appointment which described as 'for the present holder only The ersity of Dublin conferred the degree of M CH on in 1930, and six years later he was elected president e Royal College of Surgeons in Ireland. In 1940 he further honoured by the presidency of the Royal emy of Medicine in Ireland—a body in which with any specialist sections, all the disciplines of medicine ised.

had always been a keen fisherman and a first-class and when he retired from practice in 1944 he be an enthusiastic farmer His first wife Miss Ethel of Ballymote co Sligo died in 1938 and he later ed Miss Eileen Blandford who survives him and president of the council of the St John Ambulance de in Ireland.

JAN PAUL STRÖMBECK

M.D

essor Strömbeck, of Stockholm, who died in August ide interests as a surgeon and his many papers d over abdominal surgery, urology and the surgery hes, joints and blood vessels. Born in 1890, he led in 1921 and worked at the Serafimer Hospital in holm from 1928 till in 1930 he was appointed sor of surgery at Lund In 1940, on the retirement essor Söderlund, Strömbeck succeeded him at the mer Hospital at the same time becoming professor ery at the Karolinska Institute In addition to his l studies, he did experimental work on animals ing investigation of tumours of the bladder and he was often sought on ethical and other problems rectly connected with his professorial chair

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ain L. N Cahusac O B E., M C. who died on Nov 14, f secretary of the St John Ambulance Association 919 to 1953 He was chairman of many revision com of the association s textbooks and editor of most of publications.

Diary of the Week

NOV 27 TO DEC. 3

Monday, 28th

UNIVERSITY OF LONDON, Senate House Malet Street W C 1
6 P.M Prof J Nuttin (Louvain) Motivation and Cognitive Factors in Human Behaviour (First of three lectures)
UNIVERSITY COLLEGE, Gower Street, W C 1
5.30 P.M (Physiology theatre) Dr W S Feldberg F R.S Rôle of Mediators in the Inflammatory Tissue Response
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M (Chelsea Hospital for Women, S W.3) Mr J H M Beattie Functional Uterine Hæmorrhage
BIRMINGHAM MEDICAL INSTITUTE 154 Great Charles Street Birmingham, 3
8 P.M *Anæsthetics* Dr J A Lee Anæsthetic Outpatient Clinics
MANCHESTER MEDICAL SOCIETY
5 P.M. (Medical School University of Manchester) *Odontology* Dr M J McArdle Facial Neuralgia
9 P.M *General Practice* Dr C E H Rickards Outpatient Gynæcology

Tuesday, 29th

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln s Inn Fields London, W C.2
5 P.M Dr F Dudley Hart Hormone Replacement Therapy in the Surgery of Endocrine Disorder (Arris and Gale lecture)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P.M (London School of Hygiene and Tropical Medicine, Keppel Street W.C.1) Dr G S. Dawes: Physiological Effects of Anoxia in the Fœtal and Newborn Lamb
INSTITUTE OF NEUROLOGY
5.30 P.M (National Hospital, Queen Square W C 1) Prof C A Keele: Therapeutics of Pain
INSTITUTE OF DERMATOLOGY Lisle Street, W C 2
5 30 P.M Dr F R Bettley Eczema-asthma Syndrome
ST MARY S HOSPITAL MEDICAL SCHOOL, Paddington, W 2
5 P.M. Prof Andrew Claye Disturbances of Sexual Function
ROYAL STATISTICAL SOCIETY
5.30 P.M (Westminster Medical School Horseferry Road S W 1) Dr A H T Robb Smith From Graunt to Geneva.
THE HOWARD LEAGUE FOR PENAL REFORM Abbey Orchard Street S W 1
6 30 P.M Dr Peter Sainsbury Social Aspects of Suicide in London Dr Erwin Stengel: Reactions of Society to Attempted Suicide

Wednesday 30th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1
8 30 P.M. Lord Radcliffe How a Lawyer Thinks (Lloyd Roberts lecture)
POSTGRADUATE MEDICAL SCHOOL OF LONDON Ducane Road W 12
2 P.M Dr Peter Bishop Endocrinological Investigations
INSTITUTE OF LARYNGOLOGY AND OTOLOGY 330 Gray's Inn Road W C.1
5.30 P.M Dr I Friedmann Ulcerative Granulomatous Conditions of the Nose
INSTITUTE OF ORTHOPÆDICS 234 Great Portland Street W 1
8 P.M Mr H J Burrows, Mr W H Tuck Orthopædics in the West Indies
NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY 64 St. James's Street Nottingham
8 30 P.M Dr F S Cooksey Medical Rehabilitation.
ROYAL FACULTY OF PHYSICIANS AND SURGEONS 242 St Vincent Street Glasgow, C 2
5 P.M. Dr P R Peacock Possible Ætiological Factors in Lung Cancer

Thursday 1st

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 30 P.M Dr S P Meadows Cranial Palsies and Otolaryngology
BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P.M (London School of Hygiene and Tropical Medicine) Dr J Walker The Oxygen Environment of the Fœtus
ROYAL SOCIETY OF MEDICINE
5 P.M. *United Services* Colonel L R S Macfarlane Lieut. Colonel R L Townsend Captain T M Robinson Immunisation against Tuberculosis in the Army
8 P.M *Neurology* Dr Henry Miller, Dr William Blackwood Neurological Complications of the Acute Specific Fevers Dr C E Lumsden Experimental Allergic Encephalitis.
LIVERPOOL MEDICAL INSTITUTION 114 Mount Pleasant, Liverpool 3
8 P.M Dr C H Stewart Hess Dr F Hopkins Anxiety States
UNIVERSITY OF ST ANDREWS Queen s College Small s Wynd Dundee
5 P.M. Prof G F Boddie M.R.C.V.S. Eradication of Bovine Tuberculosis

Friday, 2nd

UNIVERSITY OF LONDON
5 P.M (Charing Cross Hospital Medical School Chandos Place W C 2.) Dr R. K Burns (Washington) Experimental Studies of Sex Differentiation in the Opossum.
ROYAL SOCIETY OF MEDICINE
10.30 A.M *Otology* Miss Edith Whetnall, Mr I S D Thomson Dr D C Kendall Management of Deafness in the Young Child
2.30 P.M. *Laryngology* Dr Frank Elliott Dr John Harman Mr Charles Keogh Pharyngeal Paralysis
5.30 P.M *Anæsthetics* Dr A Brooken Dr R. Woolmer Carbon-dioxide Accumulations in Anæsthetic Circuits
POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M Mr Hedley Atkins Research into Breast Cancer
4 P.M Dr A G MacGregor Radioactive Iodine Therapy
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M (Hammersmith Hospital Ducane Road W 12) Mr Stanley Way Intraepithelial Carcinoma
INSTITUTE OF LARYNGOLOGY AND OTOLOGY
3.30 P.M Dr C H. Edwards Headaches and Neuralgias
KETTLE LECTURE
5 P.M (Royal Infirmary, Cardiff) Prof J H Dible: Ischæmia in the Peripheral Circulation

Notes and News

JUBILEE OF THE UNIVERSITY OF MALAYA

On Oct 15 the first fifty years of higher education in Malaya were celebrated in Singapore Mr Malcolm Macdonald, chancellor of the university, presided at a graduation ceremony when 200 degrees were conferred, including 38 M B S Prof David Mekie, F R C S E, who is retiring from Malaya, was made the first professor emeritus of the university The honorary degree of M D was conferred on Sir Philip Manson Bahr, Dr C V Jumeaux, and Dr A J Thumboo Lord Reading, a Minister of State for Foreign Affairs, was present at a dinner held in the evening, and afterwards a cup of Malayan silver was given to Mr Macdonald for his work towards interracial harmony Lady Manson Bahr presented the prizes for university athletics

Scientific meetings held in connection with the celebrations included a lecture on the discovery of tropical medicine and its impact on the world, by Sir Philip Manson Bahr, and a symposium on tuberculosis and the changing concepts of dentistry At an entertainment organised by the students and given in the Oei Tiong Ham Hall, the chief feature was a modernised version of Molière's *Médecin malgré lui*

Dr D W G Faris, dean of the university, was chairman of the golden jubilee committee

SPENDING BY HOSPITALS

The Minister of Health, in a letter to the chairmen of hospital authorities, asks for their coöperation in the Government's measures to meet the national economic situation He remarks that it is not intended to reduce allocations or the expanded hospital building programme, but asks that spending be kept within the total sums allocated and that work proceeded with as part of the expanded building programme shall be essential work of undoubted urgency

MEDICAL RESEARCH IN AUCKLAND

Our New Zealand Correspondent writes The Auckland division of the British Empire Cancer Campaign recently appealed for £50 000 to buy a super voltage therapy unit for Auckland Hospital, and collected £130,000 The balance is largely to be used for research, and a project involving the search for chemical substances having a bearing on cancer, particularly as possible agents in treatment, is planned The organic chemistry department of Auckland University College, which has had experience of this work in relation to native flora under Prof L H Briggs, is to carry out the task Also planned are extensions of tissue culture and other techniques to do with screening these and other compounds, under Dr J F Burton, of the pathology department of Auckland Hospital.

The Auckland Medical Research Foundation has recently been launched by Mr John Grierson, chairman of the Auckland Hospital Board At present the collection of money is its chief object

FOOD AND AGRICULTURE

The Food and Agricultural Organisation of the United Nations has just celebrated its tenth anniversary, and its annual report[1] reviews the dramatic transformation in some aspects of agriculture during this decade There has been much progress in the development of technological and physical resources World consumption of commercial fertilisers is at almost twice the pre war level, and the world tractor population has increased threefold Advances in plant breeding, in the control of plant diseases and pests, and in animal husbandry have led to greatly increased food production in certain parts of the world A beginning has been made with a vast programme for better control and use of water

Unfortunately the geographical distribution of these developments is most uneven In Asia agricultural production is barely keeping pace with population increases The average calorie intake for Ceylon, India, Japan, Pakistan, and the Philippines is only just over 1800 per head per day The corresponding figure for Australia and New Zealand is 3200 and for Canada and the U S A 3100 In these countries agricultural production is far outstripping both home consumption and the usual export trade The U S A, Canada, and Australia had 42 3 million metric tons of wheat in before this year's harvest was brought in This is three as much as in 1951 Such a stock represents about years' exports The U S A could probably meet all nor demands for home consumption and export even if farmers sowed no wheat for the 1956 harvest There are substantial surpluses of coarse grains, tobacco, cotton, sugar in America These huge surpluses have not led t catastrophic fall in prices because most of them are hel governments which are committed to a policy of keep up farm prices The disposal of these stocks is a formid problem, and a threat to the stability of national econom The report does not suggest any economic means for ord transfer of this surplus to needy countries It does point ou desirability of industrialisation in underdeveloped countr A small industrial population limits the market for off farms, and a high rural population density restricts size of farms and so limits agricultural efficiency Sur supplies in highly developed countries might be used to finance more rapid economic development in underdevel countries

This valuable report shows clearly that agricultur America is approaching a crisis, in which we may al implicated

FOR THY STOMACH'S SAKE

Sherry has been drunk in England at least since the century, and, as Mr Rupert Croft Cooke makes clear in unabashedly partial history of the wine,[1] for most of th with enthusiasm But like other tried favourites it has temporary setbacks In the 19th century, for instance, was the victim of a whispering campaign inspired, Croft-Cooke suggests, by teetotalers, envious import French and German wines, and the powerful bre Malicious rumours were circulated that sherry was "plas and " fortified " by the addition of large quantities of gy and proof alcohol, which made it injurious to health conducive to gout Among its champions sherry num John Ruskin and George Augustus Sala, but even powerful pens were unable to silence these calum Inquiries about sherry became such a nuisance to the m profession that in 1898 *The Lancet* decided to send an ana commission to Jerez According to Mr Croft Cooke th is still remembered " The Lancet Commission," he re " were given freedom to go where they liked and too advantage of it 'My father told me,' said one bod to me this summer, 'that he never knew when one of would pop out from behind a barrel '" As a result of conscientious inquiries the commissioners produced an ex tive report which exonerated sherry from any char adulteration, and all talk of plastering and fortifyin dropped. Since the 'thirties sherry has been enjoying period of great popularity, and in his chapter on " wh how " to drink it Mr Croft-Cooke claims that there a few times of the day or night when a glass of she unwelcome, save perhaps to that awkward person the " who has just had his tea " But even he will this book

A FILM FOR EXPECTANT MOTHERS

More antenatal clinics are using films to instruct patients in the anatomy and physiology of childbirth many show a film of a delivery to selected expectant mo A new film designed to tell primigravida about the an clinic and the course of labour has been made for the N Birthday Trust Fund by Dr W A. Bullen, Mrs. B and Miss Jean Burton Brown, F R C S *My Firs* (16 mm, sound, black and white, 25 min) tells m back " the story of a young mother from the time sh visits her doctor after missing two periods. At her visits to the antenatal clinic she hears about diet, importance of regular urine, blood pressure, and weight ch and the rhesus blood test The significance of the exam for piles, varicose veins, and a tightening wedding ring suggested The anatomy of birth is shown in an an sequence, and there are references to exercises and relax classes and the care of the breasts (a breast milk app is demonstrated with reference to the milk bank) Aft description of the analgesics commonly used during la the last ten minutes of the film gives a detailed accou the patient's labour is excellent film successfully approaches childbirth from patient's viewpoint The commentary by the mother is tifully delivered and the pictures are lively and closely ted to the commentary The film compares very favour with the French *Painless Childbirth*[1] designed for the e purpose for use in a French antenatal clinic

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[1] State of Food and Agriculture 1955 H M Stationery Office Pp 235 12s 6d

[1] Sherry By Rupert Croft Cooke London Putna
Pp 232 21s

ly First Baby may be obtained on hire or purchase from eyn Films, 37 High Street, Sandwich Kent

INDEX OF PHARMACEUTICAL PREPARATIONS

HE Index of New Products issued by the *Pharmaceutical rnal* now covers about a thousand preparations Each preparation is dealt with on a card which states in veniently readable form its composition properties, cations, packing and price and suppliers, and also rences to published reports Included in this service is a rapeutic index, or index of cross references which is issued f yearly as a booklet and together with an index of alagous preparations makes it easier to pick a way through growing collection of cards. Subscriptions (two guineas annum) should be sent to the *Pharmaceutical Journal* Bedford Place, London W C 1

DOCTOR AT LARGE

THE prescription is *Rep mist* Those who enjoyed *Doctor the House* and *Doctor at Sea* will also be tickled by this ount[2] of a newly qualified doctor in search of a job estnuts? Yes but they are *marrons glacés*

CARDS IN GOOD CAUSES

HRISTMAS cards serve two good purposes, instead of one, hey are bought from the charitable bodies that nowadays e funds by their sale. Besides the cards, various decorative essories are also to be had which likewise exemplify two ects of the Christmas spirit

his year we have not seen many new cards but the ional Association for Mental Health have issued three— eproduction of a Florentine figure of the Madonna and ld a modern nativity design by Anthony Lewis, and a ure of a child praying by a French artist of the 15th tury The charming study by Augustus John the picture the boy with his donkey from the film *Never Take No an Answer* and the reproduction of the statuette of the ple-cheeked Virgin with the Laughing Child are again ilable These cards cost 6*s* 6*d* a dozen, including envelopes, may be obtained from 39 Queen Anne Street London

Holiday bound—the world around is the theme of the new cards designed by Eddy Legrand for the United ons Children s Fund (UNICEF) which hopes to sell a ion cards in Great Britain this year for the welfare of y children throughout the world The cards are in bright urs and show children of different nationalities at play season s greetings are printed in five languages. In ition there is a card with the symbol of the United Nations ounded by the flags of the member nations in colour gned by Antonio Frasconi and cards which have been lar in previous years, including 'The Torch of Hope Henri Matisse All cards cost 7*s* 6*d* for 10 including elopes, and can be had from 14–15 Stratford Place W 1

he double-barred red cross of the National Association for Prevention of Tuberculosis (Tavistock House North, istock Square W C 1) is now a familiar symbol, and the ciation is anxious to sell 110 million Christmas seals this to help its good work The seals cost 4*s* for a block of and Christmas cards with similar designs are 5*s* a dozen envelopes.

he Grenfell Association, of 66 Victoria Street, S W 1 ch is doing such valuable medical work in Labrador and thern Newfoundland hopes that a successful Christmas season will help to provide its mission in Newfoundland a much needed ambulance An illustrated leaflet ribing the cards, which are colourful and Christmassy a 1½d.

he National Spastics Society has opened three new schools pastic children this year and is selling gaily coloured seals d each in sheets of 12. Its address is 28, Fitzroy Square

Fougasse s inimitable style and economy of line give racter to the cards and Christmas stationery of the Universities Federation for Animal Welfare (UFAW) 7a, Lamb s Conduit Passage W C 1 His latest card is in colour and depicts a circle of varied and (we should have thought) incompatible animals linking paws and hooves and singing 'Auld Lang Syne' A mixed packet of 6 cards is sold with envelopes for 3*s* Fougasse also illustrated Rosalind Hill s amusing little book *Both Small and Great Beasts* (2*s* 6*d* post free) and his own anthology about animals called *The Neighbours* (8*s*)

University of Cambridge

On Nov 12 the following degrees were conferred

M B B Chir—Barbara V Loney (by proxy)
M B—F B Mann

The Raymond Horton-Smith Prize for 1954–55 has been awarded to Dr E M M Besterman (Trinity College) for his thesis on the value of phonocardiography in rheumatic carditis.

University of London

Dr Charles Harris has been appointed deputy vice-chancellor for the remainder of the year 1955–56

Mr E O F Walsh PH D senior lecturer in the department of physiology at the Royal Free Hospital School of Medicine, has been appointed to the university readership in biochemistry at that school

The following have passed the final examination for the degree of M B B.S :

Honours—M R H Ashken (*b*), Middlesex; J R T Colley (*e*) St Thomas s J E Cullis (*e*) St. Thomas's Doreen A Lowman (*c*) Charing Cross Ruth Pindor (*c d university medal*) Roy Free Pamela M. Sherman (*e*) St Thomas's.

(*b*) distinguished in medicine (*c*) distinguished in applied pharmacology and therapeutics, (*d*) distinguished in surgery (*e*) distinguished in obstetrics and gynaecology

Pass.—John Aaron J B Akingba, O O Alele J H R. Allen, Anne Ambrose Flora J Anderson, J T Andrews, G P Anthony J R Anthony T I F Arthur R P Ashfield, E. J Ashworth D W Atherley J O Atunrase, F A Awobodu J R Axon, Joan W Baker, M. J Ball B E. P Barnard Margaret A Barrie, P A Bartlett, B W Barton, Moira A Batchelor A E. Bennett, E P C. Benson, Edith Bergel, A T Birmingham D H Black Sheila Blake J W Blaxland Audrey M Bloom, G R Bonner-Morgan, Jean Marie R. Boucherat, Robert Jean M. Boucherat R D Bradley D E. Brooke R B Brown N D F Browne E. M Buchan, A A Buchanan, P S O Bunning Anne J Burge I A. Campbell P F R. Cantin P R. Cardy B P Carroll, Enid J Cartwright, Audrey L. Carus, T B Cainach Devendranathan Channugam A R. L Clark J M. Clark, Joan E. Clark B S Clarke J J Clarke G M. Clayton Benjamin Cobb Lester Cohen, Barbara B Collier Bernard J E. Cooke J A. Cox John Crarer Iain Crawford Peter Crossley Meates D R Crouch, Peter Curzen, S L Dale J r O Dalrymple J R Daly, Rosemary L Dart Eileen M. Darwood Jean M. Davidson J M. P Davies T G G Davies T G Davies Ann Davis Caroline J H Dawson Gesualda de Gabriele Oliver de Sola Pinto A R. Dewsbury W R O Eggington, P D Elder C. d A Ellis G H Ellis I M Elwin, L. R. H Evans, Muriel E Evans, R G B Evans, R. F Everton, Ekpo Edet Eyo, Christine M Fairclough J G Fairer, D R. Farmer Judith F Farrar O A Fawole, L J Fish, G S Flack P C Fleming A. P Fletcher J M. Forster J G Francis, A C Fraser M J Freeth, Truls Freüchen, Shirley M Frow D W Gabriel, N St. C Gainer Elizabeth P Gibbs A G Giddins P J Giffard D C Gill, N W Glendinning G C Gould John Goulton, Jacqueline A Gowers C. W Graham Stewart J A Greeves J D Grice Joan M. Gunn H M R Hacker, J S. Hall, Thomas Hargreaves, D T Harrison G R Hart, Constance L. Haughton, G C. B Hawes M. J Healy B H P Heber I N Henderson, Jon Henderson, R. I Henry, Sylvia K. Hepton Anita M. Herdan, K T Hesketh, A. D Hickman, J C. Hill, P N A. Holden D H G Hopkins K E Howells, Christine T T Hughes, J W G. Hughes John Hunnybun, Warwick Hutchings D C Hutfield B B Hyman, A. C Ikeme M. H K Irwin Millar Oboada Adafe Ja Ja, D C. James, W D Jeans D R. John, Janet R. C. Jones J S P Jones T G Jones, V D Jones, W H Jones J V Keefe, D J Kelsall J. O P Kerley P N Kersley G E King H A P King Imogen E King H A Lacey John Landon, B K. Lane I N Lee A. F. Lever, Yuin Betty Ling Dawn C. M. Llewellyn, J K Lloyd Evelyn C Lock, D A. McClure I S MacDougall, A. I H MacFarlane H R. T A McLeod Mary Maguire D M. Mann J E. L. Mann Dulcie A. L Manning, Alexander Marrack, A J Martin, C M. Montegriffo M. R. Morton, Robert Nall Ignace J M Y Nalletamby J D Nelms Margaret E Nead, I O Nwachukwu Jean S. M Ogden E D A Ormond W D H Parry, B J Penry, Margot C. Pepper-Powell H F Price Raymond Radford, J A Reynolds D M. D Rice A G Rickenbach Joan Ridley, G R. E. Roberts, R W K Rogers J H Ronaldson R. I Roswick, Jean Rotherham Barrymore Schiff G W Scott Philip Sharer D J Sills I S G Sim, R. T Sims I D Smith E. O G Sofekun, Catherine I Soutter J A. Stainton Ellis M. B Stanton, Rosemary E Stephenson J B Stillwell H M. Swallow Elizabeth A Symes, J H K Taylor J J Taylor K. E. Thomas, R. J Thomas J W Thomson G D Tompkins J S Toner M G P Venn, Shirin Abdulhussein Visram, I F Wale A. R Walker, C J Wallace, Jean M Watkins, R C. Watson, H. A Williams, I. S Wilson, T M Winstanley Mary E. Wood P H N Wood Marian L Woodford N D Woodrow J A. Wright, Peter Wright Janet C J Young

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[1] Lancet, 1955 i, 1231

[2] Gordon London: Michael Joseph 1955 Pp 208

University of Sheffield

Dr D A Heath has been appointed honorary demonstrator in pathology

Royal College of Physicians and Surgeons of Canada

At the convocation of the annual meeting of the college, held in Quebec on Oct 22, the honorary fellowship was conferred on Sir Harry Platt, president of the Royal College of Surgeons of England

International Congress of Gastro-enterology

The fifth meeting of the Association des Sociétés Européennes et *Méditerranéennes de Gastro Entérologie* will be held in London next year from July 18 to 21 under the presidency of Dr Thomas Hunt The subjects chosen for discussion are ulcerative colitis, premalignant conditions of the gastro intestinal tract, and non malignant diseases of the œsophagus Further particulars may be had from the hon secretary, Mr Hermon Taylor, London Hospital, E 1

International Congress of Clinical Chemistry

This congress, which is sponsored by the International Federation of Clinical Chemistry and the Commission of Clinical Chemistry of the International Union of Pure and Applied Chemistry, is to be held in New York City from Sept 9 to 14, 1956 Further information may be had from the congress secretary, Mr John C Reinhold, PH D, 711, Maloney Building, Hospital of the University of Pennsylvania, Philadelphia 4, Pa, U S.A

Nutrition Society

On Monday, Dec 5, at 5 P.M, at 1, Wimpole Street, London, W 1, a meeting of this society will be held when Dr H J Deuel, jun, professor of biochemistry and nutrition in the University of Southern California, will speak on fat as an essential component of diet

Drummond Fellowships

Applications are invited for a Drummond senior fellowship (£900 p a) and 2 Drummond junior fellowships (£500 p a) for research in nutrition. The fellowships will normally be tenable for two years Application forms must be returned to the hon secretary, Drummond Trust, University College London, Gower Street, W C 1, not later than Jan 27

British Association of Urological Surgeons Home and Overseas

Next year the annual meeting of this association will be held in Liverpool on Thursday, Friday, and Saturday, June 28, 29, and 30 The programme will include a discussion on the use of the intestine in urology, when Prof Charles Wells will be the opening speaker Further particulars can be had from Mr J Cosbie Ross, 72, Rodney Street, Liverpool, 1

Institute of Child Health, London

The Simpson Smith prize for 1955 (100 guineas) has been awarded to Mr H H Nixon for his essay on intestinal obstruction in the neonatal period

Dr J E Hall has been appointed lecturer in physiology, Dr J M Tanner lecturer in child health at the child study centre, and Dr A D M Jackson, assistant to the Nuffield professor of child health

Sheffield United Hospitals

A radiotherapy centre with 60 beds is to be built with a legacy of £100,000 left during the late war by Alderman J G Graves to the old court of management of the Royal Sheffield Infirmary and Hospital The hospitals endowment fund will also supplement the Treasury allocation of £65,000 for 1956-57 so that the proposed schemes for a new psychiatric department and a children's outpatient department may both go forward

Mental Health Conference

On Thursday, Jan 26, at B M A House, London, W C 1, the Central Council for Health Education is to hold a conference to consider the rôle of local authorities in promoting mental health through health education Dr A Dalzell Ward will speak on training personnel in preventive mental health work Further particulars may be had from the of the council, Tavistock House North, Tavistock C 1

Symposium on Vitamin B_{12}

The first European symposium on this vitamin is to be in Hamburg from May 22 to 26, 1956, under the presi of Prof J Kühnau and Prof A Jores Those who wish take part should write to Dr H C Heinrich, Physiolog-chemisches Institut, 52, Martinistrasse, Hamburg, 20

London Amateur Boxing Association

A meeting of the medical officers of this association will held on Monday, Dec 5, at 8 P M, at the Great North Hotel, Kings Cross Dr Edwin Clarke will speak on injuries

Society of Medical Officers of Health

Services group—The annual dinner of this group will held on Friday, Dec 9, at the R.A.M.C headquarters at Millbank, London, S W 1, at 7 30 P M Tickets (£1 1s) be had from the administrative officer of the society, Tavi House South, Tavistock Square, W C 1

Rockefeller Grants

During the third quarter of this year the Rock Foundation have allocated $1,076,000 in grants. T include

$34,100 to be available during the next four years to the ment of preventive and social medicine directed by Dr Allen, at the Christian Medical College Vellore, India

$13 000 to St Mary's Hospital Medical School, London equipment for research on protein metabolism and enzy under the direction of Dr Albert Neuberger, F R.S

Appointments

BURNS, T H S, M A B.M Oxfd, F F A R.C.S D.A anæsthe
St Thomas's Hospital, London
COLQUITT H R, M D Lond M R C P whole time con
pathologist Barnsley and Rotherham areas
FOWLER, J M, M B Glasg appointed factory doctor,
Stirlingshire
GLASS, D T M D Belf, D.M R D consultant radiologist,
Ulster Hospital, Magherafelt co Londonderry
* HOWELL JONES, H, F F A R C.S, D A hon anæsthetist, H
et Dispensaire Français London
McFARLAND, W D H, M B Belf D.P H M O H Stafford.
McLAREN MARGARET E, M B Glasg, D P H deputy
and School M O Smethwick
MARSHALL BERNARD, M B St And D O M.S part time cons
ophthalmologist, Sheffield
MERIVALE W H H, M B Lond, M R C.P director of the
ment of clinical pathology and consultant clinical path
Guy's Hospital, London
MILLICHAP GORDON M D Lond visiting scientist, clinical
National Institute of Neurological Diseases and Bli
Bethesda, Maryland U S A
RICHARDSON, J E M S Lond F R C.S part time cons
in general surgery, London Hospital
STONE, D G H, M B Lond, M R C P, D C H part-time cons
pædiatrician, N Lincolnshire
THOMPSON, J A, M B Belf appointed factory doctor
Valley, Glamorgan

South-Western Regional Hospital Board

MERRYWEATHER, REGINALD, M B Lond, F R C.S cons
orthopædic surgeon N Gloucestershire clinical area
THOMSON, J L G, M D Lond, D M R D consultant
logist, Bristol clinical area
YOUINGS M D, M B Lond S.H M O in infectious d
Plymouth clinical area

East Anglian Regional Hospital Board

GALVIN, C M CH, F R C S senior surgical registrar
Norwich hospitals
GARDEZI S A R, M B Punjab surgical registrar,
borough Memorial Hospital
MAHMOOD, M R. H, M B Punjab Ipswich and East
Hospital (Anglesea Road wing)
MARTIN, J A M, M B Lond D L O registrar in E N T
Norfolk and Norwich Hospital and Jenny Lind Hosp

Colonial Appointments:

ABAYOMI-COLE, A B M B Durh senior M O, Sierra Leo
BOARDMAN H M S, L.R C P E A D.M.S, Sierra Leone
BRADBURY, E, B CHIR Camb D D M S, Sierra Leone
COOKE E R N M D Dubl. specialist (pathologist) Keny
CUMMINGS G G M B D T M, D P.H D D.M and H.S.
Kong
DEAN N M B M B Edin, F R C S senior specialist
region, Nigeria
EVANS W J M M B Lond D D.M.S, Tanganyika.
LIGHTBOURNE, HYACINTH I M B Birm senior M O., Jamai
PHILLIPS, P M J M R C.S principal M O Gold Coast
RIGBY, E P M B Lond A D M.S, Kenya
ROSS A D M B Edin sleeping sickness M O northern
Nigeria
SCOTT DAVID M B Camb specialist epidemiologist
Coast
STRIBIVER E V, M D Berlin, F R C S senior specialist (
Sierra Leone

* Amended notice

SORDERS OF CONTEMPORARY SOCIETY*
AND THEIR IMPACT ON MEDICINE

G W PICKERING
M.A., M.D Camb F.R C.P F.A.C P (Hon)
FESSOR OF MEDICINE UNIVERSITY OF LONDON DIRECTOR
OF THE MEDICAL UNIT, ST MARY S HOSPITAL,
LONDON

MANY of the worst ills of organisation and outlook m which we suffer today in medicine are due to two te different processes occurring in society as a whole e first is the growth of strongly centralised administra n and of associations, trade unions or parties which ose strict rules on their members These result in important, and to my mind serious, disease which y perhaps be named compulsory uniformity I regard as a serious disease partly because I cannot think t it can be to the ultimate good of mankind and ause it expresses extremely powerful forces which we erstand dimly, or not at all and which we have no nediate prospect of controlling The second process very different one It is the growth of science and nology This has produced a series of relatively or disorders, many of which we could remedy if more of us realised the need.

Compulsory Uniformity

n urge to conform to the behaviour of the rest of our w creatures is one of the strongest motivating forces uman affairs. This urge was first clearly defined and ribed by my old teacher Wilfred Trotter The herd nct as he called it is the basis of human society; the cement which binds together the family, the the firm the institution, the political party, and nation It is the basis of education by precept since fortunately the urge of the young to imitate those for the time being they regard as their masters or rs. The herd instinct is thus a part of human viour that we have to accept because it is an elemen property of man It is also a property without h civilised society, as we now know it could not or persist

every country at every time and in every branch of n endeavour there has also existed an urge to ove on Nature and to force others to conform to code of behaviour This again is an essential part vilised society, finding its expression in the law of land and in the regulations without which no ation could for long conduct itself The reason why tries like the United States and Great Britain are satisfactory places in which to live is because we evolved a very reasonable system of law, and this s enforced (If only some reasonable code of inter nal law could be drawn up and enforced many of troubles would be at an end) Having mentioned word reasonable I would like to stress it, because it s to me that the essence of a lively and interesting ty is the absence of unnecessary rules and restric Too many rules and regulations carry the penalties ducing a very stereotyped form of existence and of ling initiative Life in fact becomes dull, and I think is tragic because life should be such an ing adventure

I give an example of this generalised disorder of ty let me quote from a speech of Mr Narayan who he heir to the leadership of Mr Nehru in India

> here is a tendency to forget the human being We ater groups classes religions. We think of the workers; the capitalists the Asians the Americans, the Russians ! but we forget the individual man Humiliating Western domination has shaken the Asians faith in their traditional ways They have come to associate their plight exclusively with the lack of material power and they are turning their energies ever more insistently to the achievement of such power But in their efforts they tend to forget the human being to over govern to legislate even on matters of individual conscience And they have come in the short year of their freedom, to accept that everything should be done through legislation."[1]

STANDARDISED TRAINING

I first became aware of what I regard as a pathological desire to make all doctors alike some three or four years after the end of the war when two proposals were under discussion in Great Britain The first was a proposal in one large university to abolish one of the alternative routes which students have been able to follow for the early part of the medical curriculum In Great Britain boys and girls enter universities from school at the age of 18 or 19 having spent from one to four years in the vith form in which they may receive specialist education to quite a high level. In England candidates who have done enough general science and who prove it by passing the requisite examination are excused the course in general science at the university The proposal was to abolish this exemption and to treat boys who had done a lot of science and those who had done little exactly alike. The second was a series of proposals to lay down in detail the posts which men should hold over a period of four years before they could be eligible to hold consultant posts in the various specialties in the National Health Service

A small calculation will show the effects of the two proposals In Great Britain the medical curriculum lasts six years, after which a year must be spent in basic resident posts in recognised hospitals Then there follow two years' compulsory National Service If to this were added four additional years prescribed in detail as was proposed, it would have meant that for thirteen years, from the age of say, 18 to 31 the experience of all those entering a particular kind of post in the Health Service would tend to have been exactly alike To appreciate the full significance of this, you must remember that in Great Britain there is now no career in clinical medicine outside the National Health Service The example which showed up the folly of such proposals was mental health In our National Health Service, mental health is the third most numerous specialty after general medicine and general surgery It is also the most stagnant It would seem abundantly clear that if progress is to be made in this difficult field, every encouragement must be given to men of original mind and with a great variety of experience of other branches of medical science There could be no surer method of preventing such a development than by the establishment of regulations such as I have described

It is quite beyond my capacity as a sociologist to trace the causes of this excessive appetite for legislation and regulation In Great Britain it is no doubt related to the concept of the Welfare State which grew out of the tragedy of unemployment between the wars, and the enormous and temporarily necessary growth of detailed centralised administration during the war But there is undoubtedly a strong movement to introduce more uniformity into our educational system because, it is argued education confers privilege and privilege should be abolished

THE EXCEPTIONAL

In education there tends to be a fundamental difference of outlook between the administrator and the teacher The administrator is concerned with rules and regulations that apply to large numbers of individuals.

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lized from the convocation address delivered to the American College of Physicians on April 27 1955 Published by permission of the Editors of the *Annals of Internal Medicine* in whose November issue the address appears in full.

[1] *Observer* Feb 20 1955 p 7

To deal with large numbers, one must assume that they have certain common properties, and there is no doubt in my mind that the administrator wants to believe, and in time tends to come to believe, that all students should be more or less alike and, if they are not, then they should be made so The educationalist, on the other hand, is interested in individuals He delights in the exceptional creature who often has great virtues and great faults The function of the teacher is to develop the virtues and minimise the faults of his pupil and to direct the student into a channel of endeavour where his virtues will shine and his faults be unimportant The conflict between the administrator and the educationalist is very similar to that between the farmer and the gardener, between the ready made and the made to measure tailor In contemporary societies with their huge populations and their urge to ever higher standards of living in a material sense nothing can stop the development of a standardised product of high quality in large numbers But I would like to urge that we should exercise great care lest the individual be lost in the process And I would urge that this is particularly important in the field of higher university education, from which are likely to be recruited most of the leaders of our society and of our professions

There is an important issue here which Sir Richard Livingstone has called the pursuit of the first rate I believe that society will be the poorer if we cease to allow, much less to encourage, that handful of rather odd creatures to fulfil their possible destiny For, most of those who make important contributions to knowledge and ideas have had rather peculiar careers The proposed regulations to which I have referred would have prevented James Mackenzie from obtaining a post as physician in the National Health Service, and while, as we know, his great scientific work was done in general practice, his influence on the next generation was more personal, and my late teacher, Sir Thomas Lewis, himself a peculiar creature, might not have done what he did had he not fallen under the influence of Mackenzie after his appointment to the London Hospital

The Growth of Knowledge

The next group of disorders springs from the growth of scientific and technological knowledge If you agree with me that the disorders exist, then you will also agree that, unless we apply the appropriate remedies soon, the disorders will become serious before many more years, since scientific and technological knowledge seem to increase in geometrical progression

CURRICULA

The first disorder is overcrowding of the curriculum In our country this is particularly true of medicine, technology, and science It is less true in arts In medicine, for example, not only new knowledge, but new subjects, are constantly being added to the curriculum Rarely, if ever, is anything taken away The student has to work increasingly hard to cover the ground, and he learns to appreciate those teachers and textbooks which provide him with knowledge in a form that can readily be reproduced for examination purposes He has less and less time to devote to those aspects of civilised life which are not embraced within the confines of his curriculum

This has two unfortunate consequences

The first is educational In the kind of teaching we give in universities, a distinction may properly be drawn between the processes of education and instruction In education, the student is encouraged to work and think for himself, the function of the teacher is to stimulate and criticise Education is expensive in time and effort teachers and taught But it produces the most ed minds By contrast, instruction is a process whereby the student is required to assimilate a seri dicta, without inquiring into their validity or neces considering the evidence on which they are based. It a process which does not necessarily improve the m of the recipient, and may actually do harm by su pressing curiosity, insight, and the capacity to lea from experience Now, it is evident that overcrowd of the curriculum can have only one result—nam that education gives place to instruction I am one those who *still think that* it would be better to out our students knowing rather less, but under tand better how to learn, for the stock of facts with wh they have been equipped is a steadily diminishing ass and if they have not learned from us how to learn, th perhaps they never will

Less obvious, but no less important, is the restri imposed by an overcrowded curriculum on the pu of general cultural interests If a student spends n all his day in receiving instruction and his evening working at his books it is not surprising that he is all often uninterested in art, music, and literature, and those intangible spiritual values on which ultim any civilisation rests, in fact, in the finer produc the human mind One of the qualities that is essential in a doctor is wisdom and wisdom is acq neither from instruction nor from textbooks It product of two other qualities—a sense of prop and an appreciation of ends Both of these qualities of the mind that can only be develope personal experience Personal experience requires which tends to be increasingly occupied with the nar requisites of the curriculum From the broader po view, this would seem to me to be a serious dis The greatest danger to mankind arises from man hi and wisdom is necessary today as it never was befo

THE FASCINATION OF MACHINES

The second disorder arising from the growth of and technology may be termed the fascination of mac This disorder is one which manifests itself with clarity in the field of medicine As year succeeds some new physical or chemical technique, and some and elaborate machine, is applied to the study of di great claims are always made for the precision of answers yielded by these techniques and machines. of the greatest struggles that a practising doctor has keep up to date with advances of this kind No has he mastered one than another is upon him over, the machines or techniques are often so co that he cannot understand them He has to take they tell him on trust It must be within the exp of many of us that there is a growing tendency for d to rely on the information given by such technique machines in preference to the information which they themselves from the history and physical signs. extremely doubtful if this is in the interests of doctoring, and for three reasons First, the error limitations of these new techniques are not appreciated Often the data yielded by clinical exa tion are of much greater precision in the identificat disease Second, a thorough clinical examination, will only be carried out by doctors who apprecia worth, is the best method of establishing *that* sp mutual understanding and good will which is the of the doctor patient relationship Finally, to re data, the nature of which one does not understa the first step in losing intellectual honesty The doc peculiarly vulnerable to a loss of this kind, sinc much of therapeutics is based on suggestion naturally leaves him and his patients the poorer

There is another aspect of this question which de a little notice For some years, it has been my pr to visit institutions of learning with a view to de what financial help they need, and can profitabl re is no doubt that a collection of elaborate machinery es a deep impression on the layman It is necessary o constantly on guard to see that support goes to and ideas and not to machines

THE FRAGMENTATION OF KNOWLEDGE

he third disorder arising from the growth of science technology is the fragmentation of knowledge. sting knowledge is now so vast and the techniques s are used to win new knowledge so exacting, that are forced to canalise their efforts into a restricted pass.

o far as the practice of medicine is concerned we are essing the extinction of the family doctor and even general physician and their replacement by a panel pecialists amongst whom the psychiatrist may seem ualify best for the rôle of guide philosopher, and d I am old fashioned enough to think that some g of inestimable value to the patient is lost in this ess, and that there is a place for the old type of ly doctor and for the general physician as well as he specialist And I am glad to say that in Great ain, there is a new movement to establish the prestige, to define the peculiar functions, of the general titioner or family doctor

e other local symptom of this disorder is the steady tion to the medical curriculum of new subjects, each ded over by an autonomous professor This process course, necessary for the growth of knowledge But rtunately, it tends to happen in our country at , that each professor feels it his duty to his subject e that sufficient hours are allocated to it in the culum and that his subject has a separate examina in which the student must pass before he is allowed ve that department In my more detached moments, these worthy gentlemen each determined to exact ound of flesh, like a flock of vultures descending on student, until only the bare bones are left And I times feel when I listen to these eminent scientists their arguments are all perfectly valid except that have forgotten one thing—that the subject of their ving exercises is a living feeling and we hope ing human being whose capacity to take intel al punishment is extremely limited Nowadays, be medicine, be it in education, be it in political reform seems to be a tendency to forget the individual.

THE TYRANNY OF JARGON

ome now to the last type of disorder the tyranny of tific and technological jargon. That this is a general rder of contemporary society is well known and Vinston Churchill has not spared his tongue on the of technical jargon used in the Civil Service. But uld venture to suggest that this disorder finds its florid expression in the world of science and tech y and particularly in the world of medicine.

begin with it is beyond dispute that a new element new compound must be given a name so that men know it; so must a newly discovered process or or a new disease Much of this technical jargon is More unfortunately necessary It is an essential of the growth of science and technology But much chnological jargon is not really necessary and could be discarded. Technological jargon has two evil s first it accentuates the fragmentation of know and second it facilitates confusion of mind use it tends to hide it I fancy that all of you have a similar experience to my own in finding difficulty derstanding what I read in some medical journals d greater difficulty in reading journals devoted to mistry, chemistry botany zoology or genetics, I find most mathematical or physical journals quite ssible. Some of this difficulty is due to new dis ies and new ideas since I was a student and some of my own defective education But most is due to the use of unnecessary technological jargon In creating our own jargon, we are fencing off our subject so that it shall be, as it were, inaccessible to any not initiated into its technicalities

If we are interested in the growth of knowledge and if we acknowledge as we must, that knowledge is a whole, then we must deplore anything that accentuates this process of fragmentation We should, in fact, demand that technological words are never used in scientific papers if familiar words can be used instead To give an example, I showed my colleague, the Professor of Anatomy the following passage "hypokalæmic hypochloræmic alkalosis was present." He had no idea what is meant Had the statement read: 'plasma potassium and chloride were diminished CO_2 increased'" he would have understood Here the simpler phrase is seven letters more But editors are not always so particular in curbing verbosity Moreover another example from a recent paper by a very able and highly cultured author bilateral nephrectomy was performed," is not only less easy for a non biological scientist to understand than both kidneys were removed' but is eleven letters longer Much of this technological jargon is thus unjustifiable on any grounds whatsoever, and I can only regard it as a bad habit into which we all tend to fall

The other evil consequence of technological jargon is not less important, but its ill effects are more insidious, and most of us to a greater or less degree, are already its victims. I refer to its inhibitory effect on our own mental processes. When we use a technological term, there is a strong tendency for the idea to become isolated and inaccessible to those periodical spring-cleanings to which we subject our more ordinary mental furniture Thus by using a technological term, we often assume an entity where in fact none exists the next process is to invent it Thus, by using a technological term, we may create an artefact An outstanding example of this is essential hypertension The realisation that this condition is not an entity but merely represents one end of a curve of continuous variation and thus that the condition is in a sense, an artefact has been one of my greatest personal experiences.' Certainly many of the features that were said to characterise the course of the disease and some of the more credible hypotheses of its causation were consequences not so much of facts but of the assumption made in interpreting them the particular assumption made was that a dividing line could and should be drawn between normal blood pressure and hypertension This assumption was a consequence of the idea that essential hypertension was an entity an idea that in its turn arose from the use of a technological term and the necessity to define it In terms of wasted effort the use of this technological term must have cost medical science several thousand man years of mis-directed effort

An important source of confusion arising from the use of technological terms is that they may seem to be much more precise than they are and different people using the same word may be considering totally different things This is well seen for example in the various uses of the words stress ' and ' arteriosclerosis.

I would therefore advocate two things first, that we should watch very carefully our own use of technological jargon; and second, that we should not allow our students and assistants to use it unless they can explain to us in simple words what they mean by the terms they employ If we do this, I have little doubt that our pupils will in the long run have reason to be grateful to us. My personal contacts with great scientists leads me to suppose that one of the reasons they have made their great contributions is because the ideas and images which they manipulate in their minds are relatively simple and well defined and bear a close relation to reality I would suggest that the greatest enemy to straight thinking in medicine is technological jargon

In trying to give you a brief description of these disorders of society, which seem particularly to obtrude in the world of medicine, I am aware of *two grave defects*—that I have omitted important disorders and that I have not considered prognosis and treatment Thus I have omitted a very grave disorder now assuming the proportions of a major epidemic in Great Britain—namely, an excessive appetite (or is it a perverted appetite ?) for committees, which is so effective in reducing the productivity of our best minds With regard to prognosis, I have nothing useful to say With regard to treatment, I would doubt whether we need await a new antibiotic or some new application of nuclear fission I may be wrong, but I suspect that these disorders would respond readily to that old fashioned but none the less potent remedy, the application of common sense

ACUTE RENAL FAILURE ASSOCIATED WITH CONCEALED ACCIDENTAL HÆMORRHAGE OF PREGNANCY

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In reviewing all our patients with anuria or severe oliguria we have divided them into clinical groups in which acute renal failure followed such different causes as intravascular hæmolysis (particularly due to a mismatched blood-transfusion), poisoning with mercury or other nephrotoxic agent, criminal abortion, concealed accidental hæmorrhage of pregnancy, &c

We review here 22 patients in whom renal f followed concealed accidental hæmorrhage. All the typical clinical course of this complication of last trimester of pregnancy as described by Sh and Moore (1952) We have, however, departed fro strict criteria of these authors in one respect 3 o patients had a live child despite placental infar with retroplacental blood-clot and, in at least 2 of t uterine subperitoneal hæmorrhage None of our p had placenta prævia or rupture of the lower u segment None of those receiving emergency b transfusion were thought to have hæmolytic trans reactions

Tables I and II give details of the 18 patients recovered and table III details of the 4 fatal cases. T shows all the cases of concealed accidental of pregnancy that occurred in the two teaching ho of Dundee in two years All the patients had upset of renal function, varying from very mild to ately severe, and all recovered with simple tive management Cases 1–7 (table I) had short suppression of excretion of urine, usually onl several hours, proteinuria for several days, peak blood-urea levels of 25–82 mg per 100 ml. 6 other patients (table II) were all seen in c in hospitals other than our own, and only 1 of was transferred to our care at Hammersmith H These 6 patients and cases 8–12 had moderate or renal failure with oliguria lasting from two to ten and peak blood urea levels of 120–450 mg per 1(All made a satisfactory clinical recovery on c treatment

These 18 patients (tables I and II) were thought to renal damage proportional to the disturbance of function as shown by duration of oliguria and rise in l urea level Their oliguria was not due to underhydr The mildest cases—e g , cases 3 and 7 (see table figs 1 and 2)—probably would at the most show trivial kidney damage The more severe cases probably show either acute tubular necrosis or incor cortical necrosis Necropsy in the 4 *fatal* cases (tab showed gross cortical necrosis incompatible with c recovery The first 2 deaths, on the sixth and el days, although inevitable, were accelerated by overlo with salt and water

The following case reports illustrate the d spectrum of severity of renal failure

TABLE I—ACUTE RENAL FAILURE FOLLOWING CONCEALED ACCIDENTAL HÆMORRHAGE OF PREGNANCY

Case no	Age (yr)	Previous obstetric history	Present pregnancy									Day of 1 litre diuresis
			Toxæmia	Duration (days)	On admission		Lowest Hb %	Emergency blood transfusion (pints)	Duration of labour	Days of oliguria <300 ml per day		
					B P (mm Hg)	Hb %						
1	35	6 normal pregnancies	No	251	90/60		47	2	9 hr 20 min	0		[illegible]
2*	37	1 stillbirth (fœtal abnormality), 1 normal pregnancy, both by cæsarean section	Yes	256	175/95		58	1	3 hr	0		1
3	23	1 normal pregnancy	No	211	160/95	52	50	2	15 hr 45 min	0		1
4	27	1 normal pregnancy	No	225	124/90	68	62	1	9 hr 10 min.	0		1
5	24	1 pregnancy toxæmia still birth	Yes	247	130/100	68	62	1	10 hr 50 min	1		3
6	46	5 normal pregnancies	No	270	120/70		47	2	?	0		7
7	42	First pregnancy, cæsarean section for ? contracted pelvis 9 subsequent normal pregnancies	No	233	95/65	38	38	4	5 hr	1		[illegible]
8	29	Nil	No	236	100/65		58	2½	12 hr 55 min	2		4
9	37	8 normal pregnancies	No	256	98/60	34	34	None	16 hr 50 min	3		4
10†	41	7 normal pregnancies	No	?	130/80	45	45	4	?	3		6
11	31	1 normal pregnancy 1 abortion	No	236	155/100		45	None	10 hr 20 min	2		4
[illegible]	[illegible]	2 normal pregnancies	No	251	115/80	55	30	3	12 hr	4		8

* Cæsarean section live birth, uterine subperitoneal hæmorrhage † Live child

E II—ACUTE TUBULAR NECROSIS OR INCOMPLETE CORTICAL NECROSIS FOLLOWING CONCEALED ACCIDENTAL HÆMORRHAGE OF PREGNANCY

Age (yr)	Previous obstetric history	Present pregnancy				Days of oliguria (<300 ml per day)	Day of 1 litre diuresis	Highest blood urea (mg per 100 ml.)
		Toxæmia	Duration (days)	Admission B.P. (mm Hg)	Emergency blood transfusion			
41	1 pregnancy complicated by toxæmia 1 miscarriage	†	185	140/80	None	2	3rd	120 7th day
30	1 normal pregnancy 1 miscarriage	No	185	110/70	Yes	3	4th	128 7th day
20	1 pregnancy complicated by toxæmia	Yes	†	†	None	6	8th	236 7th day
31	1 normal pregnancy	No	184	80/60	2 pints	4	8th	253 9th day
30	1 normal pregnancy	Yes	239	150/110	None	6	8th	290 11th day
33	1 normal pregnancy	Yes	211	110/90	None	10	13th	150 11th day

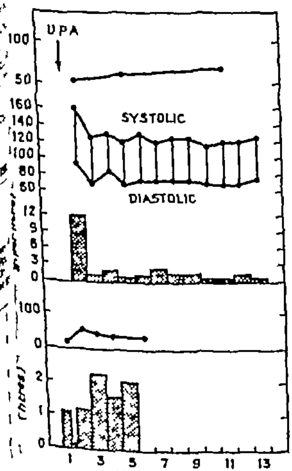
TABLE III—FATAL CORTICAL NECROSIS FOLLOWING CONCEALED ACCIDENTAL HÆMORRHAGE OF PREGNANCY

Age (yr)	Previous obstetric history	Present pregnancy				Days of oliguria (<300 ml per day)	Highest blood urea (mg per 100 ml)	Remarks
		Toxæmia	Duration (days)	Admission B.P. (mm Hg)	Emergency blood transfusion			
32	Nil	Yes	251	210/120	None	6	316	Died from pulmonary œdema after treatment with artificial kidney
35	6 normal pregnancies	Yes	230	180/134	None	11	213	Died from pulmonary œdema due to excessive administration of water and salt
24	Nil	Yes	190	160/120	None	28	202	Treatment with artificial kidney at weekly intervals
30	Not known	Yes	208	230/120	None	42	485	Conservative management only

* Twin delivery (one live one stillborn) † Reported previously (Jockes and Bull 1948)

Case-reports

e 3 (see table I and fig 1) —Last menstrual period (L.M.P.) 1951 Expected day of confinement (E.D.C.) Aug 7 At her last antenatal-clinic attendance on July 27 no abnormality was noted At 4 45 P.M. next day d a sudden onset of severe abdominal and low back faintness, and vomiting Admitted early next morning Pulse rate 84 Blood pressure (B.P.) 165/105 mm Hg Pale no œdema uterus tense hard. Gross proteinuria. There was frank revealed hæmorrhage at 4 35 A.M. on July 29 1952 and 2 pints of blood was transfused The membranes ruptured spontaneously at 8 20 A.M. and a stillborn fœtus was delivered by 8 32 A.M. The placenta was infarcted with retroplacental blood clot During the next 24 hours she passed 1200 ml of urine and her blood urea level that day was 48 mg per 100 ml She made a rapid clinical recovery, and there was no evidence of residual kidney damage



Case 3 (see table I) : suppression of urine for
hours only and only a minor rise of blood-
level. U.P.A., uteroplacental apoplexy
ealed accidental hæmorrhage of pregnancy)
-urea level is assumed in this and the
llowing figures to have been normal
onset of bleeding

Case 7 (see table I and fig 2) —L.M.P. Aug 20 1952. E.D.C. June 2 1953 Admitted on April 15 1953 after painless antepartum hæmorrhage On examination: "shocked ; pulse rate 00; B.P. 95/65 mm Hg Uterus tense and tender ; *absence of* fœtal heart sounds Hæmoglobin 38% 4 pints of blood was transfused and a stillborn fœtus was delivered spontaneously five and a quarter hours after the onset of the vaginal bleeding The placenta was found completely separated by blood clot Clinical recovery was rapid proteinuria lasted five days and the blood urea level had returned to normal in the second week, the peak being 82 mg per 100 ml. on the sixth day

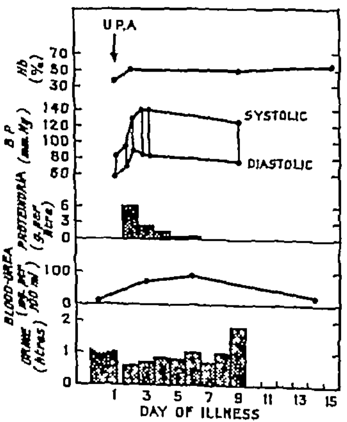


Fig 2—Case 7 (see table I) : suppression of urine for a few hours only and peak blood-urea level 82 mg per 100 ml

Case 9 (see table I and fig 3) —L.M.P. Sept. 10 1951 E.D.C. June 26 1952. Attended antenatal clinic on April 2 1952 (B.P. 135/80 mm. Hg ; urine, no abnormality no œdema) At 11 30 A.M. on June 26 1952 she had a sudden onset of severe abdominal and low back pain, *faintness*, and vomiting.

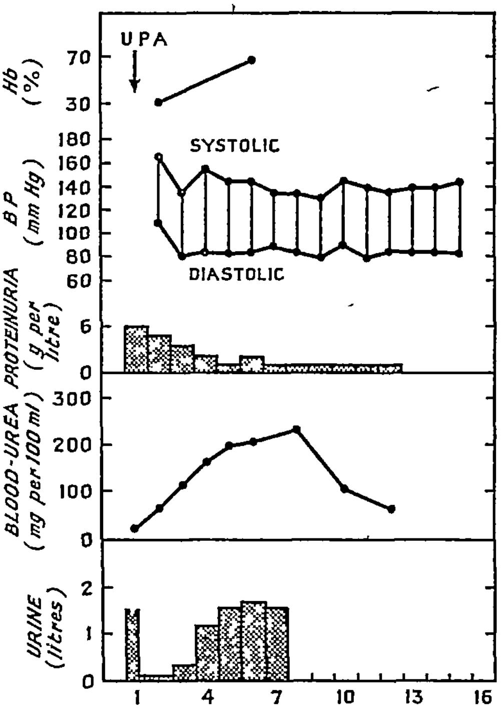
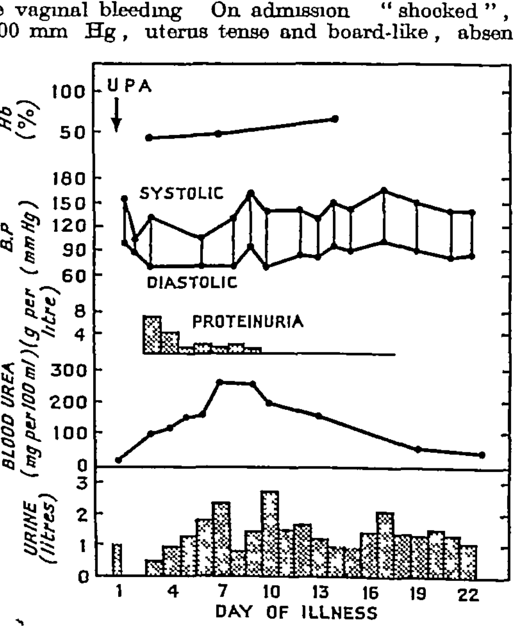


Fig 3—Case 9 (see table I): oliguria for about 3 days, moderate azotæmia.

The pain lessened at about 5 30 P M, when vaginal bleeding started On examination pale, "shocked", skin "cold and clammy" B P 98/60 mm Hg (rising to 165/110 mm Hg during labour), uterus "wooden hard", no œdema June 27, 1952, delivered of stillborn fœtus, placenta infarcted and "ploughed up", retroplacental clot Low protein high calorie oral diet with approximate salt and water balance Satisfactory diuresis on fourth day followed by rapid clinical recovery Peak blood urea level 228 mg per 100 ml on the eighth day

Case 11 (see table I and fig 4)—L.M.P Sept 21, 1952 E.D C June 29, 1953 She had been under routine antenatal supervision by own doctor At 4 P.M. on May 14, 1953, she had a sudden onset of abdominal pain and haziness of vision, some six hours after, while in ambulance, she had severe vaginal bleeding On admission "shocked", B.P 155/100 mm Hg, uterus tense and board-like, absence of fœtal heart sounds, transverse lie At 2 10 A.M on May 1953, internal version was done, and stillborn fœtus delivered at 2 20 A.M The placenta was complete but placental clot was present No urine was passed that day, but subsequently the urine flow increased, and she passed than a litre on May 18, 1953 The peak blood urea level 274 mg per 100 ml on the seventh day Treatment with oral low-protein high calorie diet with approximate salt and water balance, and a satisfactory clinical recovery was made



11 (see table I) oliguria for about 2 days, peak blood-urea level 274 mg per 100 ml

Case 12 (see table I and fig 5)—L.M.P Dec. 3, 1951 Sept 9, 1952 Patient had been in good health, and abnormality had been noted at routine antenatal visit her own doctor At 2 30 A M on Aug 11, 1952, she had sudden onset of vomiting and brisk, vaginal hæmorrhage On examination some hours later "shocked", pulse rate 90, B.P 115/80 mm Hg, slight ankle uterus hard and tense Transfused 3 pints of blood. Art rupture of membranes at 8 30 A.M and spontaneous de of stillborn fœtus at 2 35 P M Retroplacental blood present Gradual diuresis, and on eighth day passed more a litre of urine Peak blood urea level 274 mg per 100 ml ninth day Treatment was with oral low protein high-c diet and approximate salt and water balance, and a good recovery was made

Case 17 (see table II and fig 6)—L.M.P July 8, 1948 April 15, 1949 Emergency hospital admission on March During the previous week she had been in bed on acc raised blood pressure, œdema, and albuminuria, and on the of admission she complained of severe abdominal and low pain, headache, vomiting, blurred vision, and slight

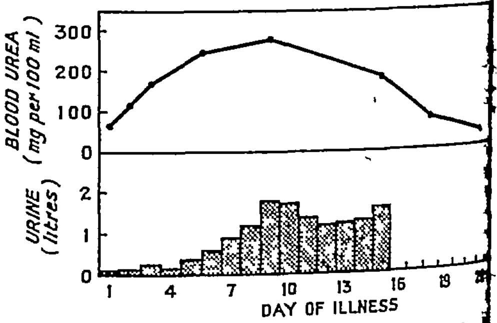
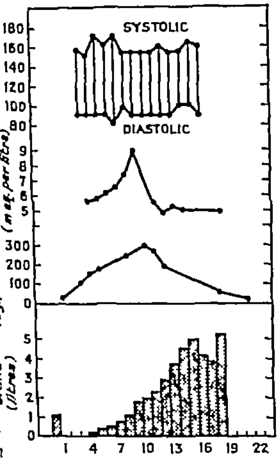


Fig 5—Case 12 (see table I): oliguria for 4 days, peak blood 274 mg per 100 ml

bleeding On examination pale, facial œdema, 150/110 mm Hg, uterus hard and tender Heavy uria Six hours after admission she was spont delivered of a stillborn fœtus Retroplacental blood present She was tube fed a fat-sugar emulsion (Bull 1949) for six days and subsequently had oral low high-calorie diet She was anuric for three days and th a gradual diuresis, her urine volume exceeding a litre eighth day The peak blood urea level was 290 mg 100 ml on the eleventh day She made a good recovery

Case 18 (see table II and fig 7)—L.M.P April 9, 1949 Jan 16, 1950 Emergency admission on Jan. 8, 1950, on of sudden onset of abdominal pain, followed two hours vaginal bleeding During the preceding two weeks she had increasing œdema, transient blurring of vision, and On examination pulse rate 72, B.P 110/90 mm. Hg, extremities, generalised œdema, tense uterus proteinuria. She was delivered of a stillborn fœtus About half hours after the onset of abdominal pain. of old blood clot followed immediately after delivery, maternal surface of the placenta was covered with blood-clot She had a severe episode of renal failure, being delayed until the end of the second week, and the urea level rising to 450 mg per 100 ml. on the fourth day Treatment was by tube feeding of fat-sugar During the oliguric period her condition gave rise to anxiety on account of drowsiness, twitching, blurred vision, and transient congestive heart-failure On sixteenth day she was able to take oral low protein calorie diet After the end of the third week of illness had a rapid and satisfactory convalescence e 22 (see table III and fig 8).—L.M.P April 27 1954 E.D.C 1955 Not under medical supervision. On Nov 20 1954 d swelling of hands and legs, absence of fœtal movements, inal pain, and the passage of blood-clot per vaginam Admitted to Jubilee Hospital Belfast under the care of Mr W S Campbell. B.P 230/120 mm Hg Oliguric Urine protein ++ blood ++ Two hours after admission delivered of stillborn fœtus. Placenta ragged and unhealthy; retroplacental clot Hæmaturia continued for two days, but the renal tenderness was not more marked than might be expected after normal delivery She was treated conservatively by the tube feeding régime On the twenty fifth day she was trans d to the Royal Victoria Hospital Belfast because mild s of water intoxication had developed. This biochemical t was corrected by conservative management. No dialysis used at any time Consciousness was only lost in the last k of illness, when a chest infection developed. She died Jan. 1 1955 on the forty-second day of illness The est daily urine volume was 700 ml on the thirty fourth At necropsy extensive bilateral renal cortical necrosis found Owing to the long survival period considerable ition of the necrotic tissue had taken place and fibrosis starting The average thickness of the renal cortex about 2 mm.



—Case 17 aged 30: concealed accidental morrhage complicating toxæmia of pregnancy wing typical course ending in clinical recovery der conservative treatment.

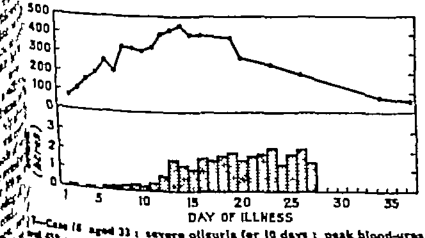
Discussion

ur clinical and laboratory data in these 22 cases ed clearly the gradation in severity of renal failure t may follow concealed accidental hæmorrhage It impossible to relate the severity of the renal lesion uch factors as age parity amount of concealed or t blood loss, and duration from onset of bleeding delivery The 4 patients with cortical necrosis how had more severe signs of toxæmia and higher blood ure on admission than had any of the 18 patients recovered. Though a severe renal lesion may result n concealed accidental hæmorrhage in the absence of toxæmia, those patients with renal cortical necrosis are perhaps more likely than not to have had severe pre-existent toxæmia

From necropsies of 67 patients who died after concealed accidental hæmorrhage of pregnancy Sheehan and Moore (1952) demonstrated a gradient in severity of the associated renal lesions In the mildest cases of renal damage there were only protein precipitate and protein casts in the tubular lumina There then followed a series of increasingly severe degenerative changes in the tubular epithelium (which we call 'acute tubular necrosis') and finally renal cortical necrosis, graded in order of increasing severity as focal, minor, patchy and gross Our present series of cases of acute renal failure form a clinical counterpart to Sheehan and Moore's necropsy series

Renal-clearance and other biochemical tests were made on some of these patients and on other patients with acute renal failure due to causes other than concealed accidental hæmorrhage These data have been reported elsewhere (Bull et al 1950 Lowe 1952, Lowe et al 1954) The pattern of disturbed renal function in acute tubular necrosis due to concealed accidental hæmorrhage is similar to that in acute tubular necrosis due to any other disturbance of the general circulation or to poisoning—e g mercury and phenol

Many patients with acute renal failure following concealed accidental hæmorrhage never had a low blood pressure in fact it may remain at hypertensive levels throughout the illness Such patients have pallor sweating and rapid pulses and are described clinically as shocked There is probably generalised vasoconstriction but most severe and most harmful in the renal vascular bed It is therefore possible that more extensive use should be made of various techniques of renal sympathetic block in the early phase of acute renal failure (Barry et al 1955) Observations on renal function before and after renal sympathetic block would be valuable



—Case 18 aged 33: severe oliguria for 10 days; peak blood-urea ed [illegible] mg. per 100 ml on 14th day; return of blood-urea level to rmal in 6th week of illness.

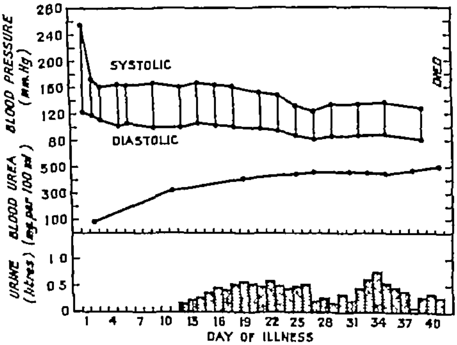


Fig 8—Case 22, aged 38: extensive cortical necrosis; inadequate diuresis and death in uræmia on 42nd day, under conservative treatment.

As regards treatment, we have departed from our original régime (Bull et al. 1949) in several respects Patients with very mild acute renal failure need practically no dietary restrictions or at the most, should be treated like patients with acute nephritis with oral low protein high-caloric diet and approximate salt and water balance When diuresis is delayed for more than twenty four to forty-eight hours strict attention to diet is required The original tube feeding régime of fat-sugar emulsion is still useful for some patients We prefer to allow only about 500 ml. of water a day for insensible water loss and attach much less importance to the inclusion of fat in the diet Supplementary use of sodium-charged cation exchange resin, either orally or by retention enemata, is sometimes required as an additional measure to prevent potassium intoxication (Elkinton et al 1950, Bull 1952, Evans et al 1953) Tube feeding the fat-sugar emulsion is often poorly tolerated because of nausea, vomiting, diarrhœa, or retrosternal discomfort Like other workers in this field (De Keyser et al 1949, Russell et al 1954, Shaw and Mair 1954) we have therefore gradually gone over to the use of intravenous hypertonic glucose infusion into either the superior or the inferior vena cava as an alternative to tube feeding in the very severe cases of acute renal failure The additional use of dialysis (particularly the modern highly developed artificial kidney handled by an expert team) is occasionally indicated, but its routine use is controversial Correction of such chemical disturbances as acidosis and hyponatræmia may at times be desirable, but the calculated amounts of the requisite salts should be given cautiously For fuller discussion of treatment in uræmia see Bull (1955)

Our knowledge of the ætiology, natural history, and best treatment of acute renal failure is far from complete, and much investigation is still required Nevertheless much has been learnt in this field since the beginning of the last war It is now possible to approach each clinical case with some optimism and rational methods of treatment and with the continued hope of furthering knowledge by clinical and biochemical investigation

Summary

As a clinical counterpart to the classical necropsy studies of Sheehan and Moore (1952) on renal failure following concealed accidental hæmorrhage of pregnancy, the case reports of 22 patients are presented of whom 18 (with graded severity of renal failure) recovered and 4 (with gross renal cortical necrosis) died

We are grateful to Prof Margaret Fairlie and Miss Jean Herring for permission to study the Dundee cases, and to Mr W S Campbell, Dr E G L Bywaters, Dr Avery Jones, Dr Gavin Shaw, and many other physicians and surgeons for referring or discussing their cases

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> “ In general practice we are individuals conducting our own practices in our own individual ways, working directly with our own patients, and adapting our methods to their needs *I hope we will ever preserve this individuality* even while we strive to adapt and absorb into our practices the great advances that modern research in medicine and in technicology offer for our advantage let me first state for myself as simply as I can what it is I feel that general practice holds that makes it satisfying to me I think it is the opportunity it gives for doing things in my own way for my own patients, and for going on doing so, not at one special time, but through all their lives, not for one special ailment, but in all their illnesses and tribulations, getting to know them and their families, their homes, and their jobs, their habits and their fads—in fact, being their family doctor I want to do as much as I can for them myself, but I realise that to do so I need a variety of help, help which can extend my usefulness to them Finally, when they are beyond help I still want to offer what solace I may to them and to those [illegible] for them '—Dr A Talbot Rogers, *Med J Aust* [illegible] p 753

PROTOPHRENIA

A STUDY OF PERVERTED REARING AND DWARFISM

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THE purpose of this communication is to briefly a hypothesis in psychopathology and its investigation, to outline the disease entity which and to indicate its frequency and importance.

The work was planned to determine (1) whether mental defect may result from social and psychol adversity in infancy—i e, whether “ amentia” may be added to the types of mental already distinct[1]—and (2) to discover the prevalenc clinical features of psychogenic amentia if it really

At the Fountain Hospital, with 600 beds for defective children, almost all under 5 years o admission, the processes causing severe mental are relatively recent and thus unusually accessibl will be shown that clinically, as well as at n (Crome 1954), most of the severe cases can be ex by organic brain disease, and that heredity seems less significant than is sometimes believed remains a small group of children, lacking any organic or familial pathology, who appeared to display notably both a curious pattern of behaviour and a background of appalling misf It was postulated that in such cases a faulty up might cause failure of mental growth

It has become common knowledge, since Freud, early experience may predispose to psychological later Hence it is conceivable that, when enough, emotional trauma in infancy can also immediate effects which completely disrupt the processes of mental development and thus induce defect Clinical intuition has led to this view e g, Klein (1932)—and scientific evidence for it exists in the classical studies by Spitz (1945, 194 Goldfarb (1945) of retardation in institutional

Another consideration is that social influen important in the occurrence and outcome of schi (Hollingshead and Redlich 1954, Wahl 1954), adults or children often proceeds to mental disorg indistinguishable from mental defect and also any known cerebral pathology

By artificial derangement of their early has been revealed that the “ innate ” skills and patterns of animals are not simply inborn as was believed (Lorenz 1935) To develop them, a require certain stimuli, normally always encounter the species, and the absence of early exposure to priate social situations and objects may be follow behaviour foreign to the species or by defect of ‘ nat abilities, such as nest-building (Promptov 1953) logically, therefore, it is reasonable to explore the c suspicion that mental dwarfism in man can distortion of infant experience

Method of Investigation

A survey was accordingly devised to show wheth comparison with other mentally defective children, children whose mental defect has no apparent o cause come from an environment psychologically unfavourable, and whether they do present clin distinct behaviour or the survey I investigated 154 cases admitted ecutively to the Fountain Hospital. Except at the inning when occasional new patients did not come er my care this includes every admission during two rs apart from a dozen eliminated as unsuitable for ons given below

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[1] A reminder may be useful, here, that “ mental defec not a medical diagnosis in the ordinary sense bu “ insanity,” a legal or social designation for the n of many unrelated disease processes

wo groups were distinguished—those with discernible nic disease, and those without Then the psycho tal background and the behaviour of each were pared statistically The clinical separation of the groups was my own task but the information needed ompare the social experience of the groups was cted from reports by very many other observers and dependent of any subjective bias of mine.

sion of Unsuitable Cases

cases were eliminated for lack of data concerning r social history 4 of these had obvious organic se and 1 possibly epileptic, stayed only a few s. The little known about their background is in no discrepant from the results of the survey

hough mental dwarfism is pathological, subnormal lligence need not be so any more than is subnormal ure. In the general population the scatter of intelli e is wide, and only some individuals towards the r limit require care under the Mental Deficiency Acts , n they do it is not usually through feeble intelligence . Burt (1947) shows how the distribution of lligence in normal and in defective children overlaps present work was a study of pathological processes) to avoid dilution by children within the lower iological range of intelligence those with an intelli e quotient (I.Q.) exceeding 50 were excluded ationally this limit was low since intelligence testing ung children is somewhat unreliable Among the 7 ren so eliminated, the I.Q. spread from 50 to 90 d organic disease and 2 were abandoned children t happened including them would not materially altered the results.

ration of Two Groups

the 154 cases, 138 had an evident organic cause and tal none The distinction was based on clinical tigation and a medical history derived from several ces. The chief source was standard history forms pleted by the hospital's social workers in each case in 74 by the outpatient consultants as well Also were 380 medical reports—an average of 2 per nt in the larger group and 3 in the smaller— ally requested from hospitals attended previously of these were really plural reports, concerning more one admission, or coming from independent depart ts or referring to other members of the family too 0 of the cases, including 14 of the smaller group the nancy and labour were described In 34 cases I viewed relatives—mostly at their wish, but in a few to get extra details.

here were 30 deaths, all in the larger group, 31 coming ecropsy and in all of these organic disease was found e clinical distinction was difficult only twice

A child, admitted at the age of $3^1/_2$ years from a dis- d family in a rest centre had no certain physical rmality Hydrocephaly was suspected from the skull ure, but the skull dimensions were normal He died months later and necropsy revealed the rare condition of ocephaly the brain weighing 1665 g (normal 1200 g)

A physically healthy child, aged $3^1/_2$ years had still as mental organisation as in her first weeks of life The er related that the infant was born very blue with the tightly round her neck was resuscitated with great ulty, and for some days seemed moribund. Though no ical report was available the circumstances were con ve and the case was ascribed to brain damage from ia at birth

able I lists the pathology of the ‘organic’ group— of 154 cases This figure is close to Penrose's (1938) finding that 83% of 955 more severely defective persons presented such conditions , and his material was 20 years older, on average, and so harder to unravel

Comparison of the Two Groups

The information was gathered from the sources mentioned for the medical history, the standard forms ensuring certain items uniformly for all cases, and the reports from other hospitals supplying occasional psychiatric accounts of near relatives ; in addition there were 200 reports from outside social agencies, mainly local authority workers

Where occasional discrepancies were met an obviously less reliable report was discarded, or further inquiry was made My judgment replaced that of others in a single instance

All accounts referred to a mother as mentally defective because she had been certified as such in prison and spent years in a colony As her letters were far too fluent for this diagnosis, she was interviewed. She proved to be a psychopath of at least average vocabulary and literacy from a criminal family and now the prosperous young widow of an engineer who had died suddenly ' If she was defective it was in morals and not intelligence

For statistical treatment the social histories compiled in this way were tabulated the items extracted for this falling into some fifty categories. The two groups were then compared statistically item for item, mainly by the χ^2 test with the Fisher Yates correction required because one group was numerically small

Because the number of mongols in the organically affected group was large, it was necessary to prevent unknown factors that might be peculiar to them from influencing the comparisons either by swamping real differences or by creating misleading ones. As a pre caution every calculation had to be repeated with mongols treated as an isolated group In the event this turned out to have been superfluous uncovering nothing otherwise overlooked, and indicating only the differences to be expected between mongols and the rest of the organic cases Therefore, except where mentioned the results all refer to comparisons between the whole

TABLE I—CLINICAL FINDINGS IN THE ‘ ORGANIC GROUP OF 138 CASES

Pathological condition	*No of cases*
Birth trauma	
Mechanical, with residual neurological disorder	3
Prolonged anoxia	1
Prematurity, prolonged anoxia with total failure to thrive	1
Congenital deformities with other abnormality	4
Epilepsy	
As sole disease	14
With other abnormality	30
Eye disease with other abnormality	
Blind or nearly blind	15
Optic atrophy	0
Chorioretinitis	1
Microphthalmia	3
Congenital cataract	2
Total affected with any eye condition	21
Gargoylism	1
Head injury as well as other aetiology	2
Hemiplegia with epilepsy	3
Hypopituitarism with other disease	1
Megalencephaly (necropsy diagnosis)	1
Meningitis :	
Tuberculous	2
Other with residual neurological disorder	3
Meningocele with hydrocephaly	1
Mongolism	40
Neurological disorder bilateral	
As sole abnormality	2
With microcephaly	19
With other disease	22
Phenylketonuria	3
Rhesus encephalopathy with gross neurological disorder	5
Rickets with other disease	1
Skull deformity	
As sole disease	2
With other disease	41
Hydrocephaly as sole disease	2
with other disease	8
Microcephaly	20
Oxycephaly	1
Plagiocephaly	3
Tuberose sclerosis	1

"organic" group of 138, mongols included, and the "residual" group of 16

The Survey

GENERAL FEATURES OF THE SERIES

When first admitted, only 5 of the 154 children were over 6¼ years of age, and these were all in the "organic" group, 2 being transfers from another institution The mean age was 35 months (S D 19 7) and the range 6–93 months for the "organic" group, and the mean age 50 25 months and the range 22–73 months for the "residual" group, any difference reflecting the prompter recognition of mental defect in physically crippled children Males were a majority in both groups 77 (55 8%) in the "organic," and 11 (68 8%) in the "residual" group

Intelligence was mostly measured by the developmental quotient (D Q) on the Vineland scale, but for the present purpose D Q 's and I Q 's are treated as equivalent The mean I Q of the "organic" group was 23 8 (S D 15 6) Though the mean of 39 7 for the "residuals" is not significantly different, there was a very significant excess among them of children with an I Q of 31 or more (P = 0 001) To exclude any possibility that the findings in this survey simply depended on this I Q difference, every result was confirmed by repeating the comparisons with the "residual" group, using a series of cases selected from the "organic" group to match in I Q, sex, and age

COMPARABILITY OF THE TWO GROUPS

If disordered environments are in excess in the "residual" group, it would be mistaken to decide the significance this might have without first ensuring that (1) the hereditary sources of mental defect are equal in both "organic" and "residual" cases, (2) prenatal and obstetric trauma do not explain the "residual" group, and (3) differences do not arise simply from disparity in economic circumstances or in family size

The following data show that in fact comparison of the two groups is valid

TABLE II—FAMILIAL FACTORS

—	"Organic" group (138 cases)	"Residual" group (16 cases)	Significance of difference between groups
Mother	No information in 1 case		
Mentally subnormal	3 7% (5)	12 5% (2)	None
Epileptic	2 3% (3)	0% (0)	,,
Total so affected	6% (8)	12 5% (2)	,,
Father	No information in 4 cases		
Mentally subnormal	3% (4)	0% (0)	None
Epileptic	0 7% (1)	0% (0)	,,
Total so affected	3 7% (5)	0% (0)	
Siblings	Of 106 with siblings	Of 13 with siblings	
Mentally subnormal	5 9% (6)	11 5% (1½)*	None
Epileptic	2 9% (3)	0% (0)	,,
Total so affected	8 8% (9)	11 5% (1½)*	,,
Dead or stillborn	13 2% (14)	7 7% (1)	,,
Having cousins and/or uncles and/or aunts	No information in 2 cases	No information in 1 case	
Mentally subnormal	9 6% (13)	13 3% (2)	None
Epileptic	5 9% (8)	13 3% (2)	,,
Total with such relative affected	15 5% (21)	20% (3)	
Parents consanguineous (first cousins)	2 3% (3)	6 3% (1)	None
No consanguinity and no mentally subnormal relative known	84 8% (117)	75% (12)	None

Includes 1 case with mentally subnormal half sibling

Familial Sources of Mental Defect

Contrary to popular belief, familial factors are prominent when mental defect is as extreme as in patients They become so only with milder case intelligence lies within the wide range of phy variation (Penrose 1954) Very few of the rel these 154 patients had been certified under the Deficiency Acts There were only 2 with a certified (1 wrongly, as already mentioned), and with a sibling certified, 1 of these being a "resi case with a certified half sibling whose other parent in a deficiency colony

Therefore, for the purposes of this survey, the fa sources of mental defect are assessed by combining handful of relatives statutorily ascertained together parents and siblings of subnormal mentality consp enough to be recorded in social and clinical reports with such cousins, uncles, and aunts specifically by informants in response to routine questioning mentally backward

Even then it will be seen that defective intellige not common in the families of these patients—p *no more so than in the general population* Ta shows that the two groups do not differ signi either in this respect or in the incidence of pa consanguinity, epileptic relatives, and death or sti of siblings, all of which are considered here too be of their occasional association with mental defect

Prenatal, Obstetric, and Neonatal Abnormalities

Abnormalities of pregnancy, labour, and the ne period feature only in the "organic" group

Maternal age—As expected, this proved to be im only among mongols The mean maternal age at birth "organic" group, excluding mongols, was 27 5 years (s whereas for the "residual" group it was 29 years, a significantly different The mean for mongols was 33 also not very different, but the proportion of their m aged more than 40 was 27%, an excess, compared w other mothers, significant at the 0 1% level

Pregnancy—With children such as these, the m retrospective account of pregnancy probably exaggerat discomfort and ill health The information was theref subjective for detailed statistical study to be valid. degree of objective comparison is made possible, ho by reducing it to show the incidence respectively "organic" group, omitting 3 with no information, "residual" group of (*a*) threatened miscarriage or blee the first five months—5 2% (7 cases) and 6·3% (1 (*b*) pre eclamptic toxæmia necessitating admission to h —11 1% (15 cases) and 6 3% (1 case), and (*c*) ot health, including specific diseases such as phthisis, und symptoms such as alarming gain in weight or in girth, statement "felt unwell throughout," but omitting vomiting, and intercurrent upper respiratory infec 19 3% (26 cases) and 12 5% (2 cases) There is *no sig* difference in the frequency of these abnormalities, figures supply no evidence for placing the ætiology "residual" cases in the prenatal environment

Obstetric abnormalities—The data indicate that birth injury nor any sequel apparent in the neonatal can account for the "residual" cases A comparison obstetric factors in the "organic" group of 98 cases excluding mongols because they certainly do not resul birth injury) with the "residual" group shows no stati significant difference in the respective incidence of (*a*) geniture—35% (34 cases) and 56% (9 cases), (*b*) twin 5 1% (5 cases) and 6 3% (1 case the other twin inci received different rearing and is not backward, the p have obstructed every attempt to find out whether th identical), and (*c*) other obstetric abnormalities—43·5 cases made up of 6 with difficult, prolonged, but spont delivery, 5 with forceps delivery without malpresenta with malpresentation or breech birth, and 5 with ca section) and 0%

Neonatal abnormalities—An alarming neonatal con was significantly commoner in the "organic" group and the "residual" group respectively the neonatal con (*a*) caused brief anxiety—7 1% (7 cases) and 6·3% (1 d case), (*b*) caused anxiety and the infant to be detain ital more than two weeks though without special treat —5·1% (5 cases) and 0·3% (1 case premature weighing lb.) or (c) required special treatment—30 7% (30 cases) 0% In sum, 49% of the organic ' group presented ital abnormalities in contrast to a doubtful 12 5% in "residuals —an excess significant at the 1% level. rtheless by the time they left hospital there seems to been no suspicion of any permanent abnormality in well half these unsatisfactory neonates which is a curious ng

ily Size ²

5 'socially illegitimate ' cases are omitted, the number of children in the families of the ' organic " p was 2 3 (S.D 0 40) if mongols were excluded, and including them It was also 2 3 in the 'residual' p 2 'socially illegitimate' children being likewise ted. Thus family size does not differ in the two p

omic Level

ble III indicates the similarity of the two groups in omic level Further to exclude any influence of omic factors every finding mentioned in this survey confirmed by repeating the comparisons with the idual ' group, using a series of matched cases ed from the ' organic ' group to coincide in father s pation and in illegitimacy

TABLE III—ECONOMIC BACKGROUND

Father s occupation	Organic group (138 cases)	Residual group (16 cases)
erial and professional	10% (14)	12·5% (2)
manual wage-earner	14·5% (20)	18·8% (3)
l skilled	35% (48)	18·8% (3)
l semi-skilled and unskilled	38·5% (53)	37·5% (6)
ally illegitimate "	4% (5)	12·5% (2)
wn	0·75% (1)	0

Rearing and Environment

istics are a poor medium for tragedy This much be said before proceeding with numerical com ns for which uneventful lives and individual trophes have had to be desiccated alike into uniform a The findings given below support the present thesis but do not convey the quality of misfortune beset the residual cases so strikingly

ADVERSE REARING

e infant's experience consists mainly in the people ear him and through whom the larger social environ is transmitted—a rôle principally the mother s. this consideration it is reasonable to compare the ency of harmful experiences and upbringing during ty by assessing the occurrence in each group of hological mothering ' and pathological fathering " pected, the latter did not prove to be important, at tate directly

logical Mothering

s covers experience during the first two years of two kinds of disordered mothering— qualitative quantitative '

the former, the mother or mother substitute is ly abnormal psychologically ³ either overtly psy c or known to local social agencies as notoriously psychopathic, or a feckless dullard so neglectful as to attract the attention of the National Society for the Prevention of Cruelty to Children

TABLE IV—PATHOLOGICAL MOTHERING

Pathological mothering	" Organic " group (138 cases)	Residual" group (16 cases)	Significance of difference between the groups
Qualitative only	0% (0)	25% (4)	+ at 0·1% level
Quantitative only	1·5% (2)	18·8% (3)	+ at 0·5% level
Both qualitative and quantitative	3% (4)	38·3% (5)	+ at 0·1% level
Total	4·5% (6)	75% (12)	+ + + at > 0·1% level

In ' quantitative ' pathological mothering the infant is without a mother or a definite mother substitute ⁴ for an unduly long time, the emotional harmfulness of this is already well substantiated (Bowlby 1951) For such deprivation to be included here, the period, whether continuous or intermittent, must have exceeded an arbitrary minimum of five months in the first year or eight months in the second and it must not have occurred as a consequence of detection of the child s backwardness Thus periods away in hospital specifically for investigation of backwardness were disregarded as also were 3 instances where, at birth the infant s abnormality was so gross that the mother never had the child at home Of the cases in the "residual' group listed in table IV as having suffered such deprivation in only a single example was any part of the period in question simply time in hospital with some serious illness here it was gastro-enteritis Every other instance was an outcome of the mismanagement and social chaos surrounding the infant

Table IV shows the remarkable significance of pathological mothering in the residual ' group The probability is actually millions to one against its total preponderance being a chance occurrence The difference in the qualitative category is really reduced because it was restricted to mothers of the extremely disturbed types specified Maternal psychoneurosis was disregarded not because its harmfulness to the infant is discounted but because neuroses are too common, vague and unequal to be precisely computed here and because the burden of a defective child mobilises neurotic tendencies Some information about florid maternal neurosis appears below

TABLE V—PATHOLOGICAL FATHERING

Pathological fathering	" Organic " group (138 cases)	"Residual " group (16 cases)	Significance of difference between the groups
Qualitative only	2·2% (3)	6·3% (1)	None
Quantitative only	4·1% (6)	37·5% (6)	+ at 0·1% level
Both qualitative and quantitative	2·2% (3)	12·5% (2)	None
Total	8·8% (12)	56·3% (9)	+ + + at > 0·1% level

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this study the term 'socially illegitimate distin ishes children born and bred out of wedlock from those illegitimate merely by law whose parents, while not gally married, in fact kept a house as man and wife and gether reared the child

bviously this category does not include cases where the mother was mentally ill and did not rear the infant The emphasis here is on the quality of mothering actually experienced and not on the mental health of the mother from this

4 There was no instance of a father acting as a consistent mother substitute—i.e. here " pathological mothering refers only to a female influence or lack of one Of the organic cases 4 children were reared by a mother substitute 2 of these being fostered out when recognised to be mongols at birth and at 6 months All the mother substitutes seemed to provide good care one being the grandmother and another so distressed by the child's admission that she soon took him home again Of the 'residual " cases 3 children were reared by a consistent mother-substitute for a while: 2 were with grandmothers for a time one of whom was a gaol bird who neglected, and was often separated from the child the was not reared by the mother at all but, after foster mother was shifted from nursery to

TABLE VI—DEPENDENCE OF PATHOLOGICAL FATHERING ON PATHOLOGICAL MOTHERING

—	“Organic” group (138 cases)	“Residual” group (16 cases)	Significance of difference between the groups
Pathologically fathered but not pathologically mothered	6 5% (9)	6 3% (1)	None
Pathologically mothered but not pathologically fathered	4 3% (6)	25% (4)	+ at 1% level
	(6 cases)	(12 cases)	Significance as given in 2 × 2 contingency tables
Prevalence of pathological fathering in cases pathologically mothered	50% (3)	56% (8)	None
	(12 cases)	(9 cases)	
Prevalence of pathological mothering in cases pathologically fathered	25% (3)	89% (8)	+ at 2 5% level

Pathological Fathering

This is assessed in table v by the criteria used for pathological mothering Though it is very much commoner in the “residual” group, the significance of this is greatly diminished by the finding (presented in table vi) that, when analysed, the difference in fathering between the two groups depends on the difference in mothering This is partly because separation from the mother usually involves separation from the father too, and presumably also because pathological mothers tend to mate with unstable men

Pathological Rearing

The disparity between the two groups is summarised in table vii by combining noxious social experiences, both “mothering” and “fathering” Startling as this is, it still conceals by conversion to numbers the depth of adversity suffered by the “residual” patients

ADVERSE BACKGROUND

Unfavourable factors in the general background again occur to excess in the “residual” group

Illegitimacy

With 31 3% (5 cases) illegitimate, compared with 4 3% (6 cases) of the “organic” group, this was significantly commoner in the “residual” group but only because of the number born to parents living together though not legally married Thus if such children are distinguished from those “socially illegitimate” as well as legally, illegitimacy in the “organic” and “residual” groups respectively was (*a*) merely legal in 0 7% (1 case) and 18 8% (3 cases), the excess in the “residuals” being significant at the 0 1% level, and (*b*) both legal and social in 3 6% (5 cases) and 13 5% (2 cases), this difference being statistically insignificant

Discordant Parents

Many marriages become strained by a defective child However, overt marital conflict was significantly commoner among the parents of “residual” patients before the child came on the scene as well as after Among cases whose parents were living as man and wife there was overt conflict or separation (*a*) in existence before the child's birth in 28 6% (4 cases) of the “residual” group compared with 5 2% (7 cases) of the “organic” excess significant at the 2 5% level, and (*b*) among the child's arrival in 42 9% (6 cases) of the “res group and 9% (12 cases) of the “organic,” an significant at the 0 5% level

TABLE VII—PATHOLOGICAL REARING

—	“Organic” group (138 cases)	“Residual” group (16 cases)	Significance of difference between the groups
Pathological rearing either mothering, or fathering, or both	13% (18)	81 3% (13)	+ + + at > 0 1% level

Psychologically Unhealthy Families[5]

Parents—Table viii compares the parents for festations of mental disturbance and social in (mental subnormality has already been considered table ii) This allows further comparison of the background of the two groups, since nearly all the took some part in rearing the children, the the “residual” cases being 1 mother and 2 (none in the psychologically abnormal categories table viii) and a like proportion, 8 mothers fathers, in the “organic” group Again it is the difference between the groups is far more where mothers are concerned, of interest too is that the “residual” cases are most often hamp mothers with psychopathic personality

Siblings—There is, unfortunately, insufficient for how siblings fare in the “residual” group

TABLE VIII—MENTAL DISTURBANCE AND SOCIAL IN IN PARENTS

Psychological abnormality	“Organic” group (138 cases)	“Residual” group (16 cases)	of b
Mothers			
Feckless dullards pursued by N S P C C	0% (0)	12 5% (2)	None
Psychosis	1 4% (2)	12 5% (2)	None
Neurosis, severe enough to need specialist treatment or to be florid before birth of the defective child—i e, not simply the result of burden of patient	5 1% (7)	18 8% (3)	None
Gross psychopathy	1 4% (2)	31 3% (5)	+ at 0·1
Total	7 9% (11)	75% (12)	+ + > 0 1%
Police convictions			
Neglect	0% (0)	12 5% (2)	
Other	0 7% (1)	18 8% (3)	
Total	0 7% (1)	31 3% (5)	+ at 0·1
Psychiatric treatment at some time	4·4% (6)	43 8% (7)	+ at 0·1
Fathers	Information for 134 only		
Feckless dullards	0 7% (1)	0% (0)	None
Psychosis	2 2% (3)	6 3% (1)	None
Severe neurosis as defined above	1 5% (2)	6 3% (1)	None
Gross psychopathy	1 5% (2)	12 5% (2)	None
Total	5 9% (8)	25% (4)	+ at 0·5
Police convictions	1 5% (2)	6 3% (1)	None
Psychiatric treatment at some time	4 4% (6)	12 5% (2)	None

patients in this group have siblings, some not rea the same circumstances As 9 children are first most siblings are too young still for unequivocal dis that could be assessed here So far, besides the 2 sibling or half sibling mentally subnormal (table have siblings known to be child guidance cases, have siblings probably as disturbed but not rec treatment—i e, nearly half the sibships are abno which is far in excess of the “organic” group, where proportion is 10% at the outside

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[5] The reader tempted to see a genetic aetiology for “residual” cases in the miscellany of psycho disorders prevalent in their families is referred to discussion of this below

TABLE IX—CERTAIN DEVELOPMENTAL DETAILS

—	"Organic" group (matched for age, I Q and sex) (16 cases)	"Residual" group (16 cases)	Significance of difference between the groups as given in 2 × 2 contingency tables
rkwardness apparent in 1st year	Mongols excluded 8	1	+ at 2 5* level
able to walk at 3 years	4	1	None
control of rectal sphinc- ter at 5 years	7	0	+ at 1% level
	30 cases with defect unrecog nised in 1st year		-
tory of regression after age of 1 year or more	4 (20%)	3 (12 5%)	None

ome occasionally incontinent but having intervals indicating real ability to control

ther relatives—The family histories bear out the pectation that the unhealthy parentage of the sidual cases is the product of diseased backgrounds npared with the "organic" group, the 'residual' a greater incidence of mental hospital treatment cide, alcoholism and crime in one or more of (*a*) the ndparents—40% (6 of 15 cases with available details) inst 6% (8 of 136 cases) and (*b*) the uncles aunts, and ins—33 3% (5 cases) against 4 5% (6 cases) Both these excesses are significant at the 0 5% level

CLUSIONS OF STUDY OF REARING AND BACKGROUND

Harmful social influences are overwhelmingly con trated here among cases of advanced mental defect attributable to organic disease So much is evident n statistical analysis, though this omits not only all ned assessment of the infant s early relationships but n the lurid nature of many *misfortunes* The total ture is incomplete without mentioning this or remark that subtler criteria might have accounted for 2 of the 'residual" cases not classified in table VII as athologically reared'

Obviously a more elaborate study by a team is required h a greater number of 'residual cases, but mean le my hypothesis that severe mental arrest sometimes alts from severe psychological injury appears reason y supported Nevertheless the following alternative lanations of the data must be considered:

l) *That the residual' cases are peculiarly selected*—*i.e* *when lacking organic abnormality children with mental ct as severe as in these cases are not usually admitted to itutions unless the home is a bad one*—If this were so the sidual" cases would probably be admitted earlier than ganics," and here the opposite was the case Actually all severe defectives organic or residual enter pital, and there is nothing to indicate that those who do simply *ones with inferior* homes. On the contrary the a presented reveal that the great majority come from rage homes, and this is as true for those organic" cases h superficially normal appearance and docile behaviour as mongols, whose facies alone might make their families get of them The usual difficulty of proving a negative arises is to be demonstrated that the residual patients in this es are not an unrepresentative sample of such cases in the eral population. Though this can only be settled by a ful survey of severe mental defect in the whole child ulation it is certain that here at least there is no evidence tever that the "residual cases are so much more unrepre- tative than the organic ones that the large differences covered between them may be dismissed as aetiologically mportant

2) *That the "residual cases are really examples of as yet ntifiable organic disorders*—Of course it is impossible prove that some may not be but if they all are their ordinary association with disturbed environments s a coincidence which is truly incredible

(3) *That the 'residual' cases have a genetic cause*—This hypothesis has already had some attention because it was shown above (table II) that mental subnormality and related conditions are not conspicuous in their families; in fact a third of the parents may even have been of superior intelli gence An assortment of neurotic psychotic, and criminal deviants is prominent among the forebears, but no hereditary relationship is known between mental disturbance in general and mental defect nor is one likely *Such an interpretation* of the data would be entirely out of touch with modern genetical concepts of heredity on specific mendelian lines (Penrose 1933) Further the peculiar concentration of mental ill health in the mothers defies simple genetic explanation.

Despite the present findings and others cited the rôle of emotional injury in the production of mental defect may still be disputed since not *all* infants exposed to harmful social experience become imbeciles In reply one can only point out that sceptics who reject psycho logical causes of disease do not rush forward to question the pathogenicity of the tubercle bacillus, though the vast majority infected with it are not ill As with every pathogen, the outcome whether minor psychological scarring or major deformity must depend on the time the intensity and the conditions of general health and constitution in which it was operating Some cases of defect seem to follow *psychological trauma that appears* not to be gravely destructive and no doubt they must be explained by some exceptional susceptibility a subject beyond the scope of this work Its elucidation perhaps may come through direct observation of nursing infants and their mothers and through concepts such as the congenital activity types of Fries (1953)

Development and Behaviour of the Two Groups Compared

It remains to examine whether psychological injury has distorted the mental development of these children *as well as arrested it* Owing to the difference in intelli gence levels mentioned above for valid comparison of *developmental* and *behaviour* patterns the 'residual' cases were matched against "organic" cases selected to correspond in I Q age and sex

Development

In both groups backwardness was first revealed by slowness of development in the first three years and seldom by regression from some previously *attained* level, but it became obvious later in the 'residual" cases This difference was significant (table IX), even when mongols were excluded from the comparison because *their physical appearance would lead to early diagnosis* Perhaps this is because certain abilities—e.g erect posture, binocular vision and primitive sphincter control —are relatively more dependent on the rapid *organic* maturation of the brain during *infancy* and so less accessible to psychological disruption With organic defect there might be general retardation whereas with

TABLE X—BEHAVIOUR DISORDERS

Behaviour disorder	"Organic" group (matched for age I.Q and sex) (16 cases)	"Residual group (16 cases)	Significance of difference between the groups as given in 2 × 2 contingency tables
Socially intolerable and:			
Reported before admission	25% (4)	87 5% (14)	+ at [illegible]
Observed after	18 8% (3)	62 5% (10)	+ [illegible]
Externally directed			
Interfering aggressive or with destructive outbursts	25% (4)	[illegible]	[illegible]
Prolonged screaming	12 5% [illegible]	[illegible]	[illegible]
Smearing faeces	6% [illegible]	[illegible]	[illegible]
Not externally directed			
Isolated self-absorbed pseudo-deaf	[illegible]	[illegible]	[illegible]
Repetitious, mannerisms	[illegible]	[illegible]	[illegible]
Self injuring	[illegible]	[illegible]	[illegible]

psychogenic defect these may be to some extent spared The information about acquired abilities was not reliable enough for more detailed comparison than is presented in table IX

The scatter of intelligence is quite dissimilar in the groups The total "organic" group, reflecting its multiple ætiologies, is almost evenly distributed at all levels from 0 to 50, the "residual" cases in contrast, are clustered round the mean of 39 7 (S D 5 9), and this further supports some homogeneous ætiology

Distorted Behaviour

The "residual" group presents behaviour disorder both more commonly and in peculiar forms The disparity is indicated in table X, which only lists disturbance that was socially intolerable It discloses that, though externally directed behaviour disorder, such as destructiveness and screaming, occurred in both groups, activity with no external direction such as repetitious, self-absorbed and self injuring types, was practically confined to the "residual" cases, some children, at times, were so withdrawn as to be suspected of deafness

Clinical Picture of Psychogenic Defectiveness

The outlines of the condition isolated now emerge The young child, though physically healthy, will present severe backwardness evident from about the second year, with curious behaviour disorder and a history of perverted mothering in infancy In his first two years he will either have been reared by an extremely disordered person, commonly a psychopath, or else deprived for long and repeated periods of the mother or her substitute usually he will have suffered both misfortunes None here were simply reared in an institutional setting—of 3 so reared from the age of 18 months or less 2 first endured terrible neglect by unstable mothers, 1 passing later through five institutions, while the 3rd went from foster-mother to institution to institution

Clinically these children's backwardness is uneven, despite an I Q about 40, their early milestones are not much delayed, and they lack the clumsiness and impoverished expression of other imbeciles—some indeed, are very graceful and attractive At times they appear extraordinarily remote and even deaf, tending to monotonous mannerisms, banging their heads, and tearing their hair out, many also have intolerable propensities for screaming and destructiveness

Of those I have observed in hospital for a year or two beyond their 5th birthday, some become docile imbeciles, and others burnt out and dilapidated ones, yet others do not change

Practical Importance of Psychogenic Defect

The condition described here must be of great social interest since it cannot be rare, it is probably preventable, and it may initially be treatable

A Common Condition

At the Fountain Hospital about 10% of severe aments seem to be in this category Admissions are from a big area and without any special selection, and this figure must be fairly representative of extreme defectives under hospital care The condition may therefore be responsible for many thousands of people occupying hospital beds in this country Moreover, this is a restricted estimate confined to psychogenic defect in apparently pure culture The condition may be even commoner for the following reasons

(1) Milder emotional undernourishment or damage, or an equal degree in a more resistant victim, may account for some of the less extreme defectives in the community, and even more of those in institutions (Hilliard and Mundy 1954)

(2) Some mental defectives of organic ætiology may have [illegible] ced to the institutional level by such trauma, [illegible] Possibly these children are less equipped to overcome indifferent rearing and very liable, by virtue physical deformity, to elicit it

A Preventable Condition

The histories of these cases monotonously disclose little realisation still exists among social agencies, doctors and hospitals that a small infant is a social being needs more than food alone to grow up For example the digestive difficulties, failure to thrive, and nappy rashes common in these infants, and a crying illustration of maternal incompetence, led to their spending weeks at a time in hospital, always to be discharged "recovered," and always to relapse with another complaint, but never led to serious probing of the mother Even when backwardness was obvious, the exclusion, often recondite, physical disease left inquiry exhausted, in all 5 cases this series where the child was under one hospital while the mother was under another for psychological treatment no communication appears ever to have passed between the two

A Treatable Condition

These conditions are man made If recognised and given therapeutic environments, with sensitive skilled nursing and intensive psychotherapy, they possibly reversible, there is every indication of this the therapeutic work of Rank (1949), in Boston, "atypical" children, and of David and Appel (1951), Paris, with *arriération psychogène* No such facilities are enjoyed at the Fountain Hospital

Protophrenia Theoretical Significance of Psychogenic Defect

Its theoretical significance will need elaboration where, but it will be mentioned here that the condition has bearings on the nosology of mental disorder in childhood, on ego psychopathology, and on the psychology of intelligence

Nosology of Mental Disorder in Childhood

It will have become apparent that these children superficially resemble adults with chronic schizophrenia However, similar behaviour does not mean identical psychopathology, and merely to label these defectives psychotic deprives the term of any precise meaning Generally, psychosis designates disorders where functions disintegrate, where the person ceases to himself These children have no such disorder, and from presenting disintegration, with 2 exceptions, they achieved integration at no time at all, their disruption being presumably of primitive infantile processes assembling towards an organised personality The distortion of those unintegrated processes that survive may account for the curious behaviour which characterises these patients

Protophrenia seems to me a suitable name for condition, implying an aborted organisation of personality as distinct from disorganisation, to which psychosis refers, and from undistorted retardation accompanying organic cerebral defect, which, by itself seldom produces autistic behaviour disorder, to from the material here

It is uncertain how protophrenia is related to syndrome of "early infantile autism" (Kanner There seem to be differences in that a proportion of cases here are not autistic and in that only some Kanner's cases were regarded as mentally defective none are described as having behaviour disturbance apart from lack of emotional relationship to people monotonous adherence to some daily routine. The background of his cases was different too, containing an ex of socially and intellectually superior forebears

Psychopathology of Ego Functions

Protophrenia can be regarded as a psychogenic failure of ego formation Its study must be relevant to the of pathological ego formation, generally, where otional trauma is at all important This includes fragility underlying adult schizophrenia and child ychoses and the maldevelopment of psychopathic ults and problem children The present arrangement ereby mental deficiency child guidance and adult yehiatry are practised in almost complete isolation m one another can only impede understanding of the mmon processes basic to each

ychology of Intelligence and Mental Defect

The fact that extreme mental defect can be related to avourable rearing promotes the view that lesser riations of mental ability are highly susceptible to ture and are not simply a matter of genes. The vance of this to mental defect of organic ætiology has ady been mentioned mental hygiene rather than enic programmes may be the way to alleviate the ial problem of mental defect and to promote lligence

Summary

his work indicates that extreme mental defect may be ributable to grossly perverted infant rearing in about % of cases This group alone may be occupying usands of hospital beds and in frequency may be ond only to mongolism as a type of severe amentia 'or many years attention has been devoted to psycho ical injury in early life as a cause of mental disorder, the same possibility has been almost ignored in severe ntal defect because this is usually associated with ious organic disease The possibility is evident from rical studies of institutional infants, from a measure uccess in psychotherapy with imbecile children, and n experiments on animals

n objective survey was devised to discover whether itionally unfavourable environments are significantly umoner among severe cases of mental defect with no cernible organic cause A consecutive series of 154 d cases was separated clinically into 'organic (138) residual' (16) groups The experiences and back und of each were tabulated and compared statistically, information obtained being independent of any jective bias of the examiner A remarkable pre derance of destructive social influences was demons ed in the residual' cases and no explanation can place their ætiological importance

clinical picture of psychogenic amentia is drawn and as also shown statistically that certain patterns of elopment and distortions of behaviour are charac tic

he condition is of considerable social importance ilar causation may account for many cases of mental et milder than those described here and in cases with in damage environmental factors may aggravate the ect to such an extent that the child requires institu al care.

is nosology is discussed it appears to be an abortive ure in organisation and integration of ego functions tophrenia is the name suggested to distinguish this h psychosis, in which ego organisation forms and then integrates and from organic retardation which has a erent clinical picture lacking certain patterns of elopment and behaviour disturbance The under ding of ego psychopathology is impeded by the natural divorce of mental deficiency from other nches of psychiatry for there are pathogenic cesses common to all.

sychogenic defect is man made and preventable and haps cases detected early may be reclaimed A plea ade for seeking to alleviate the social burden of mental ect and to promote intelligence by mental hygiene her than by eugenic programmes

am deeply indebted to Mr Frank Orford M.A of nity College London for sharing the labour of some statistical calculations and for many stimulating ideas. I thank the records office staff at the Fountain Hospital for unstinted and unpaid assistance with the great mass of documentation I am grateful to Dr L T Hilliard Dr Brian Kirman and my colleagues for encouragement and facilities for the work given most generously

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ROSEOLA INFANTUM

A REVIEW OF FIFTY CASES

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ROSEOLA infantum was first described and named by Zahorsky (1910) in the U S.A Others have called it exanthema subitum exanthema criticum, three day fever and sixth disease Many reports on it have been published in the U S.A and a smaller number of papers have appeared in many European and overseas countries According to Berenberg et al (1949) it is probably the most common febrile exanthem in children aged less than 3 years in the U S.A Only very few papers about it have been published in this country

The fact that I have observed 50 cases in general practice between 1943 when I first became acquainted with it, and 1955 shows that roseola infantum is also quite common in this country The cases were fairly evenly spread over the twelve years and were all sporadic so far as I could ascertain

The following are the main characteristics of roseola infantum

(1) It occurs nearly exclusively in the first three years of life.

(2) There is an initial febrile stage with fairly high pyrexia and very little to account for it It lasts several days, most commonly three

(3) Rather surprisingly—hence the name exanthema subi tum—when the temperature is settling or has settled down, and the child is getting well, a rash like rubella or very mild measles appears and the illness ends.

(4) Complications scarcely ever arise No fatal case has been described.

(5) Roseola infantum practically always confers permanent immunity to it

The great majority of cases reported have been sporadic but there have been some contact cases, and descriptions of small epidemics mainly in homes for babies have been published

Kempe et al. (1950) transmitted roseola infantum from a child in the pre-eruptive stage to a baby kept in isola tion; the baby developed the typical disease after nine days Clinical experience appears to fix the incubation period at eight to fifteen days (Cushing 1927, Greenthal 1922 Berenberg et al 1949)

All attempts to isolate the causal organism probably a virus have so far been unsuccessful

Incidence

My 2 youngest patients with roseola infantum were both aged 3¹/₂ months, and I had 3 aged more than 3 years The age distribution of my cases was as follows

Age (mos)	*No of cases*
Up to 6	5
6–12	12
13–18	16
19–24	9
25–30	1
31–36	4
40	1
50	1
63	1

In other words 66% of cases occurred in the first 18 months of life, 84% in the first 2 years, 94% in the first 3 years and 6% later

Up to 1947—according to Zahorsky (1948)—less than a score of cases had been reported in children over 4 years of age

It is generally agreed that the sexes are about equally affected , of my patients 26 were male and 24 female

According to Zahorsky (1940) in 300 cases the disease was most prevalent during autumn and spring My cases were fairly evenly spread throughout the year 5 in January, 5 in February, 4 in March, 5 in April, 5 in May, 3 in June, 4 in July, 1 in August, 4 in September, 7 in October, 4 in November, and 3 in December

Illustrative Case-reports

The following are 2 typical case reports

Case 1 —A baby, aged 15 months, became irritable on Jan 13, with loss of appetite, temperature 103 5°F, slight coryza, and injected pharynx Next day some small swollen occipital glands were detected (temperature still 103 5°F) On Jan. 15 the condition was unchanged and nothing abnormal was detected in ears, chest, or urine On Jan 16 the temperature fell to 100 2°F and the general condition improved somewhat On Jan 17 the temperature was 99 0°F, the baby was apparently well, and a pink macular rash appeared, which disappeared in forty eight hours (fig 1)

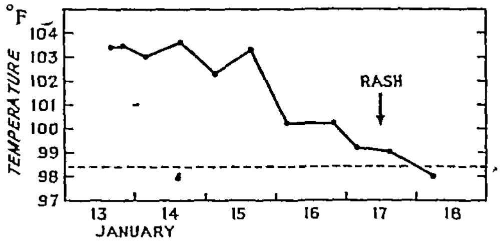

Fig 1—Relation of pyrexia to rash in case 1

Case 2 —A baby, aged 12 months, became ill on Oct 3 with slight diarrhœa, restlessness, loss of appetite, temperature 104 0°F, and slightly injected pharynx Next day the temperature was 101 2°F in the morning and 105 0°F in the evening, but there were no other signs of illness On Oct 5 the temperature was 100 6°F in the morning and 103 0°F in the evening On Oct 6 the temperature was 99 2°F On [illegible] temperature was 98 4°F and a rubelliform rash which disappeared in twenty four hours (fig 2)

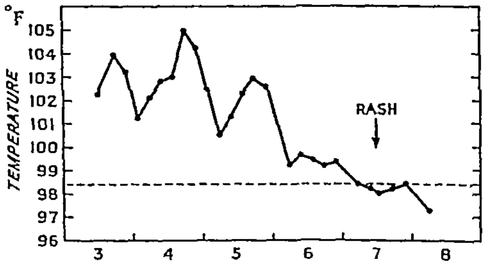

Fig 2—Relation of pyrexia to rash in case 2.

Temperature

In 22 of my cases an exact record of the t was kept in 10 of these the maximum was 104–10 in 8 102–104°F, and in 4 100–102°F

15 infants had remittent, 6 continuous, and 1 mittent pyrexia

The pyrexia lasted one day in 2 cases, two days 4, three days in 25, four days in 10, and five days 1 case In 8 cases the history was too vague to d the length of the pyrexia

According to the published reports the most co duration of the pyrexia is three to five days, but it lasted as long as nine days

Zahorsky (1940) saw the majority of his 300 cases by crisis Of my 22 cases in which the temperature recorded 13 ended by crisis and 9 by lysis

Symptoms and Signs in Pyrexial Stage

During the pyrexial stage some children app have surprisingly little discomfort, in spite of temperatures, but others are restless, sleepless, do eat, and appear to be in pain

There is a *characteristic lack of signs* in the stage of my 50 cases 7 had a red throat, 4 a mild coryza, 4 reddened conjunctivæ, 12 a slight initial vomiting, 3 a few loose stools, 1 follicular tons 1 flushed drums, and 1 a mucoid vaginal discharge these signs disappeared when the temperature came and the rash appeared

The most common sign during the pyrexial was swollen lymph glands these were present cases (44%) , in 16 cases occipital glands were en in 8 cases posterior cervical, in 3 posterior and in 1 axillary

All workers emphasise that the catarrhal present at all, are generally very mild , only few with follicular tonsillitis and very few with suppr otitis media have been described

The occasional appearance of a distinct en on soft palate or uvula has been noted by C (1934) and by Berenberg et al (1949)

In a varying proportion of cases—the reported in in different series varies between 0 7% and convulsions have been observed during the pyrexial no convulsions occurred in my cases

The white cell count shows nearly always, at after the first twenty-four to thirty six hours, a leucopenia with relative lymphocytosis

I made a white cell count in 3 of my cases leucocytes numbered 5000 per c mm (lymphocytes 4600 per c mm (lymphocytes 44%), and 2400 per (lymphocytes 80%)

The appearance of the rash coincided generally the drop in temperature

In 42 of my cases either the patient had already seen in the pyrexial stage or the history was suffici clear cut to determine the relationship between tem ature and rash , in 32 of them the rash appeared on day of the temperature drop, in 5 it appeared twenty hours later, in 1 thirty six hours later , in 4 cases it b to appear the day before the temperature went down

The Rash

The rash is composed of discrete pink macules, occasionally it is slightly papular , in my cases it be usually on the trunk, more often on the back than chest or abdomen , in other cases it appeared first the nape of the neck, at the forehead hair border, behind the ears When fully developed it usually cov most of the trunk, the nape of the neck, often the up part of the limbs, and occasionally the scalp. The was only rarely and then sparsely affected In 3 cases the rash coalesced on part of the back but not extensively as a typical scarlet fever rash he rash was usually fully developed in twenty four rs. Its total duration was in most of my cases forty ht hours, but in some it had already disappeared in nty four hours, in a few others it lasted up to seventy hours

t did not appear to itch it was not followed by quamation or pigmentation

Cases of roseola infantum without rash have been n by other observers during epidemics in homes for les.

Immunity

he fact that roseola infantum rarely occurs after age of 3 years suggests that by that time nearly children have become immune to it but since only minority of children suffer from a typical attack, it ears that by the age of 3 years many have become mune through a modified illness - either without a n or with a very sparse or fleeting one On the other d Wesselhoeft (1951) suggests that roseola infantum ht occur in older children and adults without a rash with a nocturnal rash only This would put roseola ntum in the exceptional position of being an exan matic disease occurring in one age group usually a rash and in the rest usually without a rash or a nocturnal rash only, which seems to me unlikely

Diagnosis

n the presence of an otherwise unexplained persistent xia in a child of the most susceptible age group ibly with enlarged lymph glands at the back of d or neck, the diagnosis of roseola infantum should onsidered among other causes of pyrexia of unknown n. A well marked leucopenia with relative lympho sis would support the diagnosis

nce the rash has appeared mainly rubella measles, drug rashes have to be considered in the differential nosis. Though the rash of roseola infantum is very ilar to the rash of german measles or very mild sles it does not affect the face or only very slightly roseola infantum catarrhal symptoms are absent t the most very mild, there are no Koplik's spots he most important characteristic of roseola infantum at the rash appears when the child is beginning to ver whereas in rubella the pyrexia and the rash ide, and in measles the rash appears while the is reaching its climax.

Summary

oseola infantum is a common infective disease rring nearly exclusively in the first 3 years of life ases of it were seen in twelve years of general tice.

mplications are very rare no fatal cases have been rted

he treatment is symptomatic

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ANTIBIOTIC THERAPY OF TUBERCULOSIS OF THE FEMALE GENITALIA

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ALMOST five years have elapsed since our first results of streptomycin treatment of 12 cases of latent female genital tuberculosis were published (Halbrecht 1951) We have since treated 62 more cases of tuberculosis of the female genitalia in all its stages and have followed up some of them for more than five years since the start of antibiotic treatment

Almost all of these patients sought our help not because of genital tuberculosis, of which they were hardly, if at all, aware, but because of sterility Thus, the assessment of any treatment of female genital tuberculosis must take into account not only its ability to cure the tuberculosis but also its effect on the sterility which is the main complication of the tuberculosis

Diagnosis

It is generally agreed that in the first stages of tuberculosis the fallopian tubes alone are involved, and that endometrial tuberculosis represents a later stage, the tuberculosis spreading slowly but continuously by contact from the endosalpinx to the endometrium (Sutherland 1943 Sharman 1944, Halbrecht 1946, Berblinger 1946 Liljedahl and Rydẹn 1950, Schockaert 1951)

It is therefore obvious that in female genital tuberculosis, the earlier the antibiotic treatment is instituted the more likely it is to be successful especially so far as sterility is concerned. For this reason we tried to *diagnose* the tuberculosis, which is asymptomatic in more than 90% of cases, by culture of menstrual and intermenstrual discharges By this method it is possible to diagnose genital tuberculosis in its early, pre-endometrial, *stage* in a considerable number of cases.

Material

We treated with streptomycin and *p* aminosalicylic acid (P.A.S) 74 cases of female genital tuberculosis, of which 21 were discovered in the tubal stage and 49 in the endometrial stage and 4 were exudative cases with more or less large tumours in the adnexa (table I)

Methods

Our first 12 patients were treated by daily injections of streptomycin 1 *g* alone. Each of them received 45 g The 62 other patients received a combined treatment of streptomycin 1 g thrice a week to a total of 45–50 g and P A S 12 g daily to a total of 800–900 g

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TABLE I—CLASSIFICATION OF CASES BY METHOD OF DIAGNOSIS

Group	Stage	Diagnostic means and results		No of cases
		Endometrial biopsy	Culture	
I	Tubal	Negative	Positive	21
II	Endometrial	Positive	Positive	49
III	Exudative		Positive	4
Total				74

11 patients in whom this first course of antibiotic treatment was unsuccessful received a second course of treatment consisting of streptomycin 60–75 g and P A S 1200 g

In 6 cases the streptomycin was discontinued before 30 g had been given, because vestibular symptoms appeared

In cases in which endometrial biopsy had revealed endometrial tuberculosis, biopsy was repeated at six-month intervals after the treatment In cases in which cultures of menstrual discharges had been positive, cultures were repeated every month during the first year and every two or three months in the years following the treatment

Results

Only 68 of the 74 patients received the full treatment of 45 g which is the minimum needed to cure latent tuberculosis of the female genitalia Nevertheless I report here the results (table II) obtained in all 74 cases, including the 6 in which only about 30 g of streptomycin was given, because I have been impressed by the lasting successful results in some patients with even this small amount of streptomycin

TABLE II—RESULTS AND FOLLOW-UP

Months after treatment	12	13–24	25–36	37–48	49–60	61–74	Total
Cures	3	8	11	8	11	7	48
Recurrences	10	14	2				26

In 48 of the 74 patients, treated with streptomycin alone or in combination with P A S, no signs of genital tuberculosis could be discovered from one to six years after the treatment

Of these 48 patients 7 were under continuous observation for more than five years after the treatment, 11 for more than four years, 8 for more than three years, 11 for more than two years, 8 for more than a year, and 3 for a year

3 of the 6 patients who did not receive more than 30 g of streptomycin were free from any signs of genital tuberculosis for more than three years, whereas the 3 others showed a recurrence of tuberculosis before the end of the second year after the treatment

Endometrial Tuberculosis (table III)

Tuberculosis recurred in 16 of 49 patients who had endometrial tuberculosis before the treatment In only 8 of these was the recurrence endometrial, in the other 8 it was tubal, found by positive culture of menstrual and intermenstrual discharges, whereas endometrial [illegible] was repeatedly negative after the treatment

TABLE III—RESULTS OF ANTIBIOTIC TREATMENT IN ENDOMETRIAL TUBERCULOSIS

Months after treatment	12	13–24	25–36	37–48	49–60	61–72	Total
Cultures and endometrial biopsy negative	2	3	9	6	8	5	33
Cultures positive and endometrial biopsy negative	5	3					8
Endometrial biopsy positive	4 9	3 6	1 1				8 16

In 3 of the 8 cases in which endometrial t[illegible] recurred the first endometrial biopsy after tr[illegible] was negative, and only the second, done six month[illegible] showed endometrial tuberculosis. Long before the [illegible]tive endometrial biopsy, cultures of menstrual [illegible] were positive for tuberculosis in these 3 cases It there[illegible] seems that antibiotic treatment is more effective in [illegible] endometrial than tubal tuberculosis

Tubal Tuberculosis (table IV)

The only means of diagnosing female genital tub[illegible]losis in the tubal stage, before involvement of the [illegible]metrium, is culture of menstrual and intermen[illegible] discharges

In 7 of the 21 cases of isolated tubal tuberc[illegible] positive cultures of the genital discharges showed [illegible] recurrence of tuberculosis within two and a half ye[illegible] the start of the treatment

TABLE IV—RESULTS OF ANTIBIOTIC TREATMENT I[illegible] TUBERCULOSIS

Months after treatment	12	13–24	25–36	37–48	49–60	61–
Negative cultures	1	4	2	4	1	[illegible]
Positive cultures	2	4	1			

Exudative Tuberculosis

In 4 cases bimanual genital examination reveal[illegible] tumour of the adnexa which was clinically thought t[illegible] tuberculous The diagnosis was confirmed by p[illegible] culture of the menstrual discharges

Each of these 4 patients received 60–75 g of str[illegible]mycin and 1200 g of P A S In 2 cases the tumour [illegible]appeared completely, and in the 2 others it dimin[illegible] but did not disappear In 3 of the 4 cases culture of menstrual discharges became positive from six to eig[illegible] months after the treatment

Effect of Antibiotic Treatment on Sterility caused by Ge[illegible] Tuberculosis

7 ectopic and 5 intra uterine pregnancies followed antibiotic treatment of genital tuberculosis in the patients They were distributed as follows

5 ectopic and 3 intra uterine pregnancies occurred [illegible] patients with isolated tubal tuberculosis. The 3 intra-u[illegible] pregnancies went to their end, full term healthy babies [illegible] born.

TABLE V—RESULTS OF SECOND COURSE OF ANTIBIOTI[illegible] TREATMENT

Months after treatment	12	13–24	25–36	37–48	49–60
Cures		1	3	1	1
Recurrences	5				

2 ectopic and 2 intra uterine pregnancies occurred [illegible] patients with endometrial tuberculosis who had been [illegible]pletely cured by the antibiotic treatment The 2 [illegible] uterine pregnancies ended in miscarriages in the third [illegible] fourth months

Histological examination of the tubes in the 7 ec[illegible] pregnancies revealed the persistence of tuberculos[illegible] the walls of the tubes in 1 case and no tuberculosis in [illegible] others

Histological examination of curettage material in [illegible] 2 cases of miscarriage did not reveal any tuberculo[illegible]

3 ectopic pregnancies occurred immediately after [illegible] antibiotic treatment, and the other 4 one or two y[illegible] after the treatment

Both full term pregnancies in the patients with he[illegible] tubal tuberculosis and both miscarriages in the pati[illegible] with healed endometrial tuberculosis occurred in [illegible] second year after the treatment *ond Course of Treatment* (table v)

1 of the 20 patients in whom the first series of strepto cin injections did not cure the genital tuberculosis eived a second course, which consisted of strepto cin 60 g and P.A.S 1200 g In 5 of these patients the erculosis recurred within a year from the start of the ond course The 6 other patients are free from tuber osis from two to four years after the second course none of them has yet conceived

Discussion

No treatment of female genital tuberculosis can be perly assessed except by comparing its results with incidence of spontaneous healing of this disease and occurrence of pregnancies in untreated cases

pontaneous healing of female genital tuberculosis is y rare but undoubtedly takes place In 6 of 90 cases untreated endometrial tuberculosis and in 1 case of al tuberculosis spontaneous healing could be assumed the basis of repeated negative endometrial biopsies a great number of negative cultures of the menstrual charges made repeatedly during at least from two to years after the diagnosis of genital tuberculosis had n established by a positive endometrial biopsy or by itive cultures of the genital discharges

No patient with apparently healed endometrial tuber sis conceived whereas the patient with healed tubal erculosis conceived and was successfully delivered

hus it seems that spontaneous healing of endometrial erculosis does not improve the chances of pregnancy hese patients. On the other hand, in cases in which ntaneous healing starts in the earliest, or tubal stage a functional *restitutio ad integrum* of the tubes is possible pregnancy may take place

Conclusions

nalysis of the results of antibiotic treatment of ale genital tuberculosis leads to the following con ions

) The combined treatment of female genital tuberculosis streptomycin 45 g and P.A.S 800 g led to healing of the se in about 65% of cases.

) More than half the patients in whom the first course of iotic treatment was ineffective benefited from a second se of streptomycin and P.A.S

) Healing of female genital tuberculosis cannot be con red definite until at least three years have elapsed since start of treatment

) For this reason all the patients must remain under observation, and endometrial biopsies and cultures of menstrual discharges must be repeated at regular intervals ing the first five years after treatment. A second course of tomycin and P.A.S should be given as soon as the first s of recurrence of tuberculosis are discovered whether on metrial biopsy or in cultures of the menstrual discharges.

) Cultures of the menstrual discharges were much more able than endometrial biopsy in discovering recurrence male genital tuberculosis

) There is no doubt that in some cases antibiotic treatment d the sterility caused by genital tuberculosis especially e tubal stage

) Antibiotic treatment was followed by ectopic pregnancy often than by intra-uterine pregnancy

) 2 intra-uterine pregnancies after antibiotic treatment to term in genital tuberculosis healed at the tubal stage as in both cases of healed endometrial tuberculosis nancy ended in a miscarriage

Summary

) 48 of 74 women with genital tuberculosis treated streptomycin and P.A.S the disease did not recur a first course of antibiotic treatment consisting of ptomycin 45 g and P.A.S 800 g In 6 of 11 women n a second course, which consisted of streptomycin and P.A.S 1200 g the genital tuberculosis was cured ectopic and 5 intra-uterine pregnancies occurred in f the patients in whom the genital tuberculosis was d by antibiotic treatment

References at foot of next column

Q FEVER IN NAKURU, KENYA

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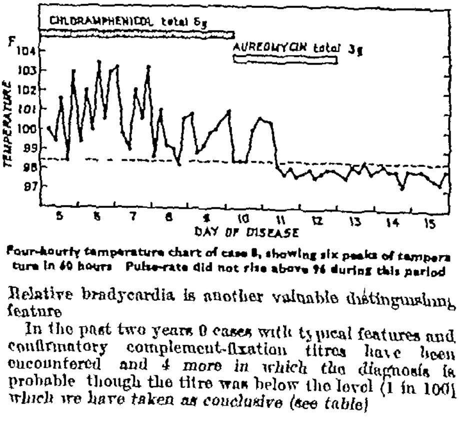
Soon after arrival in Nakuru three years ago one of us (A L C) was struck by the frequency of an acute febrile illness with pneumonic features, which was usually regarded as virus pneumonia It strongly resembled Q fever and the help of the other (J H S G) was enlisted to confirm its cause Tests soon showed that many cases were in fact infections with *Rickettsia burneti* and there is no doubt that this disease is endemic in the locality Nakuru itself is a large market town a hundred miles north west of Nairobi surrounded by an extensive dairy farming area occupying the floor and slopes of the Rift Valley Cattle are a well recognised source of infection (Harvey et al 1951, Marmion et al 1953)

Q fever among Europeans in Nakuru is as a rule easily recognisable The onset is sudden and the characteristic features are rigors with drenching sweats, and intense headache Cough is usual, and the sputum is often bloodstained but these features are less constant than the rigors and headache Malaria has always to be excluded but Q fever can usually be distinguished by the fact that the rigors and profuse sweats often occur two or three times in twenty four hours (see figure)



Four-hourly temperature chart of case 8, showing six peaks of temperature in 40 hours Pulse-rate did not rise above 96 during this period

Relative bradycardia is another valuable distinguishing feature

In the past two years 9 cases with typical features and confirmatory complement-fixation titres have been encountered and 4 more in which the diagnosis is probable though the titre was below the level (1 in 100) which we have taken as conclusive (see table)

Illustrative Case report

A man aged 33 (case 4 in table) felt perfectly well until the evening of Nov 18 1952 when he had a violent attack of shivering He went to bed felt hot and sweated profusely During the night he had another violent attack of shivering followed by a rise of temperature and copious sweating Next day he felt better though he still had fever On the morning of the 20th he had another severe rigor with temperature 105 F followed again by a drenching sweat. His temperature remained about 102 F until the morning of the 22nd when

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DR HALBRECHT: REFERENCES

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ANALYSIS OF CASES

Case no	Age (yr)	Sex	Occupation	Day after onset of illness on which serum was taken	End titre (1 in)
1	46	F	Housewife	186	200
2	40	F	Housewife	21	400
3	41	M	Processing hides and skins	15	800
4	33	M	Clerk	23	400
5	46	F	Housewife	31	400
6	45	M	Farmer	10	100
7	29	M	Farmer	10	80
				62	200
8	32	M	Agricultural officer	12	400
9	30	M	Clerk	9	20
				25	400
10	9	M	Schoolboy	23	±100
11	33	M	Clerk	14	50
12	47	M	Dental surgeon	14	40
13	23	M	Farmer	12	80

[illegible] was normal The same evening, however, he had another rigor and his temperature rose to 103°F It remained at this level for the next two days, rose to 104° on the 25th, and then fell by lysis over the following two days, after treatment with chlortetracycline (aureomycin) had been instituted Throughout the illness he complained of very severe frontal headache with soreness of the eyes, backache, nausea, and anorexia On the fourth day cough began, and next day his sputum was bloodstained By this time prostration was considerable, and he was admitted to hospital

On examination he looked very ill, was flushed, and had a moist skin and furred tongue Temperature 102°F, pulse rate 84 Crepitations were heard at the base of his left lung, but there were no other abnormal signs The liver and spleen were not palpable The white cell count was 8000 per c.mm (polymorphs 67%, lymphocytes 33%) No malaria parasites were seen A chest radiograph showed no abnormality

Q fever was diagnosed on the history and the relative bradycardia, and chlortetracycline therapy was started on the seventh day of the illness, 0 50 g initially, followed by 0 25 g eight hourly to a total of 4 g Recovery was rapid and convalescence normal, and the patient was discharged seven days after admission

A sample of blood was taken on Dec 11, twenty three days after the onset, and sent by air mail to Johannesburg, where a complement fixation test with *R burneti* antigen showed an end titre of 1 in 400, confirming the diagnosis of Q fever

Clinical Features

Most cases have conformed fairly closely to this picture, and in Nakuru an acute febrile illness with frequent shivering and sweating, intense headache, cough, and relative bradycardia is very probably Q fever and may be treated as such pending confirmation of the diagnosis, which can be made only retrospectively

Besides the symptoms already mentioned, pain in the chest is sometimes complained of, and one patient complained bitterly of tenderness of the scalp One patient had epistaxis, one had vomiting in addition to nausea, and nearly all complained of loss of appetite and constipation.

In a third of the cases the spleen was palpable No patient had a palpable liver Chest crepitations were audible in a third of the cases In 3 cases these were localised to an area just above and lateral to the nipple, and in these patients radiography showed wedge shaped peripheral shadows corresponding to the anterolateral segment of the upper lobe No other cases showed abnormal radiological signs

The total and differential white cell counts were within normal limits in all the cases, but the total counts tended to be slightly lower than normal (case 4 was the one exception)

Treatment

The response to chlortetracycline may be dramatic The temperature falls within forty eight hours, often within twenty-four hours, and subjective improvement is rapid Chloramphenicol is also usually effective, but the response is slower, and in one case the illness responded only when chlortetracycline was substituted for the chloramphenicol (see figure) Chlortetracycline is the drug of choice, an initial dose of 0 50 g followed by [illegible]-hourly to a total of 4 g is usually adequate

Laboratory Studies

The diagnosis of Q fever may be established by isolation of *R burneti* from the patient's blood or during his acute illness This may be effected by inoculation of guineapigs or of embryonated eggs. Th however, are possible only in a specialised diseases laboratory The final identification of a of rickettsia takes some considerable time, and is with the danger of infection of the laboratory staff. these reasons it is usual and indeed preferable to r the results of serological tests to confirm a c diagnosis of Q fever This was the method adopted the present investigation The sera sent from the patients were submitted to rickettsial complement fix tests with *R prowazeki*, *R mooseri*, *R conori* var pij and *R burneti* antigens

It is desirable to compare the results of the test the acute-phase serum with those on the convales phase serum In Q fever, from being negative in acute phase the test becomes positive in convales two to three weeks after the onset of the illness, in a titre of at least 1 100 Where no acute phase is available the titre of complement fixation given by convalescent phase serum is of considerable impor Patients who have recently recovered from Q fever show a titre of at least 1 100 Conversely there is reason to conclude that a patient whose serum gi positive complement fixation reaction with *R* b antigen in a titre of more than 1 100 has recently Q fever

On the other hand, where Q fever is endemic, as in the Union of South Africa and (as this study revealed) in East Africa, the sera of many people gi positive complement fixation reaction in a titre of 1 No diagnostic significance can be attached to this fi except that such people have been infected with *burneti* in the past, possibly many years previously has been also observed that people with what we called the hyperreactive auto allergic diseases— acute lupus erythematosus—may give a complem fixation reaction with *R burneti* in a "diagnostic" of at least 1 100 A change in the result of the from negative in the acute phase to positive in a of at least 1 100 in convalescence is therefore of gr significance than the result of a single test in conv cence However, when such hyperreactive cond can be ruled out, a positive complement fixation rea with *R burneti* in a titre of 1 100 or higher is sumptive evidence that the patient's recent illness Q fever On this basis the serological tests (see table) that in 9 of our cases the illness was Q fever while in other 4 it was probably Q fever

Discussion

These findings add Kenya to the list of countr which Q fever is endemic Before the second world this disease was thought to be rare and confined Australia and Montana, U S.A Since then it has recognised in most countries, though its prevalence v It is commoner in the south and south east of Eu than in the north-west

In Africa Q fever has been identified in North Af in French Tropical Africa, and in the Ruanda Ur province of the Belgian Congo It was first diagnosed serological findings in the Union of South Africa in 1 Since then it has become apparent that it is the prevalent rickettsial disease in southern Africa, w epidemic and murine typhus and tick bite fever— local variety of tick typhus—are also common (G 1954) Indeed it is so prevalent that most adult S Africans are immune, having been infected in childh

As the distinction between urban and rural life South Africa increases, the incidence of Q fever in older age groups of the indigenous population may pected to increase Up to now, however most of ases in adults in South Africa have been observed in grants from north west Europe. Many of these grants had soon after their arrival a febrile illness was suspected on clinical grounds of being typhoid but proved on laboratory investigation to be Q

This infection was usually acquired, as in the nt cases, from contact with an environment in tick infested cattle roamed Some people con ed the infection soon after starting work on cattle iry farms, and others while visiting such farms. lly the mode of infection seemed to be by inhaling contaminated with the causal rickettsiæ more it was from drinking infected milk Q fever is thus of the hazards that immigrants from north west pe face in southern Africa The present study sts that a similar hazard exists in East Africa or of it

fever may occur in explosive outbreaks like the one ling students at the College of Art Canterbury vey et al 1951) but is more commonly encountered sporadic infection as in Nakuru

occurrence here is no surprise because it has been l in many parts of the world where the sources of human ion—cattle sheep and goats—exist and it has been d for These domestic animals excrete the rickettsiæ eir urine fæces and milk, and harbour them in their nts and fœtal membranes; hence human beings may be ed either by drinking milk or by inhaling dust in which ckettsiæ are remarkably persistent Close contact— in delivering calves—may explain some cases.

this East African community milk, dust, and contact stock are all likely sources and the next step will be to mine the source and route of the infection. Possibly than one route is involved because whereas the con tion of cow's milk probably causes a large proportion of in the United Kingdom, contact with sheep particularly roducts of parturition is a likely cause in the Romney area of Kent (Marmion et al. 1954)

bdleri (1952) said ' It is now proved that if the virus enetrated by inhalation there will be pulmonary localisa of the disease and that there will not be pulmonary sation if Coxiella has infected the organism through by subcutaneous injection, or through the surface membranes. If this be true, dust-borne disease d be distinguishable from milk borne disease

tances of case-to-case infection have been reported, ly in the small outbreak at the Royal Cancer tal, London (Harman 1949 Marmion and Stoker but are not common

ere appeared to be no connection between cases in ries, except in one instance

e * became ill on Nov 3 1952 and her husband (case 3) v 18, fifteen days later Both could have been infected a common source but possibly the wife infected her nd. The husband was employed in processing hides ins; and, had his wife not been taken ill first it would been tempting to attribute his illness to his occupation

has not been possible so far to control the infection g stock but while Q fever remains sporadic and able to chemotherapy the problem does not seem it However the pasteurisation of milk which at nt is on the borderline of effectiveness in killing kettsiæ, might perhaps be modified to provide a ler margin of safety

Summary

ring the past three years several patients with an febrile illness, characterised by frequent rigors and s and intense headache have been seen in Nakuru a Many have had cough and hæmoptysis and of these have provided radiological evidence of ntal pneumonia

e clinical diagnosis of Q fever was confirmed in 9 of cases by finding that the rickettsial complement n test gave a positive result with *R burneti* antigen in a titre of 1 100 or higher, whereas the test with other rickettsial antigens gave negative results

In 4 other cases the results suggested Q fever but the titre of complement fixation did not reach 1 100

These findings add Kenya to the list of countries in which Q fever is endemic and this disease is one of the minor hazards for immigrants from north west Europe to South and East Africa Its occurrence in East Africa was to be expected because the usual sources of human infection—cattle, sheep and goats—are found there in large numbers

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BLOOD-COAGULATION DEFECT ASSOCIATED WITH MISSED ABORTION

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Certain complications of pregnancy have assumed new importance with the recent recognition of the fact that they may be accompanied by disorders of blood coagulation which if not properly treated may prove fatal

Blood coagulation defects have now been found in accidental hæmorrhage amniotic embolism, retention of a dead fœtus, induced abortion, and toxæmias of pregnancy and as a cause of delayed postpartum hæmorrhage (Maisel et al. 1954) In fact the present position is such that any case in which bleeding per vaginam continues for no apparent reason after delivery must be regarded as probably due to a blood-clotting defect, and attempts to ascertain the particular defect by suitable blood tests are more likely to be rewarding than continual local attempts at hæmostasis This subject has been fully reviewed by Ratnoff et al. (1955)

Accidental hæmorrhage and retention of a dead fœtus are comparatively frequent complications of pregnancy and it is of the utmost importance that anybody undertaking the care of the expectant mother be aware of the possibility that a hæmorrhagic state may develop as a further complication in these cases This is especially important in the case of missed abortion where domestic treatment is often undertaken

The so-called acquired fibrinopenia of accidental hæmorrhage has been very fully described, but the occurrence of severe defects of blood coagulation in missed abortion has not long been recognised and only a handful of cases have been described in any detail

Ætiology

This disorder of the blood is most likely to develop where the death of the fœtus has been due to iso immunisation of the mother by Rh antigen and where the fœtus has attained the age of sixteen weeks but it can develop without iso-immunisation of the mother and as early in pregnancy as the eighth week (Barry et al 1955) It seems, however, that the dead fœtus must be necessarily retained for at least four weeks for the dis order to develop unless the position is further complicated

RESULTS OF COAGULATION TESTS

Specimen taken on	Pro thrombin time (sec)	Platelets per c mm	Lysis time of clot (min)	Thrombo plastin heparin time	Anti thrombin (%)	Thrombin time (% of normal)	Pro-thrombin (%)
June 11	—	—	Nil	—	60	—	—
July 18 at 5 15 P M	19 5	77 000	70	5–30 min	65	115	> 100
July 18 at 7 45 P.M	No clot	—	<240	—	85	130*	> 100
July 18 at 9 P M	15	—	Partial 180	—	72	112 5	> 100
July 18 at 10 30 P M	15	126,000	120	4–6 min	72	125	> 100
July 19 at 4 15 P M	13	60 000	Nil	105 sec	100	73	—
July 20 at 11 A M	14	108,000	Nil	71 sec	—	—	—
July 29 at 3 P M	13	260,000	Nil	73 sec	90	Normal	—

* With fibrinogen added to sample and control

by abruptio placenta, when it may occur very suddenly (Schneider 1953)

In this later type of case the ætiology is similar to abruptio placenta where the fœtus is alive

Retention of the dead fœtus for some time seems to indicate that the agent causing the disorder comes from the contents of the pregnant uterus, and that a certain length of time is necessary to allow of its production and/or its influence on the maternal circulation

Lysis of the blood-clot in an abnormally short time when kept at 37°C is a common accompaniment This is rare in the fibrinopenia of accidental hæmorrhage Evidence for the presence of a fibrinolytic agent is contradictory

Vecchietti (1953) observed that the amniotic fluid of a patient whose fœtus had been dead for some weeks was fibrinolytic

Ratnoff et al. (1955) could not detect any significantly abnormal fibrinolytic activity in the blood of five patients with hypofibrinogenæmia associated with missed abortion, and Pritchard and Ratnoff (1950) did not detect fibrinolytic activity in the amniotic fluid in two cases

Reid et al. (1953) suggest that the fibrinogen is consumed by intravascular coagulation possibly due to the thromboplastin produced by the degenerating placenta This suggestion has been adopted to explain secondary postpartum hæmorrhage associated with blood coagulation defect (Maisel et al 1954)

Case-report

A woman, aged 37, had had eleven previous pregnancies, all of which had ended in live births The third infant died with jaundice three days after birth. The eighth infant was deeply jaundiced at birth and died at seven weeks The ninth infant was deeply jaundiced within nine hours of birth, an exchange transfusion was given, but the infant died at $7^1/_2$ months The eleventh infant was born on Aug 1, 1954, at term, it was œdematous and became jaundiced very rapidly and did not survive many hours after exchange transfusion Its Hb was 9 1 g per 100 ml, its blood bilirubin level was 9 5 mg per 100 ml, and a blood film contained 80% of nucleated red cells Towards the end of this pregnancy the patient had become grossly œdematous especially in her legs, over her sacrum, and in her abdominal wall, and became rapidly more so in the week preceding labour* There was no albuminuria, and the blood pressure remained within normal limits The patient was not seen again until April 21, 1955, when she had had no menses since her last pregnancy and thought that she was about twenty weeks pregnant She had just felt movement two weeks previously and still felt movement On examination the size of the uterus indicated a pregnancy of about twenty two to twenty four weeks, and the fœtal heart was heard The antibody titre at this stage was 1 128

May 21, 1955—The patient reported that she had not felt movement for about two weeks The fœtal heart-beat was absent The patient being very anxious to have labour induced, she was given ethinylœstradiol 1 mg every waking hour for a week and then given an oxytocin drip induction (5 units of oxytocin to each pint of glucose solution, 120 drops a minute) This was run for eight hours on successive days, and, although violent uterine contr occurred, the cervix remained firmly closed and un The patient was then discharged at her own reque was asked to return at weekly intervals or immedi if she noticed spontaneous bleeding from any site

June 16, 1955—The blood fibrinogen level was per 100 ml, clot retraction normal, clot stable for t four hours at 37°C, and serum antithrombin level No abnormality was noted (For the techniques used investigation see Appendix)

July 18 1955—The patient was seen at 4 30 P.M. had not been seen since June 16 despite warning. She complained that she had felt a sharp sting in her thigh the previous night and noticed that she had developed spontaneous bruise, and others had appeared within the few hours Three large bruises were visible on her ar thigh and several small bruises on her legs. At 5 her bleeding time was 1 min 10 sec and clotting time 10 sec, and a tourniquet test produced a fine crop of pe in 6 min. at 100 mm Hg (positive result) The on prothrombin time estimated within 10 min of venep was 19 5 sec, only a minimal clot being present and th was reduced to 15 sec by the addition of 20% of plasma, and to 13 sec by the inclusion of fibrinogen. time was not significantly reduced by the addition of or of absorbed plasma The fibrinogen reading of per 100 ml. is probably low, the sample having b lysed during the 30 min delay between venepuncture clotting the aliquot with thrombin Heating the p 56°C for 6 min. and 25% saturation with ammonium produced very small precipitates in comparison w control The platelet count by the direct method was per c mm and the hæmatocrit 40% Clot retraction wa but the clot showed lysis at 30 min and was gone in in two of the clotting time tubes In the other tube t did not altogether disappear Recalcified thrombin tated clots, buffer diluted 1 in 8, 16, and 32, lysed b 60 min and 150 min. after clotting at 37°C The th plastin heparin time was 5–30 min and was not sho by the addition of fibrinogen The control time was The addition of 20% of patient's heparin plasma to the prolonged the control time, to 123 sec, indicating coagulant activity at this level The prothrombin-cons index 75 min. after clotting was 30%, antithrombin and two stage prothrombin time well over 100%, n accelerated

Hysterectomy—A decision was made to attempt partial correction of the coagulation defect by tra four pints of dried plasma in one pint of distilled (pure fibrinogen was not available) and to do a closed ectomy if this produced the anticipated improvement. only eight pints of plasma was available, it was decid immediate removal of the source of the offending agent of the gravest urgency At 7 45 P M a specimen of was taken before the infusion of concentrated plasma and tested six hours later in common with two succeeding mens The citrated sample was kept at room temp and the clotted blood at body temperature In the the clot had lysed completely There was no fibrin the citrate sample, no precipitate following the a of thrombin or heating to 56°C for 6 sec. or precip after 33% saturation with ammonium sulphate The thrombin time with fibrinogen added was 13 sec Two prothrombin estimation was much greater than antithrombin 85%, and thrombin time with fibrinogen compared with a control time of about 28 sec The added to normal clotted blood did not effect lysis after incubation at 37°C At 9 P.M. the first pint of quadruple gth concentrated plasma had been infused and the tion was due to start. Some lysis of the clot took place , small nidus remained stable for twenty four hours in 32 dilution clot did not lyse Prothrombin time was c (14 sec with fibrinogen added) The two stage pro mbin time was well over 100% but not so high as before fibrinogen level was 145 mg per 100 ml., a precipitate present from heating to 50°C for 0 min. and on 33% ation with ammonium sulphate. Antithrombin was Thrombin time was 27 sec. compared with 24 sec e control and the addition of fibrinogen prolonged it sec compared with 28 sec in the control.

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* We have now observed rapidly developing œdema on other occasions in severe cases of iso immunisation of the mother without evidence of pre-eclampsia, and this is characteristic of the presence in the uterus of a severely affected us The œdema may have an allergic basis, it clears ly after the birth of the infant

stoperative Course —At 10 30 P.M. the operation was over a pint of blood had been infused No undue bleeding was rienced during the operation but there were fresh chial hæmorrhages on the surface of the uterus; so rther pint of quadruple strength plasma was transfused blood clotted and the clot lysed completely in two s at 37°C. The 1 in 32 dilution clot did not lyse in ve hours at 37°C. The prothrombin time was 15 sec. a poor clot and 13 sec when fibrinogen was added stage prothrombin estimation was slightly higher than in previous specimen The fibrinogen level was 145 mg 100 ml., and a precipitate was present on heating to 56°C l min, and on 33% saturation with ammonium sulphate thrombin was 72% and the thrombin time 32 sec. pared with 24 sec in the control and 38 sec. compared about 28 sec. in the control when fibrinogen was added thromboplastin heparin time was 240–300 sec. When ogen was added it was 240 sec. The platelet count was 00 per c.mm. At 11 A.M. next day the prothrombin was normal, no lysis was present the fibrinogen level 250 mg per 100 ml. antithrombin was 100%, there 60 000 platelets per c.mm the thromboplastin heparin was 105 sec compared with 95 sec. in a control, and the bin-time was 28 sec compared with 38 sec in a control he second postoperative day the prothrombin time was c., the fibrinogen level was within the normal range is was observed, the thromboplastin heparin time was c., and there were 108 000 platelets per c.mm. On eventh day the prothrombin time was 13 sec. the ogen level was 405 mg per 100 ml the antithrombin 90%, the thrombin time was 31 sec compared with c. in a control the thromboplastin heparin time was c compared with 67 sec in a control and there were 00 platelets per c.mm (see table)

hological Report (Prof J Kennedy) —The uterus showed ple hæmorrhages beneath the serosa and contained a ated fœtus measuring about 7 in from crown to rump was no gross retroplacental hæmatoma No histo l detail could be made out in the fœtus owing to macera The placenta histologically showed old and recent s. There were many areas of calcification within the Two areas of giant-cell reaction were present No ure blood forming cells were seen. The placental villi ed their thromboplastic covering It was impossible to e erythroblastosis from the placenta

Discussion

e features of the case are active fibrinolysis mbocytopenia, plasma hyposensitivity to bovine nbin and hypofibrinogenæmia The lysis, the fibrinogenæmia, and the thrombin hyposensitivity oved after the infusion of concentrated plasma and proved after the substitution of blood for the na during the operation The platelets were not ted immediately before the operation, but after it ount was raised above normal Next morning all normal save the platelet-count and a slightly pro d thromboplastin heparin time, and thrombin sensitivity had superseded the hyposensitivity her progress was uneventful The rapidity of ysis of the first specimen was such that immediate on of concentrated plasma and surgical removal e presumable cause seemed advisable The lysin inactivated either by time or by the citration fication process or by normal blood Probably fibrinogen level in the 5 15 P.M. and 7 48 P.M. ens was higher at the moment of venepuncture the fibrinogen underwent lysis before being estimated A definite anticoagulant effect at the thromboplastin heparin level seems to have been exercised by the 5 15 P.M. sample The fibrinogen level in this type of case may fall gradually over some weeks (Ratnoff et al 1955) If that happened in the present case, the development of the thrombocytopenia must be of grave import and of the lytic activity decisive

The treatment of missed abortion takes on a new importance with the recognition of the fact that a blood coagulation defect may develop The rapidity with which the hæmorrhagic state develops, once the disorder is initiated means that one must be prepared to deal with this grave emergency For many years the standard treatment of missed abortion has been one of expectancy because of the unreliability of the methods of induction of labour and the grave danger of infection

The mental anguish of a patient condemned to carry a dead fœtus in her abdomen must be very great Now that we have the additional stimulus that a defect of coagulation can develop, the balance is decidedly in favour of emptying the uterus as soon as the intra uterine death has been verified Before the twelfth week evacuation by dilatation and curettage will not present any great difficulties after the twelfth week the correct method will require careful consideration

Oxytocin-drip induction is the method of choice, but that this is not always successful is illustrated by the present case The method most likely to succeed is the introduction of a stomach tube into the uterus This should be done with scrupulous attention to asepsis and the patient should be kept under an antibiotic umbrella while awaiting the onset of labour. Rarely will the tube have to be removed at the end of seventy two hours because labour has not taken place If this method fails, the patient must be kept under strict surveillance samples of her blood should be examined frequently, and hysterotomy should be done after a transfusion of either concentrated plasma or pure fibrinogen at the earliest sign of defective coagulation of the blood The beneficial effect of concentrated plasma on the various types of coagulation defect seen in obstetrical and surgical bleeding is discussed elsewhere (Lavelle 1955)

Summary

A case of blood coagulation defect complicating missed abortion is presented in which active fibrinolysis, thrombocytopenia plasma hyposensitivity to bovine thrombin and hypofibrinogenæmia were the main features

Attention is drawn to the danger of treating these cases in domestic practice unless one is equipped to deal with a grave defect in blood coagulation

The standard treatment of missed abortion should be induction of labour at the earliest possible moment after confirmation of intra uterine death of the fœtus

The efficiency of concentrated plasma in the treatment of these cases is illustrated

APPENDIX

Blood was taken by venepuncture with an oiled syringe and citrated 0 parts to 1 part of 3 8% sodium-citrate solution.

Plasma was separated by centrifugation at 3000 r.p.m for 5 min.

Clotting time was estimated by the Lee White method, the mean of three tubes being taken, and bleeding time by the Duke method the mean of both ears being taken.

The Quick one stage prothrombin time with rabbit brain thromboplastin gave a normal time of 13 sec., and fibrinogen was added as 0·1 ml. of a saline solution containing bovine fibrinogen 200 mg per 100 ml. before recalcification. 1 ml of blood was incubated at 37°C for examination of clot retraction and lysis.

Thrombin time was estimated with 0·1 ml. of thrombin dilution added to 0·2 ml of citrated plasma at 37°C to give a normal time of about 30 sec

Fibrinogen was estimated by King's (1951) method

Platelets were counted by a direct method from blood in

Wintrobe silicone tubes Dilution clots for lysis, two stage prothrombin time, and prothrombin consumption index were according to the methods of Biggs and Macfarlane (1953) Serum antithrombin was estimated according to MacFarlane (1952)

Thromboplastin heparin time 3 ml of blood was added to 9 units of heparin previously dried in a test tube, and well mixed After separation 0 2 ml of plasma was timed to clot with 0 1 ml of standard thromboplastin solution The time for normals is constant for a given batch of heparin and thromboplastin It is believed that the test measures heparin sensitivity at the prothrombin level.

Adsorbed plasma was prepared by adding 0 1 ml of aluminium hydroxide gel to 1 ml of plasma, incubating at 37 C for 5 min, and separating plasma by centrifugation. This plasma gave a quick prothrombin time of 50–70 sec

The work of one of us (S M L) was financed by the Medical Research Council of Ireland, and was carried out in the department of pathology, University College, Galway

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CONGENITAL TOXOPLASMOSIS

DIAGNOSIS CONFIRMED BY PASSAGE TO MOUSE

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THE cardinal clinical features of congenital toxoplasmosis—meningo encephalo myelitis, chorioretinitis, and radiological evidence of cerebral calcification—are sufficiently well recognised to enable a good proportion of cases to be diagnosed at or soon after birth Purpura in a newborn infant, although more commonly associated with other conditions, is occasionally one of the presenting features of toxoplasmosis Callahan et al (1946) noted purpura in 3 of 18 cases

In the case reported here purpura was the earliest abnormality seen, but until the ocular signs were observed, the possibility of toxoplasmosis was not appreciated

The diagnosis of toxoplasmosis has hitherto usually been confirmed either by serological tests or by detecting *Toxoplasma gondii* microscopically post mortem Valentine et al (1953) reported for the first time in this country the successful passage of the parasite to a mouse from a case of congenital toxoplasmosis, this has since been accomplished by H S Baar, and by C P Beattie (personal communications) in 3 further cases Owing to the rarity with which the organism has been isolated in this country from human material this further case is reported

Case-report

A female infant was born at term to a primiparous woman aged 23, at the Military Families Hospital Woolwich The mother had no history of past illness, and her pregnancy was uneventful The child was born by spontaneous delivery and weighed 6 lb 9 oz At birth the baby was moderately shocked but required no special resuscitation Purpuric spots were present over her face and trunk, and vitamin K was given he next 24 hours. She became fretful, refused feeds, d unwell, fresh purpura appeared over her body At the age of 36 hours she was transferred to th Hospital for Mothers and Babies, and thirteen day the Queen Elizabeth Hospital for Children.

On admission she was pale and mildly muscle tone was poor, and her cry feeble and The purpura affected mostly her face and trunk, and spleen were easily palpable, both extending below the costal margins

Treatment and Progress

The infant was nursed in an oxygen tent, expressed breast-milk by œsophageal tube, and cillin 100,000 units and streptomycin 100 mg for four days. Chloral hydrate gr 1 was given The purpura gradually faded, and the spleen was easily felt by the 5th day of life, although the liver palpable In spite of a daily intake of 50 calories body weight her weight decreased from 6 lb 9 oz. to 5 Later, when fluids were taken with difficulty by were augmented by subcutaneous and intravenous Irritability, which had been mild at the onset, increased, and generalised convulsions ensued The cranial sutures were observed to have separated, although the circumference of the head remained unaltered at 13½ inches Both eyes were microphthalmic, ophthalmoscopy revealed a large white opacity in the left lens and a smaller one in the right lens The baby's condition slowly deteriorated, convulsions came on with increasing frequency and proved more difficult to control, and she died at the age of 25 days

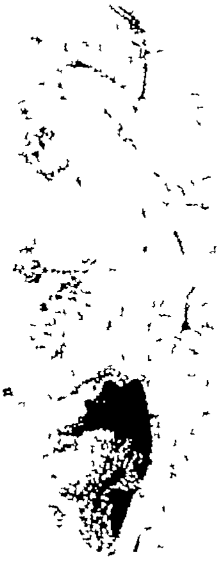


Fig 1—Coronal section cerebral hemisphere sive necrosis around lateral

Investigations

Examination of her blood showed Hb 15 6 g per 100 ml, red cells 5,200,000 per c mm colour index 0 96, leucocytes 13,000 per c mm. (polymorphs 66%, eosinophils 3%, lymphocytes 29%, monocytes 2%), platelets 260,000 per c mm, prothrombin time normal, blood urea level per 100 ml, plasma bilirubin level 0 7 mg per 100 ml, group A_1 Rh positive to anti D, and Wassermann, gonococcal complement fixation tests negative The spinal fluid (C S.F) was xanthochromic and contained per c mm (polymorphs 4%, lymphocytes 96%), total 825 mg per 100 ml, and chlorides 770 mg per 100 Pandy globulin test was positive No toxoplasma seen on microscopy of the fluid Radiographs of showed small areas of cerebral calcification and the sutures Toxoplasmic encephalitis having been ally diagnosed, Dr I A B Cathie examined the obtained the following results

	Dye test titre	*Complem test titr*
Mother	1 in 64	1 in 1
Infant	1 in 8	Negativ

and reported that "the positive dye test in the presumably passive transference"

Necropsy Findings

A well nourished female weighing 6 lb 13 measuring 20 inches in length The circumference head was 14 inches, there was no separation sutures Both eyes were microphthalmic, and there apparent opacity of the left lens The brain (427 g normal gyral pattern, with flattening of all gyri and of the sulci. About twelve irregular slightly depressed pale yellow areas with thickening of the overlying

1—Cortical lesion showing peripheral calcification and central ecrosis with cellular exudate in leptomeninges. (Hæmatoxylin and sin. ×34.)

nges were seen on the surface of both cerebral hemi eres. Some were only a few millimetres in diameter; the est, around the right calcarine fissure and on the left ipital lobe, measured 18 × 12 mm. and 18 × 9 mm. tion of these areas showed firm pale yellow punctate tissue ending 3–6 mm into the substance of the cortex and ply demarcated from the surrounding tissue. A sagittal tion through the brain showed the entire corpus callosum, the lamina terminalis, hypothalamus, pineal body and tum lucidum to be friable yellowish brown and obviously rotic. The third ventricle was filled by a recent blood clot pituitary gland appeared normal. Coronal sections ough the left cerebral hemisphere (fig 1) showed moderate tation of the lateral ventricle, which was lined to a depth 1–6 mm. by a zone of reddish brown granular gritty tissue anterior thalamus was speckled with numerous calcified s; this appearance extended for 1–2 cm lateral to the lining he third ventricle and involved the basal ganglia but not putamen and insula. Anteriorly in the white matter of the temporal lobe was an area of softening with a cavity uring 3·4 × 3·0 × 1·4 cm. and lined by soft grey e; it did not communicate with the inferior horn of the ral ventricle Here and there small soft brown areas mbling early necrosis were visible in the white matter of hemisphere No abnormalities were seen in the cerebellum, n stem or spinal cord and all other organs appeared mal.

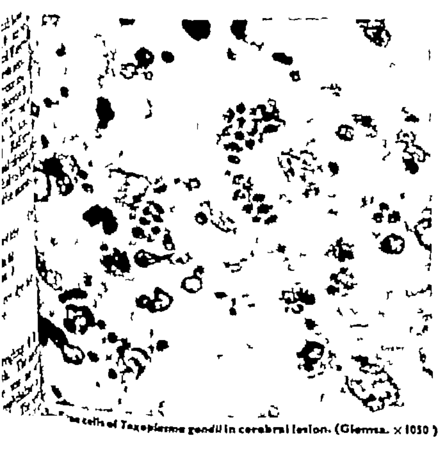
Histology

The lesions in the cerebral cortex showed central necrosis with powdery calcification often appearing to have arisen by deposition of calcium salts in necrotic nerve-cells (fig 2) At the periphery was a zone of large irregular polygonal or oval cells with vesicular nuclei and pale-staining cytoplasm together with a few lymphocytes, occasional compound granular corpuscles, and a little glial proliferation Numerous toxoplasma cells, intracellular extracellular and in the form of pseudocysts, were found in this tissue (figs. 3 and 4) The overlying meninges were infiltrated by mononuclear cells and lymphocytes. Early cortical lesions consisted of epithelioid cells lymphocytes, and neuroglia but showed no calcification The lining of the ventricular system showed a cellular reaction with numerous toxoplasma cells adjacent to normal brain tissue and separated from the ventricle by a zone of necrosis and calcification The cavity in the left temporal lobe was lined by necrotic brain tissue with no accompanying inflammation. Small lesions were present in the dentate nucleus and throughout the brain stem and spinal cord A particularly large calcified focus was situated in the lumbar cord The membranes covering the brain stem and spinal cord were infiltrated by a few mononuclear cells and lymphocytes. Dr N Ashton reported that the right eye showed posterior synechiæ and a delicate inflammatory pupillary membrane with a normal lens and ciliary body There was focal chorioretinitis with destruction of the retina considerable pigmentary disturbance and inflammatory infiltration of the choroid and vitreous. Near the disc granulation tissue extended into the vitreous and there was a folded retinal detachment Numerous extracellular and intracellular toxoplasma cells were seen in the retina. The optic nerve was normal. The left eye showed similar but more severe chorioretinitis with mild inflammatory infiltration of the ciliary body and early cataractous changes in the posterior cortex of the lens. Since the ocular contents were completely formed and there were no persisting fœtal structures Dr Ashton considered the microphthalmia to be the result of the endophthalmitis rather than of an arrest of growth, and he suggested that the inflammation was not fully established until the last weeks of pregnancy Apart from accidental involution of the thymus, all other organs were normal

Passage of Toxoplasma from Brain to Mouse

A portion of the brain from the edge of a large necrotic area removed at necropsy was made into a fairly fine suspension by grinding in a test-tube in about ten times its volume of broth with a glass rod The suspension was inoculated into three mice one intracerebrally with 0·01–0·02 ml and two intraperitoneally with 0·3–0·4 ml. From the first mouse no toxoplasma was obtained despite several attempted passages into further mice

One of the two mice injected intraperitoneally became ill and was killed twelve days after injection About



se cells of Toxoplasma gondii in cerebral lesion. (Giemsa. ×1050)

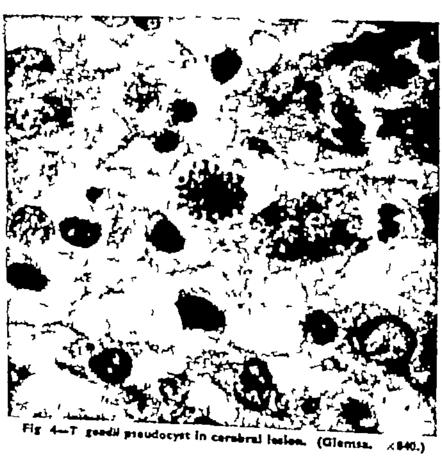


Fig 4—T gondii pseudocyst in cerebral lesion. (Giemsa. ×840.)

0 5 ml of a turbid fluid was found in the peritoneal cavity, but careful search, after staining, failed to reveal the parasite The remainder of the fluid was inoculated into two other mice, one intracerebrally and the other both intracerebrally and intraperitoneally The first was sacrificed after seventeen days and showed no evidence of encephalitis, nor did mice inoculated with its brain suspension The other mouse became ill and died twelve days after injection Its mucoid peritoneal fluid showed numerous free toxoplasma cells, from this there was no difficulty in continuing passage by the intraperitoneal route

Mice inoculated with peritoneal washings from the last of the original three mice were accidentally killed two days after injection, hence this passage was lost

Some of the original suspension was also inoculated into developing hen's eggs by Prof C F Barwell After eight days lesions were obtained on the chorio allantoic membrane, and scanty free toxoplasma cells were found

Discussion

That many species of mammals and some birds are infected with toxoplasma has been well established (Feldman 1954), but whether this animal reservoir of infection is the source of human toxoplasmosis is uncertain It seems worth while to assess the significance of animal contact in every case of active human infection Dr R Lamson, who investigated the epidemiology of the present case, found that the mother had been in Egypt for thirteen months and became pregnant five months after her return to this country She worked in a hospital canteen for the first sixteen weeks of pregnancy and, after a break of two months spent in Cardiganshire and South London, she returned to her original occupation in Woolwich until shortly before the birth of the infant A considerable number of cats, some of them having the run of the kitchens, stores, &c, had access to the canteen, one of these was her particular pet, and she also kept a cat in her home both in Woolwich and Wales The mother admitted that she was in the habit of petting and caressing any dog or cat which presented itself, and she did not mind their licking her hands and face She said that she was "subject to insect bites" She did not in her work prepare food, she never handled rabbits, alive or dead Since the number of contacts with animals was so great, it was impossible to single out any one animal for examination as the source of infection

Sabin (1953) has followed over 50 mothers none of whom produced an infected child subsequently He suggests that the fœtus is infected only when the mother is in an acute infective state, which may be inapparent or unrecognised In the present case, five months after the birth of the patient the mother aborted in the seventh week of pregnancy The fœtus was examined microscopically and showed no evidence of toxoplasmosis, the placenta was normal

Some petechiæ are commonly found over the presenting part after normal deliveries, particularly if there has been delay in the delivery and local cyanosis is present Generalised purpura in a newborn infant is a diagnostic problem Generalised infection, thrombocytopenia, hæmorrhagic disease and blood-group incompatibility may be excluded by examination of the blood With no abnormal findings in the blood the possibilities narrow to less common conditions, such as cytomegalic inclusion disease and toxoplasmosis Examination of the C S F may help There are few conditions in which the protein content of the C S F is much raised with *only a relatively* small increase in the cell count This is always the case with a spinal tumour and block and sometimes with a cerebral tumour, lead encephalopathy, and a subdural hæmatoma To these should be added toxoplasmic encephalitis A xanthochromic C S F with a considerable exc[illegible] protein and only a slight or moderate increase in the present case, suggests toxoplasmosis

Although there was active infection, the infant ga negative complement fixation test Such a finding is infrequent (Feldman 1954) and should not exclud diagnosis of toxoplasmosis

None of us had had any previous practical exper of toxoplasma, so the relative ease with which it isolated will perhaps encourage others to inv cases of suspected toxoplasmosis In the present ins *only intraperitoneal* passage into mice was suc none of the mice inoculated intracerebrally devel encephalitis or showed parasites on histological exam tion Intraperitoneal inoculation is simple and ap sufficient No toxoplasma cells were seen in the peritoneal fluid in the first transfer to mice, but finding should not deter an attempt at a second or third passage before assuming a negative result.

Finally, although it was impossible to trace the so of infection in the present case, since toxoplasmo common among domestic animals (Feldman 1954) p nant women should be warned to avoid close con with them

Summary

A fatal case of toxoplasmic encephalomyelitis chorioretinitis in a newborn infant is described, an epidemiology is discussed

Toxoplasma cells obtained from the infant's brain death were passed by intraperitoneal inoculation to m

Purpura may be a presenting sign of toxoplasmo

A considerable excess of protein and a relatively excess of cells in the C S F is of diagnostic significan

We are indebted to Dr R H Dobbs for his permiss publish the clinical details, Major B W Hughes for ref the case to us, and Mrs F M Byron and Mr G Hu their technical assistance

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THE FAILURE OF ACETYLATION IN DIABETIC COMA

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Human, rabbit, and rat blood can acetylate p benzoic acid and sulphanilamide in vitro (B 1955) This finding makes it easier to investigate

ACETYLATION BY BLOOD OF HEALTHY PEOPLE AND OF DIABETICS

Healthy people		Diabetics		Rat diabet	
Person no	Percentage of acetylated sulphanil amide	Case no	Percentage of acetylated sulphanil amide	Case no	T
1	17 6	1	14 3	13	
2	15 9	2	25 2	14	
3	23 2	3	24 8	15	
4	19 7	4	15 4	16	
5	20 4	5	20 7	17	
6	24 4	6	22 2	18	
7	23 3	7	23 5	19	
8	21 7	8	19 8		
9	24 6	9	18 5		
10	19 5	10	24 7		
11	20 2	11	21 3		
12	21 4	12	19·0		
Mean	20 99 ± 2 12		20 78 ± 3 85		

on in many human physiological and pathological nditions

Since acetylation is closely related to the metabolic ocesses leading to the formation and transfer of active acetate,[1] we investigated acetylation in 12 ealthy people and in 19 patients with diabetes mellitus, whom 7 were in diabetic coma The technique used t the acetylation in vitro of sulphanilamide by the ole blood was the same as Blondheim's, 0 2 ml of 3 6 mM sulphanilamide being added to 5 ml of whole heparinised blood and incubated at 37°C for twenty four hours The results are shown in the accompanying table

These results indicate that whereas in diabetes mellitus acetylation does not differ appreciably from acetylation in healthy people, in diabetic coma it is completely absent

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New Inventions

SCISSORS FOR POSTEROMEDIAL COMMISSUROTOMY IN MITRAL STENOSIS

DIGITAL splitting of the mitral valve is often possible, because of the toughness or excessive bility of the valve; and a variety of instruments—lvulotomes guillotines, fingernail knives, dilators d so on—have been devised for combined digital and trumental commissurotomy In a series of 270 tients with mitral stenosis we had to use instruments 85% of cases; the corresponding figures reported other workers range from 15 to 60% and Russell Brock tells us that he uses the ulotome in 80% of his operations.

Splitting or cutting of the valve outside line of the commissures, or damage to the rdae tendineae may cause serious mitral urgitation

All the existing instruments have dis- antages

With commissurotomes of the guillotine type ding is hard to control, and the operation st therefore be hurried It is difficult to align cutting edge of the instrument accurately h the commissure, which cannot be felt with guiding finger at the moment of cutting se disadvantages are shared by all the e-like valvulotomes.

or all practical purposes the dilators and the ing punch must be discarded

he commissurotome of Nuñez is dangerous use it may tear the circumflex branch of the coronary artery and if too much force is l, lacerate the heart wall

hen the right index finger is fitted with a mall knife of any type then the tip of the right index er cannot be used for splitting the postero-medial nmissure of the mitral valve

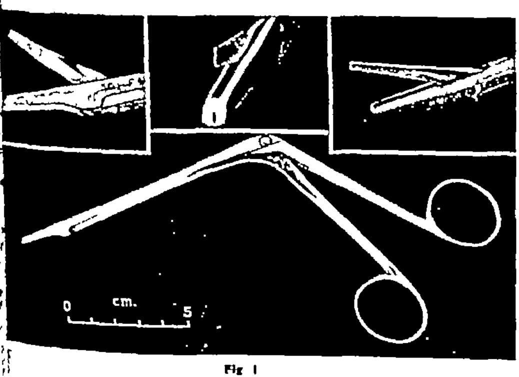

Fig 1

Struycken's conchotome used for the surgical removal the turbinate bones was used for posteromedial mmissurotomy in a new technique developed by A G Brom, director of this department. This new technique of inserting the instrument through a separate tiny incision was developed in view of the difficulty encountered in pronating the index finger when it was already in the heart, to the position where it could satisfactorily split the posteromedial commissure The conchotome was later modified by Brom and Romanos by providing the moving jaw with a cutting edge and by covering the slit in the back of the fixed jaw with a fine strip of metal to prevent fragments of cut tissue from entering the blood-stream (fig 1) The serrated edges of the fixed jaw were left. The instrument (which is kept closed during insertion and withdrawal) is introduced through a small incision in the wall of the left atrium and the wall is closed over the instrument by a purse-string suture and a Rümel Belmont tourniquet The right index finger introduced through an incision in the wall of the auricular appendage guides the jaws under the posteromedial commissure (fig 2), the jaws are opened and the commissure cut for a distance of 3–5 mm This incision is lengthened if necessary, or the opening in the valve is widened by digital pressure The instrument is withdrawn, and the atrial wall sutured in the usual way

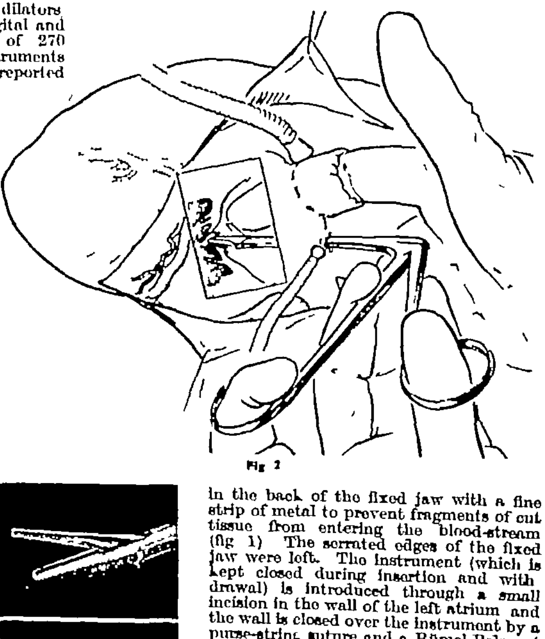

Fig 2

The conchotome is easily modified and it ensures accurate valvulotomy without endangering other structures. As its slim shaft needs only a small incision in the atrial wall little blood is lost during the operation, which need not be hurried

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A. N ROMANOS
M D
T E DEROM
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Reviews of Books

An Illustrated History of Science

F SHERWOOD TAYLOR, M A, PH D Illustrated by A R THOMSON, B A London Heinemann. 1955 Pp 178 25s

THIS handsome book, based on six Christmas lectures given in 1952 at the Royal Institution, amounts to a brief history of science written around the theme of its historical experiments, which were demonstrated at the lectures in a fashion as near as possible to that of their originators

Half of the 120 plates are modern full page drawings olacing the experiments, thus helping the text by revealing the background and personalities They are admirably done, ften with wit, and great care has been taken over detail, the r es of which are listed in an appendix For example, plate of William Harvey preparing to dissect obviously roduces the operation table from Vesalius's *Fabrica*, the struments being shown in disarray Readers will probably art with the feeling that anachronisms are bound to be resent we did not find any The lamp swinging in the thedral at Pisa was quite different from the one we had lways pictured when reading of Galileo, but the artist's ote reads "The scene is conjectural the lamp similar to, but not identical with that shown at Pisa, but in fact not placed there until after Galileo's death" The portraiture in the pictures is remarkably good

The roots of science pass down beyond the deepest strata of history into the darkness which surrounds the beginning of man himself Somewhere round about 4000 B C some communities organised themselves into larger units From then on science has developed with civilisation at an ever increasing speed, and the whole sweep of this development is here presented in a remarkable concise and readable survey The book is a triumph for Dr Sherwood Taylor, Mr Thomson, and the publishers

Local Analgesia Head and Neck

SIR ROBERT MACINTOSH, D M, F.R C S E, F F A R C S, Nuffield professor of anæsthetics, University of Oxford, MARY OSTLERE, M R C P E, F.F.A R C S, research assistant, Nuffield Department of Anæsthetics, University of Oxford Edinburgh and London E & S Livingstone 1955 Pp 138 27s 6d

Sir Robert Macintosh and the Oxford school of anæsthetics have established a tradition in their presentation of practical and liberally illustrated monographs on local analgesia The anatomy and the techniques of nerve injection are succinctly described, with the help of many clear and objective pictures, each of which tells so much more than text ever can This latest work in a memorable line contains 145 original illustrations, all bearing the stamp of close acquaintance with the problems encountered in this type of work.

Practice of Dynamic Psychiatry

JULES H MASSERMAN, M D, professor of neurology and psychiatry, North-Western University, Chicago Philadelphia and London W B Saunders 1955 Pp 790 84s

THE disorganised state of dynamic psychiatry, and the ebullient vitality of its proponents in the United States, are profusely shown in this textbook. Everything that came into Dr Masserman's head as he was writing seems to have been thrown into the flowing stream of words, and his likes and dislikes are vigorously stated, he ranges from principles of psychiatric examination to "drug narcosis" and "biodynamics and social issues", he offers a bibliography of about fifteen hundred items, and, inevitably amid this welter, there are many minor errors of fact and spelling Dr Masserman is, however, a widely read, experienced, and scientifically active psychiatrist who is not committed to adherence to any of the sects which sometimes further, and sometimes mutilate, dynamic psychiatry as it is practised in the United States His approach to the whole controversial fi [illegible] erefore broad and stimulating (except to the [illegible] o demand precision of thought and language), his practical guidance is shrewd, and he is critical of all rigid forms of psychotherapy, includ traditional psycho-analysis The book is in five pa dealing in turn with methods of psychiatric examinati syndromes, case-studies and reports, psychopatholog and the practice of psychotherapy this last secti occupies more than half of the book There are appendi on rather diverse topics, such as nomenclature of men disorders, alcoholism, and the training of the psychiatri This large textbook is a refreshing variant on the us tedious and dutiful statement of psycho analytica oriented or dynamic psychiatry

Pulmonary Resection for Tuberculosis

POUL OTTOSEN Aarhus Universitetsforlaget Pp 166 21 Danish Kr

THIS attempt to evaluate lung resection in the ment of pulmonary tuberculosis is based on the auth work first in the United States and later in Denmark

After a historical review and recapitulation of the in previously published series, he analyses two main The first consists of 138 cases operated on in the State Sanatorium, the operations were undertaken comparatively advanced disease and the results make interesting comparison with the second, more recent, of 43 patients operated on in Aarhus. More limited were possible in the second series and the results more gratifying The complications of the operation dealt with in detail There are some short case records well produced radiographs that are interesting to in conjunction with the main text

The work thus affords a useful critique of resecti a form of treatment, but it does not get to grips with more difficult problem of deciding whether the o is preferable to other forms of treatment in a case Admittedly the author is not entirely wedded resection as a means of surgical treatment, but it is he prefers it to collapse measures

Doctor in the Whips Room

SIR HENRY MORRIS JONES, M C, L.R C S.E Robert Hale 1955 Pp 211 18s

THE author's adventures began early he a woman before he started to learn obstetrics, he present in France at the execution of a deserter, in front line his ability to speak Welsh saved him arrest as an enemy These and other stories are in an autobiography revealing a first-rate and successful general practitioner, even if he was duped by a confidence trickster The second half book deals with his political life There is brilliant speech on the occasion of the golden of the speaker, the sad farewell of J H Thomas House, and a grim visit to Buchenwald

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Mental Health and Infant Development.—The ceedings of the international seminar held by the Federation for Mental Health at Chichester in the 1952 have now been published in two volumes under editorship of Dr Kenneth Soddy The first volume the lectures and summaries of the discussions held at the seminar The second volume gives a representative of the case histories of living French, British, and Ame children, which were distributed to members of the as preparatory material The British cases were pre under the direction of Prof D R MacCalman. (Lon Routledge & Kegan Paul 1955 Pp 308 and 289. vol)

The Medical Annual (Bristol John Wright & 1955 Pp 548 32s 6d)—The editors, Sir Henry Tidy Prof R Milnes Walker, continue their notable servi providing a yearly review of progress This year Dr Bodley Scott has undertaken the section on blood di and Dr Kenneth Cameron has contributed a new on psychiatry in childhood

Spot Diagnosis (vol 2 London Harvey & Bly 1955 Pp 127 8s 6d)—The Editors of *Medicine Illu* have prepared another collection of their entertaining Some of the conditions illustrated are rare, but the de of this game will be ready for anything

THE LANCET

LONDON SATURDAY, DEC 3 1955

Formation of Urinary Stones

ANY of us still think in terms of urate, oxalate, or phate stones, for we were brought up that way, recent investigations have shown that such a le faith is misleading A renal stone composed me compound in pure or almost pure state is ual The chemical analysis to which we have accustomed is crude and inaccurate but by ying modern physical methods of analysis LAY et al[1] were able to show the prevalence of ate (a complex of calcium and phosphate con ing carbonate and hydroxyl groups) in 30 renal li submitted to X-ray crystallography PRIEN FRONDEL[2] classified 600 urinary calculi after nination by both X-ray and optical crystallo hy and found only 217 (36%) pure oxalate stones, he mono or di hydrate forms (whewellite and dellite) either singly or mixed Uric acid was nt in pure state in 30 stones and mixed with ate and apatite in 7; so only 6% of stones ained urates This is a lower proportion than it be expected from chemical analysis in which test for ammonium urate may be misleading[3] 1%) stones were pure cystine and 1 pure brushite, est were a mixture of oxalate and apatite, struvite apatite, or the three compounds together

knowledge of the true composition of stones es us little further towards the cause of their ation, but it does suggest means whereby they be prevented or dissolved Since calcium is the alent cation in 90% of all urinary calculi, it is nable to infer that its physico chemical properties be controlled so that its salts are prevented from tallising from the urine There is the school of ivists' who hold that stones will not form in nal urine PRIEN and WALKER,[4] for example, k that by certain means the calcium salts are kept lution and that this mechanism should be pro ed and sustained According to this view, urinary uronosides provide stabilising compounds with um ions, and they are destroyed or inactivated nfection, thus leading to stone Since 25% of a of sodium salicylate taken by mouth is excreted he urine as glucuronosides, PRIEN and WALKER this drug to 19 patients with recurrent stones, encouraging results were recorded in 17 In 6 r patients with indwelling catheters encrusted alculi, administration of salicylate prevented the lation of these concretions The 'activists,' on other hand work from the premise that the urine ains substances, either normal or abnormal tituents, which steal the calcium cation from tion. The colloid matrix of the stone is often minated. BOYCE et al[5] noted two mucoproteins in normal urine which retained a negative charge throughout the whole range of urinary pH, they found that these mucoproteins were much increased in calculous disease and *particularly in hyperparathyroidism* "*Uromucoid*" was the name given to these substances The same workers[6] have now considered the possibility of "micelle" formation. Mucoproteins in urine contain chelate rings with which calcium may be leached out of inorganic solution on to the protein moiety Thus calcium chelates may be formed in a colloid micelle which can be disturbed by shifts of pH and alterations of inorganic environment so that crystalline calcium compounds are precipitated from the micelle—rather as water is squeezed out of a sponge BOYCE et al admit that uromucoid would act in this way as a detergent in urine only if it was modified so that both carboxyl and amino groups could be freed Their suggestions are supported by the fact that the process can work in reverse, and stones may be dissolved in vitro by chelating agents such as ethylenediamine tetra-acetic acid,[7] which has been used by GEHRES and RAYMOND as an irrigating solution in the bladder and kidney for this purpose[8] In 1 patient out of 7 complete dissolution of a bladder stone was achieved. SUBY et al[9] attempted renal irrigation in 2 patients but treatment was stopped because of pain, the pH of their solution was 4 5 and 'Tween' had been added GEHRES and RAYMOND used a 1% solution at pH 7 3 and reported no disturbing symptoms It is interesting to note that RAINS has been investigating *micelle mechanisms* in the formation of biliary calculi[10]

The factors which may prevent stones *forming*, or dissolve them after they have formed, do not necessarily indicate the causes of stone formation the mechanisms need not be the same and this confusion has often arisen in the past It would be wrong to suppose that because calcium salts may be prevented in one way or another from coming out of solution and because stone formation is thus avoided, stones are therefore formed by a reversal of that process A mechanistic hypothesis has been put forward by CARR.[11] His work is founded on RANDALL's[12] observation of calculous plaques at the apex of renal papillæ, calcium deposits were found in this situation in 17% of 429 pairs of kidneys examined at necropsy He also found 28 renal calculi adherent to and apparently growing upon renal papillæ ANDERSON and McDONALD[13] studied RANDALL's plaques more closely and found them to be an accumulation of calcareous particles which were apparently formed by phagocytic ingestion, their situation in the renal papilla could then be explained by the fact that calcium is reabsorbed in the tubules and may be in such concentration as to become particulate and require phagocytic mobilisation Whereas RANDALL and ANDERSON used histo

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logical techniques, CARR studied these deposits by direct X-ray photographs of the exposed kidney at operation and also by preparing autoradiographs from thin slices of 98 kidneys removed by operation and 111 obtained at necropsy A normal kidney contains one, two, or more opacities just visible to the naked eye Sometimes they are larger and composed of many small concretions which have accumulated together, often in lines In the presence of calyceal stones renal concretions are more abundant than usual, and they are often situated in the area draining into the corresponding calyx CARR also found that the concretions were just outside the fornices, in line with but outside arteries and veins Here the renal lymphatics pass out into the renal sinus, and CARR has therefore suggested that the concretions are lying within the lymphatics and that this is a normal method of removing particulate matter from the kidney and its pelvis Should a lymphatic become obstructed, concretions may accumulate at the fornix and break through its thin endothelial sheath into the calyx, whereupon a stone may grow from deposition of urinary salts around the concretions Further back in the lymphatic more concretions come to rest in linear deposition and the damming-back process may go so far as the renal papilla—hence RANDALL's plaques

Most, if not all, the known ætiological factors in stone formation would fit into CARR's hypothesis the lymphatic-drainage mechanism would tend to break down from overloading with microliths because of disturbed calcium metabolism, or a failure of colloidal solution alternatively inflammation would obstruct lymphatics by fibrosis The tendency to recurrence[14] after removal of a stone becomes understandable, indeed CARR suggests that the appropriate renal segment or lobule should be excised with the removal of a calyceal stone Furthermore, he has identified the composition of concretions with that of stones described by PRIEN and FRONDEL[2] Finally, if renal concretions lie within the lymphatics, which drain outside the kidney, certain extrarenal concretions might have the same X-ray diffraction patterns as intrarenal concretions and frank stones, and CARR has shown that they have

Nutrition and Vitamin B_{12}

WE know vitamin B_{12} as the factor necessary for the proper development of the red blood-cells when it is not absorbed a megaloblastic anæmia ensues, with typical changes in the bone-marrow Vitamin B_{12} is derived from food, and it is absorbed from the alimentary tract only in the presence of the intrinsic factor (hæmopoietin) secreted by the stomach Pernicious anæmia, the archetype of megaloblastic anæmias, develops because the stomach ceases to secrete the intrinsic factor and therefore the 1 µg or so of vitamin B_{12} that a man needs daily is not transported across the intestinal mucous membrane—a striking example of starvation in the midst of plenty We now know of other megaloblastic anæmias due to deficiency of vitamin B_{12} The megaloblastic anæmia after total gastrectomy is not hard to understand, since the area of gastric mucosa that secretes intrinsic factor is removed, CALLENDER et al[15] have shown that intrinsic-factor secretion and B₁₂ absorption are in fact greatly reduced in patients, and WATSON and FLOREY[16] produced same sort of result with experimental in rats What is surprising is that it is two years before the anæmia appears after gastr suggesting that the body possesses a cons store, perhaps 1000–2000 µg, of vitamin PITNEY and BEARD[17] followed the serum level vitamin B_{12} in a patient who had had a total tomy for carcinoma of the stomach, the level slowly and did not fall below the normal of 86 µµg per ml until eight months had After nineteen months the serum B_{12} was 50 µµg per ml, which is the upper limit in with pernicious anæmia (the average level in anæmia is about 13 µµg per ml), but in spite of further fall the gastrectomy patient still had megaloblastic anæmia

A megaloblastic anæmia in which nutrition at least some part is that reported by Fo co-workers in East Africa In their latest they show that the patients who respond to tr either with penicillin or with relatively small (80 µg) of vitamin B_{12} by mouth have low levels (20–100 µµg per ml) of vitamin B_{12} diet of these people is poor in animal protein and in bulky carbohydrates It may be actually in vitamin B_{12}, and it is likely that this type of encourages the growth in the intestine of that successfully compete for the available leaving little for absorption, and these presumably sensitive to penicillin. There is evidence that in these patients gastric func usually unimpaired

In food vitamin B_{12} is usually associated animal protein, it has been detected in only two vegetable foods, such as groundnuts Ve even in temperate climates, might therefore be of vitamin B_{12}, and, if a purely dietary ever occurs, it is among vegetarians that the might be found WOKES et al[19] have investiga matter They appreciate the fact that the British vegetarian does, in fact, consume quite of animal protein in the form of milk, butter, and other dairy products The proportion of dietary calories he gets from animal protein is under 3%, whereas in the average non diet in the United Kingdom the figure is about The British vegetarian gets as much animal in his diet as the ordinary Greek or Italian, and more than most people in India, for instance there are some vegetarians (vegans) who have eliminated dairy products from their food and animal protein at all, and groundnuts are absent from their diets As might be symptoms of deficiency do not become until they have kept to the vegan diet for some and some of them seem to escape definite symp even after five years on the diet The comm and earliest symptoms are in the mouth, sore to is often prominent Of the 32 British vegans

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)KES et al, 27% had oral symptoms Pares developed in 20% Amenorrhœa or other ual disturbances occurred in 8 of the 22 women between fifteen and forty five years The ual symptoms appeared early, for example, our years on the vegan diet paræsthesiæ were t in 4%, oral symptoms in 6% but menstrual oms in 24% Nervous symptoms were also n and about 20% complained of pains in the nd spine. WOKES et al estimated the serum B_{12} some of the vegans The normal is 200–320 µµg and in the vegans the levels varied from 45 to g per ml, 9 had levels of less than 100 µµg per d were considered to be definitely deficient in n B_{12} but all these 9 had been on vegan diet least six years Hæmoglobin levels were normal, n some, red cell counts were a little low and ean corpuscular volume a little high One vegans a boy of 16 who was deficient in in B_{12} did develop typical subacute combined eration of the spinal cord and details of case have been described by BADENOCH[20] patient responded very well to treatment with in B_{12} alone WOKES et al point out that bles contain comparatively large amounts of cid, and since folic acid is known to precipi he onset of neurological symptoms in classical ious anæmia, it is conceivable that the folic n the diet may have a similar effect in vegans ave become really deficient in vitamin B_{12}.

comparison with the British vegans, some nation is available about Dutch[21] and American[22] s Both seem to be less affected than the h vegans, no deficiency symptoms were ved in 26 American vegans who had been on a ree from animal protein for five years or more Dutch group had symptoms like those of the h vegans, but less commonly WOKES et al out that the Dutch group had been on vegan for an average of only two years compared with or six years in the British group The British s had the lowest protein intake, the Americans ned 10·4% of their calories from protein, the h 9%, and the British only 7% This difference be correlated with the observation that animals on t free from animal protein have a poor rate of th and development which can be corrected by g them vitamin B_{12} but only if the diet is ate in total protein. Possibly the British s could at least postpone their symptoms by sing their intake of non animal protein

ere is still controversy about whether the addition tamin B_{12} to the diet in small quantities (10 µg) by mouth has any effect on the growth and opment of children American claims that such a ement accelerated the growth of undernourished ren could not be substantiated elsewhere[23] s et al state that the growth and development ritish vegetarian boys showed no significant malities but these workers have little infor n about children on the restricted vegan diets known that vegan children have been success reared, though they are often breast-fed for longer than usual, and symptoms of vitamin B_{12} deficiency were commoner in the children than the adults There is certainly no support in these studies for the general use of vitamin B_{12} supplements for children

Experiments in Liaison

THE National Health Service Act of 1946, which changed the whole structure of the health service of the country, did nothing, initially, at least, to break down the barriers that separated the three branches of the profession Not all the blame for this however, can be laid on the Act, the profession itself must take its share There is no doubt that some of the provisions of the Act appeared—directly or indirectly—to make many of the barriers more formidable than they were, or to raise new ones There was, for example, the removal of the municipal hospital, the chest clinic, and the mass-radiography unit from local authority control The widening of the responsibility of the health visitor also had important repercussions, which affected in many ways the local authority's relations with general practitioners and hospitals. The Children Act 1948, which created new departments and new staff (usually separate from the public health department), produced further problems But these obstacles are in reality flimsy and unstable, for most of them rest on shallow foundations of prejudice and misunderstanding which can be broken by unity of purpose and joint effort

In liaison between the public health department, the family doctor, and the hospital staff, there has been gradual but accelerating improvement, though there are big differences throughout the country That this improvement could be carried further is evident from the frequency with which the words "coöperation" and "liaison" are used in Ministerial speeches, official circulars, and articles in the medical and lay press The subjects of problem families and the welfare of children in their own homes, the need for a proper domiciliary team and the rôle of the health visitor, and the control of tuberculosis have been recent contexts for these remarks But strenuous efforts have been and are being made to knit the work of the family doctor and the municipal health services more closely together In Birmingham[1] general practitioners were offered the use of clinic premises, THOMAS[2] has urged his fellow practitioners to seize the chance of the help which the health visitor can provide, and CHALKE[3] and others have described schemes which aim at bringing this about The Minister of Health, addressing the Executive Councils Association, has advocated more part-time hospital appointments for general practitioners, and he welcomed the action of the British Medical Association in asking local medical committees to make plans with medical officers of health to ensure that general practitioners could play a part in preventing the break up of families[4] In some respects the bonds between hospital and local authority have been tightened since 1948, largely as a result of regular visits by health visitors and clinic doctors to special departments—pediatric diabetic asthma psychiatric, geriatric, and physical medicine In the care of diabetics, for

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instance, special health visitors were used in Cardiff as long ago as 1944 [5], and an extension of this work elsewhere has given good results [6] Better coordination of effort is conspicuously needed too in tackling the growing problems of the aged, and here the local health authority has big responsibilities The Rutherglen experiment [7] is an example of what good team work can do, and the seconding of health visitors to work in association with geriatric units has been tried in a number of hospitals with great success [8] A number of surveys and inquiries have also demonstrated the value of the combined operation we recall the ones concerned with tuberculin testing and mass radiography in the Rhondda Fach [9] and tuberculosis in Blyth [10] As for tuberculosis control, we observed a few weeks ago [11] that the division of command may hamper the preventive approach, and that the expanding work of the epidemiologists could be better coordinated An illustration of the way in which good human relations can be established within the health service may be found in the account, by Dr STEPHEN TAYLOR and his colleagues,[12] of the Harlow health centres, which they term "an essay in cooperation ' Nearly all general practice in the new town will be conducted from the health centres, "in day-to-day association" with the clinics of the local health authority

DAVID MORRIS [13] believes that it is in the care of children that the work of the three authorities comes closest together (Each child, he reminds us, has at least three doctors, who may work independently of each other) He and his associates decided that the pædiatric outpatient department was a good place for an experiment in working coöperation with the local authority The health visitors in the area were in turn seconded to the department by rota The visitor in attendance passed on information to the clinic and the health visitor concerned, after a consultation with the almoner, It has been good to see how well health visitors and almoners are now working together, and this is borne out by the almoner, quoted by MORRIS, who found the experiment "wholly advantageous" She pointed to the different situations of the almoner and the health visitor, the former is generally concerned with a patient in an emergency, while the latter has a less urgent duty, and by dovetailing the knowledge of both the patient is likely to receive more constructive help Under the new arrangement the health visitor also saves the time of the pædiatrician by advising on such matters as mixed feeding, and this is advice which, in any case, is probably given more effectively by the health visitor All the children attending this outpatient department are referred by their general practitioners, who are kept informed of what is being done Seminars on topics of child health are arranged at the hospital, to which both health visitors and practitioners are invited

It is by constructive efforts such as these that the obstacles to a really united health service will be removed The deliberations of liaison c and the advice of official circulars can give help, but the success of the National Health depends in the end not on committees and but on the spirit of those who do its everyday We welcome these signs that this spirit is more original and adventurous

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Annotations

HEROIN

ADDICTION to heroin can be a dreadful in some countries it is widespread Among means of preventing it, the withdrawal of heroin medical practice has been under discussion nationally since 1923 Whether much would in gained by stopping all medical supplies has often questioned, because anyone who has some and a laboratory can turn it into heroin Nevertheless, after all these years of discus World Health Organisation is now persuaded that action is necessary A ban would not only remove opportunities for acquiring addiction but would ably simplify the detection and conviction of since, where a drug is illicit, its mere possession a clue In this difficult campaign the United needs the moral support of all the principal c whether or not they have a heroin problem would not be helped substantially if Britain prohibited export of what she manufactures

Believing firmly in the need for international in medicine as elsewhere, we have already our own opinion [1] that the Government were telling the United Nations that we shall do ask, and this week we publish, on p 1183, a of the subject which, though brief, may offset impressions left by even briefer letters in the n We agree, however, that difficult issues are the Government's decision, and that some objections lately put forward are both sincere reasonable It is said, for example, that the Medical Advisory Committee of the Central Services Council were not entitled to speak profession on so important a matter as the b a drug (something never done before), and the ment will be conclusive for those whose idea of is limited to majorities and specific mandates less convincing, however, to those who think that of democratic methods can be fatal to democra are content, for certain purposes with indirect r tion by a body of respected people who are told their own judgment Looking at the constitution particular committee,[2] we should ourselves think as likely as anybody—or as any other body— a sound and dispassionate answer to the first q they were asked "Is heroin indispensable ?" their answer "No" was surely the only possible in view of the facts (1) that the British Pharma Commission, with the authority of the General M Council, had in 1952 removed this drug from the ph copœia, and (2) that a great number of doctor, degrees of eminence, long ago dispensed with it in practice On the further implied question whet primarily to help in the control of drug-addiction n should agree to the United Nations request mittee s answer could not be a statement of fact be no more than an opinion Undoubtedly the olleges, the British Medical Association, or the ofession through a plebiscite could in the same e expressed an opinion but whatever doctors ave said their rôle would still have been limited e; for the only people finally entitled to decide lectorate—who are also the patients Fortunately country we do not yet attempt to refer such s, every few weeks to the millions of voters Her Majesty s Ministers responsible to Parliament, now having to choose on their behalf between rld Health Organisation and the Fellowship for n in Medicine

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[9] Cochrane A L Cox J G Jarman T F *Brit med J* 1952, ii 843
[10] See *Lancet*, Oct 29 1955 p 921
[11] *Ibid*, Oct 22, 1955 p 857
p 863
D *Woman Hlth Offr* 1955 9 283

[1] *Lancet* 1955, i, 1311
[2] The members last December were Sir HENRY COHEN, F Dr JANET AITKEN, Sir RUSSELL BRAIN, F.R.C.P Sir DAVID C BROWN Dr C METCALFE BROWN Sir DAVID C BROWN, F.R.C.S Prof F.R.F.P.S Sir ERNEST ROCK CARLING, F R.C.S Prof ROBERT CRUICKSHANK, F CHAMBERLAIN, F R C S, Prof ROBERT CRUICKSHANK Sir ARTHUR GEMMELL, F Mr O M DUTHIE F R C.S Sir ARTHUR GEMMELL Prof A J Dr E A GREGG Dr W V HOWELLS Prof A J F R C.P Dr W G MASEFIELD, Sir HARRY PLATT, Dr F M ROSE Sir JAMES PATERSON ROSS F.R.C.S Dr SCADDING Dr W P H SHELDON and Dr C H

Fellowship were right and if the unprecedented to ban the use of a drug involved a real threat lemns and officials, to medical freedom this would se be the moment to rally the profession against vernment But does it? As so often we seem onfronted by the conflicting claims of principle and n sense On pure principle no answer is possible argument that heroin must not be banned so there is a single doctor in Britain who wants t But supposing 10% of our fellow citizens were addicts should we still for this one doctor s reject the ban? Probably not In that case on conception of medical ethics can we regard our le as inviolable when we are asked to help drug abroad? Admittedly the doctor personally akes to do his utmost for his patient, and to that ought to be free to use the method of treatment e thinks will help the patient most But there are limits to what he can do—limits set, for instance, rationing of certain drugs, by lack of the right modation or even by the ruling of judges who that professional confidence must not interfere the course of justice In undertaking to help his t as much as he can, the doctor recognises, perforce, he community also has its rights And it has never ustomary in medicine to suppose that the human unity ends on the cliffs of Dover

COLOUR RADIOGRAPHY

AUSE of the short wave length of X rays it is not re possible to make a colour film directly For tion purposes in the past various colour radio have been made either by colouring the negatives ish with a special stain[1] or by superimposing three raphs taken at high medium and low voltage h colour filters.[2]

ce[3] has now experimented with tricolour paper to some direct colour The negative film and printing of this type contain three emulsions the top is ive to blue, the middle to blue and green and the t layer to blue and red A yellow filter is placed en the top and middle emulsions, allowing only and red light to reach the deeper layers At the f development a fix bleach solution removes the filter and the silver salts leaving only the three dye s. Using this material and a front intensifying it is possible to make a two-colour radiograph by ng the emulsion to coloured light during develop The result is a radiograph with a brown image there has been no exposure and various shades of and green at intermediate levels

n emulsion could be produced which would allow a rable variation in colour between areas of small opacity then this method would become more novelty But it is unlikely that any of the known ls would be suitable

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A. Brit J Radiol 1955 28 553

DEPRIVED AND DELINQUENT CHILDREN

THE latest report[1] on the work of the Home Office Children s Department is on the whole an encouraging document The expansion of the boarding out system for deprived children has accorded with the findings of psychologists and sociologists on the one hand and with economic necessity on the other We have known for a long time that large hostels and institutions are bad for the mental health of the child inmates, and that other ways, including boarding out and fostering, are needed to afford children individual attention and affection The relative costs cited in this report—£1 12s per week per child in a foster home and £6 4s in local authority homes and nurseries—show the extensive economies that can be effected by the present trend in official policy Between 1949 and 1954 the proportion of children boarded out increased until some 44% were provided for in this more satisfactory way The importance of obtaining an increased number of suitable foster parents in order to sustain the present trend is realised by the Home Office The time is clearly not far distant when foster parents will be fully trained social workers in their own right—receiving one should hope a rather more liberal allowance for this public service Also in the family group homes ' developed over recent years the aim has been to create a substitute family atmosphere for deprived children Such homes of six to twelve children under the control of a house-mother or a house-mother and house father , are established in an ordinary neighbourhood so that the children can attend local schools have their friends in to tea and in every way live their lives as members of the community By the end of 1954 there were some four hundred such family homes and the indications are that they will be developed at an increasing rate

Although the number of children and young people charged with offences has decreased in the past two years the numbers found guilty of indictable offences still exceed the pre war level New methods of combating juvenile crime include an experimental scheme of juvenile liaison officers operated by the Liverpool police force This scheme is devised to treat early delinquents and near delinquents by means of cautioning and home visiting by special non uniformed officers, with a view to stimulating parental control and preventing a child drifting unchecked into delinquency While the falling figures in Liverpool cannot prove (any more than rising figures could disprove) the value of this scheme the Home Office has considered its merits seriously and recommends its possible extension to other parts of the country

A brief account of the first detention centre established at Kidlington in 1952, is not heartening reading Of the five hundred boys who had been discharged after serving between three and six months under strict discipline and close supervision three hundred were subject to a further court order, and of the remaining two hundred only twenty could be persuaded to accept a period of voluntary aftercare supervision This suggests that tough treatment and short, sharp discipline are just as likely to increase resentment as to make hardened offenders more amenable There is clearly no easy substitute for the patient individual methods of borstal and approved school

For research the Home Office has to rely heavily on the resources of the large trusts and a few university scholars. Obviously much more needs to be done in the way of evaluating new methods of treating both young offenders and deprived children if we are going to develop an efficient flexible service

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1. Home Office Seventh Report on the Work of the Children s Department. H.M Stationery Office 1955

THE HYPERSENSITIVE XIPHOID

In view of the wide variations in size, position, and orientation of the xiphoid, it is surprising that so few symptoms can be related to disorders of this bone Very occasionally a gross disturbance of shape or position causes epigastric pain, nausea, or vomiting When there is such a malformation, and when the symptoms can be produced by local pressure, excision of the xiphoid brings relief But such cases are rare, and more commonly pain referred to the xiphoid is associated with organic lesions in the chest or abdomen In the absence of such lesions, the xiphoid itself may be responsible for symptoms which simulate those of coronary disease or peptic ulceration If pressure upon the xiphoid reproduces the patient's symptoms, this association must be borne in mind It is clear, however, that the xiphoid is often tender, both in normal people and in those with organic chest and abdominal disease, and the term xiphoidalgia, coined by Junghanns,[1] must be used with caution Lipkin et al [2] have investigated the hypersensitive xiphoid in a number of patients They suggest that procaine infiltration, repeated when necessary, often abolishes the symptoms and such a therapeutic test may be of diagnostic value

INFANTILE GASTRO-ENTERITIS

Several Continental workers [3-7] have lately written theses on the specific serological types of *Escherichia coli* and their association with epidemic infantile gastro enteritis A new monograph by Smith, of Aberdeen, now records some of the findings and views in this country [8]

Bray [9] first demonstrated the importance of a specific serological type of *Esch coli* in epidemic infantile gastro enteritis, and much important work has followed, notably by Joan Taylor and Smith It is fitting, therefore, that Smith should have written the first British monograph on this subject He makes an excellent survey of the investigations, but those who have been studying these problems may wish that he had set out to write a longer book in which he could have analysed the work more fully, and discussed at greater length the arguments for and against these specific serological types of *Esch coli* being the cause of infantile gastro enteritis He gives a clear summary of Kauffmann's serological classification, and a useful list of where and when each serological type has been found in epidemics of infantile gastro-enteritis There is mention too of the work on the white scours of calves, a closely related disease caused by certain specific serological types of *Esch coli*, some of which also cause enteritis in babies

Smith's observations on the biochemical patterns of many strains of *Esch coli* type O 111 anticipated the later identification of the different H types of that organism He gives several references to show how the demonstration of these different H antigens has been used in epidemiological studies One of his rare omissions is any reference to the work of the French investigators, headed by Nicholle,[10] who have shown that a similar subdivision of the types can be made by specific phages

The best part of the monograph deals with the 1947 epidemic in Aberdeen, which was probably the most extensive that has been recorded since these specific serological types of *Esch coli* were recognised, and in which there were 104 deaths amongst the 240 cases infected with *Esch coli* types O 111 (B4) and O 55 (B5) the points which have been stressed by later were fully examined in 1947 by Smith and his coll Giles and Sangster they showed how the younge especially those in institutions, were most often how the infants in the slums were infected hospital, how previous illness predisposed to and how breast-feeding protected these babies also found that vomiting was an important early tom (60% of 180 cases), that it was valuable to the doubtful cases and that epidemics could be by rapid segregation of carriers and cases and an epidemic was being investigated it was examine the nurses as well as the babies

ANTI-HISTAMINES AND ASTHMA

It has been known since 1934 that a substance is an anti-histamine precursor can cause smooth muscle [1], and since the introduction of histamines into clinical practice evidence has lated that in the doses used they can produce constriction in asthmatics Anti histamines have found to be relatively ineffective in the asthma, but it is only recently that it has been that they may sometimes make the condition

Given by mouth some of these drugs capacity in some asthmatics [2 3] 'Antergan' mine inhaled as 2% aerosols cause transient constriction in man [4], and Herxheimer [5] found asthmatic dyspnœa was invariably inhalation of aerosols in concentrations greater 1–3%, although lower concentrations gave some Hawkins [6] has studied 12 well known ant and found that they all cause bronchocor animals He also confirmed the finding that caused contraction of isolated human bronchial and concluded that "the bronchoconstrictor the antihistamine drugs tested may well be limiting their therapeutic activity in asthma" known that some anti-histamine drugs may cause mine release in the body,[8 9] and Hawkins thus may be the cause of the bronchoconstriction, the drug is not usually present in sufficient conc to block the action of the histamine which it has caused to be released Hawkins's explanation little practical evidence to support it, but since clear that anti histamines may cause broncho in man it is reasonable to suggest that they be used routinely in asthmatics

In chronic diseases such as asthma and parkin where there is a natural and proper tendency to t drug that may help, that drug should be assessed cr and abandoned unless undoubted improvement followed its use But the multitude of synthetic now available makes selection particularly difficu present there are at least 18 different anti histam pounds available under at least 37 names, not to various tablets containing mixtures of them The trials so far recorded suggest that 3 or 4 compo the most are all that need be used and that there to choose between most of these drugs from a standpoint Goodman and Gilman [10] remark "P in no other class of therapeutic agents does the ph enjoy a wider choice of preparation, but in no group of drugs does a discerning choice offer less re

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Special Articles

DOING WITHOUT HEROIN

ACETYLMORPHINE or heroin which has been used
ally for about fifty years, is recognised as the most
erous of all drugs of addiction, and as long ago as
an international conference recommended that all
tries should abolish or restrict its manufacture
mber of countries, including the United States of
rica took this step before the second world war,
1949 many others have followed suit, and by 1954
sponse to an inquiry by the World Health Organisa
fifty four had expressed the view that the medical
of heroin could be dispensed with

this country prohibition of the manufacture of
in has been seriously considered for more than five
s. Thus on Jan 15 1949 the *British Medical*
nal wrote

> The dangers of heroin are well known Addiction is
> ired more rapidly than with any other drug; once
> ired the disorder progresses with greater speed and is
> ked by a more profound and disastrous moral degeneration
> in any other addiction. Cure is more difficult and
> len withdrawal may prove fatal In the light of these
> it is clearly the duty of the medical profession to examine
> n the therapeutic value of this substance and to weigh
> ainst its social danger
>
> Pharmacological opinion has long held that its social
> ers overshadow its therapeutic importance It must be
> ed that there is justice in the Permanent Central Opium
> rd's claim of an *a priori* case for its total abolition.

hen in 1940 the Standing Medical Advisory Com
tee of the Central Health Services Council was first
ulted about an inquiry from the United Nations as
hy the use of the drug was still regarded as indis
able they stated that ' it was favoured by many
eons as the best postoperative sedative ' On the
e occasion however the same committee also said
s though half of the drug used in this country went
the dispensing of cough linctuses the general opinion
ng physicians was that heroin had no significant
antage over codeine or morphine as a cough suppres

In October 1950, the Standing Medical Advisory
mittee reconsidered the alleged indispensability of
in and decided to consult the British Pharmacopœia
mission Later in the same year the committee
urred in the commission s view—reached after con
ing a large number of bodies including the Medical
arch Council and the British Medical Association
approved—that the advantages claimed for heroin
not outweigh the grave consequences of widespread
tion in certain countries and the committee decided
to oppose prohibition of the manufacture and sale
roin if international agreement on it could be reached
1952 the British Pharmacopœia Commission decided
mit the monograph of heroin from the 1953 *British*
macopœia

hen in 1953 the Sixth World Health Assembly
mmended member States to prohibit the import and
ufacture of heroin there was a measure of support[1]
very little opposition in the British medical press
December the Standing Medical Advisory Committee
he Central Health Services Council was asked to
der a resolution to the same effect from the Economic
Social Council of the United Nations, and after
idering the evidence which had appeared since their
ious decision they agreed that prohibition of heroin
acceptable This action was subsequently endorsed
the Central Health Services Council which is the
utory body set up under the National Health Service
1946 to advise the Minister of Health on matters
ting to services provided under the Act The results
of these consultations were available to the Home Secretary and no doubt largely determined the Government's decision announced last February

USE OF HEROIN

Last year English manufacturers made about 80 kg of heroin for disposal in this country Probably about half of this was dispensed on National Health Service E C 10 prescriptions, mainly in the form of linctus of diamorphine *B.P.C.* the remainder being used either in hospitals or for private prescriptions and proprietary preparations It is therefore evident that quite a substantial amount of heroin is still being prescribed in Great Britain On the other hand, in current British textbooks of general medicine and therapeutics there are relatively few references to its special value The following for example, is the passage on heroin in a much used work on therapeutics[2]

> The drug resembles morphine in its general effects, but acts more strongly on the respiratory centre It is therefore more dangerous than morphine. It is more depressant to the cerebral cortex than codeine but less so than morphine Its analgesic effect is about 4 times stronger than that of morphine It is excreted unchanged in the urine Only a small degree of tolerance is acquired and then most of the drug is destroyed in the body No tolerance is developed towards its excitant action on the nervous system so that convulsions may be produced in place of sleep Addiction is common, the drug being taken in the form of snuff or by injection.
>
> This drug is used to allay cough, especially incessant cough with much expectoration. It is also used to abolish pain as it is less liable than morphine to cause vomiting Alarming symptoms of respiratory paralysis may, however occur after therapeutic doses. Papaveretum (Omnopon) *is much safer* and usually equally efficacious. '

One[3] of the general medical textbooks contains no mention of the use of heroin, though morphine and codeine are advised and an equally popular manual[4] of applied pharmacology, after a brief reference to its use in the treatment of cough and in postoperative discomfort states unequivocally that heroin is such a dangerous drug that its use has been banned in America and it would be a great advantage if this control was exercised in all other countries. '

ALTERNATIVES

Medical opinion in the United States of America as reflected in current American textbooks, regards heroin as completely replaceable in medical treatment Thus in one[5] work on therapeutics, of American authorship, there is the clear statement that " heroin has no indispensable advantages over morphine ' and in an equally well known American textbook[6] of pharmacology is expressed the opinion that heroin shares all the disadvantages of morphine without any serious advantages

That doing without heroin is a matter of the skilful employment of the available alternatives is suggested by the fact that while some hospitals use considerable amounts others use almost none In his study of *Good General Practice*[7] Stephen Taylor lists the drugs carried in the bags of general practitioners these included morphine pethidine compound tablets of codeine papaveretum and methadone but heroin was not found in any of the bags examined

Though there is no single drug with analgesic and cough suppressant actions which can automatically replace heroin, the use of a number of other drugs, either in sequence or in combination, is held to afford equal benefits In a recent discussion at the Royal Society of Medicine,[8] on the treatment of inoperable cancer, heroin was not mentioned, the control of pain by drugs in the terminal stages being secured by mist acid acetylsal opiat, pethidine, methadone and phenadoxone, with chlorpromazine where necessary The intolerance of some patients to morphine, expressed by a tendency to vomit, is often put forward as a sufficient reason for the indispensability of heroin, but the coincident use of small doses of atropine and hyoscine, or of one of the antihistaminics, is said to overcome this difficulty Another suggestion in this connection is the use of morphine combined[9] with amiphenazole (diamino phenylthiazole, 'Daptazole') It is claimed that in this combination morphine becomes much less dangerous, and can be given in larger doses without resultant respiratory depression and without diminution of its analgesic effect

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[1] *Brit. med J* 1953 ii 190

[2] Hale White's Materia Medica Pharmacology and Therapeutics. Edited by A H Douthwaite 28th ed., London 1952 p 211

[3] Textbook of Medicine Edited by Sir John Conybeare and W N Mann 11th ed Edinburgh 1954

[4] Clark's Applied Pharmacology Revised by Andrew Wilson and H O Child 8th ed., London, 1952, p 267

[5] Pharmacological Basis of Therapeutics By Louis S Goodman and Alfred Gilman. 2nd ed, New York 1955 p 238

[6] Manual of Pharmacology By T Sollmann 8th ed Philadelphia 1954, p 288

[7] Taylor S Good General Practice London 1954 p 550

For the control of cough there are various alternatives to linctus of diamorphine A well-known book on general practice[10] describes linctus codeine as the most generally useful antitussive agent and does not mention heroin This book also recommends linct scill opiat *B P C*, (Gee's linctus), methadone (linctus 'Physeptone'), and for very severe cough dihydrocodeinone ('Dicodid') The control of the severe usually unproductive cough associated with tumours of the lungs and bronchi is a difficult therapeutic problem,[11,12] for which hitherto, at least in this country, opiates including heroin have often been used But American physicians have used alternatives for this purpose Increasing interest is being shown in the antitussive properties of some of the new synthetic narcotics, especially in levorphan congeners such as dextrorphan and dextromethorphan These substances, though they have no analgesic properties and are said not to produce addiction, have been found[13,14] to be as effective as codeine and to cause no undesirable side effects

VITAMINS A AND D

THE nutrition panel of the food group of the Society of Chemical Industry held on Oct 26 the opening meeting of a series concerned with Nutritional Requirements and Food Fortification The subject of Vitamins A and D was dealt with under three headings—nutritional requirements, dietary supplies, and food fortification

Mr T MOORE, D SC, discussed nutritional requirements He concluded that the figures of the B M A nutrition committee (1949) were the most acceptable These were based on observations in Sheffield, where 16 volunteers had been fed a vitamin A deficient-diet for two years Only 3 of these showed a true deficiency, which indicated that there were large liver reserves It was shown that 1300 I U of vitamin A or 2500 I U of carotene was curative Carotene was equivalent to vitamin A in the rat but not in man From these figures, and including a safety margin, it was suggested that, if fed as preformed vitamin A, 2500 I U was adequate, or, if as carotene, 7500 I U, and since a mixed diet was usually composed of one third as vitamin A and two-thirds as carotene, a total of 5000 I U was recommended This compared with the League of Nations (1938) figure of 2000–4000 I U and the United States (1943) figure of 5000 I U Requirements were increased in
and lactation

The evidence for the requirements of vitamin
was very doubtful, moreover these requirement
modified by the amount of sunlight reaching the
and the amount of calcium and phytic acid in the
Dr Moore concluded that here again the B.M.A.
were the most acceptable children 0–2 years 800 I
2–4 years 400 I U, adult requirements not as

Mr V H BOOTH, PH D, dealt with the dietary su
The levels of intake of these two vitamins had
very constant in recent years, even during
With regard to vitamin A the absorption of
differed considerably according to its source. T
carotene from vegetables was not so well absorbed a
from an oil solution, while the carotene from carrot
less well absorbed than that from green leafy veg
Evidence compiled by the National Food Survey
that the average intake, corrected to vitamin A,
3800 I U, thus more than fulfilling the postulated
ment of 2500 I U Dr Booth pointed out that th
an average figure, and that it had been shown th
coefficient of variation was 45% It appeared
least 16% of the population, if the distribution
was normal, were receiving less than 2100 I U

In the case of vitamin D no allowance could be
for the synthesis taking place in the skin under
influence of sunlight From the average food
calculated that the intake, allowing for 15% loss,
143 I U per day

Mr P N WILLIAMS discussed food fortific
Margarine was the most important vehicle for f
cation with vitamins A and D and was, moreover
first food to be fortified When forty years ago the
soluble factors were shown to be present in bu
became clear that margarine was deficient in
factors, it was fortified with vitamins A and D to
its nutritional value to that of butter Mr W
traced the history of this process, which in the earl
used cod liver oil, and then later a vitamin conc
prepared by saponifying the oil When the p
whale liver oil was discovered this was used as the
source until 1939 Since there was no vitamin
whale liver oil this was added as irradiated
The final stage was the use of synthetic vitamins A

The vitamin content of margarine was about
that of butter Other vehicles for fortification
dried milk for infant feeding, which contained
vitamin D, and in the United States tinned ev
milk was similarly fortified

In the discussion Miss D F HOLLINGSWORTH
attention to reports of hypercalcæmia in infants
be due to overdosage of vitamin D from the addition
riched foods and cod liver oil to an already
Mr A L BACHARACH pointed out that if
children were receiving excessive doses of vitamin D
it became necessary to prevent this by reducing
amount of the vitamin in various preparations, the
might be to exaggerate the problem of those infant
now receiving sufficient vitamin D He suggested
this was a problem for the administrator and leg
rather than the scientist

With reference to calciferol poisoning Mr Bach
expressed scepticism about the frequency with
genuine cases had occurred Earlier reports had
certainly referred not to calciferol but to irrad
ergosterol which contained toxic substances

Prof JOHN YUDKIN, the chairman, asked whe
fortification of margarine raised a diet inadequate
vitamins A and D to the level of adequacy Mr Willi
replied that margarine was likely to be the main so
of vitamins A and D for people of limited income,
without this source he thought that the intake of vit
A might be inadequate

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[8] *Proc R Soc Med* 1955 48, 703

[9] Shaw, F H, Shulman A. *Brit med J* 1955 i, 1367

[10] Introduction to General Practice By D Craddock London, 1953, p 516

[11] Text Book of Medical Treatment By D M Dunlop and others 2nd ed revised, Edinburgh, 1943, p 869

[12] Introduction to Diseases of the Chest By J Maxwell 3rd ed, London 1948 p 146

[13] Cass, L J, Frederick W S, Andosca J B *Amer J med Sci* 227, 291

[14] *Ibid*, p 297

ofessor **Yudkin** drew attention to the apparent ality of fortifying margarine with vitamin D to a three times as high as that of butter although the of vitamin A was the same as in butter particularly se infants who required vitamin D did not normally margarine Mr **Williams** commented that this was rently done to provide a source of vitamin D for ing children.

reply to a question Miss **Hollingsworth** pointed hat there was little difference between the nutritional kes of different income groups in contradistinction he state of affairs in the 1930s, and that the greatest rences were between families with different numbers ependants

PLANNED PARENTHOOD

International Conference in Tokyo

FROM A CORRESPONDENT

he theme of the 5th International Conference on nned Parenthood held in Tokyo from Oct 24 to 29 overpopulation and family planning A vast array naterial was presented—the Japanese alone offered e than 30 papers—covering demographic and clinical lies field trials, and fundamental research aimed at control of fertility

an arresting paper Dr Elmer Pendell argued that concept of ' the dignity of the individual could be led so far as to clash with the interests of society Not must quantity of population be controlled, quality must be maintained by a judicious policy of sterilisa Dr Frederick Osborn held that society should e easier early marriage and large families for its more able stocks—i.e those conspicuous for vitality and achievement

efining population pressure as 'the way a people about its own economic situation as compared with of other peoples, Prof Warren S Thompson gave ns for expecting this to increase in the next few des. In his view population pressure was one rtant cause of, but did not lead inevitably to war

ough the dangers of overpopulation are appreciated world over it is significant that so far the govern s of only two countries—India and Japan—are tically facing them to the point of financing family ning programmes That Communist China is alive his danger is shown by the fact that a request was ved at the last minute from the Peking government ermission to send delegates to the Tokyo conference rtunately though the request was readily granted as too late for the Chinese to make the necessary gements

ports were made to the conference of a number d studies notably the Ludhiana experiment and the ssful experiment, under the direction of Prof Yoshio at present under way in three villages in Japan he most important feature of the conference was the that many distinguished scientists were gathered ther to describe their researches into reproductive ology and to exchange ideas Though the perfect t for the control of fertility is not yet in sight, ous promising lines of investigation are being pursued mpts are being made to select stages in the male female reproductive processes which are vulnerable signed interference Among the oral contraceptives examined are certain antimetabolites progesterone substances anti histamine agents such as ergotoxin the recently isolated active principle of *Pisum* *m*, metaxylohydroquinone

Family Planning Association

part of its 25th anniversary celebrations the Family ning Association held its second conference of doctors rses on Nov 26

SUBFERTILITY

Dr G I M. **Swyer** described a routine preliminary approach to subfertility cases which could be applied in any clinic without special facilities, and would deal with most of the simpler problems. But he stressed the importance of post coital testing and semen examination by experienced staff

MARITAL PROBLEMS

Dr A G **Thompson** opened a discussion on the provision of advice on marital difficulties The general feeling was that a large proportion of the difficulties which patients mentioned though a source of real unhappiness could be very simply dealt with by a few understanding words and a background of common sense It was important to give patients an opportunity to voice their worries Many felt that they were abnormal and were anxious about the abnormality To be told that their problem was common and easily resolved was often all the help they needed Doctors who were also marriage-guidance counsellors felt that the more difficult problems were best referred to marriage guidance centres But clinic doctors were in a unique position for helping people with simple and common problems. The majority of F P.A clinics appeared to provide such a service and many worked in close coöperation with the Marriage Guidance Council

UNPLANNED PREGNANCIES

Dr **Margaret Hadley Jackson** described an investigation into the causes of unplanned pregnancies in clinic patients. From the figures given by Dr Jackson and other speakers it appeared that a surprisingly large number of patients gave up using the occlusive-cap and paste method of contraception because they found it unacceptable

BIRTH CONTROL

Dr **Naomi Penfold** spoke about how the unconscious motivation of patients might affect their acceptance of a birth-control method. Many patients were ambivalent about further pregnancies some were unenthusiastic because it would mean resumption of intercourse with the spouse A subfertile woman had enormous motivation to become pregnant; most women had a far less intense desire not to become pregnant Many women felt that birth-control was the husband's responsibility but it seemed best that where psychological disorder was present the responsibility should be with the more stable partner

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Mr **Iain Macleod** the Minister of Health during a visit to the North Kensington centre of the Family Planning Association on Nov 20 said that the position held by the association today would have seemed unthinkable to the pioneers of the movement twenty five years ago Happily he said much of the prejudice and ignorance about its work had been swept away and today many local authorities sent patients to the association's centres rather than start their own clinics Mr Macleod referred to the admirable work done in planning the size of families helping women who for medical reasons had been advised to have no more children; and teaching doctors, nurses and senior students contraceptive technique In congratulating the association on bringing happiness and fulfilment to many families, Mr Macleod added that there were thousands of people in this country whose different views on family planning we should respect

The Family Planning Association was started in 1930 to coördinate the work of five existing organisations Lady Denman, who helped to found the association was chairman until she died last year Lord Horder was the first president and still held office at the time of his death The association maintains an approved list of proprietary contraceptives and at its headquarters, 64 Sloane Street, London, S W 1 there is a pregnancy diagnosis laboratory where the results of Hogben tests are available in twenty four hours. Last year the association's 108 centres in England Scotland and Wales were visited by about 200 000 patients, mostly for the first time Fees are charged according to the patient's means. The North Kensington centre which was opened in 1924 deals with all aspects of family planning, including helping childless couples to start a family (The association estimates that as many as 10% of all married couples may be involuntarily childless) Some 20 000 patients have already been seen at the London medical centre for the investigation of male infertility which is the first of its kind in the country

GENERAL MEDICAL COUNCIL

SESSION NOV 22–25

BEFORE SIR DAVID CAMPBELL's presidential address[1] at the 191st session of the General Medical Council on Nov 22, two new members were introduced and took their seats—Mr HEDLEY ATKINS, representative of the Royal College of Surgeons of England, and Mr VICTOR LACK, representative of the Royal College of Obstetricians and Gynæcologists

Dr H GUY DAIN presented the report of the Pharmacopœia Committee, incorporating the report of the British Pharmacopœia Commission, 1953–58 Sales of the *Addendum, 1955,* had been extraordinarily good—much better than those of the previous *Addendum* Work on the next *Pharmacopœia* was well in hand Among the matters which the Commission had considered was the colouring of tablets After careful consideration, they recommended that the requirements stated in the *Pharmacopœia* should be retained The Pharmaceutical Society and the representatives of retail pharmacists strongly supported the retention of the present ruling

The council considered the report of the Committee for the Registration of Commonwealth and Foreign Practitioners They agreed that for the purpose of section 1 (*b*) of the Medical Act 1950, the following should be regarded as having had the compulsory houseman experience specified in section 4

Persons holding recognised diplomas granted after Jan 1, 1953, by the University of Malaya who are registered as medical practitioners in the colony of Singapore or the Federation of Malaya

Persons holding recognised diplomas granted by the University of Sydney who produce a certificate of hospital service given by the New South Wales Medical Board, provided that the person's experience as shown on the certificate satisfies the requirements of the Act

Persons holding recognised diplomas granted by the University of Dalhousie after Jan 1 1929 who are registered as medical practitioners in Nova Scotia

Persons holding recognised diplomas granted by the University of Manitoba after Oct 20 1948 who are registered as medical practitioners in Manitoba

Medical Disciplinary Committee

The committee began its session on Nov 23, with the President in the chair During the President's absence on Nov 24, Prof R J BROCKLEHURST took the chair

APPLICATIONS FOR RESTORATION

Sumatapalage Reginald Gunewardene applied for restoration of his name He had been told that he could not be put on the Register in Ceylon while his name remained off the British Register The committee did not see fit to direct the registrar to restore the applicant's name

Archibald Luke Basham, whose name was erased in August, 1954, following his conviction for conspiracy to defraud an executive council, applied unsuccessfully for restoration

Robert Vivian Storer applied for restoration of his name, which had been erased in 1935 His name was not restored

The registrar was directed to restore the name of *Arthur James Daly*

INTENT TO PROCURE MISCARRIAGE

Basil Arthur Furniss, registered as of 1, Dean Park Road, Bournemouth, Hants, M.R C S (1939), was convicted in July on three charges of unlawfully using an instrument with intent to procure the miscarriage of a patient The committee directed the registrar to erase his name from the Register This decision is subject to appeal within 28 days

NOT ERASED

In November, 1953, the committee postponed judgment in the case of *William Francis Hirsch Coulthard,* registered as of Balwinnam, Aspatria, Carlisle, M.B Edin (1927), in order to give him a further opportunity of overcoming his tendency to drink to excess In view of the satisfactory information they had received concerning Dr Coulthard's conduct, the committee decided not to direct the registrar to erase his name

Judgment had also been postponed in the case of *William Bellamy James,* registered as of 41, University Road, Belfast, M.B Belf (1938), who was convicted in 1951 and 1954 of driving a motor car while under the influence of drink The committee did not direct the erasure of his name

Boris Nicholas Klukin registered as of 6, Normanton . Newcastle upon Tyne had been convicted of motoring offences concerning drink and dangerous 1940, 1951, and 1954 Judgment had been postponed year in November, 1954 The committee decided not t the registrar to erase his name

John Lennon, registered as of Springfield, C Yorks, L M.R O.P I (1929), had been convicted of dis *conduct whilst drunk (in 1930) and of drunkenness* in of motor vehicles (in 1935 and 1954) Judgment ha postponed in November last, and the committee now that Dr Lennon's name should not be erased

Alexander Urquhart, registered as of 8, Portland Troon, Ayrshire, M.B Glasg (1947), had been conv 1950 of driving a motor vehicle when under the drink or drugs and in 1954 of being in charge of a vehicle when under the influence of drink Judgment h postponed for one year In view of the satisfactory in tion received as to his conduct, the registrar was not to erase his name

The committee had previously postponed judgm one year on *Patrick Laurence Lyons,* registered as c o Bank Ltd , 55, King Street, Manchester, L.A.H Dubl. who had been fined for being drunk and disorderl committee did not direct that his name should be era

JUDGMENT POSTPONED

George Ralph Spencer Jackson, registered as of 1, P Road, Sheffield, 6, L.M S S.A (1943), had been being in charge of a motor car when under the drink Judgment was postponed until November, 19

In the case of *Joseph Hirschemann,* registered as o House, Clunbury, Craven Arms, Salop, M.B Dubl. judgment had been postponed following convictions the Dangerous Drugs Act After consideration m judgment was again postponed for a further 6 months

Joseph White O'Brien, registered as of 176, Sev Road, Victoria Park, London, E 2, M B N U I (1914) because of a series of convictions , the last was for motor car when under the influence of drink in year It was stated that Dr O'Brien had been treatment in hospital since March Judgment was for two years

NO POLICE INFORMATION

Alexander Winchester St Clair Greig, registered a Kersland Street, Glasgow, W 2, M B Glasg (1935), h convicted on three occasions of driving when influence of drink Mr G J K Widgery, solicitor General Medical Council, said that, as happened in cases, he had been unable to obtain any details police in Glasgow Dr Greig was not represented, Widgery read a letter from an Edinburgh solicito stated that, following the last conviction, sentence deferred for the doctor to obtain treatment in a hospital Dr Greig said that at the time of the last he had had a slight blackout and could not rememb had happened He was now under treatment The c postponed judgment for two years

DRUGS FOR WIFE

Peter Louis Milbourne Hartley, registered as Wimbledon Park Road, London, S W 19, M.R.C.S. M B Camb (1946), had had judgment postponed for following convictions of unlawfully procuring drug drugs were for his wife He had not been treating h since the conviction. She had been discharged from "apparently cured" in April The committee did no the registrar to erase Dr Hartley's name

INFAMOUS CONDUCT

In November, 1953, the committee postponed judgm two years in the case of *William Arthur McIlrath,* re as of 222, Lewisham Way, London, S.E 4, M.B Belf The charges related to being on the medical list of the Executive Council and receiving grants for the train trainee assistant, when Dr McIlrath was employ whole time capacity at a hospital The committe Dr McIlrath guilty of infamous conduct in a prof respect, but after considering the satisfactory info as to his conduct, they did not directed the registrar his name

IMPROPER CERTIFICATES

Harvey Forrester Jackson, registered as of Johnene, L mohr Avenue, Ballymena, co Antrim, M B Belf. appeared for judgment postponed from November la when the committee found that he had issued documen his signature which were, in the circumstances, misl er, to assist persons to obtain houses of the Belfast ation. The committee found him guilty of infamous t but in view of the satisfactory information as to his t, they did not direct the registrar to erase his name

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[1] See *Lancet* Nov 26 1955 p 1132

CONSPIRACY TO DEFRAUD

n Clark registered as of 1, Harley Street London W 1 .A. (1929) had been convicted of conspiring with other s to cheat and defraud by administering drugs to unds.

Widgery said that Dr Clark was in practice in Bourne- and had an address in Harley Street He became ly with a man named Green who some months later uced him to another person named Selby They met *cussed the effect of drugs on greyhounds.* Dr Clark ted supplying drugs to Green and that some of the were for use by medical practitioners only For Dr it was said that the drugs were never used on dogs in l, and Selby had said that he injected only a small nt of hydrocortisone into one sick poodle who never ran race. A long statement had been taken from Dr Clark e police without warning It was clearly a statement ed from Dr Clark in order that he could give evidence e prosecution in fact it was used against him

chairman announced that the committee took a grave of the conviction They were, however prepared to into consideration the representations made on Dr s behalf and the evidence concerning his character had decided to postpone judgment for two years

A TREATMENT FOR BALDNESS

Kelvin, registered as of 1440 Dumbarton Road ow W 4 L.R.C.P.E. (1925) M B Leeds (1926) appeared charge of infamous conduct in a professional respect s alleged that for his own professional advantage elvin associated with an organisation known as the Hair and Scalp Clinics in the United States, which stematically procured or sanctioned the publication in American newspapers of reports and advertisements ing attention to his professional skill knowledge services, ualifications and that in furtherance of the association d a press conference in Chicago in October 1954 all ry to section 6 (c) of the Warning Notice

Widgery stated that Dr Kelvin was in practice in w In September 1954 a letter from Dr Kelvin red in the *British Medical Journal* under the heading or Baldness. This described how two of his patients om he had given β pyridyl-carbinol tablets (Ronicol) termittent claudication ' proudly and happily volun the information that the tablets had grown a good of hair on their bald pates. That was a perfectly letter for a medical practitioner to write to a profes journal Mr Widgery continued But it was taken up popular press and Dr Kelvin seemed to have been ed in a blaze of world wide publicity He said in a to the registrar " I was written up in every newspaper ery magazine in every town in every country in the My telephone buzzed incessantly News reporters rrespondents harassed me unmercifully

director of the Akers Hair and Scalp Clinics came to w and was photographed with Dr Kelvin at Prestwick He offered to open a research laboratory in Glasgow r Kelvin as research director at a salary of $10 000 a Mr Widgery said that Dr Kelvin was obviously d by the commercial prospect before him and pro al terms were agreed On Oct 24 1954, Dr Kelvin America to sign the contract He wrote a letter to neral Medical Council asking for his name to be removed the Register In Chicago a press conference was held, Dr Kelvin was photographed examining the bald head atient There were further negotiations, but he was f and no contract appeared. Dr Kelvin came back ubt disillusioned to Glasgow He found a letter from strar explaining that formalities had to be complied efore his name could be removed from the Register ther negotiations went on The Akers Clinics put ous advertisements in American newspapers long after elvin returned to Scotland One advertisement included r supposedly written by Dr Kelvin and signed by him. ctor denied authorship of the letter and the signature as Mr Widgery had been able to ascertain did not to be his.

James Colquhoun a solicitor said that he was a partner firm of Graham and Co., of Glasgow and that the Akers Hair and Scalp Clinics were clients. His clients offered Dr Kelvin an appointment as *research director* he would have conducted his research in Glasgow Mr Colquhoun agreed that the Akers organisation wanted to get hold of Dr Kelvin and use his name 'Did you persuade him to give up his practice in Glasgow ? — 'No It was pointed out to him that he would probably have to' Mr Colquhoun was asked whether any photographs were taken at the press conference in Chicago He replied : "Oh yes These Americans go in for it in a big way We had Kleig lights and everything A reporter said 'Look at my head doctor Dr Kelvin looked and he was taken He did not remember Dr Kelvin signing the letter Heads of agreement were signed before Dr Kelvin went to America The object of the visit to America was to sign the final contract but no such agreement ever came into being

Cross-examined Mr Colquhoun agreed that Dr Kelvin was at all times anxious to safeguard his professional position and that he was anxious not to do anything while he remained a doctor which conflicted with his duties. He wanted to safeguard his position as a doctor until he actually joined the Akers *organisation. Mr Colquhoun said that Dr Kelvin was* looked on as research director in the Akers organisation and received sporadic payments—about four—of $500 a month

In evidence Dr Kelvin said that when he went to America he did not know that he was to be the subject of publicity When he went to America he had a shock when he found he was among crooks and profiteers. The contract was never signed He was to be paid full expenses for his trip to America but when he got there the Akers organisation refused to pay his hotel expenses. When he returned to Glasgow he received four sporadic payments of $500 Asked about the letter he said it was a complete forgery from beginning to end he did not write it and he did not sign it

Cross-examined Dr Kelvin said that he was to have had $500 a month in addition to the profits and properties of two clinics. He lost more than he got from Mr Akers Of the press conference in America he said : I was press ganged into it I was dazed and confused by the whole proceedings He did not know whether it was being broadcast or televised When he went to America he was under the impression that he was off the Register

After deliberating in camera, the committee concluded that the facts alleged against Dr Kelvin were proved to their satisfaction, and they regarded the charge with grave concern They decided to postpone judgment for two years

A CONVICTION IN MALAYA

Bak Hin Ong registered as of 10 Riverside Malacca, L.R.C.P.E. (1915) had been convicted in 1953 in the High Court of Malaya of having unlawfully performed an operation of abortion which caused the death of Tee Bee Geok

Mr Widgery explained that under section 29 of the Medical Act of 1858 this case being a conviction outside the United Kingdom or Eire, had to be treated as one of *conduct* He therefore had to prove to the satisfaction of the committee the charge against the doctor He proposed to rely for his evidence on the transcript of the trial in Malacca Later in the proceedings it was stated that this was the judge s note not a shorthand transcript

Mr N L Taylor appearing in his private capacity for Dr Ong objected to the evidence *being received* in this form on so serious a charge Dr Ong had come 8500 miles to be present Whatever might have been done in Malacca he felt that here he would get an absolutely fair trial The committee could not give a fair trial without the witnesses. Mr Widgery had not suggested that the witnesses could not be produced It might be inconvenient and an expense : Dr Ong had been put to *inconvenience* and expense

The legal assessor Mr C P Harvey Q C said that the council could not compel the attendance of witnesses They were back to the position of the General Medical Council before the Act of 1950 On the basis of the decision in the Spackman case he felt bound to advise the committee that this method of admitting evidence remained open to them and indeed must be employed A civil court *in litigation*, could direct a commission to go out to Malacca to take evidence and a criminal court would simply decline jurisdiction but the committee could do neither of those things.

In consultation with Mr Widgery but not with Mr Taylor Mr Harvey had been very carefully through the transcript since under the rules he had to advise the committee what statements contained in *documents* ought to be received.

The transcript contained many passages which would not be received in this country, and in the copies of the transcript for members of the committee, these had been excised The legal assessor also advised the committee not to read the judge's summing up

Mr Widgery then stated his case, with reference to the transcript He alleged that the Chinese woman, Tee Bee Geok, came to see Dr Ong at his maternity home without the knowledge of her husband She told the doctor that she had 7 children and did not want to have more The doctor agreed to help her and an immediate operation was performed She went home by bus and pedicab Next day the husband found his wife seriously ill He took her to hospital, where she was found to have a perforated uterus She died two days later

Mr Taylor said that Dr Ong's family had lived in Malacca for 300 years He was a rich man who did not have to rely on medicine for his living The esteem in which he was held was not restricted to the Chinese community He occupied public positions and was a member of the Chinese consultative committee set up to advise the government There was antipathy between indigenous Chinese and immigrant Chinese What could be more readily at hand to discredit a political opponent, asked Mr Taylor, than this charge? The dead woman's husband, he alleged, was a member of a certain political party

Turning to the evidence, Mr Taylor said that Tee Bee Geok came to Dr Ong saying that she did not want to have more children. She had been taking drugs Dr Ong concluded that she had had a partial miscarriage, and being used to dealing with emergencies among women who would not go to hospital, he evacuated the uterus In evidence, Dr Ong said he had never in his life performed an abortion without having therapeutic grounds for doing so He examined the clots which came out of the uterus and did not see an ovum He did not agree that his instrument had caused the perforation

After deliberation in camera, the committee found the facts alleged proved to their satisfaction, and the registrar was directed to erase Dr Ong's name from the Register

MUSEUM OF COLLEGE OF SURGEONS

Sir Henry Dale, O M, F R S, opening the Wellcome Museums at the Royal College of Surgeons of England on Nov 23, recalled that the Hunterian Museum and much of its precious contents suffered grievous damage during the air attacks of 1941 The rebuilding and extension of the college had been planned, he said, over ten years ago, but lack of funds prevented the construction of new museums until the Wellcome Trustees gave £100,000 for this purpose The late Sir Henry Wellcome, the founder of the Trust, was an honorary fellow of the college

The museums occupy three floors immediately above the new Great Hall, and form integral parts of the departments of anatomy and pathology The lower floor consists of a pathological exhibition room, the offices of the curator (Dr L W Proger), a research laboratory, a preparation room, and a workshop The exhibition room is spacious and is divided into five bays, it has a wide central aisle which can be used for temporary exhibitions "Natural" fluorescent lighting and neutral grey walls behind the shelves display the specimens to advantage The layout of the museum on the floor above is similar and houses the Hunterian Collection as well as selections from the odontological and war collections There is also a photographic unit on this floor The upper floor comprises the museum of anatomy with the offices of the conservator (Prof G W Causey), a workshop and mounting room, an embalming and preparation room, and the prosectors' room The anatomical specimens will eventually be arranged according to the various systems of the body, illustrated by tracings and diagrams of physiological and pharmacological reactions where appropriate, but until the rest of the building is completed the museums will continue to house the Hunterian physiological and anatomical collection, and demonstration classes Labora- of the Imperial Cancer Research Fund are also being ly accommodated in the museums

In the Mental Hospital*

INSTITUTIONALISATION

DENIS V MARTIN
M R C S, D.P.M.
CONSULTANT PSYCHIATRIST AND DEPUTY PHYSICIA
INTENDENT, CLAYBURY HOSPITAL, WOODFORD BRIDGE,

THE words "becoming institutionalised" or institutionalised" are often to be found in the notes of mental hospitals These phrases cove stages in a process which has come to be acc the most desirable one for the chronic patients mental hospitals

"Well institutionalised" implies that the pa ceased to rebel against, or to question the fitness position in a mental hospital, he has made a m less total surrender to the institution life. W nurses are asked about the progress of an institut patient, the usual reply is "He gives no doctor, he is very cooperative" Here "coo usually implies that the patient does as he is to a minimum of questioning or opposition This on the part of the patient is very different true cooperation, essential to the success of any ment, in which the patient strives to und work with, the doctor in his efforts to cure.

The "well-institutionalised" patient, cooperative, who has ceased to question his r a patient, and who has become too passive to any problem of management, has in the process of sity lost much of his individuality and initia may be that institutionalisation is, in fact, the desirable end for the mass of the chronically who are beyond the reach of treatment, and have to be cared for under difficult conditions rest of their lives But far too little attention ha paid to the effect that this process has on the tre and prognosis of the early cases who are admit our mental hospitals Little has been written subject, and there seems to be widespread unaw of the power that the institution exerts on the when he is first admitted to hospital and is still acc to treatment

The Patients

What brings a patient to this state of institution tion? Some would argue that such a state predetermined end of some forms of mental d Schizophrenia is the disease most likely to produ state Does the natural end-result of this co mental disease influence us unconsciously to p similar results in other patients because of its u free effect? Institutionalisation is not confined diagnostic class In any mental hospital will be recovered depressives who no longer need rem hospital on account of their original illness, but wh lack any desire to leave it The same is true o neurotics, alcoholics, and other groups of patients it can hardly be argued that mental illness in g regardless of its type, produces an end state sim "institutionalisation"

BEFORE ADMISSION

Factors outside the hospital, such as inad personality and lack of satisfying interests and rel ships, may predispose a patient to become institut ised, and unfavourable economic circumstances pr add their weight These external facts should not our attention from the power of the institution to jents into the type best suited for its purpose Indeed, s for those who are predisposed that the danger is st acute

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* A group of articles chiefly concerned with the va active occupation and work for mental patients means whereby it is best provided

efore a patient agrees to enter hospital, unless rela s have exerted undue pressure he is usually suffering siderably This suffering is the strongest force ing him to seek a solution to the problem of his ess Besides this suffering inherent in his illness, he also had to bear some material discomfort—e g of wages and the luxuries and entertainments that ey can buy Moreover while at home he is con tly aware of the unhappiness that his illness causes family and which may be expressed in ways that are ful to him Some responsibility is still thrust upon All these factors tend to keep alive in him the nt necessity of solving the problem of his illness in e way

THE FIRST WEEK

ntry into hospital at once removes many of these eties and many patients particularly neurotics feel h better soon after admission This can be accounted by their removal from the responsibilities and personal tionships that are productive of suffering but it ediately lessens their drive to solve their difficulties s the first step towards institutionalisation Entry hospital has given relief and offered protection but are seldom aware of what has happened and so do ing to save themselves from further drift away from r problem This lessening of symptoms on admission ospital resembles the initial symptomatic relief often ined in individual psychotherapy, before any aware of the dependence in the transference relationship is blished In individual treatment the doctor is aware his situation and takes steps to make his patient re of it also if he does not do so treatment ceases rogress In the institution however the patient is om deliberately made aware of his position in relation he hospital largely because the staff are themselves e or less unconscious of the way in which the institu influences the patient in fact, they often foster dependence by their relatively unconscious participa in the organisation of the hospital

he power of the institution is further shown by the that some patients who may for a few weeks be re of their true position are gradually drawn into state of unconsciousness as the hospital exerts its ence on them they settle down to use another se commonly found in the clinical notes of any tal hospital

nce in hospital *the patient quickly becomes absorbed* its highly organised life The fact that any large lation needs an efficient and complex organisation ies with it the danger that the life of the individual in it will also become highly organised, and this will to relieve him of the need to think or plan for himself y but the most unimportant trifles. His basic needs supplied, his meals are prepared at the appointed he is given a bed to sleep in and facilities for hing Outside the hospital these basic needs are ally his own responsibility his illness is a threat to r supply and they are a powerful incentive to very The patient s recreational needs are also met out any real effort or thought on his part Cinema vision cricket musical evenings, and debates are nised for him either by the staff or by a few more rprising patients Many patients get more positive sure out of life through the amenities of the hospital n they obtain outside

OCCUPATIONAL THERAPY

he occupational régime also plays a part in institu alisation in the average mental hospital Some ents are put to work in the utility departments of the hospital These departments must be run with the economic efficiency of the hospital as the first consideration and so it is inevitable that the patients working in them become more or less involved in this necessity As a result the productivity of the department becomes more important to the hospital than the effect that the work is having on the patient He finds himself working in the interests of the institution instead of in his own interests, but he is seldom aware of this Thus a patient may be lost in the routine work of a single department for many months, without anyone questioning the wisdom of this Again, the transfer of a patient from one type of work to another for therapeutic reasons may be strongly resisted because he is in the language of the clinical notes such a ' good worker

Many patients are sent to work in the occupational therapy department Some of these departments are also in danger of becoming production houses for the hospital The chief criterion of their worth is often the quality of the annual exhibition or the number of useful articles produced for the hospital rather than their value to the patient as therapy More often the occupational centre is regarded as a purely therapeutic department, but even then the aim of too much of the work is merely to alleviate symptoms. Thus anxiety is allayed by a ' soothing craft or new interests are created to take the patient s mind off his symptoms Such an approach may relieve suffering but it adds to the patient s dependence on the institution and deflects him from the task of solving his inner problems

The Staff

Refractory wards, where violent and destructive patients and those who tend to wander away are segregated tend to be regarded by the other patients as a place of punishment to which they will be sent if they do not conform to the accepted pattern of hospital behaviour Thus a patient is inhibited from criticism of the staff or of the organisation of the hospital or from using initiative lest he be transferred to the refractory ward about which he has frightening fantasies. The danger inherent in refractory wards is that staff may solve difficult problems of behaviour by the easy way of transferring the patient to the refractory ward rather than by careful inquiry *into possible faults* of organisation or personal relationships which may in fact have been the cause of *the patient s behaviour* Thus the staff become victims of the system and are prevented from helping patients as much as they might if they examined the situation more critically The pattern of behaviour usually *expected from the patient is similar to that of the* ' well institutionalised The staff are rarely aware that they too are influenced by the pattern of life in the institution Unconscious, or unacknowledged motives for transferring a patient to a refractory ward are easily rationalised under the present system

THE DOCTORS

The problem of the refractory ward leads naturally to an examination of the part played by the medical staff in fostering largely unconsciously the crippling process of institutionalisation A number of factors render the doctor vulnerable to the powerful influence of the institution The most obvious predisposing cause is the size *of his problem* He is responsible for anything from 100 to 300 patients and the tendency of the organisation to produce " well institutionalised patients simplifies his task the patient who gives no trouble leaves more time for the treatment of those who satisfy the doctor s particular therapeutic interests. Thus he has as it were a vested interest in maintaining the process of *institutionalisation.*

Again the doctor s own personality difficulties which lead to a sense of insecurity predispose him to become a victim of the institution that he is helping to run, in much the same way as such difficulties affect the patient

The doctor's tendency, often unconscious, to hide behind his traditional professional status is also a powerful influence in the process of institutionalisation This tradition makes it difficult for him to communicate with junior nurses except through the ward sister, and even more difficult to communicate with employees in the utility departments except through the heads of departments Thus the people most closely in contact with the patient are often either unaware of their real therapeutic rôle, or are unable to cooperate adequately with the doctor Too often, as a result, they succumb to routine and disillusionment, or the patient comes to be regarded as just another employee This situation is made clear by the astonishment, or overwhelming gratitude, of a junior nurse when a doctor does, for some reason, take the trouble to discuss a patient with him as a real partner in the task of understanding and treatment, instead of regarding him as someone who merely carries out specific directions

A doctor who pays at least lip service to the importance in individual psychotherapy of those fantasies of the patient which lead him to view the doctor as all-powerful and all wise, may yet be unaware of the influence that his status as a member of the medical staff of the hospital has on the patient One patient expressed this clearly when he said, " You are my doctor, but you are also a member of the staff " He sensed that the man whom he might trust as a doctor might yet resort to punishment in the name of the institution to preserve the peace Mental hospital doctors are often caught in this dilemma, and they often sacrifice their relationship with the patient rather than detach themselves from the authority of the institution They may feel such detachment to be an act of defiance or disloyalty to a senior member of the staff—e g , the superintendent In hospitals where rules are prominent this conflict appears insoluble, since disloyalty or defiance to an authoritarian system may create chaos , on the other hand loyalty or submission often interferes with the doctor patient relationship

A doctor must be well integrated and secure within himself if he is to preserve a high degree of consciousness within the organisation of a mental hospital of which he is a part Only thus can he deliberately help his patients, avoid the evil effects of institutionalisation, and remain a responsible member of the staff

THE NURSES

When we turn to the influence of the nursing staff in this process we have first to consider the nurse's training which, far more than the doctor's, is destructive of individuality The doctor has more freedom to express what is characteristically individual in his personality , he is not expected to toe the line, or obey orders, to the same degree as the nurse Moreover, too little training in the understanding or management of human relations is given to the mental nurse, yet skill in such relations is probably his most desirable qualification This, in itself, makes him feel insecure and inclined to fall back on a rigid system to maintain his status To the extent that he lacks ability to form real relations with his patients, to that extent must he fall back on the authority of the institution The obstacles to his becoming conscious of this situation are also greater than for the doctor So long as the quietness and tidiness of the ward, based on submission to the institution, is the conscious, or unconscious, criterion of nursing efficiency, the nurse's task must remain largely that of maintaining a relationship of authority and submission between himself and the patient Failure on his part may, in fact or in fantasy, threaten him from above with loss of promotion or f[illegible] this strikes at his home life where promotion means material security He feels that it is da for him to act too much as an individual towards patients So long as he is wholly, or partly, under power of such a system he is likely to foster the of institutionalisation, and to be incapable of a ship with his patients which might help to save from this process

Conclusion

I have made no attempt to do more than open thought and discussion what I feel to be a most problem in the treatment of psychiatric disorders hospital The ideal solution would be to staff our hospitals only with men and women sufficiently dent and integrated to replace an authoritarian sys real human relationships Such a staff is pure fantasy such a notion offers no practical answer to our Since the tendencies to institutionalisation are likely the present to remain, it is the more important psychiatrists working in mental hospitals should their own awareness of the problem, and that of nurses, and take what steps they can to help patients to become conscious of this danger, lest join the ranks of the " well institutionalised "

Medicine and the Law

Death from Intestinal Obstruction

In the Scottish Court of Session on Nov 11, Strachan awarded damages against a house surgeon a hospital board of management for professional gence in connection with the death of a patient intestinal obstruction

A 47 year old man had a minor operation on his Feb 8, 1951, while a hospital inpatient He was qu immediately after the operation but on the morning of he had nausea and pain in the upper abdomen. The surgeon found nothing wrong with him and presc nesium trisilicate for a " gastric upset " The patient twice that day and refused food

He vomited again at 2 A M next day (Feb 12), and wa during a routine ward round that afternoon by the con surgeon, who could find nothing seriously wrong, he the house surgeon to keep an eye on the patient, who a bowel motion that day for the first time since operation

Next day (Feb 13) the patient vomited twice and abdominal discomfort, but he was not seen by the h surgeon from that morning until 7 P.M on Feb 14 wh vomited dark brown, foul smelling fluid The pat abdomen was distended and the house-surgeon susp intestinal obstruction , he ordered an enema which yi good fæcal result but little flatus The distension sub and he decided that there was no obstruction At 10 P.M patient's pulse rate, which had been steadily rising since morning of Feb 13, was 120 per min

At 2 A M and 4 A M on Feb 15, the patient vomited drinking some water, and later he vomited some foul-sm fluid , but at 8 45 A.M the house surgeon considered condition no worse At about 10 A.M the patient coll and vomited a copious amount of intestinal contents, consultant surgeon diagnosed intestinal obstruction, a operation at another hospital that night a complete ob tion of the upper bowel was found, which the surgeon estim had been present for about thirty six hours The pat circulatory collapse could not be reversed and he died next day (Feb 16)

Lord Strachan acquitted the house surgeon of n gence in failing to diagnose the condition but held had he exercised ordinary care he would have infor his seniors of the patient's condition (which he had g grounds to believe was serious) on the night of Feb had he done so, Lord Strachan said, the patient would probably have been saved

Damages were apportioned equally between the ho surgeon and the hospital's board of management

In England Now

unning Commentary by Peripatetic Correspondents

HE installation of the Queen Mother as Chancellor e University of London was in the finest tradition cademic ceremony The processions of the senate higher officers, the representatives of other uni ities, and the court moved down the Festival Hall a precise and ordered formality, which was yet ely free from pomp and circumstance It was indeed mpany of learned men and women assembled to ur their chosen head Doctors and scientists, ers, philosophers and men of letters had laid aside disputations to combine in a colourful pageantry hich black and scarlet predominated The rectorial le of Paris, side by side with the yellow and black trasbourg mixed easily with the black gown and e ruff of Bologna, and hats of every description, conventional velvets and mortar boards to the f Algiers and to others which could only be described hurchillian nodded together in dignified affability royalty seemed to have shed much of its panoply n the Queen Mother in academic robes with a single was escorted by the Chairman of Convocation down centre of the hall and past the solitary Life Guard e Chancellor's seat. There she assumed the responsi es and gave the promises of her office and in a ous address reminded the assembly of a university's duties of teaching and research She also congratu l London already a pioneer in women's education he forward step it had taken by appointing its first an Chancellor She then invested the honorary uates who were presented to her by the Public or with wit and scholarship Musician, scholar, an and statesman, a bishop with the common , an ambassadress and old opponent of the British gifted with heaven sent culinary skill, a distinguished honoured again after four hundred years by a n Elizabeth, all were welcomed to the catholic ship of the university *Chancellor, I request* by the Authority of the Senate' William Walton, ard Livingstone Malvern John Wand Vijaya hmi Pandit, and Salisbury The assembly stood for National Anthem followed by the *Trumpet Voluntary* e Chancellor departed for Guildhall The ceremony and inspiring as a spectacle, had given new meaning e life and ideals of the university Above all London shown that its many and world wide branches, ite their haphazard origin had been united into a rent whole At last it had acquired a shape

* * *

e derricks look on Rotherhithe, and Rotherhithe on the sea and Fate having placed my hospital e north and my home on the south bank of the es, I am obliged to plunge b d into the depths of arth. The other day, dreaming there an hour alone my tube was as usual blocked—I thought of lf as a protein molecule driving an erythrocyte down pillary in spasm Other red cells before and d (displaying anisocytosis and polychromasia) nutriments, reconstructive materials, and—yes— en

wards the end of the second pipe-full, it was borne on me that this was a thrombosis rather than mere n, but as the half hour approached I trickled ly towards the clot. Phagocytes were busy in their blue uniforms sorting out the particles, and a cell trailing a thread of fibrin was dragging away otoplasmic remains of an elderly and crenated red which seemed to be without its rear wheels. Oh for astomosis! The wreck swung drunkenly at the end thread and the area threatened to slough, but I my erythrocyte smartly past towards the dim nt destination and as I emerged into the blinding I cried as with Beethoven's prisoners in *Fidelio*: welche Lust in freier Luft den Athem leicht zu en."

therhithe Borough Council should and doubtless realise that, as the fate of the world depends upon tiny arterioles in President Eisenhower so does integrity of their tunnel depend upon the tiniest grain of sand in any of the thousand and one carburettors which daily blow back and forth

So when my dear Boss glowered at me from the end of the ward and asked, in his usual gentle way, what I thought I was playing at keeping him waiting for over an hour he was surprised when I absently answered: 'Studying pathology, Sir

* * *

Acting as interpreter to some non English-speaking colleagues during their visit to this country, I have become acutely aware of a new dimension of personality which operates whenever two or more people are striving to communicate with one another This is the Individual Effector Receptor Index, or more simply, E/R, which denotes a person's tendency to talk too much and to ask too many questions instead of listening to what is being said (= high E/R) or else his capacity to hear (= low E/R) When the discussion is between a person of high and a person of low E/R, or between people of low or medium E/R, interpreting is straightforward and meaningful communication is possible. When, however the talkers both have high E ratings, the tensions set up are considerable and the interpreter has to function mainly as a selective filter Even so, at full working pressures, failure of effective communication is liable to occur, and the trouble is not as is often supposed a semantic one The same thing happens in discussions between such people even when they are using the same language and there is no interpreter

* * *

It was a medical outpatient clinic. Last week the patient had provided the subject for a demonstration to students on industrial pulmonary disease, we discussed a change of job and emphasised what a serious decision it was. We eventually favoured a change and the patient had now returned to report progress Despite a thick yellow fog her chest had not so much as a whisper, she looked radiantly happy quite different from the wheezing and anxious creature of last week. I could not help pointing out to the class how well she had done, leaving the inference of a wise decision to be drawn by the class.

As we finished and the patient left, Sister lent over and whispered She tells me she has just won £500 on the pools

* * *

He came in after the last patient had gone and sat in the consulting room chair 'Doctor it's my new Black Widows, I'm rather worried about them I put them in with the Angels and now they've all come out in white spots

We discussed ichthyophthirius and other protozoal diseases their treatment by heating the aquarium to 80° or even 90°F, repeated once or twice to kill the spores, but eventually decided that an older remedy, quinine, should serve

℞ Sol Quinin. Hydrochlor gr 4 ad O 1 Fiat Balneum pro piscibus.

* * *

When we admit surgical cases from the 'cold' waiting list we often have to ask the lady almoner to help with arrangements for dependants. But last week we had to consult our veterinary colleague.

Dear Matron,

Thank you for your letter I quite see your difficulty but I must try to come even if it is in the Winter as one leg has in this last fortnight become so painful and so should my turn come please will you let me know and providing the cow or the sow are not due and my Mother and the gardener are not ill and my ponies are all well I must come as I cannot now I feel put it off until June as my leg hurts so if I walk uphill and in May I hope to have my mare foaling and then I could never leave her Thank you so much

* * *

The patient had had a cholecystogram and a biligrafin test. When we asked him for his history he said, "I came up to hospital and had a Billy Graham's test"

Letters to the Editor

ADRENOSPLENIC IMPLANT FOR HORMONE-DEPENDENT TUMOURS

SIR,—It is now evident that the combined operation of bilateral adrenalectomy and castration plays a small but useful part in the management of patients with metastatic, hormone dependent tumours untreatable by any other means Such tumours occur in carcinoma of the breast in women and in carcinoma of the prostate in men Of the patients so treated, those who derive advantage from the total removal of their internal sources of sex hormones still require to be maintained indefinitely on cortisone With this drawback in mind it occurred to me that if some adrenal tissue removed at operation were reimplanted into the patient's spleen, the liver might then inactivate any œstrogen or androgen, leaving the metabolic hormones relatively intact The postoperative requirements of the patient for cortisone from external sources might then be very small indeed

I understand that this concept is not new With a similar aim in view, Galante and his group [1] in California have anastomosed the left adrenal vein to the splenic vein—a considerable technical achievement This operation also runs the risk of failure either from thrombosis of the anastomotic channel on the one hand, or from revascularisation of the adrenal by branches of the systemic circulation on the other Bernstein [2] has actually anticipated the present method by implanting the excised adrenals into the mesentery, a site which still leaves open a potential escape route for hormones into the systemic circulation by way of the mesenteric lymphatics

The first patient to be treated by "adrenosplenic implant" was an elderly man with carcinoma of the prostate

The operation was performed by Mr F R Brown, the aftercare of the patient being in the hands of Dr J M Stowers On this occasion the first stage comprised castration and removal of the right adrenal, the more difficult side Three weeks later the remaining (left) adrenal was removed through an anterior approach and 3–5 g of glandular tissue was then implanted into the spleen by means of a small suprapubic trocar and cannula A neatly fitting glass rod enabled the fragments of the gland to be deposited well inside the splenic pulp

I am aware that the ovaries of rats [3] and mice [4] [5] have been experimentally implanted into their spleens and that such ectopic ovaries occasionally become malignant But the expectation of life of the patient with a metastatic, hormone dependent tumour is normally so short that, for the present, the possibility of malignant transformation in the adrenal graft need hardly be considered It remains to be seen whether the long term results of adrenosplenic implantation justify the continuance of the method

Department of Radiotherapy,
Royal Infirmary
Dundee

JAMES F RILEY

CŒLIAC DISEASE

SIR,—In his interesting and stimulating lecture which you published last week Dr Sheldon quotes me as saying that "estimations of fæcal fat should be abandoned as evidence of steatorrhœa, both in diagnosis and in charting recovery"

As this is not what I said, and is the exact opposite of what I feel to be true, I should like to give my exact wording,[1] which was in the context of the value of balances versus other methods in the detection steatorrhœa

> "Assessment of Fat Absorption. It is extremely to measure fat in the fæces, but the only way of deter whether an abnormal amount is being excreted is by form of balance Unfortunately for many years past good observational work has been largely wasted by the of the microscopical appearance or estimation of percen fat in the stool as a means of detecting defective fat absorp Both these methods may be grossly misleading and no of them is of any value as a quantitative index of the de although these examinations have their uses, they shou abandoned as evidence of steatorrhœa both in diagnosis as indices of recovery"

The only way of obtaining evidence of steatorrhœa of course, the estimation of fæcal fat—but total fat not as a percentage

Department of Medicine
University of Birmingham.

J M FRENC

HEROIN

SIR,—I find it deplorable that the Fellowship Freedom in Medicine identifies itself with Dr A Douthwaite's resolution[2]

> "Believing that heroin is of the greatest value treatment of some medical conditions and that the ban manufacture would serve no useful purpose in this or elsewhere, this meeting strongly urges the Home Sec to reverse his decision prohibiting its manufacture for purposes"

I have practised medicine for thirty five years formerly used heroin But long ago I came to the clusion that there is no longer any indication for habit-forming drug When I joined the staff of this hospital over ten years ago, heroin linctus was in demand I introduced to this hospital dihydrocode ('Dicodid'), which is much superior to codeine phate in its cough-suppressing effect, and heroin disappeared from our prescriptions

Holywood Hall Hospital,
Wolsingham, co Durham

E G W HOFFSTA

URINARY STEROIDS AFTER PREDNISO

SIR,—Professor Gray and his colleagues (Nov mention the presence of five steroid metabolites urine of patients treated with prednisone

We have studied the metabolism of prednisone, in man and in the adrenalectomised dog, and regularly found seven steroid metabolites by the bination of various chromatographic techniques.

We have isolated prednisolone from the urine of p treated with prednisone [3]

Another compound appeared to be unchanged pred

Two further compounds did not show U V absorp 258 mμ but strongly reduced blue tetrazolium and h same movement-rate as tetrahydrocortisone and tetra hydrocortisone Further identification is in progress.

Two more steroids show U V absorption at 258 mμ yellow fluorescence after treatment with NaOH They reduce blue tetrazolium, but give Zimmerman-re material after treatment with periodic acid

Finally we found a steroid showing both U V abs at 258 mμ and yellow fluorescence after NaOH treatme reducing blue tetrazolium

In some of the urines, but not in all, still other steroids present

Although not identical with Professor Gray's co sions, our results confirm most of his views But finding of metabolites reducing blue tetrazolium wi U V absorption suggests reduction of the $\Delta^{4,3}$-ke as one of the metabolic pathways

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State University,
Ghent, Belgium

A VERMEULE

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1 Galante M, Rukes M Forsham, P H, Wood D A, Bell, H G *Ann Surg* 1954 140 502
2 Bernstein D E *Yearb Endocr* 1954 55, p 370
3 Biskind, M. S, Biskind, G S *Proc Soc exp Biol, N Y* 1944, 55, 176
H, Gardner W U *Science* 1947 105, 13
, Sobel, H *J nat Cancer Inst* 1947 8 7

1 *Proc Nutr Soc* 1955, 14 33.
2 See *Lancet* Nov 12, 1955 p 1030
3 *J clin Endocrin* (in the press)

IN THE MENTAL HOSPITAL

t is regrettable that the first two paragraphs of ston's contribution last week to your 'In the ospital' series should be so full of gross historical ies and fantastic misrepresentations Such ave not been absent from the other articles in ies as your correspondence columns have and in consequence, the whole series is uch of its value in the minds of thoughtful and ced readers

lunacy reformer ' with his very characteristic s mentality has been a constantly recurring of British psychiatry for many years past. Your tors cannot for example be ignorant of the nts of the early 1920s when the Montagu agitation was at its height Dr Houston would, e be sorry and surprised to know that his opening ph is similar in provocative tone to that author's I am well aware that his motives and ideals are different

rue that the paragraph can be read as though the tices he describes belonged to the past He es however, to say at last a new era is dawning doors of despair are being unlocked." He then s to name certain excellent hospitals as leading y in activities most of which were flourishing sly in at least a majority of mental hospitals long he was born

ll not burden your columns by giving detailed n support of that statement which I could easily t I think it is a pity that such able and enthusiastic s as Dr Houston and his fellow contributors have miliarised themselves better with the history of pecialty and with the work of the real reformers to whom both patients and hospitals remain ly indebted.

on, W 1 HENRY YELLOWLEES

THE FORGOTTEN PATIENT

—On Nov 12 and 20 you published comments on ticles on the Forgotten Patient (Oct 20 and Nov 5) articles were based on a wide knowledge of mental tals in England and Scotland and I am certain the faults of which I wrote are not confined to a tal here and a hospital there but are widespread urse, it would be a bad region which had to admit everything I said applied to all its mental hospitals robably there are few psychiatrists who would not that some of my statements are true for one or of the hospitals in which they have worked

ll state the main reasons for which I wrote

If things are wrong they should be corrected

If bad things happen and are hidden their occurrence l be made widely known.

A quiet acceptance of evils does little to ensure their ation

The relations of a patient have the right to be told how treated and how he lives.

ning to particular criticisms I have no doubt that old people with gross organic brain disease are perly admitted to mental hospitals in the usual geriatric hospital they would overcome their rest s within a few weeks It is equally clear that many eople whose psychotic illness or whose inadequacy ling with things has precipitated a breakdown in confidence are properly admitted to a mental tal and are there restored to their normal health tunately they may not be equal to living alone in ngs or flats and it is difficult to get anyone to accept on from a mental hospital the word drove is thought too picturesque I willingly substitute another but this will not the fact that large numbers of patients are improperly employed on hospital farms On a farm the patient is not only out of sight but too often forgotten He leaves the ward long before the doctor reaches it and only returns after the doctor has long since left it By reason of his chronic illness and lack of initiative he is most unlikely to seek an interview with his doctor, and the latter may not seek one either In theory he will be examined twice a year, but theory does not always agree with practice

It is all very well for Mr Sargood to speak so cheerfully about the work in his region I too will say how good *the good work is* But senior psychiatrists have willingly shown me bad things in their hospitals in the South West Metropolitan Region as they have done elsewhere I am glad to hear that the majority of committee members perform their duties properly but negligence does occur though again I would prefer not to particularise.

Bracebridge Heath is fortunate to have so many Polish nurses and some Polish doctors the opportunist will feel that this excellent staff for Poles might well solve the problem *for all the mental hospitals in the* Midlands! But how often does this obtain throughout the country? What of the hospital with three Poles a Ukrainian, and a Yugoslav? How will they muster a doctor and a nurse for each nationality? Dr Falla has argued from the particular to the general

No one will deny that neurotics are often severely disabled by their illness but the ultimate test of disability is the necessity for inpatient care, which must surely never or almost never be essential for a neurotic I should be pleased to know what valuable work for psychotics is being done by mental health organisations Is their work predominantly for the neurotic or the psychotic?

There can be no doubt that a great deal of effort is made in every mental hospital to treat the patients What varies is the point at which this effort ceases. In a few it never ceases. In some it may be years before *the psychiatrist decides he must devote his limited time* (I dealt with this last year) to more promising material But in many it stops the moment the patient leaves the admission ward and in a few hospitals he never experiences any care because he is admitted straight to a chronic ward where no patient ever gets more than the most cursory attention It is my contention that care ceases early rather than late

Mr Sargood implies that I employ half truths and that *my pictures are painted in lurid colours*, Dr Falla calls my descriptions exaggerated and distorted Dr Duncan says that what I say is grossly misleading I do not think that there is any need to defend myself No-one has to do more than travel a little to see for himself The only difference between these critics and myself is in our interpretation of facts and this interpretation ultimately depends upon the difference in our sense of values

In the justified enthusiasm for the energetic treatment of recent admissions, one *often* hears the psychiatrist say what good work could be done for these patients if only he was not hampered by having to spend so much of his time looking after the chronic patients whom his predecessor had neglected He will ask why these cannot be moved elsewhere and given the material necessities of life so that he can by his hard work on the present generation prevent new admissions from ever becoming chronic But, assuming that chronicity can be prevented by his energetic treatment—and I like to *think that* it can—this does nothing to solve our present problem, which is the restoration to health of the tens of thousands of chronic patients at present in our hospitals for whom the likelihood of a normal life seems remote indeed

I think that most relations of chronic psychotics will share my beliefs many psychiatrists evidently condemn them The truth is most likely to come from the young nurse and the young psychiatrist Miss Restell's letter expresses admirably what all of us once felt before so many of our consciences became stilled by daily acquaintance with dreadful things, and before this made us accept the dreadful things not only as inevitable but also as correct

De la Pole Hospital,
Willerby, East Yorkshire

J A R **Bickford**
Consultant psychiatrist

Sir,—Unable to claim professional qualifications, nor yet the authority of your correspondent the chairman of the Mental Health Committee of the South West Metropolitan Regional Hospital Board, with indeed no claim to speak save membership of two hospital management committees, I feel that someone must register a protest against the point of view expressed by Mr Sargood in his letter last week If the only lay people who have the opportunity to know the facts refrain from all but polite comment for fear of discouraging patients, it is hardly to be wondered at that the public at large are unaware that some 40% of hospital patients are ill fed ill housed, and inadequately treated

The asylum—or place of refuge—renamed mental hospital struggles against the handicaps of inadequate staff and equipment to justify the title of place of treatment The mental health committee (like everyone else) does its best to help , but, as the *cri de cœur* at the end of the letter suggests, that help is limited, and the determination to maintain that all is for the best only sets in at board level

The series of articles you are publishing will hasten a change of outlook which will save not only lives but also in time money—a matter that sometimes seems more important to administrators

London, S W 3

E L M **Pulvertaft**

FAT ABSORPTION

Sir,—We should like to draw attention to some inaccuracies in your report (Nov 19) of our paper on the cellular phase of fat absorption presented to the British Society of Gastroenterology on Nov 4

Your report begins " Dr R Schneider had fed unemulsified olive oil to rats and had demonstrated that absorption took place despite the absence of bile and pancreatic lipase The same was true of sodium oleate and liquid paraffin " This seems to imply that there was no evidence of emulsification with the two latter substances We stressed, however, that under these conditions sodium oleate was converted in the intestine to a soap stabilised oleic acid emulsion and that liquid paraffin was administered in a pre-emulsified form , also that emulsification of the absorbed portion of olive oil had most likely taken place In short, the importance of emulsification in the process of fat absorption that we intended to emphasise was not mentioned in the report

In line 9 your report says " Olive-oil administered in fine emulsion passed into the lacteals " Olive oil did this whether given as an emulsion or in the unemulsified state, and the possibility of spontaneous emulsification applies here as in the experiment mentioned above

The report continues " so did oleic acid, but not sodium oleate which needed these [upper intestinal] juices for its absorption " We made no distinction between oleic acid administered as such and as sodium oleate, as the latter is converted in the intestine into the free acid It is oleic acid that requires the presence of the upper intestinal juices for its passage into the lymphatics whether administered as such or as sodium oleate

In line 13 your report says " Lipid, phospholipid, and fatty acid likewise passed into chyle " This statement contradicts the preceding sentence " Lipid " is the generic term for all the substances under investigation, and oleic acid is a very important " fatty acid " In the previous sentence the different fate of different " lipids "—namely, of a triglyceride (olive oil) and a fatty acid (oleic acid) was emphasised Phospholipid was *certainly* estimated in the chyle, but the question of whether it had " passed into the chyle " was not discussed

The remark " These results were contrary to those found by Prof. A C Frazer in previous experiments " seems to hat this refers to all the points made in our paper This is certainly not the case The difference refer experiments carried out with oleic acid feeding in of upper intestinal juices—conditions under which one authors (Professor Frazer) found no evidence of a lipids in lymph and peripheral blood in his exper in 1943, whereas we did so in the experiments discussion

Department of Pharmacology,
University of Birmingham

R **Schneide**
H G **S**

A REPORT FROM HOSPITAL

Sir,—Can Dr Fisher (Nov 26, p 1138) explain the surgeon from whom he requested a report " promptly and very courteously " to write for an report to a " gentleman who appeared to be the trative chief of the hospital ?" I have asked a n consultants what they would have done on recei similar request, and they all said that provided were no abnormal circumstances they would hav direct

Surely if any lesson at all is to be learnt from Fisher's story, it is that the surgeon to whom he request was at fault and not the lay administr have I perchance missed the point of Dr Fisher's

Manchester Victoria
Memorial Jewish Hospital

M G

MODIFIED ELECTROCONVULSION

Sir,—We wish to reply to those who have on our article (Sept 17)

We cannot agree with Dr Fisher (Nov 5) that n danger at all to life when straight E C T is used, nor danger of bone complications is very small. W personal experience may have been one cannot reported risks of straight E C T—namely, a death 0 8%,[1] an incidence of vertebral compression fract 20 8% for males and 2 4% for females,[2] and an injury of 2 4%[3]

What does Dr Tyndel (Oct 15) mean by a " mere fra of bone complications in straight E C T ?

Both Dr Fisher and Dr Tyndel refer to an added or imposed risk when a relaxant is employed alone with We should like to know what they think this risk m when the small doses advocated by us are used. Fa believing that there is an added risk, we hold that th a relaxant alone in small doses eliminates the haz E C T without imposing any new risk

Dr Russell and his colleagues (Oct 15) advoca 'Ectonus' technique We believe that the prolonged causes unavoidable cyanosis and at least the same d stress on the cardiovascular system as straight E C T. This stress is due to the Valsalva phenomenon. This omenon has been described as follows " The V phenomenon results from increase of the intrathoracic p against a closed glottis , this impounds large amou venous blood in the extrathoracic large vessels. Up release of the Valsalva phenomenon at the end of an unmo seizure, these large amounts of blood suddenly enter the placing severe stress upon the heart musculature an impulse conducting system "[4]

We should like to know what the fatality rate was in series of cases treated by the ectonus technique

With reference to Dr Murphy's comments (Oct 8 number of cases that we reported was sufficient to statistically valid comparison of the three techniques. over the technique we recommended has been employed routine treatment for several months in hundreds of ca this hospital and has proved satisfactory Dr M believes that the " proper administration of thiopento suxamethonium chloride is a safe procedure " We presum he means that the treatment is given by an anæsthetist it has been clearly stated[5] that the degree of safety with pentone is related to the special experience of the admini tor If one holds, as Dr Murphy does, and as we do, th use of straight E C T is now unjustifiable, one must eithe

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1 Impastato, D J Almansi, R *J nerv ment Dis* 194
2 Kalinowsky L B Hoch P H Shock Treatments, P surgery and other Somatic Treatments in Psychiatr York *1952* p *154*
3 Kelly J P *J Bone Jt Surg* 1954 36B, 70
4 *Confin neurol Basel* 1953, 13 332
5 Leading article *Brit med J* Oct 1, 1955, p 836

cant alone or use a relaxant and thiopentone only when cathetist is present ; the second of these two alternatives impose an impossible condition on the administration of

should like to emphasise that satisfactory modifica s obtained with suxamethonium chloride (Scoline) the stimulus is given 10 seconds after the onset of fasciculation and with suxethonium bromide vidil F ') when the stimulus is given 3-5 seconds the onset of facial fasciculation If one waits for paralysis as Dr Hewat and his colleagues (Nov 5) been doing one subjects the patient to an unneces degree of anxiety without achieving any added fit.

J KELLEHER
R W WHITELEY

llswood Hospital,
Sheffield.

SECONDARY HÆMOCHROMATOSIS

R—The demonstration by Dr Davies (Nov 19) enough iron was administered by way of blood sfusion to account for the increased amounts in the ges of his patient with secondary hæmochromatosis articularly interesting in view of conflicting reports his subject.

reached the same conclusion concerning a similar [1] and I observed that there was a correlation between volume of blood given and the liver iron content in ther patients who had received transfusion No ase in liver iron storage was, however, found in 11 nts with chronic normocytic anæmia who had not transfused even though some of them had received iron

ses of secondary hæmochromatosis in which the e iron content is unaccountably high are exceptional their existence must not be allowed to obscure the that repeated blood transfusion is the primary cause is unusual condition

mersmith Hospital
London, W 12

G A MACGREGOR

CONSULTANTS IN DERMATOLOGY

R,—Dermatology in this country is now recognised important branch of general medicine and dermato ts must primarily be general physicians One has to remember that such conditions as disseminated erythematosus polyarteritis nodosa sarcoidosis various reticuloses first present with skin manifesta to realise how important is this basic knowledge neral medicine

e employment of underworked venereologists as atologists for administrative convenience is, as Ingram so rightly points out in his letter last week rograde step in British medicine. If it is thought able for venereal disease to be treated by the cian interested in the organ affected principally he disease, it is as reasonable for the condition to be ed by the cardiologist neurologist, or genito ry surgeon as by the dermatologist Conversely training of a venereologist makes him no more of rmatologist than say a cardiologist.

further factor which depresses well trained r registrars (not only in dermatology but in other ches of medicine) is the increasing tendency to rtise consultant appointments with only a few ons. This is possibly justifiable in London where it is able that further sessions in other hospitals will be lable but in most provincial areas this is not the case the appointment almost inevitably goes to the local date who can retain part of his previous appoint t. Accordingly, consultant posts are being filled applicants who are not necessarily the best available

H R VICKERS

rds

CARCINOMA OF THE BREAST

SIR —I have noticed that the patient with carcinoma of the breast who is slow to regain normal health after operation is usually the one that develops early clinical secondaries. I know that experience, at least incomplete experience is fallacious but this is all that anyone has Excessive blood loss, bigger operations and postoperative complications all delay recovery, and must be avoided

Recently it has been shown that smaller and more local operations give, in certain people's hands, better results than the classical modified Halstead both procedures being followed by X ray therapy As I see it there are two possible explanations

Hippocrates told us that operations on growths made them worse This is very true—one should operate on normal tissues around the growth If we believe that breast carcinoma usually spreads by lymphatic metastases rather than permea tion we have in an advanced case of carcinoma the primary in the breast next a zone of normal tissue and then glands in the axilla If we carry out a local removal of breast we cut across the normal zone ; if we conduct an axillary dis section we are in and around growth and so aggravate the condition contravening Hippocrates s advice. Alternatively in the smaller operation we have less blood loss fewer com plications, and a quicker return to normal health Of these two possibilities I think that the second is the more important factor causing a better survival rate also the patient is much fitter when she receives her postoperative X rays X rays seem to work not only by inhibiting the carcinoma cells, but also by producing local fibrous and other changes which imprison the carcinoma cells and this being a tissue bed reaction, is more complete in the healthier person

The cynic says that all patients after operation for carcinoma of the breast develop secondaries provided they live long enough By this he infers that after opera tion he does not feel confident that he has removed all the carcinoma cells, and the cells left behind may become active at any time Work on biopsies of retrosternal glands suggests that many cases of five year cure have retrosternal deposits at the time of operation Why are the cells that are left behind so often slow in producing a clinical secondary ? Does removing the primary hinder the growth of the secondaries ? This is seen in certain ovarian carcinomas where after removal of a primary observed secondaries disappear It has been said that these secondaries are anyway of limited existence but possibly the presence of the primary helps their growth—a hormonal control obvious in the ovaries but present in a lesser degree in all growths. That certain *sites are more favourable for the* growth of secondaries is well known—it may be that growth only becomes rapid should the cells move (this may be due to many causes) to a more suitable site That trauma can liberate malignant cells is seen by the frequency with which operations at the site of a ' healed ' growth are followed by a recurrence

The late development of a secondary in a case I saw when doing my first house surgeon job impressed me greatly Eighteen years after the excision of a primary carcinoma of a breast a rapidly growing secondary of the skin of the back appeared What change had allowed the latent carcinoma cells to multiply ? Trauma moving them to a new site, trauma stimulating their growth, or was it the result of some general systemic or glandular change ? That the alteration of the general health of the patient does allow secondaries to grow is illustrated by the following case of mine

A man with carcinoma of the tongue with secondary glands was treated by excision and block dissection. He remained without a recurrence for four years. I then operated on him because of a painful peptic ulcer Six weeks after partial gastrectomy he developed a bloodstained pleural effusion that contained epidermal carcinoma cells. His lowered general condition apparently allowed the latent carcinoma cells to multiply

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[1] *St. Thomas s Hosp Rep* 1950 6 128

I consider that there must be some factors in the patient's general health that inhibit the growth of secondaries, and submit that it is essential to ensure quick return to good health after operations on carcinoma Radiotherapists, who see the day-to day results of different surgeons, are aware that different surgeons get different results although doing essentially the same operation These differences depend, I believe, on the finer points of technique and care, and I submit the following rules for breast operations, all aimed at rapid postoperative return to health

Preoperative care —This is limited because delay is unwise The patient should not be anæmic—blood transfusion may be necessary Full diet (calories and vitamins) Vitamin C deficiency delays healing Adequate rest with sedation if necessary to ensure sleep—the worry of a pending operation is distressing

Operative care —Premedication is given in relation to the anæsthetic All effort must be made to diminish hæmorrhage, clear airway and hypotension There are many ways in which an anæsthetist can help diminish blood loss I think the importance of diminishing blood-loss possibly justifies hypotension All blood-loss must be made up The surgeon must pay particular care to save blood by meticulous hæmostasis Clip before cutting Clip the blood vessel and the blood vessel only, no masses of tissue tied in the ligature so to die and create sepsis—clean cutting and no tearing All that causes operative shock must be avoided I myself carry out an axillary dissection unless there are fixed glands Cutting through axillary growth is condemned Postoperative œdema of the arm must not occur, dissection into the arm lymphatic trunk is avoided—especially in obese patients, who tend to develop arm œdema Closed drainage by a long tube is carried out and blood volume drained is charted At all times the patient's hæmoglobin must be kept up I feel that it is safer to leave skin than to delay healing by excessive removal I prefer to skin graft rather than to risk flaps sloughing I prefer to cut a thick flap that does not die than to cut a flap too thin and risk a slough Skin tension must be avoided

Postoperative care —This means good nursing, feeding, sleep, and avoidance or early treatment of any sepsis I prefer the arm to be kept fully abducted and externally rotated, early movement delays healing and causes lymph pooling Postoperative X ray therapy, should not be given till the patient is well, but should be given as early as possible The healthy body aids the X rays in inhibiting the growth of neoplasm—mutis mutandis The sooner the patient is fit the sooner the X ray therapy can be given

London Hospital E 1 CHARLES HEANLEY

POLIOMYELITIS IN LONDON

SIR,—I rather think that Dr Laurent (Nov 19) has misunderstood me It was the fact that in the majority of cases of so called "abortive poliomyelitis" in North-West London, cell-counts of upwards of 100 in the cerebrospinal fluid without a single polymorph were the rule, that led to the suspicion that these cases were not poliomyelitis at all but some other virus infection of the central nervous system Hence one's surprise to learn that in a certain—admittedly small—number of cases poliomyelitis virus (type 3) had been recovered My own experience agrees entirely with Dr Laurent's—namely, that in true paralytic poliomyelitis polymorphs always form a substantial percentage of the cells in the C S F, and sometimes the majority It is not easy to understand why the same ratio should not apply in cases where no paralysis supervenes

Dr Laurent's remarks on the "peripheral" spread of the epidemic are very interesting Broadly speaking one would say that the higher the standard of nutrition and environmental hygiene in a community, the more likely is epidemic poliomyelitis to occur During the first epidemic in London in 1947, it was very striking to note how the cases clustered thickly among the better class neighbourhoods, whereas in certain boroughs in the East End (Stepney, Poplar, &c) they were relatively few the fact that standards are better in the suburbs may account for the curious track of the epidemic from that, however, in some instances there almost seem to be a *genius loci* at work If my m serves, Lewisham in at least two epidemics has an unusually high incidence I do not know it enough to be in a position to assess its standards on above basis, but assuming both to be high, the inci nevertheless still appears to be disproportionately Other localities have also shown similar patterns.

South Middlesex Hospital,
Isleworth G E BREE

CONGENITAL AGAMMAGLOBULINÆMIA

SIR,—In your issue of Oct 22 I described two of congenital agammaglobulinæmia occurring in bro In both, death was due to pneumonia of a peculiar which I had not before encountered Although the of these two brothers were separated by an in of almost five years, the histological appearances of lungs were almost identical After publication paper, Dr H S Baar, pathologist to the Chil Hospital, Birmingham, wrote to me to suggest th these brothers the lungs were infected with P *cystis carinii* Dr Baar has kindly examined se from the lungs of my cases and has confirmed th was indeed the case

While I understand that this protozoan infec not uncommon on the Continent, only one pub has appeared in this country, by Dr Baar The occurrence of this rare infection outside European continent raises the question whether a globulinæmia may not be a vital predisposing f The possibility obviously merits investigation

I am grateful to Dr Baar for having elucidated nature of the fatal infection in my cases

Royal Hospital for Sick Children,
Glasgow, C 3 J H HUTCHIS

INFECTION ACQUIRED IN HOSPITAL

SIR,—A solution to the problem of hospital infec is urgently and universally needed The recomm tions enumerated below are effective and can mo implemented with existing equipment

1 The M R C rules for surgical dressings should be observed

2 Floors should be treated with substances that dust particles to adhere to the surface Table tops, shelves, &c, should be similarly treated Dust can be further subdued by the regular use of 'Microsol' containing dilute 'Hibitane' solution

3 Infected dust collects in the interior of pillows mattresses, which should be regularly disinfected moist, gaseous formalin in the hospital disinfector

4 Blankets also collect dust Before washing can also be disinfected in the hospital disinfector, moist, gaseous formalin Washing blankets in 'Fi after treatment with a detergent to remove soap has a prolonged antibacterial effect on the blanket fib

5 Blankets, pillows, and mattresses can be protect rubber or plastic envelopes such a one is the 'St envelope for treating burns, supplied by the Milton com

6 Clean surgical cases should be segregated Open cases should be isolated, preferably in cubicles, until fre infection

7 Nurses should wear rubber gloves when ha infectious dressings or bedpans, and when changing napkins, &c The nurse can wash her gloved hands in hot water and rinse her gloved hands in a solution of or other disinfectant

8 All staff working in the wards should be gowned masked

If these rules are faithfully observed, anti resistant staphylococci and other organisms will to be harboured in hospitals

St Margaret's Hospital
Epping, Essex FRANK M
Director of Path

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1 Baar H S J clin Path 1955 8 19

WHO ARE THE INFECTORS?

IR,—Your very important leading article last week the unknown infector in tuberculosis calls attention the need for seeking sources of infection as these inish in number No-one will disagree with your arks about the necessity for intensification of proven measures which as the epidemic of tuberculosis aring its close (largely perhaps, from natural causes) ld yield a bigger harvest than ever before Routine t radiography of certain occupational groups would oubtedly help to quench foci of infection but, rtunately, the prospects of its widespread use in near future appear remote The public conscience uch matters needs a lot more stimulation before ugh support can be obtained Mass radiography s despite praiseworthy endeavour have not been to cast their nets widely enough in the most prolific ng grounds where lurk the dangerous males in the r age groups

ortunately chest radiography is not the only means lable tuberculin testing of young children has ed its worth in bringing to light the adult infector ell as in discovering active disease among children nselves This is being carried out to an increasing ht in child welfare centres and schools, and meticulous iry by the doctor and health visitor very often oses the source of infection of the positive reactor steady reduction in the percentage of reactors which been noticeable during the past few years (an indica of the decrease in foci of infection) enables more to be given to investigation than was possible a t time ago

arly 17 000 children of pre school age in this area have tuberculin tested at municipal clinics since 1947

e jelly test was used in the majority of cases, but those eacted were Mantoux tested (about 5% proved negative) et result over this period was a 1% conversion rate ever its shortcomings, the jelly test seems to err in the direction. A number of the children were found to have e disease but a greater number of adult infectors— ously known and unknown—were unearthed. These ded the lady next door " the nearby shopkeeper and a h of uncles, aunts and grandparents. Quite recently culin testing of children in a residential establishment, ich one of the staff was found to be tuberculous, resulted notification of eight cases in children.

e mass miniature radiography unit has coöperated heartedly in dealing with schools for older children in one of the teachers has developed tuberculosis, but eld has not been in proportion to the effort expended it is found that prior tuberculin testing is advantageous

assessing the rôle of tuberculin testing in the ue of tuberculosis control the cost is a factor of rtance It is computed[1] that under normal working ngements of a mass miniature radiography unit it just over £100 to discover an active case of tuber is While no price is too high to pay for the draining n unknown pool of infection may it not be possible duce the expense by increasing use of tuberculin ng ?

Town Hall
berwell, London, S E 5 H D CHALKE

XERORADIOGRAPHY

R,—In an annotation (Nov 10) you say of the radiograph Its most striking difference from a ventional film is the presence of both bone and tissue detail on the same plate

his is a startling indictment of the modern radiograph h in many cases and often in the hands of skilled ologists is only a poor image of what it should be necessary bone detail can be produced by the right lity of negative with due reference to the surrounding tissue structure provided that the radiographic sures and subsequent processing are correct After well over thirty years experience I am today frequently shocked by the radiographs presented to me of over penetrated, over exposed, and densely developed negatives which show “ a bone ’ in a dark background

The same remarks may well apply to abdominal radiographs, which are often grossly over penetrated and which fail to show muscle shadows and other soft-tissue structures In such radiographs many less opaque objects, such as renal or ureteric calculi, are often lost Indeed, it would seem that modern radiography is concentrating too much on the rare and occasional " demonstrated by marvellous variants of ‘ ography " to the detriment of straightforward photographic and radiographic principles

London W 1 F M ALLCHIN

RADIOTHERAPY CENTRE AT SHEFFIELD

Dr W A. RAMSAY senior administrative medical officer of the Sheffield Regional Hospital Board, writes to correct the first statement in the news paragraph headed ‘ Sheffield United Hospitals on p 1148 of our last issue He informs us (1) that the responsibility for providing a new radiotherapy centre is that of the regional hospital board which is at present trying to find a suitable site and (2) that there has been no Ministerial approval of any plan to provide 60 new beds for radiotherapy in Sheffield. We are sorry to have misunderstood the situation.

Parliament

QUESTION TIME

Guillebaud Report

Replying to a question, Mr IAIN MACLEOD said that the Secretary of State for Scotland and he had now received the Guillebaud Committee s report on the cost of the National Health Service Every priority was being given to printing it so that it might be in the hands of hon. Members at the earliest moment but the document was voluminous (the summary alone covers more than 50 typescript pages), and he was afraid it must be some weeks before publication could take place In the meantime, he was sure it would be improper for him to attempt either to summarise the report in his own words, or to comment on its recommendations Although two members of the committee had made certain reservations—which would of course be printed with the report—the whole committee had signed the main report itself

The Death Penalty

Mr SYDNEY SILVERMAN asked the Prime Minister, in view of the swing of public opinion in favour of the abolition of the death penalty and of his refusal to grant time for the discussion of the Private Member s Bill introduced to give effect to this, what steps he proposed to take to ascertain the present stage of public opinion as to the death penalty —Sir ANTHONY EDEN replied : I have no doubt that on this, as on other matters, public opinion will be able to express itself by the traditional means. We are prepared to consider providing time for a debate, but I am afraid that we cannot do so before Christmas, for fairly obvious reasons, having regard to the state of our programme but I hope that we shall be able to do so very soon after our reassembly

Ban on Heroin

Replying to a question Mr MACLEOD said that the Medical Advisory Committee which advised him concerning the ban on heroin was appointed under statute and included the presidents of the three Royal Colleges the chairman of the council of the British Medical Association, the president of the General Medical Council and the chairman of the council of the Society of Medical Officers of Health It also included four consultant physicians, five consultant surgeons, and five general medical practitioners, all of whom were appointed after consulting the appropriate medical organisations

Industrial Hazards

Replying to a question, Sir WALTER MONCKTON Minister of Labour said the Industrial Health Advisory Committee had recommended the stimulation of voluntary medical supervision in the steel foundry iron and steel manufacturing rubber and chemical industries

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[1] *Med Offr* Nov 25 1955 p 308

Industrial Dermatitis

Dr **Barnett Stross** asked if the Minister was aware that many employers and workers still mistakenly believed that industrial dermatitis was contagious, if he was satisfied that the officers in employment exchanges were fully aware that there was no such possibility of infection, and what steps would be taken in the campaign against dermatitis —Sir **Walter Monckton** replied I am aware that misapprehensions about industrial dermatitis may still exist among some employers and workers although the position is made clear in a poster issued by my Factory Department I am satisfied that the officers concerned in employment exchanges with persons disabled by dermatitis are aware of the facts The Chief Inspector of Factories has revised and reissued a leaflet and a poster containing advice on prevention, and further measures to stimulate the interest of employers and workers in the need for precautions are now under consideration Special visits are paid to factories where dermatitis is known to be a problem and inquiries are being made into the risk of dermatitis from certain substances Attention is also being paid to the problem in the course of the pilot local industrial health survey now in progress in Halifax

Lighter Hearing-aid Batteries

Replying to a question, Mr **Macleod**, Minister of Health, said that the Mark III hearing aid, with batteries about half the weight of those for earlier models, was available in all parts of the country and was issued to patients who needed it An even lighter monopack model had just passed its clinical field trials and would, he hoped, be available for distribution to children in about a year's time

Medical Inspectors of Factories

Replying to a question, Mr **Harold Watkinson**, parliamentary secretary to the Ministry of Labour, said that the medical inspectors of factories numbered 13 in 1951, and were the same number now 2 more would shortly be joining the department from the recent open competition It was hoped to recruit a further 3

Rabies

Replying to a question, Mr **Heathcoat Amory**, Minister of Agriculture, said that 1949 was the last year in which it was reported that one or more dogs brought into Britain had developed rabies during or after quarantine Replying to a further question, Mr **Macleod**, Minister of Health, said he understood that in man the disease was invariably fatal In 1947 there was one death from this cause, and the next had occurred this year

Increased Cost to N H S

Replying to a question, Mr **Macleod** said that the increased cost to the National Health Service of the proposed increased taxation was about £1 million a year

Public Health

An Unidentified Illness

Of 190 children at the county secondary modern school, at Tottington, Lancashire, 63 (24 boys and 39 girls) have lately been affected by an illness so far unidentified The chief symptoms were headache, dizziness, nausea, and slight abdominal pain

In a typical case, a girl of 12 complained of slight dizziness and pain at the back of the head Later her legs felt numb, as if walking on air, and her vision was blurred There was sharp abdominal pain across the umbilicus Pulse rate was 66 and temperature 99°F A number of the children affected had slow pulse rates of 65–70 and temperatures ranging from 97° to 99 5°F

Similar cases appeared in all parts of the school at different times of day over a period of four days The children recovered quickly and returned to school after one or two days' absence Moderately dilated pupils were noted in several cases A local doctor said he had a similar illness the previous weekend and that 5 adults were similarly affected in his practice The other 2 local doctors had nothing abnormal to report Throat washings were put in broth for virus examination, and blood and fæces samples were taken from 6 cases

fourth day there was a further batch of cases, one child severely affected

A girl of 11 had sore throat, dizziness, and pains stomach and top of the legs At 10 30 A.M next day Fainted at 11 30, after being removed from cl another part of the school with open doors and wi Slight cyanosis, legs rigid, closed eyelids fluttered, co about 12 45 Corneal reflexes present during unconscio but she could not be roused At 1 15 she was quite b and cheerful, good colour At 2 P M pulse 126, tempera 98 6°F

Analysis of the 46 cases during the first few enabled school meals, milk, and water-supplies to excluded as a cause

The weekend followed and there was almost 1 attendance on Monday morning The first child coll about 9 45 A M and others went down all day in dif classrooms all over the school 19 of them were ch who had collapsed the week before A number be restless with intermittent periods of unconsciou the pupils were dilated, and the corneal reflex was pr but the children could not be roused A new sym was dryness of the mouth Children collapsed long they had been removed from their classrooms to domestic flat in the school where the doors and wi were wide open

No child was so continuously ill as to require b treatment but a child who had collapsed twice was hospital for examination Nothing abnormal was except a temperature of 99 6°F Spectroscopic exam of the blood was negative for carboxyhæmoglobin 3 children who relapsed at a later date in a cinema (pr with poor ventilation) were also sent to outpatients and spectroscopic and routine examination of the blood negative The urine was normal

It was decided to close the school and to lo some form of gaseous poisoning Attention was d to the assembly hall where a number of children collapsed during a singing lesson and which was the place where all the pupils congregated

Beneath the stage in the hall in a warm cellar were 4 of floor sweeping compound which gave off a strong ch smell These were analysed with negative results the was pine oil plus wood shavings It was then discovered the sacks were second hand and had contained fert apparently nitro chalk No volatile organic compound obtained from the sacks, and tests were negative for phosphorus compounds There were also several canisters of a floor cleaner—sodium carbonate and m phosphate In addition there were sealed 5 gallon wax floor polish containing di ethanol amine, olein and various waxes All these were taken to a unheated building The wax floor polish had not been for two months There were no leaking fire exting and in any case they did not contain methyl bromide

There was no smell of coke or boiler fumes, but a tr from the side of the stage led to the cellar and the passages direct to the boiler house It was possible boiler fumes to travel along the heating pipes which ran the corridors A panel was removed from a duct heating pipes at the side of the stage and after an two a smoke haze was noticed in the hall No monoxide was detected by the diagnostic tube method test was repeated with the heat full on and all window Results were entirely negative On one occasion, ho a considerable escape of boiler fumes was observed fr base of one automatic hopper and this lasted a few m The fumes were not pungent and would not be no apart from the smoke which would settle out If th repeated at regular intervals during the night when the were damped down, no doubt fumes could reach the as hall and some of the heating ducts The boiler att said he had not had trouble with back draught, but the during the week in question was foggy with temp inversion There was very little fog in the vicinity school The boiler chimney was also very low and no above the level of the hall

Fumes would have to travel to distant classroo order to explain the collapse of pupils several hours they had left the assembly hall One of the first was a child who had not entered the assembly No-one complained of fumes or even noticed any teacher was slightly ill, the staff may have been d in the assembly hall because they sat on a higher and there was a down draught from the roof on te stage.

e school reopened on Monday of this week, and 21 ren complained of slight dizziness but they had at all been ill earlier in the outbreak and none of was severely affected on returning to school. Up iday on Tuesday, nothing further untoward had reported

first a virus infection was suspected, but the rence of symptoms in 10 children after the week was against this. On the other hand a virus is sted by the fact that apparently similar outbreaks been reported at West Hartlepool co Durham, ov 8 and 9 and at Lincoln on Nov 23 At present ost likely cause seems to be a poisonous gas affecting entral nervous system Carbon monoxide seems ive been excluded, but a less well known poison, as methyl bromide, might be acting in low dilution producing delayed effects. Methyl bromide is a y gas and would affect children before adults But urce has yet been discovered

this account of the outbreak we are indebted to J. H. T- Wade divisional medical officer, Lancashire y Council, who has been making these inquiries in ltation with Dr S C Gawne county school medical and Dr M. T Parker of the Public Health Laboratory hester

Typhoid Fever in London

London 11 cases of typhoid fever have been con d in Polish residents of Westminster Hampstead, m, Kensington and Acton Almost all those ed went to a party given by a Polish lady in Acton t 16 The first patient fell ill on Oct. 21 So far sible, a list has been compiled of the guests at the , but this may not be entirely complete; so it is le that untraced guests may be infected and as yet gnosed Unexplained pyrexial illnesses in the n area, especially in Polish people should be ered with these facts in mind

Poliomyelitis Vaccination

a W H O conference in Stockholm last week,[1] it eported that results from the five countries already the Salk type of poliomyelitis vaccine showed a degree of protection among the age-group in which used. The general feeling was that, when properly factured and tested for safety, the Salk type of e was as safe as any of the vaccines used against diseases It was agreed that the potentially ous Mahoney strain of type-1 virus used in the vaccine should preferably be replaced by a safer Dr Albert Sabin said that with a little work a could soon be produced which would be as effective ically as the Mahoney strain without any of the ant risk.

res were given [2] for some of the results of vaccina the United States Canada and Denmark

50,000 children aged 6 to 10 who were vaccinated in ork State 153 contracted poliomyelitis, 18 with para This paralysis rate of 4 per 100 000 compared with 100,000 in the unvaccinated control group of 260 000 nesota 2 out of 112 000 vaccinated children were ed whereas 10 paralytic cases occurred in 53 000 nated controls. In Canada, where 800 000 children to 9 were given a similar vaccine, preliminary results a paralysis rate of 1 07 per 100 000 vaccinated against per 100 000 unvaccinated In Denmark no case of litis had been reported among 425 000 children ated in April, but there have been only 7 cases among ole population since then.

re has been a further fall in the number of polio-tis notifications in England and Wales. Total ected notifications for the week ending Nov 19 revious week in parentheses) paralytic 111 (127) aralytic 63 (93) total 174 (220)

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[1] *Manchester Guardian* Nov 29 1955
[2] *Times* Nov 24 1955

Obituary

WILLIAM ROBERTSON SNODGRASS

M A., M D B.Sc Glasg., F R F.P.S

Dr Snodgrass, a former president of the Royal Faculty of Physicians and Surgeons, died in Glasgow on Nov 22, at the age of 65

His father was a much loved Glasgow general practitioner William Snodgrass was educated at Glasgow Academy and Morrison s Academy, Crieff, where he was dux At Glasgow University he graduated successively in arts, science, and medicine, taking his M B in 1913 He was house-physician to Prof W K. Hunter in the Glasgow Royal Infirmary before he left to serve throughout the 1914–18 war with the R.A.M C On his return from France he was appointed to the staff of the Western Infirmary in 1919, an association which remained unbroken until he retired under the age-limit eight weeks ago At first he was assistant to Dr R Barclay Ness, who greatly influenced his formative years. Later he worked with Dr George Allan who roused his special interest in cardiology

Northern Press Photo Agency

He had graduated to consulting work through general practice and he always held that this was a most valuable part of the training of any young physician In his early days he turned to the treatment of venereal disease at first in order to augment his income However, he became fascinated by research in syphilis, and the thesis for which in 1935 he was awarded the M.D with honours and the Bellahouston gold medal was based on this work It was summarised in publications in the *Quarterly Journal of Medicine* and by the Medical Research Council Later he shared in M R C therapeutic trials and wrote on the early results of sulphonamide therapy He was the first to use penicillin in the Western Infirmary As his ability as a general physician became recognised, he gave up his venereal-disease work and soon built up a large consulting practice in general medicine He was appointed visiting physician to the infirmaries of Kilmarnock and Dumfries, to the Garrick Hospital Stranraer and to the Glasgow Eye Infirmary As physician to the Southern General Hospital, Glasgow, he did great work in helping to transform a poor-law institution into a large first-class general hospital In 1942 he was appointed consultant physician in charge of wards at the Western Infirmary, and there many of his happiest hours were spent in the hospital of which he had become so fond.

Dr Snodgrass was proud of his long association with the Royal Faculty of Physicians and Surgeons of Glasgow of which he became a fellow in 1920 He served the Faculty loyally on many committees and was honorary librarian from 1933 to 1946 In 1947 he was elected visitor and he was president from 1948 to 1950 during the celebration of the 350th anniversary of its foundation He represented it on the *Joint Consultants Committee* and devoted much time and energy to negotiation during the difficult early days of the National Health Service. But even the wear and tear of committees could not smother his sense of duty or his sense of fun, as his lines On *The Committee Man*[1] show

> 'I ve tried all the trains and I hate all the lot from the
>   10.25 to the 1 o clock Scot
> I m fed up I'm finished: I feel that I ought to work
>   quietly at home but I'm off like a shot
> And I travel all over again '

His pen took easily to verse, and when we once unwittingly took his name in vain he sent a neat parody warning us that All the Snodgrasses are over the border

He served the University of Glasgow both on committees and as an honorary clinical lecturer J D O K describes how a crowd of breathless lads and lasses were to be seen running up the stairs in the Western Infirmary on the first day of enrolment for clinical classes

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[1] *Lancet* 1950 ii, 804

"Members of the XV were thought by their colleagues to possess unfair advantages in the scrimmage to secure one of the coveted places in Snoddy's class They loved him and he loved teaching them, and was curiously touched when they wished to entertain him to dinner at the end of the session

"He was full of the vital spark which inspired his juniors to work for him and his patients with fanatical devotion, his was a life full of colour—reds and purples often. He did not bear fools gladly, but he had ample generosity to find time to listen to those, and there were many, who sought his guidance As an opponent he fought cleanly and without malice The only thing of which he was completely intolerant was intellectual dishonesty But those who met him as a public figure or as a colleague on committees did not know the real man Only those who had seen him with hospital patients, gently endeavouring to aid the bad home circumstances which had led to admission, understood his infinite capacity for taking pains Only those who saw his constant compassion for desperate illness knew the true gentleness of this great physician. Only those who saw his wonderful way with a frightened child knew the true simplicity of his nature Only the few who realised the difficulties of his last year knew the full heights of his courage"

S A writes

"If ever a man was a bonny fechter that man was William Snodgrass He was a man with objectives and ideals and he left his mark on all that he touched But medicine in its turn moulded his character the son of a physician who follows in his father's footsteps is exposed all his life to influences at once powerful and benign Snoddie's magnificent independence was only an outcrop from a personality which was ever thoughtful and kindly His was the spirit of the crusader, ruggedly independent even to the point of austerity As might be expected, his teaching at the bedside was vigorous, challenging, and dogmatic, to be one of Snoddie's students was a rewarding if chastening experience But he had a pawky sense of humour, and when he laughed he was changed in the twinkling of an eye to a mischievous schoolboy In an imperfect world his passion for intellectual honesty and fair dealing were not calculated to make for peace of mind, yet his courage never failed, nor did his deep sense of chivalry This same firmness of character was a tower of strength to his patients and an inspiration to his friends he gave freely from a rich store of experience and culture It was his lot to 'feel the heart break in the heart of things,' for his wife died only a few weeks ago The loss was irreparable it was she above all who sustained him by her gentleness, her equanimity, and her profound understanding of this tempestuous but lovable character"

Dr Snodgrass is survived by two daughters

HAROLD PACE GIBB

M B Camb, F R.C S

Mr H P Gibb, surgeon to the Central London Ophthalmic Hospital, who died at Gerrard's Cross on Nov 21 at the age of 77, received his medical training at the University of Cambridge and St Bartholomew's Hospital After qualifying in 1904 he went on to take the F R.C S in 1906 and the M B Camb in 1907 J H P writes "He was a man of so retiring a disposition that his outstanding ability was known to only a few He was my clinical assistant at Moorfields for several years coming to me with an established reputation as a neurologist, won as a house-physician at Queen Square He soon gained an equally high reputation as an ophthalmologist He took little interest in private practice, but devoted himself wholeheartedly to hospital practice, winning the warm affection of his patients During the whole of the late war he did most of the work at the Central London Ophthalmic Hospital, which was depleted of the younger members of its staff He was a brilliant clinician, and it was a matter of regret to me that he did not write a book on the neurological aspects of ophthalmology No-one was better qualified to do so He had many interests outside medicine—art, sport, and literature He was a friend whom I valued very highly, and it has always been a regret to me that he d not attain that wider recognition to which his and character entitled him"

Notes and News

EXCITING RETURNS

WITH experience, the Nuffield Foundation are more money on more things[1] Last year they £681,400 which is almost three times as much as the allocation of £248,600 in 1943 The increase has them to extend their interest from workers and the United Kingdom to those in the Commonwealth. Foundation consider this side of their work both and rewarding, and over the past twelve years they allocated over £1 million to travelling and research and other projects overseas But expansion abroad meant retrenchment at home, and the Foundation tinued to offer stimulating and constructive help to in this country Their total grant to medical instance, now stands at £875,000 (including £2 rheumatism), for biological research at £586,000 *in social sciences at £684,000, for the care of the* research into ageing at £970,000

Till this year in their reports the Foundation has been able to tell us of promising research or enterprises which they thought worth backing The they are able to lead in the first of their winners, *Dorothy Hodgkin*, F.R S, and her team at elucidated the structure of the molecule of Last year, maintaining the Camford balance, Dr and his colleagues at Oxford described a method of anti hæmophilic globulin from ox and pig blood[3] clinical report in our columns[4] last week shows, this already proved its value in the surgical hæmophilic patients

New grants, which may well add to the interest reports of the Foundation, include £15,000 to the Un of Oxford for research under the direction of Dr Ho into immunological reactions of the nervous system, £35,000 to Frenchay Hospital for Dr R M Norman into causes of mental deficiency, and £8000 to St. mew's Hospital for Prof K J Franklin's research physiology of ageing from conception to death

RESEARCH ON CHILD DEVELOPMENT

THE second annual meeting, organised by the In Children's Centre, Paris, of the research teams in studies of child development, was held in Stock Oct 10 and 11 under the chairmanship of Prof Wallgren (Stockholm) Dr Frank Falkner and Dr. Hindley, of the Child Study Centre of the In Education and Child Health, attended on behalf of the team, and teams from Brussels, Dakar, Paris, and Zurich also sent representatives All are cond term follow up (longitudinal) studies of physical and development

The meeting carried forward the work, begun in 1954, of developing a minimum "base line" of techn be used at all the centres The agreed methods cov aspects as socio economic data, anthropometric me ments, the clinical examination of the child, and the use same psychological tests, and *psychological interv* cedures This collaboration should enable workers to confirm the findings of other centres, but also to the development of children in European countries and living in more primitive communities

DISCHARGE AND READMISSION

IN his articles in our series "In the Mental Hospital J A R Bickford[5] said that "the sheltering of pat hospital without continual efforts to make them fit to to the world is a complete denial of the functions of med Though there is, of course, no point in discharging merely for the sake of discharging them, the psych should regard discharge as his *objective* and must acc fact that "a proportion of those he discharges will require readmission within a few months."

Some valuable data on readmission are given in the report from Graylingwell,[6] in which Dr Joshua Car

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1 Nuffield Foundation Report 1954–55 Nuffield Lodge, Park London N W 1 Pp 125

2 See *Lancet* Oct 1 1955 p 710

3 Macfarlane R G Biggs R, Bidwell, E *Ibid*, 1954 i, 11

4 Fraenkel, G J Honey, G E *Ibid* Nov 26, 1955, p 11

5 *Ibid* Oct 29 1955 p 917 Nov 5 1955, p 969

6 58th Annual Report of Graylingwell Hospital Chichester

superintendent records a follow up of 584 patients ed in 1949 Of those, 416 remained out of hospital following five years, and of the 168 readmitted 100 only one further period of treatment in hospital more than a quarter of those discharged in 1949 , needed further inpatient treatment but as Dr marks, many thousands of people subject to attacks , rheumatism bronchitis hay fever asthma—to only a few conditions—would be overjoyed to learn owing treatment nearly three quarters of them could o remain free from attack during the next five years depressions and schizophrenia account for most of the sions: of the 209 with depressions who were dis , 66 were readmitted, and of the 129 schizophrenics, back to the hospital Dr Carse emphasises the need e research into prevention, treatment and aftercare al disorders especially the depressions of middle aged erly women

SONE AND HYDROCORTISONE PREPARATIONS

Ministry of Health is informed that the prices of e preparations at present available are as set out list below This gives the basic price The cost actual prescription is increased by the addition % on-cost as well as a dispensing fee and container nce.

ame	*Strength*	*Pack size*	*Basic price*
ne acetate			
drops	1% suspension	3 ml dropper bottle	3s
ointment	1%	3 gramme tube	2s 6d
ction	25 mg per ml	10 ml. vial	11s 3d
ets	5 mg	20 tablets	5s
		50 tablets	10s 6d
	25 mg	20 tablets	17s 6d
		40 tablets	34s
		100 tablets	86s
ortisone free cohol			
lotion	0·5%	20 ml plastic bottle	9s
	1%	20 ml plastic bottle	16s
ets	10 mg	25 tablets	15s
		100 tablets	56s 3d
	20 mg	20 tablets	24s
		25 tablets	30s
		100 tablets	112s 6d
tion for use th intravenous ips	5 mg per ml	20 ml container	11s 9d
ortisone acetate			
drops	1%	3 ml. dropper bottle	4s. 6d
ointment	0·5%	3 g tube	3s
	2·5%	3 g tube	8s
tion	25 mg/ml	1 ml vial	3s 1d.
		5 ml vial	10s 6d.
ointment	Non-greasy and greasy 1%	5 g tube	5s 3d
		15 g tube	13s 3d
		20 g tube	10s
	Non-greasy and greasy 2·5%	5 g tube	12s
		15 g tube	20s 6d
		20 g tube	36s

MEDICAL RESEARCH IN EIRE

s of further research into the chemotherapy of tuberou contained in the report for 1954 of the Medical Research il of Ireland [1] A compound synthesised in the labora of Trinity College Dublin—1 salicylidene-2 isonicotinoyl aine ('Salizid')—has been released for clinical trials in ited States The drug is said to be as effective dose for as isoniazid but to be free from undesirable side-effects. nine months 27 patients treated with salizid had an ge gain in weight of 22 lb nearly all of them showed graphic improvement; and the sputum of half of them ecome free of tubercle bacilli Early results of clinical in Dublin of 'Hisconstarch' an oxypolysaccharide er are said to be most encouraging

pochromic anæmia was found in 31·4% of 1000 pregnant n in the Coombe district of Dublin a survey of 504 of patients indicated that in many cases diet and housing ions alone were not responsible for the anæmia 8 cases galoblastic anæmia were found in 3000 antenatal patients ratio of 1 in 375

ratio of female to male anencephalics in 12 632 births he Dublin maternity hospitals was 8 to 1 this is much than the usually accepted ratio of 3 to 1 and more ed study is proceeding

The prevalence of rickets in Dublin in 1954 has declined notably: of 1000 aged from 3 months to 4 years, 3 had the disease in 1954 compared with 70 per 1000 in 1948

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[1] blished by the council, 50 Merrion Square Dublin

MEDICAL WAR RELIEF FUND

THE committee of this fund at a meeting in London on Nov 10 approved a report prepared by the distribution subcommittee In the year 1954–55 seventeen educational grants amounting to £1451, and twelve maintenance grants totalling £1263 had been made In addition three special gifts amounting to £90 and one loan of £100 were approved There were no new applications for help during the year At Aug 31 the balance remaining in the fund was £7480

University of Oxford

On Nov 19 the degree of D.M. was conferred on K B Taylor

University of London

On Oct 19 the following degrees were conferred:

M.D.—G T Johnson.
M.S.—F T Graves J P Mitchell G W Taylor

At a recent examination for the academic postgraduate diploma in psychological medicine Philip Hadon and S G E Laverty were successful

University of St Andrews

Dr William Walker has been appointed lecturer (grade I) in therapeutics at Queen's College Dundee Associated with the post is an appointment as honorary assistant physician (consultant) at Maryfield Hospital Mr W F Walker has been appointed lecturer (grade I) in surgery and will hold, along with his lectureship an appointment as honorary assistant surgeon (consultant) at the Dundee Royal Infirmary Mr A Buchan consultant in midwifery and gynæcology and Dr J S Frew, consultant in therapeutics, have been appointed honorary lecturers.

Royal College of Surgeons in Ireland

On Nov 18 T K Jones and R W Poole were admitted to the fellowship

Institute of Almoners

The annual general meeting of the institute is to be held on Friday Dec 9 at 6 P.M., at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2 when Sir David Lindsay Keir the Master of Balliol will speak on the Art and Science of Being an Almoner

Heberden Society

At this society's annual dinner in London on Nov 23 Mr Leslie Farrer Brown remarked that in the past twelve years great strides have been made in the attack on rheumatism. There were now more well-staffed and well-equipped research centres; and controlled trials had cleared the ground for further progress. Mr Farrer Brown was proposing The Society; and in his reply Dr J V Wilson spoke with pride of the society's high standard. There now exists, he declared the organisation for research and the society can offer the necessary leadership The Guests were toasted by Prof R E Tunbridge the president, who spoke of Lord Nuffield's philanthropy with special reference to advances in knowledge of rheumatism that he had made possible Professor Tunbridge went on to speak of the good quality and the prosperity, of the society's official journal the *Annals of the Rheumatic Diseases* (founded by the Empire Rheumatism Council); and he acknowledged the important contribution to this success of Dr Hugh Clegg Editor of the *British Medical Journal* who is on the editorial board of the *Annals* Sir Hubert Houldsworth and Lord Nuffield responded for the Guests. Lord Nuffield remarked that his aim had been to encourage work on diseases that disable but do not usually kill—for instance rheumatic and orthopædic disorders But he had also sought to promote progress in other fields that he regarded as neglected—namely, anæsthetics and obstetrics and gynæcology

The evening was marked by a lively exchange concerning relations between Harrogate and the city of Leeds. Dr Wilson for Harrogate conveyed that its residents would prefer the town to be sited at a greater distance from the city than the present fifteen miles. Sir Hubert Houldsworth for Leeds examined with forensic finesse Harrogate's title to any place on the map.

Ciba Foundation

Sir George Lloyd Jacob, one of Her Majesty's judges of the High Court of Justice, has been appointed a trustee of this Foundation

Army Appointment

Mr R J V Battle has been appointed honorary consultant in plastic surgery to the Army at Home in succession to Prof T Pomfret Kilner, who has retired on reaching the age limit

London Medical Exhibition

The annual regional exhibition is to be held next year from May 7 to 11, at the City Hall, Cardiff Further particulars may be had from the organisers of the London Medical Exhibition, 194, Bishopsgate, E C 2

National Blood Transfusion Service

In the first six months of this year there were 370,282 donations of blood to the service This is the highest total ever reached Last year, in the same period, there were 3[illegible]4 269 donations 59,551 people gave their blood for the first time in the same period, and at the end of June the donors panel stood at 571,659, an increase in six months of over 31 000 The service still needs more regular donors to ensure that no one need be asked to give blood more than twice a year, to replace the older donors when they reach 65, and to provide adequate reserves of blood plasma

Anglo-French Exchange Bursaries

Applications are invited for bursaries to be awarded in 1956 to young British doctors under the exchange scheme arranged by the French Embassy in London between the Institut National d'Hygiène in Paris and the Ciba Foundation in London

The value of the French grants is 60 000 francs a month tax free, and they will be awarded for periods of two to four months to doctors who wish to obtain clinical experience or carry out research in France Since the aim of the exchange is to spread in each country knowledge of achievements, outlook, and methods in the other preference will normally go to candidates who are in teaching, or in posts where they can pass on the experience they have acquired Application forms may be had from Dr G E W Wolstenholme, Ciba Foundation, 41 Portland Place London, W 1 The closing date for applications is Feb 4, 1956

The Association of Universities of the British Commonwealth (36, Gordon Square, London, W C 1) has published the eighth edition of its annual list of awards tenable in the United Kingdom and of awards tenable overseas by United Kingdom graduates

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CORRIGENDUM *The late Mr A R Thompson* —Mr Thompson was assistant surgeon to the Victoria Hospital for Children in Chelsea, and not in Leeds as stated in our obituary (Nov 19, 1955, p 1092)

Diary of the Week

DEC 4 TO 10

Monday, 5th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road W 12
4 P M Dr Raymond Daley Aortic Stenosis
LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel Street, W C 1
5 15 P M Miss Muriel Robertson F R S Some Aspects of Trypanosomiasis with special reference to the work of Sir David Bruce (Manson lecture)
NUTRITION SOCIETY
5 P.M (1 Wimpole Street, W 1) Dr H J Deuel, jun (Los Angeles) Fat as an Essential Component of Diet
INSTITUTE OF CARDIOLOGY National Heart Hospital Westmoreland Street W 1
9 30 A.M Sir John Parkinson Heart Attacks
INSTITUTE OF CHILD HEALTH The Hospital for Sick Children Great Ormond Street, W C 1
5 P M Prof C C de Silva (Ceylon) Undernutrition and Kwashiorkor in Ceylon

Tuesday, 6th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East
5 P.M Dr C E Newman External Reform and the Medical Act (FitzPatrick lecture)
ROYAL SOCIETY OF MEDICINE 1 Wimpole Street W 1
5 P M *Epidemiology and Preventive Medicine* Dr Alexander Langmuir (Washington D C) Surveillance of Poliomyelitis in the U S A in 1955
BRITISH POSTGRADUATE MEDICAL FEDERATION
5 P M (London School of Hygiene and Tropical Medicine) Prof D A Slome Physiology of Nasal Circulation
KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S E 5
4 30 P M Sir Russell Brock Cardiac Surgery (Thomas Percy Legg lecture)
[illegible] S HOSPITAL MEDICAL SCHOOL Paddington, W 2
Mr Douglas MacLeod Endometriosis
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
12 NOON (Queen Charlotte's Hospital Goldhawk Road, Mr H R MacLennan Contracted Pelvis
INSTITUTE OF NEUROLOGY, National Hospital, Queen Square
5 30 P M Mr Harvey Jackson Intractable Pain and Surgical Treatment
INSTITUTE OF DERMATOLOGY Lisle Street, W C 2
5 30 P M Dr Brian Russell Neurodermatitis
CHELSEA CLINICAL SOCIETY
8 30 P M (Rembrandt Hotel, Thurloe Place, S.W.3 Donald Teare, Sir Ronald Howe Murder

Wednesday, 7th

ROYAL SOCIETY OF MEDICINE
5 15 P M *History of Medicine* Dr W R Bett Medical Literature
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
3 P.M (Hammersmith Hospital, Ducane Road W.12) Percy Malpas Prolapse
INSTITUTE OF DISEASES OF THE CHEST
5 P M (Brompton Hospital, S W 3) Sir Russell Brock, of the Aorta and Aortic Valve
INSTITUTE OF LARYNGOLOGY AND OTOLOGY
5 30 P M (Royal National Throat, Nose and Ear Hospital, Inn Road, W C 1) Prof F C Ormerod Pharyngeal Carcinoma
INSTITUTE OF DERMATOLOGY
5 30 P M Dr R W Riddell Moniliasis
EUGENICS SOCIETY
5 30 P.M. (Royal Society Burlington House Piccadilly Prof H J Eysenck PH D Nature and Extraversion
MANCHESTER MEDICAL SOCIETY
4 30 P.M (Medical School, University of Manchester) Dr M J Greenberg Diagnostic Problems in the
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF 243, St Vincent Street, Glasgow
5 P M Mr L N Pyrah Hormones in the Treatment with special reference to the Adrenal Gland. lecture)
MEDICO CHIRURGICAL SOCIETY OF EDINBURGH
8 30 P M (18, Nicolson Street, Edinburgh.) Dr W Harrowes Place of Psychiatry in American Medi

Thursday, 8th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P M Dr Newman Triumph of the General Practi the Advent of Laboratory Medicine (FitzPatrick
BRITISH POSTGRADUATE MEDICAL FEDERATION
5 30 P M (London School of Hygiene and Tropical Dr Audrey Smith Experimental Hypothermia in
ROYAL SOCIETY OF MEDICINE
5 P M *Ophthalmology* Mr F A Williamson Noble, Crundall, Mr J Pike Multifocal Lenses.
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4 30 P M (Chelsea Hospital for Women Dovehouse Street, Mr R A Brews Vesicular Mole and Chorion Ep
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Place, W 1
7 30 P M Dr P H Abbott Mycetoma in the Sudan.
ALFRED ADLER MEDICAL SOCIETY
8 P M (11 Chandos Street W 1) Dr E K Le Principles of Adlerian Psychology
CHADWICK LECTURE
5 P.M (Wright Fleming Institute, Norfolk Place W 2) Dr R M B MacKenna Industrial (Malcolm Morris lecture)
UNIVERSITY OF ST ANDREWS, Small's Wynd Dundee
5 P M Dr Kenneth Cowan The Changing Scene

Friday, 9th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M Prof C Gray Jaundice.
4 P M Prof A W Woodruff Dysentery and its Mana
INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
2 P M (Queen Charlotte's Hospital Goldhawk Road Prof J F Cunningham Abdominal Pregnancy
ROYAL MEDICO CHIRURGICAL SOCIETY OF GLASGOW
8 30 P.M (243, St Vincent Street, Glasgow) Dr A K and Dr D B Murray Studies in Hypothermia
ROYAL MEDICAL SOCIETY, 7 Melbourne Place Edinburgh 1
8 P.M. Mr P M Barnes Blood Transfusion—Past and

Appointments

BARNS T E C B M Oxfd, M R.C O G senior obstetri gynæcologist West Cumberland group of hospitals
HENDRY, G A M B B SC Aberd , D.M.R T consultant therapist, Newcastle regional cancer service
MOORHOUSE, DOREEN, M B Leeds registrar, The National Queen Square London
TURNEY J P , M.B Lond , F R C S senior casualty officer East Northumberland H.M C

Births, Marriages, and Deaths

BIRTHS

BROADHEAD —On Nov 11 at Ryde Nursing Home, Isle of to Jill wife of Dr H H Broadhead—a daughter

DISPLACEMENT" BEHAVIOUR AND "PSYCHOSOMATIC" DISORDER

S A BARNETT
M.A Oxfd
LECTURER IN ZOOLOGY GLASGOW UNIVERSITY

c object of this paper is to suggest a relationship en the 'displacement behaviour' described by gists,* and what clinicians sometimes call psycho ic disorder The argument leads to two general f proposals. The first concerns the necessity for a ular line of research the second suggests that the nt terminologies of psychologists and psychiatrists ften a handicap on progress, and in particular that interpretations should be strictly monist

Displacement Behaviour

placement behaviour is the performance of a viour pattern in biologically inappropriate circum es when an appropriate action is prevented or nput to the central nervous system departs from the num The behaviour does not directly serve the ival or reproduction of the individual or the species gically it is irrelevant to the situation in which s performed Such behaviour has been mainly ied in fishes and birds (cf Armstrong 1950 Tinbergen) but it certainly occurs also in mammals For nple a wild rat feeding disturbed by another rat different species makes aggressive noises and ions towards the interloper the latter flees the rat then instead of immediately resuming feeding ly grooms its face with its forepaws—an action which ould not ordinarily perform in the middle of feeding nett and Spencer 1951) Deprived of the object of aggression the rat resorts to an alternative, and ppropriate behaviour pattern A slightly different nple is that of wild rats during a series of copulations : ntervals both male and female may make a rapid e to a feeding point feed hurriedly (and in a e atypical manner) for a few seconds and then me the usual pattern of courtship and coitus published)

general, typical displacement activities occur in e types of situation First, if an animal is interrupted r prevented from performing a specific act it may stitute another act, as in the example above of the ressive rat Second seemingly irrelevant behaviour occur if an animal has two incompatible types of aviour open to it as with herring gulls which resort grass-pulling when the appropriate ' behaviour d be either to attack or to run away (Tinbergen) Third the actual attainment of a goal—the formance of a consummatory act—may strangely ugh be followed by irrelevant behaviour, as in the mple above of the rats between copulations.

splacement activities are often incomplete actions the nest-building movements of gulls or the grooming ats but they need not be so They are often hurried n the displacement feeding of rats The so-called uum activities, in which an animal performs an n such as a display in the absence of an appro e object may possibly be responses to suboptimal ll ; they are comparable to displacement acts them, they seem to reflect an overflow of motor ut. This point will be discussed in more detail later nother phenomenon closely similar to displacement e redirection activity (Bastock et al 1953) hich an animal directs the appropriate movement rds an inappropriate object The authors quoted r only to examples where the appropriate object is present ; but a similar effect has been observed when the object is no longer available a rat deprived of the object of its aggression may turn on a member of its own colony (Barnett and Spencer 1951) Bastock and her colleagues draw attention to the analogy to the object displacement ' of psycho analysts As Freud (1949) wrote

> We have found that instincts can change their aim (by displacement) and also that they can replace one another—the energy of one instinct passing over to another

The examples of displacement behaviour given above may be unconvincing to the critical reader who has not himself observed such behaviour A critical attitude is very necessary in this field , but fortunately as we shall see below good examples quantitatively analysed, do exist

Learnt Responses Resembling Displacement Behaviour

In the classical examples of displacement activity the substituted behaviour always belongs to an alternative stereotyped (' innate ') behaviour pattern This is reflected in the first definition of the term displace ment activity given by Thorpe (1951) such activity is said to 'result from the activation of the action pattern belonging to another instinct but alternative, wider definitions are given

For the present argument it is convenient to apply a wider definition such as that given at the beginning of this paper We can then consider whether there are learnt responses in mammals which, though very different from displacement responses of the usual sort, can properly be put under this general heading Maier (1949) describes experiments in which albino rats were faced with an insoluble problem in a Lashley jumping apparatus Whatever solution they chose they were 'punished ' in half of their jumps on the average Moreover they were forced to jump Such rats tended to develop behaviour fixations' they commonly, after some time jumped say always to the right regardless of the stimulus situation indeed they did so even if the door was open and the food was visible on the left hand side Maier comments

> It appears that the fixated group develops some *kind of* adjustment to the test situation and is therefore able to prevent emotional tensions

Fixated rats also showed less resistance to making a jump The detailed interpretation *of Maier's* results remains difficult and to some *extent* controversial but there is no doubt from his and other experiments of the reality of behaviour fixations ' (Russell and Pretty 1951)

Better known examples of 'abnormal" learnt responses are those described under the heading of ' experimental neurosis In these, too an insoluble problem may be presented but the result is either an excessive undirected *activity* or a general *inactivity* which may include refusal of food The variety of these *abnormal* acts is considerable (cf. Russell 1950) and a fuller analysis is needed before the validity of the comparison suggested here can be assessed However despite the diversity of these responses, there seems to be at least an analogy to displacement behaviour in all these examples certainly where there is a fixated response this provides *a* regular pattern of motor output in frustrating circumstances—i e in conditions in which a biologically appropriate response cannot be made.

The 'Consummatory Situation"

Usually, a displacement activity has been described as a substitute for an alternative *activity* if an animal is unable to perform or to complete a consummatory act such as fighting feeding or copulation, it performs some other act instead But this does not always apply Moynihan (1953) studied nest building movements and preening movements in gulls during incubation of the eggs Nest building movements were shown to increase if one or more eggs were removed, and the number of such movements in a given time increased in proportion to the number of eggs removed Preening increased markedly only when all the eggs were removed An important feature of this work was the quantitative expression of displacement behaviour in this case, unlike many, subjective impressions could be excluded (An earlier good example is that given by Tinbergen and van Iersel (1947) on *fanning in Gasterosteus aculeatus*) Both types of movement were typical of displacement activities, in that they belong to stereotyped behaviour patterns, and that they occurred at inappropriate moments They differed from the usual examples, however, in one notable respect they were performed, not in place of a motor act, but when a specific sensory situation was altered The substitute activity reflected the absence of what might be called a "consummatory situation" (cf Thorpe 1954)

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* Ethology is the scientific study of animal behaviour

The importance of the afferent input is also shown by the work of H Spurway and J B S Haldane on the air gulping of the climbing perch (*Anabas testudineus*) *Haldane* (*in litt*) writes

> Our fish got into a flap when they breathed N_2 To men this certainly has not got an odd smell or taste It makes you feel dizzy a few seconds after breathing it Probably the brain is also affected by afferent impulses from the carotid sinus The fish have done their consummatory act, but have not got the normal "feedback" This disturbs them much more than if they are mechanically prevented from carrying out the act

It seems reasonable to suggest that the concept of consummatory situation or state is more fundamental and more general than that of consummatory act The latter marks the end of activity, or at least of a specific group of activities, such as those related to mating But the performance of such an act must be accompanied by specific internal changes, such as those involved in filling the stomach , and these changes, by evoking a particular afferent input, thereby alter central nervous activity and so the output to the muscles

"Instinct" in Man

Kennedy (1954), in a polemical discussion of ethological theories, suggests that the cessation of activity on the attainment of a consummatory act is "reflex"—i e , due to an input of impulses from the periphery Bastock et al (1953), in the paper already quoted, suggest that "consummatory stimuli," and especially proprioceptive feed back, are important in what they call the "consumption of drive" (Since proprioceptive fibres make up one third to one half of those in a nerve supplying a muscle, it is clear that they deserve a good deal of attention in the study of behaviour (cf Lissman 1950)) Disregarding the particular terminologies used in these two communications, each, from different points of view, suggests that we must look to the afferent input if we are to make a beginning on the physiological analysis of displacement behaviour

It is therefore worth while to consider a little further the subject of the influence of afferent impulses on certain sorts of behaviour Here is an example (Hardy 1954) from a physiological study in which engineering and psychiatric terms are both used in a physiological context

> From the point of view of servo control of skin temperature, it is worth noting that thermal sensations have strong elements of unpleasantness or pleasantness when the average skin temperature is below 32° or above 34°C This "affect" of thermal sensation is probably one of the most powerful
> physiologic servo temperature regulation in the
> external thermal stress

A noxious stimulus of the sort described here ev in man either a general restlessness (analog appetitive behaviour), or a learnt response which to reduce the unpleasantness If there is no learnt re available, as in a young child, the restlessness may to learning—perhaps of the trial and error variet In any case, the situation described in the quotation ab is one in which a particular sensory condition ind activity, and this activity ceases on the attainme of a "consummatory situation"—in the example particular skin temperature

If the analysis above is correct, it may serve to cl the concept of "instinct" as applied to man In eth logical writing the term "instinct" is today comm (not always) applied to a stereotyped *activity* Depe on the author, the activity may be a single consumm one , or it may be a complex series of acts, of which consummatory one is the last The term instinct, *used*, does *not* apply to any internal agency in behav though the term "drive" may be used to refer to inte influences which lead to the activity

In man there is virtually no instinctive beha in the above sense The infant breathes, sucks cries , he also, perhaps, at 3–6 months, smiles in res to a particular "sign stimulus" (Spitz and Wolf 1 but apart from reflexes, later behavioural perform are learnt Yet human beings act most stren to achieve certain ends These ends, regarded at physiological level, are the attainment of certain of neural input—of consummatory situations The procedures which attain these ends are variable learnt

Hence, to take an example from Freud, the *Trieb*, usually translated as "instinct," refers to behav which ceases once a particular nervous input—e g. a full belly or empty seminal vesicles—has been ach Or, to put the obverse, the behaviour is activated by input from an empty belly or full seminal ve These examples must not be taken to imply that all behaviour is activated peripherally, by the stimuli of moment, or that it is "innate" In "higher" mam especially man, with a vast mass of internuncial ne in the cerebral cortex, it seems that learning—at least previous experience—may lead to forms of organisation in which the activation of the motor is largely within the central nervous system Behaviour may then be both "spontaneous" product of learning

As Hebb (1949) has pointed out, it is the nuncial mass which makes possible the predom of learnt behaviour in man, and his relative indepe *of the immediate sensory situation* Whitehorn (approaching this topic from the point of view psychiatrist, has remarked that, despite the ev from social anthropology for the cultural rather th innate patterning of human behaviour, the term ins is still retained by psychiatrists He points out that psychiatric use of the term represents a shift of me [from that of ethologists] to "inner driving fo correlated with biological needs," and that "this impulsive force is experienced as emotion" He fu suggests that "emotion" is negatively correlated instinctive behaviour the less an animal's beha is automatically determined by fixed neural patt the more it is necessary that powerful internal ag should ensure that effective behaviour patterns acquired (learnt) by each individual Emotion in context is the subjective counterpart of the ne changes due to a certain type of (unpleasant) se input

Whether or not we agree with this hypothesis a "emotion," Whitehorn's analysis brings out cl the notorious fact that the term "instinct" is Ogden and Richards (1931) call a nomad it wa ieaning to meaning It is to be feared that its ings are not yet over

honeurosis' and 'Psychosomatic" Disorder

ural Changes

ie virtual absence of instinctive behaviour in man ght think it idle to look for displacement activities ian behaviour The realisation of the importance of ammatory state however alters the picture

analogy between displacement behaviour in animals, and psychoneurotic behaviour in man ndeed often been pointed out, notably by rong (1950) Armstrong quotes a passage on ia in which Freud writes that in such states "we in excessive innervation (in typical cases a somatic ation), sometimes of a sensory sometimes of a character, either as an excitation or an inhibition" refers of course to the fact that the behaviour hysterical covers a wide range from outbursts eeping to a functional paralysis or anæsthesia trong comments that both in displacement behaviour onversion hysteria the performance is a somatic s of release from tension in both the activity complete and apparently detached from normal ive experience The same might be said of ional behaviour However, the fact that hysteria des phenomena of inhibition as well as overt ity must make one hesitate to regard it in any le way, as the human counterpart of displacement viour As we shall see this sort of question can nswered or indeed effectively asked, only in neuro iological terms.

ychoneurotic behaviour in general is of course "instinctive" it does not consist of rigidly stereo d activities common to a whole species or variety sense it is learnt Behaviour such as smoking or ling which is clearly analogous to displacement viour but which perhaps ought not to be labelled honeurotic, is quite obviously learnt The same lies to the thumb sucking of an infant. (Smoking the rest could be labelled abnormal, whatever t may mean but there are other human responses, iological value and in no possible sense pathological, ch may have originated in evolution as displace- pt behaviour Spurway and Haldane (1953) suggest t speech is a derivative (ritualised) of displace nt breathing Another form of communication the vements of the facial muscles of expression may l have originated in the same way and have acquired reasing importance with the development of human iety)

At this point a warning is perhaps required. It is vious, but sometimes overlooked, that human aviour is so much more complex than that of any er species that it is in some respects qualitatively well as quantitatively different This is evident in use of symbols, not only in language but also indirectly woman is "sick of" her husband, she may not say or give any verbal indication that she is aware of it she may persistently vomit while her husband is home (I am indebted to Dr R D Laing for this mple) Such a response can be interpreted according a variety of systems It could be described in neuro ical terms perhaps with the addition of expressions ived from studies of conditioned reflexes it could be pared to a displacement response or it could be racterised in the more poetic or symbolic phrases ancer is intended) of Freudian analysis All no ht have some validity but to say that psycho hous resembles displacement behaviour certainly s not explain it

he usefulness if any of the sort of comparison de here is of two kinds First if similar processes are nd in man and other species, research possibilities may be widened The proposal is then, in effect, a hypothesis, namely that similar internal "mechanisms" underlie all the various phenomena compared Secondly the attitude to particular aspects of human behaviour may be changed for the better The objective non ethical, approach to behaviour attempted by ethologists is superior to a subjective moralistic one both heuristically and humanely Yet if a person is said to have a "mental" disorder for many—even for some doctors—this amounts to a moral stigma or æsthetic flaw such as is not felt to exist in the person with, say, peptic ulcer or tuberculosis (It is perhaps instructive to realise that a great variety of so-called "perversions" from masturbation to fetishism, have been observed in various animal species Homosexuality in particular is a widespread phenomenon among vertebrates) There is indeed, on these grounds alone a case for revising the terminology of what in my view should be called behaviour disorders but which at present are usually described as mental illnesses (It is a strange fact that in psychiatry the term 'behaviour disorder' is reserved for a single group of antisocial activities—the "conduct" disorders which are also lumped under the head of "psychopathic personality")

Somatic Responses

In all the examples so far given there is an altered output from the central nervous system Instead of the biologically appropriate or "normal" output, another is substituted The alternative motor pattern may be "instinctive" or not, it may be alternative to an active pattern of behaviour or to an inactivity, it may itself be an inactivity—an inhibitory effect

All these statements apply also to the so-called psychosomatic disorders of man In these the substitute output is not to the somatic musculature, but is as a rule autonomic There is, however no part of the body and no organ which is outside the scope of these disorders This is not surprising since every part of the body has a blood-supply partly under autonomic control and carrying hormones of which the secretion is influenced by the autonomic nervous system

Wolff (1953) gives an excellent review of these conditions. An example is the pattern of response of the stomach to the ingestion of food increased blood flow increased motility, and secretion of acid These may all occur, quite inappropriately, in conditions of stress Another familiar response to stress is diarrhœa—hyperactivity of the gut muscles Wolff comments that the person with violent diarrhœa may be outwardly "calm sweet mannered and serene" A third standard example is asthma, in which the response is an inappropriate contraction of the smooth muscle of the lung

Alexander (1952a) describes these responses as follows

> Whenever the expression of competitive aggressive and hostile attitudes is inhibited in voluntary behaviour the sympathetic adrenal system is in sustained excitation. The vegetative symptoms result from the sustained sympathetic excitation which persists because no consummation of the fight or flight reaction takes place in the field of coordinated voluntary behaviour as exemplified by the patient suffering from essential hypertension who in his overt behaviour appears inhibited and under excessive control. Likewise in migraine headache the painful attack may terminate within a few minutes after the patient becomes conscious of his rage and gives open expression to it

It is easy to see that in one aspect the psychosomatic responses fit quite readily into a Pavlovian framework they can be interpreted in terms of conditioned reflexes once it is understood that a conditioned reflex is an exceedingly complex phenomenon (cf Hebb 1949) In each instance the primary response is "innate" and would ordinarily be called reflex In the innate character of the response, these disorders show a closer similarity to the ordinary displacement behaviour of birds and fishes, than is shown by typical "psycho neurotic" behaviour They are, however, different in three obvious ways from what we may call classical displacement activities

First, they are very variable within the species There is evidence, as might be expected, of genetically determined differences in the ways in which individuals react to stress in one man a given stress may induce, say, diabetes, in another similar conditions may lead to hypertension This is perhaps yet another example of the exceptional polymorphism of the human species (cf Haldane 1949)

Second, the environmental causes of these disorders is much more complex and diffuse Even when there is an immediate precipitating cause, it acts on a central nervous system already prepared by previous experience This of course reflects the size and complexity of the human nervous system, with its enormous accumulation of connecting neurons

Third, as already mentioned, the output is not somatic motor, but is visceral Here again, evidently, we have a reflection of a distinctively Primate (especially human) evolutionary development—namely, the importance of the cerebral cortex, and especially of the frontal lobe, in controlling autonomic output Fulton (1949) writes

> I am inclined to regard the recognition of the frontal lobe as the primary autonomic centre of the forebrain as perhaps the most significant disclosure of recent years in the field of scientific medicine, for it affords at long last a sound physiological background for that still shadowy subject of psychosomatic medicine '

Despite these differences, the psychosomatic disorders and the psychoneuroses on the one hand, and displacement activities on the other, all seem to exemplify a general feature of complex nervous systems—that, if there is an excitatory state which would ordinarily produce a motor discharge, and if the motor output cannot take place in the biologically "normal" fashion, then it will follow some other path The other path may be "innate" or "learnt," but, if learnt, may be rigorously fixed for the particular individual

The Problem of "Nervous Energy"

Terminology

An early discussion of "nervous energy" was that of Freud As Ernest Jones (1953) points out, Freud in his early psychiatric works wrote in terms of "an economics of nervous energy" (At that time, too, Freud adopted a notably "psychosomatic" approach to his subject In interpreting anxiety neurosis as a consequence of sexual deprivation he points out that increased respiration-rate, palpitation, sweating, and congestion occur both in coitus and in anxiety states As Jones shows, the history of Freud's thinking is of great interest for the study of ideas on the relation between "soma" and "psyche")

What, then, is the nature of the central state responsible for the motor discharge? This is as crucial a question for ethology as for psychology Whether the central state is in turn due to a specific neural input, or whether it is in any sense autonomous, there can be no doubt that it exists Lorenz (1950) interpreted the variation in intensity of "innate behaviour patterns" in terms of "reaction specific energy" This expression has been extensively criticised, and Thorpe (1951) proposed the use of the term "specific action potential" (S A P), later modified to "specific action potentiality," as an alternative The definition is

> "The state of the animal responsible for its readiness to perform the behaviour patterns of one instinct in preference to all other behaviour patterns This specific readiness diminishes or disappears when the consummatory act of the discharged instinct has been performed."

The advantage of this term, so defined is that it is o unambiguous (provided that terms such as ' are defined with similar rigour), and noncommittal on the nature of the internal state The last feature might however be regarded disadvantage, since it glosses over the problem—namely, the nature of the central state "readiness"

Whatever terminology is adopted, if the relationship between displacement behaviour and human disorders has any significance, it should to some improvement in our understanding of behaviour I suggest that it can do this in two ways

Possibilities for Research

Halstead (1951) has remarked that a major gap neurophysiology is our ignorance of how the output the cerebral cortex is organised For mammals it course just this output which is crucial for understand the behaviour discussed here The need for links betw neurophysiology and ethology has been urged enough (cf Darwin 1872, Tinbergen 1951), but the are slow in the forging We have seen that there general rule that, if one motor output is blocked, whatever reason, there will be discharge along an pathway Can physiologists make this notion precise, in terms of the actual functioning of neur One of the great difficulties is to decide on a line of st What experiments can be devised to establish sp relationships between neural processes and behav Up to now, there has been more success in rel hormonal effects to specific behaviour patterns, we know almost nothing of how the hormones infl the central nervous system—or, for that matter, the nervous system influences endocrine secretion.

Nevertheless, it seems possible that this is a fie which advances might soon take place, given suff effort The phenomena of "stress" (cf Selye 1 have already been mentioned in connection with ps somatic responses They have been studied espe in man and laboratory mammals, in which they m a complex tangle of relationships between the endo glands, the hypothalamus, and the cerebral co Selye has described a "general adaptation syndro involving a characteristic set of changes in endo and other organs, and leading sometimes to "psyc matic" disorder Despite controversy on detail, have the beginning of a foundation for the physiolo study of these disorders (cf Russell 1953)

Parallel studies come from the psychological apparently uninfluenced by developments in etho but with a bearing on them Stellar (1954) has forward a hypothesis that "motivated behav is quantitatively dependent on the activation of hy thalamic centres He uses Morgan's term "ce motive state" as his counterpart of the etholo S A P He suggests that, if the hypothalamus is m concerned in the control of all types of "motivat this may help to account for "interaction among mot tions" Brain function is likely to be more comp than this suggests (cf Fessard 1954), but in so far a valid, it has obvious implications for the understan of displacement behaviour in vertebrates Psycholo have also carried out experimental work with results wh ought to be incorporated in any general picture Ma work has already been mentioned Miller (1948) shown that white rats may show "generalisation response), or displacement from one drive to anoth

The physiological side has been emphasised because it seems essential, for real progress, that physiological analysis of behaviour should be develo But this does not imply that the study of overt behav should be neglected There is also needed, among o else, a thorough study of the whole range of substi responses throughout the vertebrates at least such survey should preferably be carried out in conjuncti with physiological studies

nage and Interpretation

this endeavour it will be necessary to join the ts of people working in widely different fields gulfs between psychiatry psychology, ethology, and ıology are both wide and deep and the attempt to ge them is liable to bring on fits of dizziness An nt necessity is for those who practise one discipline arn the language of the others It would perhaps be e to hope for a unified terminology at least in the few decades but some simplification might be mpted Psychiatrists often use words in ways which lder outsiders and perhaps repel students Here, for ance are two statements by an authoritative follower reud—Franz Alexander (1952b)

> early infancy the uncoördinated movements of the l are not yet subordinated to any utilitarian goal and ably have the sole function of erotic discharge
>
> rotic phenomena have a playful quality—in fact all play ities are erotic in nature

h statements may have a valid meaning but to ologist they suggest a lack of rigour in the use language what does 'erotic mean in these tences?

t is not suggested that clinicians will derive much ct benefit, as clinicians from watching rats or seagulls, from reading about them. But some intellectual ulation may result and perhaps a more critical roach to theory and a more rigorous terminology particular, one fundamental conclusion arises from the ument presented here—that a *monistic frame of* erence is the only one which satisfies the needs of munication about behaviour We are obliged to k of *the animal body including* that of man as a erial entity, of which the existence can be fully lained in terms of the observable physical processes g on in it This excludes any reference to a mind' he sense of an independent agency or separate mode xistence (cf Young 1950)

his statement is not intended as an excursion into ology, or even epistemology Nor does it deny the ity of consciousness. Our *consciousness* is tied firmly the integrity of certain parts of our brain we are scious when certain neural processes are occurring l unconscious when they are not When we say quially that we have something in mind" we r to our conscious thoughts but there is no reason we should reject the notion that these thoughts are ctions or aspects of brain function

t is assumed that the aim of ethology of which psycho y is a part, is the fullest possible understanding consequently prediction and control of behaviour improve understanding we have to devise ways of municating our *observations and theories* about aviour At present however dualistic modes of aking are so deeply embedded in our language, that an *may* explicity support monism and in the same ath use a dualistic terminology The obvious example he persistence of the division of illness into mental " physical.

le can see this very clearly with the psychoneuroses l the psychosomatic disorders." As their names ly the mind or psyche is held to be involved in both first, however are commonly regarded as strictly ental disorders while the second are, by definition, ases in which the manifestation is somatic The tinction however disappears when we find that the kinds of condition may alternate or co exist in same *individual* a man with persistent pulmonary rculosis, given a phrenic crush which improves condition of the lung develops a conversion hysteria lead (Day 1946) similarly anxiety may be without manifestation in talk or other behaviour when re are somatic indications of stress, although somatic state disappears when anxiety is removed

From this point of view the common practice of using the term 'neurosis' instead of 'psychoneurosis," is appropriate but 'neurosis" should include, not only conditions such as anxiety states or obsessional behaviour, but also 'adaptive bodily changes with repression or denial of anxiety and other disturbances in feeling with no verbalisation of conflicts except after considerable enquiry" (Wolff 1953) *In other words it should include* the psychosomatic disorders and all these disorders might more reasonably be called 'neurogenic' The term 'somato somatic' has been suggested not very seriously for this approach (Schorstein 1954) Russian physiologists use the term 'cortico visceral' to refer to the effects of emotion on smooth muscle or glandular secretion

(It would be wrong no doubt, to *pursue etymology* much further But it is remarkable that the terms "anxiety' and 'angina both have the same *origin*, *which they share with the Latin verb angere* to choke There are other instances of monism in etymology)

A difficulty in the approach suggested here is that one can palpate a spastic colon, while the neural changes of an anxiety state can be inferred only from general behaviour or from speech A psychologist or physician, accustomed either to the somatic or the 'psychic" frame of reference, finds difficulty in switching to the other This example further underlines the desirability of psychiatrists, psychologists, and ethologists learning each other's languages Another related, difficulty is that the way *of speaking adopted here is to some* people, distasteful or even odious to them it seems inhuman *This attitude* deserves respect since it often reflects a real and necessary concern with the needs of the whole human personality The question remains, however, whether the formulations suggested in this paper help towards the successful application of knowledge to human ends. The ends to which knowledge is put depend on the motivation of scientists physicians and others not on their prose style

It is not suggested for a moment that only doctors use imprecise or obscurantist *terminologies* The example of instinct' has already been mentioned Drive" *remains an instance of a mendicant word—one which goes around begging for a* meaning (Ogden and Richards 1931) The whole of learning terminology despite the efforts of Thorpe (1950) and others is in a most unsatis*factory state (cf Haldane 1954)*

This state of affairs will not be remedied by *logical* meditation or semantic analysis alone Greater precision must depend on improved understanding and this will develop only from further experiment The proposals put forward here for future research and for more rigorous interpretation are therefore interdependent

Summary and Conclusions

Disturbed behaviour in which one reaction pattern replaces another more appropriate one, *is widespread in vertebrates* It occurs when an activity is interrupted or prevented (i e in conflict or in frustrating" circumstances) or *when* a particular sensory situation is not achieved (e g when the number of eggs in a nest is reduced, or when *the skin* temperature is outside a certain optimum range)

In the study of animal behaviour (ethology) responses of this sort are called displacement behaviour These responses have *been mainly* described as substitutes for other *activities* (usually for consummatory acts such *as* breathing eating or copulating), but it is suggested that the immediate *cause* of such behaviour must always be some deficiency in the afferent input to the central nervous system All activity is accompanied *by a* proprioceptive (and interoceptive) input and *this is* presumably responsible for the normal cessation of activity which occurs when a consummatory act has been performed

In human behaviour there is an almost complete absence of "innate" behaviour in the sense of unlearnt stereotyped reaction patterns Human behaviour of the kind which is said to arise from "instinct" is infinitely variable (apart from reflexes) on the motor side, but it tends to achieve particular sensory inputs (consummatory situations) If such ends are not attained, behaviour may be disturbed "psychoneurotic" behaviour—e g, in hysteria or obsessional states—is analogous in certain respects to displacement behaviour in birds or fishes Psychoneurotic behaviour is, however, not innate, but in a sense learnt In this it resembles the behaviour fixations developed by, for instance, rats in frustrating situations

In these examples one motor output is substituted for another The same applies in the "psychosomatic" disorders of man, in which an autonomic discharge, resulting from some form of "stress," produces a condition such as asthma It is suggested that the distinction between psychoneurotic and psychosomatic disorder is unjustified, that both might properly be called "neurotic" or "neurogenic", and that the distinction arises from a conventional mind-body dualism which is now a handicap in the interpretation of behaviour

It is further suggested that displacement behaviour and neurotic responses of all kinds may represent a general feature of the functioning of nervous systems—namely, that if there is an excitatory state which would ordinarily produce a motor discharge, and if the motor output cannot take its "normal" form, then it will follow some other pattern This proposal may be regarded as an hypothesis It requires investigation and clarification by neurophysiologists

In general, there is need for more effective communication between ethologists, psychologists, physiologists, and psychiatrists, and for the development of research in which physiologists and students of behaviour collaborate Given such combination, it should be possible to devise experimental programmes which would lead to a rapid advance in the understanding of behaviour

I am grateful to Prof T Ferguson Rodger and his colleagues of the Department of Psychological Medicine, Glasgow University, and to Prof J B S Haldane, F.R S, and Dr H. Spurway, for illuminating discussions on the subject-matter of this paper Especial acknowledgment is due to Dr A B Sclare for reading and criticising the manuscript

ADDENDUM

After this paper was written Kortlandt (1955) published a long and valuable discussion of the concept of instinct, with many references to the relationships between ethological and psychiatric theories I have also been allowed to see, in advance of publication, a paper by Morris in which an interesting aspect of the connection between autonomic function and behaviour is presented Both papers can be recommended to anyone interested in the topics I have discussed

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BIOPSY OF THE RECTUM IN ULCERATIVE COLITIS

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RAPID autolysis has hitherto greatly impeded stu the morbid histology of the gastro intestinal tract F reason post-mortem material is of very limited valu detailed study, and examination of surgical spe also has its limitations because of the degenerative c that occur before fixation is complete The stomach the rectum, however, are accessible for biopsy and gastric mucosa has been carefully studied with the gastroscope Palmer (1954) has used this extensively and reviewed the published reports biopsy has been used almost entirely for

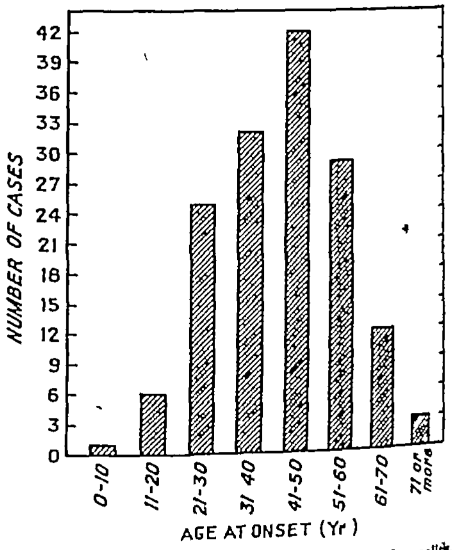

Fig 1—Age-distribution in 150 cases of ulcerative colitis

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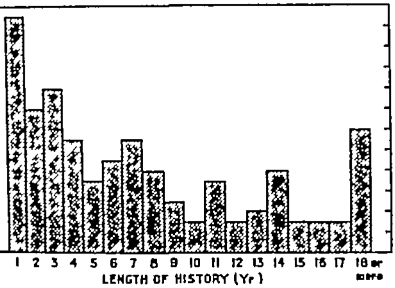

-Distribution of length of history in 150 cases of ulcerative colitis.

asms (Gabriel et al 1951) very little attention being to other mucosal abnormalities
e describe here the histological changes seen in 180 y specimens from the rectum in 150 cases of ative colitis. The patients investigated were lected, and material was obtained both in acute and lescent phases of ulcerative colitis. Figs 1 and 2 the age distribution and the duration of symptoms e series of ulcerative colitis

Technique

the biopsy specimens were taken under direct 1 with Officer's forceps through a sigmoidoscope level selected was 11 cm from the anal sphincter ue this is well above the anorectal junction yet f the peritoneal reflection No anaesthetic was used xcept in 1 case in which there was slight bleeding atients suffered no discomfort and there was no e effect on the course of the ulcerative colitis
ch specimen was bisected and placed in fixative for twelve hours Histological sections cut 5 µ thick and stained routinely with
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We also studied the healing of normal rectal mucosa after trauma We asked our surgical colleagues to remove pieces of normal rectal mucosa when they were taking biopsy specimens from tumours of the rectum before surgical removal These specimens were taken from two to twelve days before abdomino perineal resection, so that various stages of repair could be studied

Normal Rectal Mucosa

The mucosa of the large intestine does not form folds, except in the rectum Being devoid of villi it has a smooth surface The crypts of Lieberkühn are straight tubules and in the rectum attain a length up to 0·7 mm They are somewhat shorter in the colon. These glands are remarkably symmetrical in normal rectal mucosa and lie parallel and very close to each other (fig 3) The free surface between the openings of the glands is lined by simple columnar epithelium with a thin striated border and by occasional goblet-cells There are more goblet cells at the top than at the bottom of the crypts. The other cells at the bottom except an occasional argentaffin cell are undifferentiated epithelial-cells often showing mitosis (fig 4) Florey (1932) has shown that the goblet cells are derived from undifferentiated epithelial-cells at the base of the crypts Once a cell secretes mucus it seems unlikely that it can revert to an undifferentiated cell although it may acquire a striated border

The lamina propria in the healthy rectum is scanty It contains a stroma of argyrophilic fibres similar to that of lymphatic tissue and becomes condensed to a reticular basement membrane at the epithelium covered surface Close to the fibres lie cells which have oval pale nuclei, may become macrophages and can take up pigment Among the meshes of this framework there is a moderate number of free cells, most of which are lymphocytes and plasma-cells with occasional eosinophils and polymorpho nuclear leucocytes Scattered lymphatic nodules, which reach their highest development in the rectal mucosa of man are more numerous in the rectum than in the colon and tend to increase progressively in number from the proximal to the distal large intestine (Dukes and Bussey

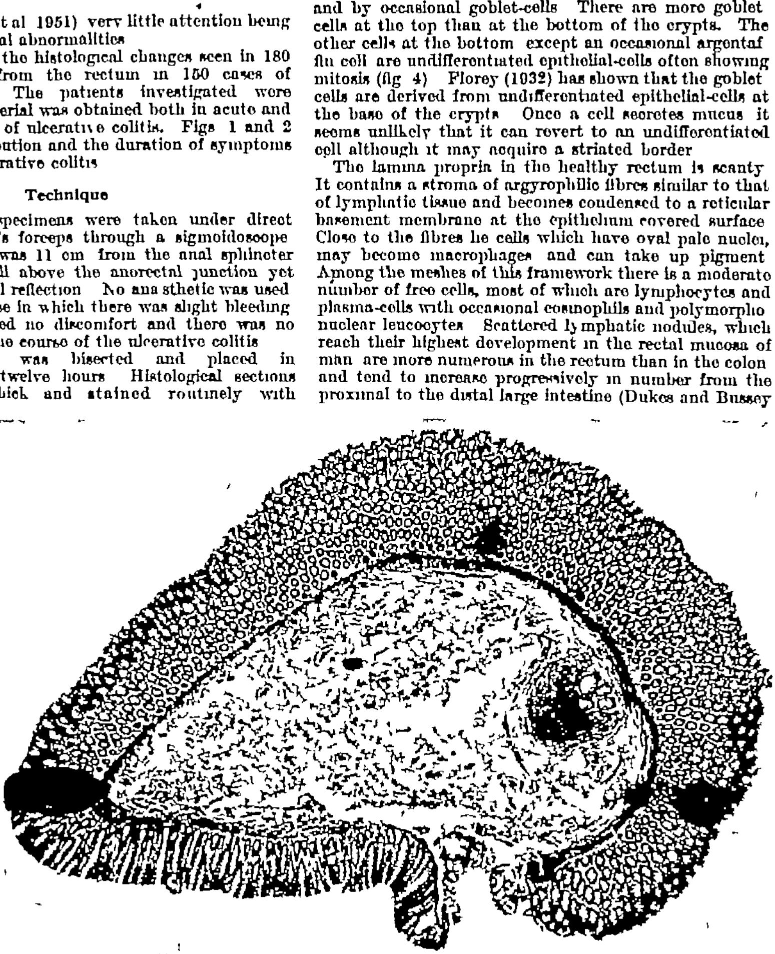


Fig 3—Normal rectal biopsy specimen. (Hæmatoxylin and eosin. × 25)

1926) They are of various sizes and often traverse the fibres of the muscularis mucosæ The muscularis is well developed and consists of longitudinal and circular strands

The submucosa does not present any peculiarities It consists of thick collagenous and elastic fibres with small arterioles, venules, and lymphatics

The biopsy specimens obtained from healthy rectum are remarkably similar Since the biopsy forceps tend to remove part of a mucosal fold, the shape of the biopsy specimen is usually as seen in fig 3 The 100 specimens examined include examples from both sexes and from all age groups, and there is no evidence of any recognisable variation of appearance Most of the crypts are seen cut transversely, and their closely packed and regimented arrangement with underlying sharply demarcated muscularis mucosæ is strikingly constant In none of the normal biopsy specimens examined was there any evidence of infiltration by neutrophils or of degenerative changes in the epithelial-cells lining the crypts

Normal Process of Repair in Rectum

Mucosal repair has not been studied in the colon as extensively as in the stomach and small intestine This is rather surprising because the structure of the mucosa is simpler in the colon than in the stomach and small intestine since it is not complicated by glands secreting digestive ferments

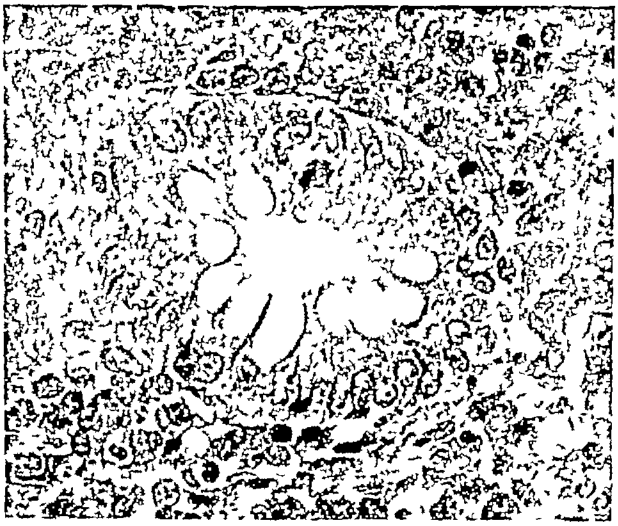


Fig 4—Transverse section of base of normal crypt showing dividing cell (Hæmatoxylin and eosin × 576)

Florey (1933), who was primarily interested in the rôle of mucus in protecting the colonic mucosa, found that, when the epithelium desquamated, the surviving cells tended to make good the deficiency by spreading laterally, first becoming cuboidal and finally becoming much flattened and in this way covering a considerable area of stroma The many basophil dividing cells in the bases of the crypts of Lieberkühn are clearly the source of replacement of cells in the superficial portions of the glands and the intervening surface epithelium (fig 4)

Localised areas of alimentary mucosa have been removed in animals, and the results vary considerably with the site and with the species of animal

In the gastric mucosa of rats, guineapigs, and rabbits Williams (1953) found no evidence of re formation of chief or parietal cells but only of crypts lined by mucus-secreting cells Ferguson (1928), however, could find no evidence of regeneration of glands in the rabbit, whereas ng all elements of the gastric mucosa were O'Connor (1954), who studied the healing of as of necrosis in the colon of the mouse,

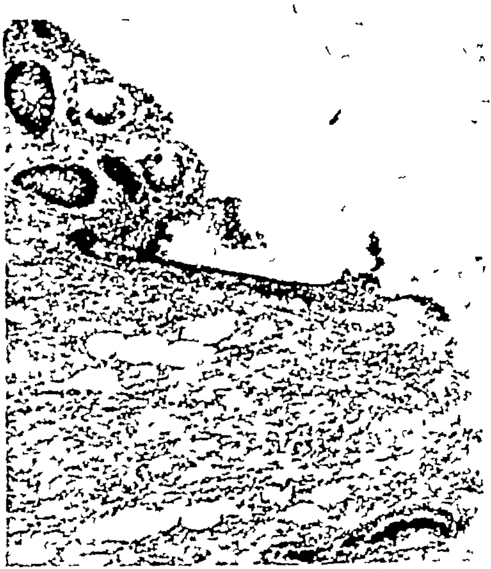


Fig 5—Repair of experimental ulcer in normal mucosa , eleven days after trauma. (Hæmatoxylin and eosin. ×

found that, if the mucosa and the muscle destroyed, the breach in the bowel wall be with granulation tissue, and adhesions were fo such areas regeneration of the mucosa was formation of an epithelial layer partially co damaged area, no new mucous glands were Only when the bases of the crypts were left in damaged area was the normal histological regained

Our study of repair following surgical rectum shows the following sequence of events. *surrounding mucosal folds tend to fall over the* area, where granulation tissue is forming On or fourth day after the trauma, flattened cells growing out from adjacent crypts, where the cells in the base are undamaged In one case af days, in the absence of secondary infection, a 2 5 mm in diameter was completely covered

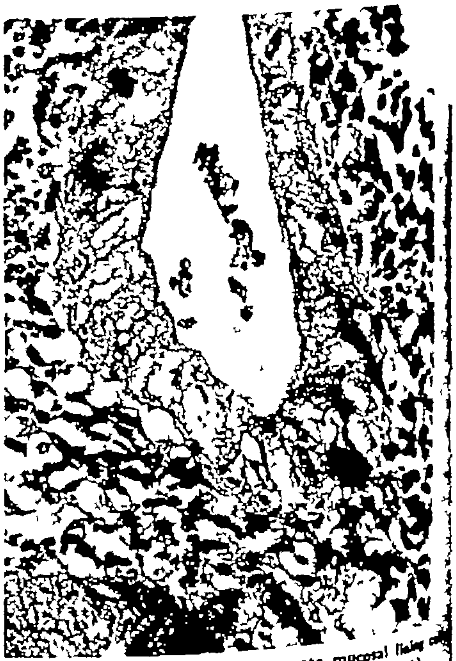


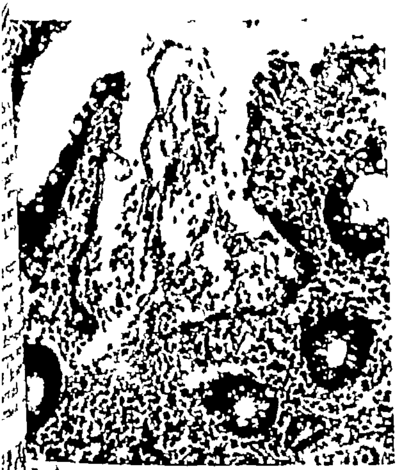
Fig 6—Neutrophil infiltration of degenerate mucosal lining ulcerative colitis. (Hæmatoxylin and eosin. × [illegible])

elium (fig 5) The underlying areas undergo fibrosis consequent contraction In these artificially induced there was no evidence of any tendency for the mation to spread beneath adjacent normal mucosa he contrary the process remained sharply localised

en mucosal damage involves the entire crypt, ce repair will take place by an outgrowth from unding crypts, where actively dividing cells have spared It seems unlikely that these cells can form crypts Repeated trauma with resulting fibrous action and lack of new formation of crypts would itably lead to diminution of distensibility and to ening of the mucosal barrier

Biopsy Material in Ulcerative Colitis

e studied 180 specimens from 150 cases of ulcerative is In some cases the diagnosis had already been blished whereas in others the biopsy was used as of the diagnostic procedures The material used for study comes from cases under careful review in the w up scheme at the Gordon Hospital They are all



-Erosion showing rupture of crypt base in acute ulcerative colitis (Hæmatoxylin and eosin. × 150.)

to complete clinical scrutiny and full radio d pathological investigations

rrelation between histological appearances and nd sigmoidoscopic findings was accurate within imitations In a few cases there was absence or ce of ulcerative colitis in the rectum with in a more proximal part of the colon, and in such ances no comparison was possible Thirteen owed normal histological appearance in the rectal and 3 showed quiescent appearances although ns and radiological changes suggested active e colitis elsewhere In most cases the histo and sigmoidoscopic findings were in agreement s however showed sufficient mucosal healing to a normal appearance on sigmoidoscopy and yet oscopy showed characteristic histological changes.

LOGICAL APPEARANCES IN ULCERATIVE COLITIS

he 180 specimens examined 110 showed evidence e and 48 of quiescent ulcerative colitis. 3 biopsy ens showed melanosis coli In 2 specimens sub granulomata were seen containing giant-cells

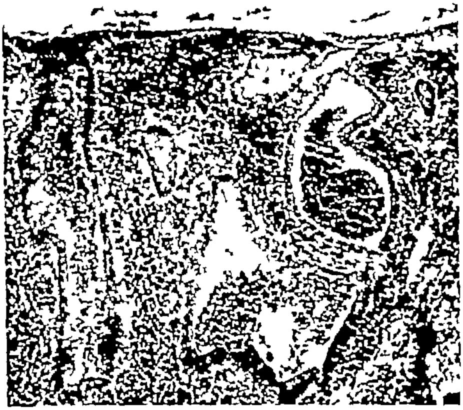


Fig 8— Crypt abscesses in ulcerative colitis. (Hæmatoxylin and eosin × 150.)

with no evidence of tuberculosis Squamous metaplasia was not seen in any of the material of this series although it has been noted twice in operation specimens of the colon in ulcerative colitis

Active Ulcerative Colitis

The earliest active lesion seems to develop in the bases of the crypts, where neutrophils are found passing between the lining cells to accumulate inside the lumen (fig 6) The basal cells stain poorly Their cytoplasm is vacuolated and their nuclei show degenerative changes (fig 6) As necrosis progresses, small erosions are produced which establish continuity between the lumen and the submucosa (fig 7) The accumulation of neutrophils with eosinophils red blood-cells, serum and mucus in the lumen of the crypts constitutes the so-called crypt abscess,' which is a characteristic feature of ulcerative colitis (fig 8) Excessive infiltration by eosinophils is inconstant at all stages it was seen in a third of the cases in this series

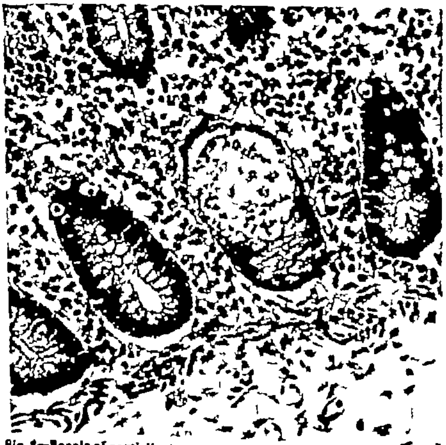


Fig 9—Repair of partially damaged crypt in ulcerative colitis. (Hæmatoxylin and eosin. × 250.)

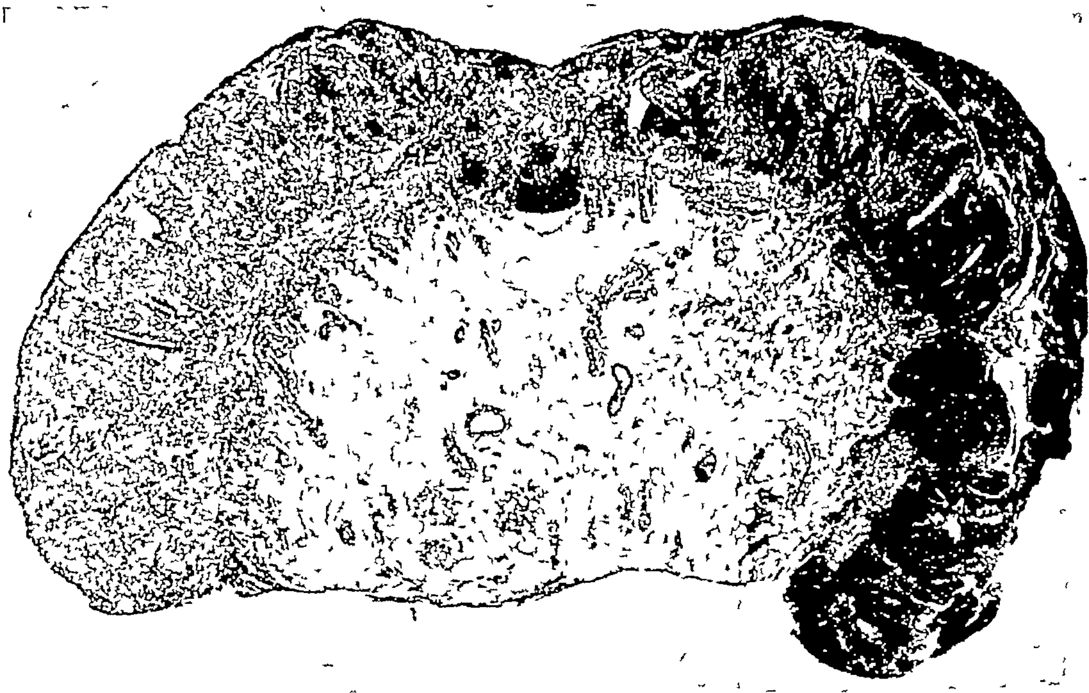
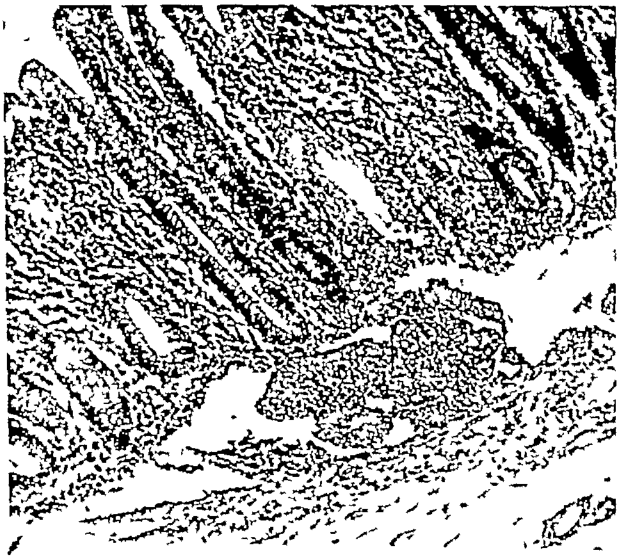


Fig 10—Rectal biopsy showing diffuse ulceration in ulcerative colitis (Hæmatoxylin and eosin × 25)

In the mildest lesions the destructive process may be limited to a portion of the crypt, and in such cases it is possible for repair by thin flattened epithelium to take place without loss of the normal architecture (fig 9) More commonly, however, numerous crypts are involved, and large areas of their walls break down, liberating infective material into the submucosa and producing widespread ulceration These ulcers are very rarely clear cut They usually present an irregular pattern of necrotic debris and inflammatory cells scattered among remaining fragments of viable epithelium (fig 10) The inflammatory exudate shows neutrophils only in the most superficial areas In the deeper zones lymphocytes and plasma-cells with smaller numbers of eosinophils predominate An additional method of ulcer formation is by the spread of the inflammatory process in the submucosa, which strips off the overlying and relatively normal mucosa and produces the so called "lacunal abscess" (fig 11)

In most cases in this series (113 of the 119 ulcers were localised in depth at or above the muscularis mucosæ The cellular exudate involved the submucosa more often series 23 of the 167 abnormal biopsy specimens showed submucosal involvement, and they were of long standing ulcerative colitis There group of cases in which widespread involve bowel wall with extensive muscle damage early in the disease Cases of this type reviewed elsewhere (Lumb et al 1955)



abscess' in ulcerative colitis (Hæmatoxylin and eosin × 200)

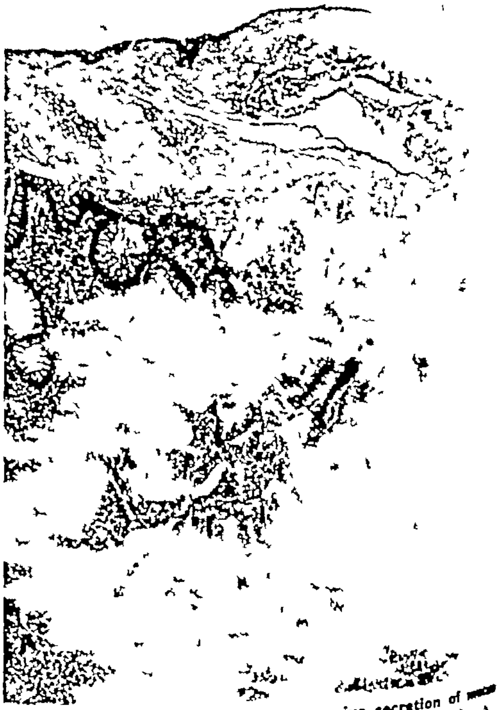
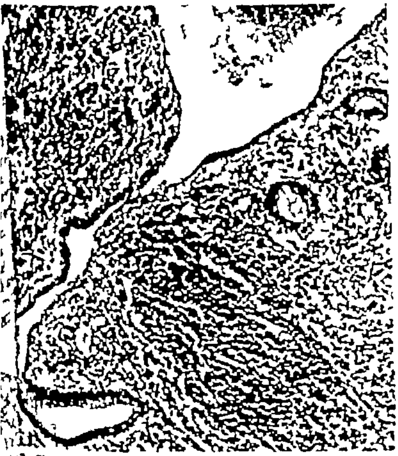


Fig 12—Irregular structure and excessive secretion of repair in ulcerative colitis (Hæmatoxylin and eosin

intact cells in the surrounding epithelium differen o form increased numbers of goblet cells These our out an excess of mucus, which coats the adja ucosa (fig 12) The lamina propria is œdematous he capillaries are dilated and congested Bleeding ne ruptured crypts and ulcerated areas is common

loss of continuity of the surface epithelium allows rmal intestinal flora to enter freely the submucosa amina propria Seneca and Henderson (1950) greatly increased numbers of coliforms and other l intestinal bacteria in the stools in established of ulcerative colitis

mage and repair in the diseased areas tend to go in hand so a single biopsy may show all stages commencing progressive ulceration in one area to elial regeneration and repair in another Vascular lation tissue infiltrated by lymphocytes, plasma and eosinophils is formed in the damaged areas us tissue is laid down which tends to contract and ush the apparent size of the lesion Epithelial eration takes place with the production of flattened lch grow out from adjacent surviving crypts



13—Flattened epithelium growing over granulation tissue from cent surviving crypts in healing ulcerative colitis (Hæmatoxylin eosin. × 67)

histological changes of active disease are com correlated with the sigmoidoscopic appearances he earliest changes of erosions and small crypt s are found in cases where congestion and loss n are seen by the naked eye In rectal biopsy l ulcers are smaller than those seen in operation ns from the colon This is partly because the specimen tends to be taken from a projecting fold ea where there are no macroscopic ulcers, but it true that the large spreading ulcers seen in the re uncommon in the rectum

ir may be complete and the mucosa recon d. This state of quiescence may continue for g periods without further activity During this the symptoms may be mild and sigmoidoscopic rances inconclusive Granularity of mucosa and d distensibility are common during this period ften symptoms may disappear and sigmoidoscopic rances become completely normal

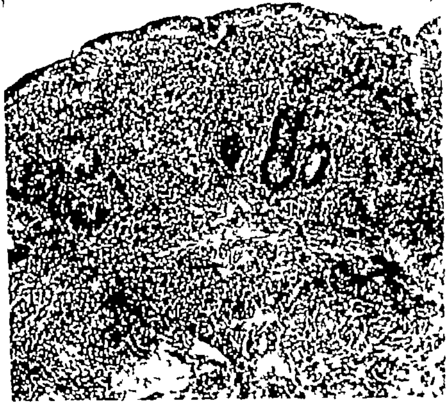


Fig 14—Flattened but intact mucosa with lymphocytes and plasma cells infiltrating muscularis mucosæ in ulcerative colitis (Hæmatoxylin and eosin × 67.)

Quiescent Ulcerative Colitis

It is at this stage that biopsy is of particular interest clinically, for abnormalities can be detected histologically

The microscopic appearances show an intact mucosa with a considerably altered structural pattern The change is always towards a diminution in the numbers of crypts and a generalised thinning following destruction during the ulcerative phase. This may be extreme (fig 14) or less well marked (figs. 15 and 16) The regular arrangement of crypts, which is so characteristic of the healthy mucosa (fig 3) is lost when repair takes place (fig 12)

Goblet-cells are seen in larger numbers than normal (fig 17) and the secretion of mucus is excessive (fig 12)

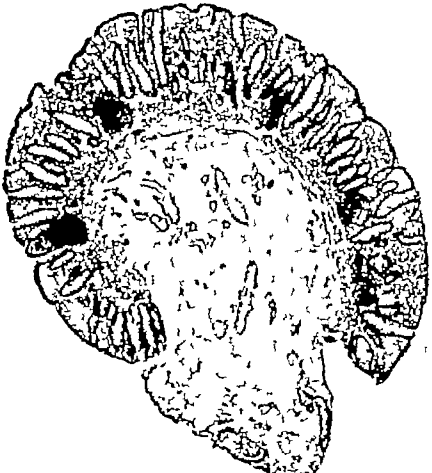


Fig 15—Rectal biopsy showing intact irregular mucosa and follicular lymphoid hyperplasia in quiescent ulcerative colitis. (Hæmatoxylin and eosin × 25.)

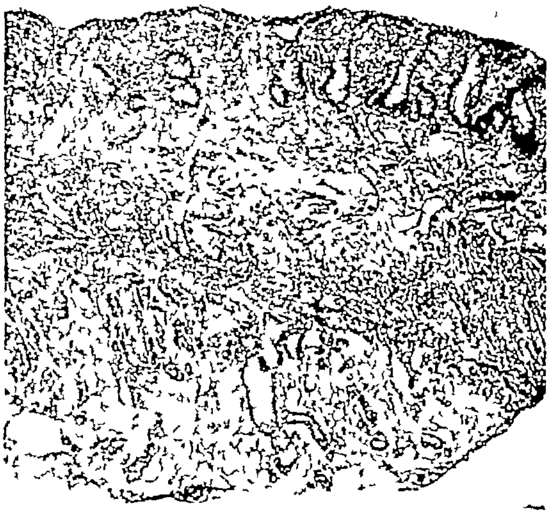
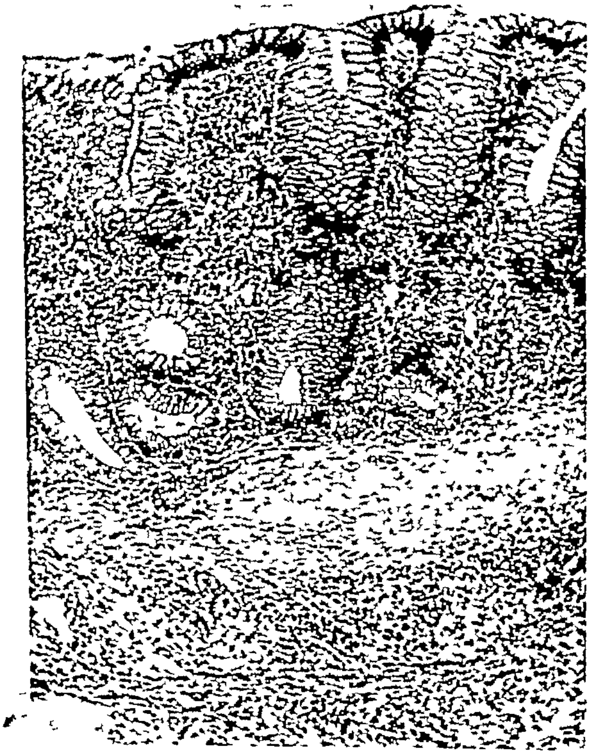


Fig 16—Intact mucosa with gross œdema and dilated lymphatics in ulcerative colitis (Hæmatoxylin and eosin × 25)

The cellular infiltration of the lamina propria and submucosa shows the following sequence of appearances Immediately after an active phase dense accumulations of lymphocytes and plasma cells are found lying below the newly healed epithelium (fig 14) Often there is diffuse infiltration of the muscularis mucosæ by lymphocytes and plasma cells, causing fragmentation of the muscle elements and making them appear "buried" in the cellular exudate (fig 14) Large lymph follicles become apparent as the generalised cellular infiltration diminishes, and these are the cause of the "granularity" of the mucosa seen through the sigmoidoscope (fig 15) Sheets of eosinophilic mucinous material are seen spread over the irregular mucosal surface (fig 12) If the quiescent phase persists, lymphocytes gradually disappear, leaving grossly œdematous lamina propria and submucosa, with evidence of dilated lymph c (fig 16) Where the muscularis mucosæ has re relatively intact it may be separated from the m by this wide zone of œdematous connective tissue (fig Considerable numbers of young fibroblasts and c laries are seen in this area, and fibrous tissue is gra laid down (fig 17) A small zone of ulceration may healed and obliterated completely by fibrous drawing together adjacent areas of mucosa which alth abnormal have escaped complete destruction (fig 1



mucosa and submucosal fibrosis in quiescent ulcerative colitis (Hæmatoxylin and eosin × 84)

It must be emphasised that these various degre quiescence seen in the biopsy specimens give no indic of the subsequent course of the ulcerative colitis T mucosal areas showing epithelial repair and relat minor degrees of lymphocytic infiltration with and fibrosis may at any time break down to produce ulceration

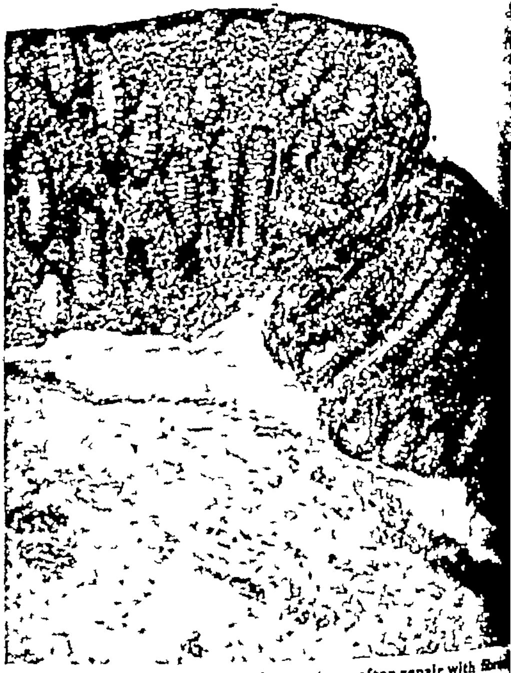


Fig 18—Disruption of mucosal structure after repair with fi small ulcer in ulcerative colitis. (Hæmatoxylin and eosi

Biopsy is therefore of particular interest in sta clinical inactivity for it shows that a lesion capa renewed ulceration still exists It is importa recognise these appearances of quiescent ulce colitis, for it then becomes possible to diagno disease even when no ulcers are present on examin

Discussion

The rectum is involved in many cases of ulce colitis Of 150 cases in the present series 137 (91 showed evidence of ulcerative colitis, and in 13 (the biopsy specimens appeared normal Of the cases in which the rectum was involved 64 (46·7%) radiological evidence of ulcerative colitis in the colon, whereas in 73 (53 3%) only the distal colo affected In 19 of these no radiological change found and the diagnosis was made by sigmoidoscop biopsy In the remaining 54 cases radiological ch were seen in the sigmoid and/or in the descending c

Separate titles, such as idiopathic granular pr (Cropper 1955) and non specific proctosigmoiditi (Br 1954), have been given to conditions localised in distal colon and rectum No histological evidence found in this series to justify such a subdivision seems certain that none of the microscopic ch ibed in ulcerative colitis is in any way specific, but xamination of biopsy specimens from 0 cases of pecific diarrhœa revealed no histological abnor ies.

e primary lesion appears to consist of small erosions uced by breakdown of epithelial cells at the bases of ls with subsequent formation of crypt abscesses and id of the disease In acute and severe cases wide- ıd ulceration develops but a chronic inflammatory late and some attempt at repair are nearly always

In milder cases the lesions remain more localised ılceration is not so severe and repair is more obvious 8 cases (about a third of the present series) the osa was intact and the ulcerative colitis appeared to quiescent

arren and Sommers (1949) suggested that a small ortion of cases of ulcerative colitis (19 of their 180) resulted from mucosal degeneration following an equate blood supply caused by necrosis and throm of blood vessels in the submucosa and mesentery polyarteritis nodosa This condition they called colitis. In the material examined in the present there was no evidence of any proliferation of blood ls except in areas where there was sufficient active mmation to cause secondary vascular change

e essential lesion of ulcerative colitis seen in rectal material seems to be an excessive destruction of ferentiated cells in the crypts leading to failure of r and to subsequent secondary infection It there- seems important to focus attention on the possible s of degeneration and necrosis of these cells

the stomach the earliest lesions in gastritis develop e neck of the crypts (Palmer 1954) and Wright) says that the first changes in acute appendicitis place in the depths of the mucosal folds In both regions the affected area is a zone of active division differentiated cells a fact which coincides with the ngs in ulcerative colitis

e mechanism of formation and rupture of crypt sses is of great importance in attempting to under the ætiology of ulcerative colitis Levine et al.) suggest that ulcerative colitis is associated with bsence of the homogeneous ground substance of the ment membrane of the epithelial cells. They believe abscesses can develop after rupture of the epithelium result of these changes In this way the epithelium its barrier properties. Sommers et al (1953) ted this work by a different technique but could detect any deficiency in this basement membrane pt locally in areas of *inflammatory exudate. They* luded that basement-membrane discontinuities ar to be secondary to infiltration by leucocytes.

arren and Sommers (1949) suggest that the crypts from distension by pus-cells They say that the ing the crypts are normal but become flattened ion increases. In our study of this process gross ion of crypts sufficient to cause bursting was seen rely, whereas abnormality of the epithelial-cells mmon. Serial sections cut through crypt-abscess revealed palely staining vacuolated cells under necrotic change actual breakdown of epithelial nty and foci of repair by flattened epithelial-cells.

herefore seems reasonable to suppose that neutro re attracted by chemotactic influences originating from the damaged cells or from organisms in the lumen Florey (1933) described essentially similar rances after the introduction of pathogenic *Salmo ertrycke* into the mucosal crypts of the colon in apigs Repeated searches, however have revealed imary causal organism in ulcerative colitis. Indeed recently the more chronic cases were thought by observers to be chronic bacillary dysentery This was favoured by Hurst (1921) Felsen (1945) art (1950) and Felsen and Wolarsky (1953)

Difficulty in isolating a dysenteric organism in ulcerative colitis cannot be explained by lack of a suitable technique, and Felsen's evidence that dysentery may precede ulcerative colitis and regional ileitis is not convincing Bargen's "bacillus" is now regarded as a commensal diplostreptococcus Cropper (1955) emphasises that many patients with idiopathic granular proctitis have been hastily and uncritically diagnosed as having some form of tropical dysentery and treated as such We agree with Warren and Sommers that any attempt to isolate cases of ulcerative colitis from those of non specific diarrhœa previously published is impossible in retrospect

Other ætiological factors have been suggested to account for the death of mucosal cells Very briefly these are as follows

(1) An allergic inflammatory origin (Andresen 1942 1949)

(2) Parasympathetic hyperactivity which may originate from psychogenic stimuli (Grace et al 1950) Muscular spasm (Lium 1939) and vascular dilatation mediated through parasympathetic agents (Wener et al. 1949) have both been shown experimentally to cause colonic ulceration.

(3) Some local surface irritant of enzymatic type—e.g., *mucinase (Sammons 1951)*

None of these theories has proved adequate Most of the experimentally produced ulcerative lesions in the colon are transient and do not produce lesions truly resembling human ulcerative colitis It may well be therefore that no single cause exists but that some intrinsic failure of normal regeneration of epithelial-cells may be aggravated by several extrinsic factors

Summary

The histological appearances of 100 biopsy specimens of normal rectal mucosa were studied

The healing of healthy rectal mucosa after trauma was examined and is discussed

180 biopsy specimens from 150 cases were investigated In 137 of these cases disease of the rectum was found

The early lesions of ulcerative colitis are described and the mechanism of their formation is discussed

Of the 180 specimens 48 (26 7%) were in a quiescent phase clinically Their histological appearances are described and the use of biopsy in the diagnosis of this group is discussed

Our thanks are due to the members of the medical and surgical staff of the Gordon Hospital for their collaboration in providing the surgical material for this study especially Mr G S Ramsay, who did most of the biopsies Mr J R Stokes for his technical assistance; and Mr E V Willmott for some of the photomicrographs One of us (R H. B P) *was assisted by a grant from the Westminster Hospital Board* of Governors Discretionary Fund

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THE ELECTRON-MICROSCOPY OF ATHEROMA*

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With illustrations on plate

DURING the past nine years Duguid has put forward the thesis that atherosclerosis as we know it in man is largely the product of thrombosis (Duguid 1946, 1948, 1949, 1952, 1954, 1955, Duguid and Robertson 1955) He suggests that the fibrous tissue which forms the atherosclerotic plaque, although it gives all the staining reactions ascribed to collagen, is actually fibrin and represents *mural thrombi which, having been covered by endothelium*, are incorporated in the vessel walls and then packed down by the pressure of the blood

To test this suggestion I examined typical plaques by electron microscopy The electron microscopic structures of collagen and fibrin are quite distinctive, and it seemed likely that a clear identification could be made by comparing known samples of these with the material in question The results strongly support Duguid's suggestion

Methods and Materials

Tissues to be examined by electron-microscopy were teased and minced in distilled water, and suspensions of them were washed twice by centrifuging A drop of the suspension was then placed on an electron microscopic specimen grid which had been previously covered with a thin 'Formvar' membrane, and the drop was allowed to dry in air After two hours' further drying in a high vacuum the grid was shadowed with gold-palladium metal at an angle of 2 1 and scanned in the electron microscope for at least half an hour Four grids were prepared from each specimen, and from four to eight representative fields photographed at a magnification of 11,300 Further enlargements to 67,800 were then made photographically The electron microscope used was a Metropolitan Vickers type E M 3, with an adjustable objective aperture (50 μ) and a ×10 telescopic attachment Unshadowed specimens of collagen and fibrin were also examined after having been treated for fifteen minutes with a 0 2% solution of phosphotungstic acid Most of the tissues were fixed in formalin, it having been ascertained that fixation did not materially affect the periodicity measurements of collagen or fibrin

Collagen

Standard examples of normal collagen were obtained from human tendo achillis (fig 1), chordæ tendineæ of the heart from various age groups, portions of dermis, a surgically removed fibroma of the jaw, and a portion of the tail tendon of a rat

The characteristic electron microscopic features of mammalian collagen are a transverse periodicity of about 640 Å (1 μ = 10,000 Å), and a fibre width of 350–800 Å The fibres are easily recognisable on the electron microscope screen by using the telescopic attachment

Fibrin

Standard examples of fibrin were prepared by adding calcium-chloride solution to human plasma

The characteristic features of fibrin (fig 2) are a beading of the fibres in shadowed specimens, with a regular periodicity of about 230 Å In a *freshly formed clot* [illegible] are considerably thinner than those of collagen (less than 100 Å thick) and can therefore be only in the enlarged photographs

A comparison of unshadowed preparations (fig 3) and fibrin (fig 4) shows the in their periodicities

Intimal Plaques

Fifteen aortas were selected at random, and an atheromatous plaque was taken and tudinally, half being used for ordinary half for electron-microscopy Histological stained with hæmatoxylin and eosin, Van Lendrum's (1949) acid picro Mallory All staining reactions commonly ascribed to in addition, with the acid picro Mallory of the plaques showed masses of fibrinous either superficially or in the deeper layers of intima In the other eight no fibrin staining From the remaining half of each plaque a p intima was separated under the dissecting and prepared for electron-microscopy in the

The findings, which were practically const that in each of the plaques, including those stainable fibrin, there was a preponderance which did not in the least resemble collagen periodicity more characteristic of fibrin about 230 Å—and a fibre width of 250 six of the plaques no collagen at all was o in the remaining nine such collagen as comprised only about 5% of all the fibres

I then decided to examine the different average intimal plaque, and for this purpose mens were selected, each of which gave in histological sections the staining reactions for only From each plaque successive layers in thickness were stripped away under the miscroscope and examined individually to six layers were taken, according to the thic plaque, and in two instances part of the media included

The electron-microscopic appearances quite constant, the superficial layer consis fibres, about 100 Å thick, with a regular periodicity 230 Å, and the deeper layers (fig 6) of slightly thicker fibres (250 Å) *but with* periodicity The appearance was in fact that seen in the fifteen plaques previously The fibres of the media, on the other hand mainly of collagen (periodicity 640 Å), the muscle having been destroyed in the

Trypsin Digestion

Fresh fibrin is digested by trypsin, whereas remains *virtually unaffected* I therefore

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LEGENDS TO ILLUSTRATIONS ON PLA

DR LEVENE

Fig 1—Collagen fibre from human tendo achillis, showing periodicity of 640 Å. (Shadowed with gold-palladium.

Fig 2—Human fibrin, showing fibrils with characteristic periodicity 230 Å. (Shadowed with gold-palladium ×

***Fig 3—Collagen fibre from* human tendo achillis, showing of 640 Å. (Unshadowed, stained with phosphotungstic acid.**

Fig 4—Bundles of human fibrin fibrils, showing periodicity (Unshadowed, stained with phosphotungstic acid ×

Fig 5—Fibres from aortic intimal plaque, showing periodi 230 Å. (Shadowed with gold-palladium × 67,800)

Fig 6—Fibres from intima of atheromatous plaque showing of about 230 Å. (Shadowed with gold-palladium ×

Fig 7—Superficial fibres from* normal aortic intima. tinguishable from fibrin (Shadowed with *gold-palladium.

Fig 8—Deep fibres from normal aortic intima. Although slightly thicker their periodicity is the same as that of (Shadowed with gold palladium × 67,800)

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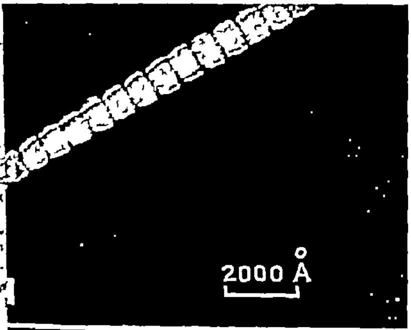
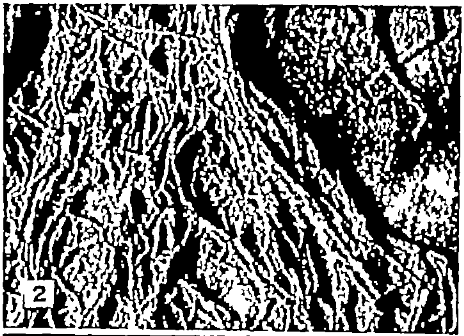
a conference of the Pathological Society of Great in July, 1955

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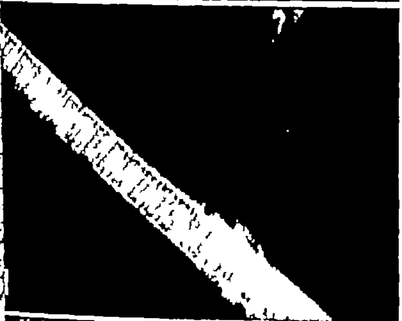

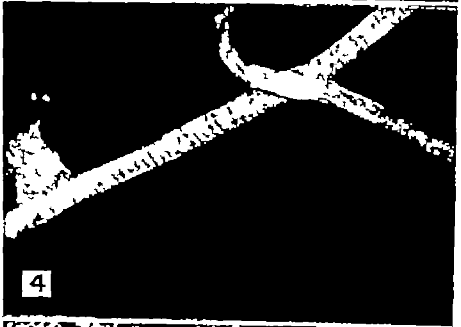
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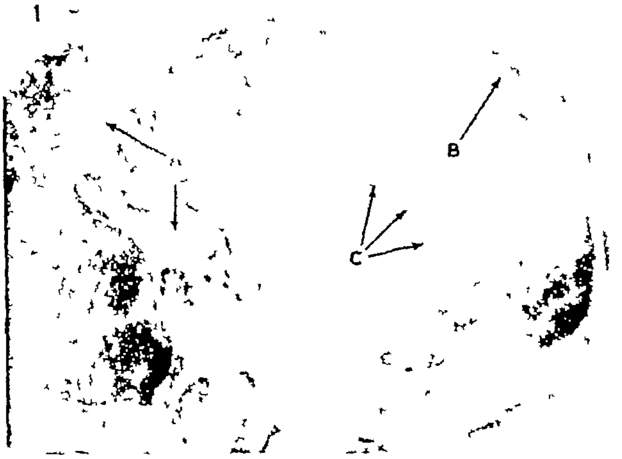
DR LUCAS AND DR DAVIS TUBEROUS SCLEROSIS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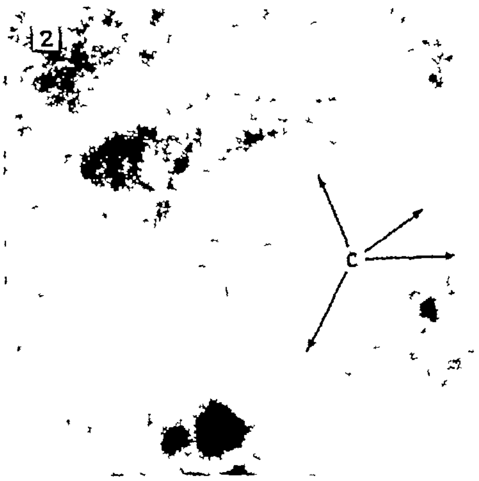
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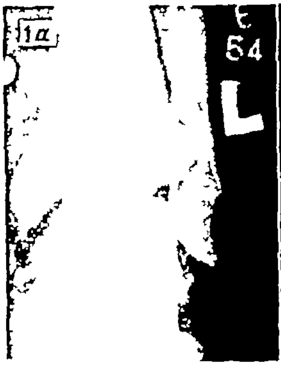
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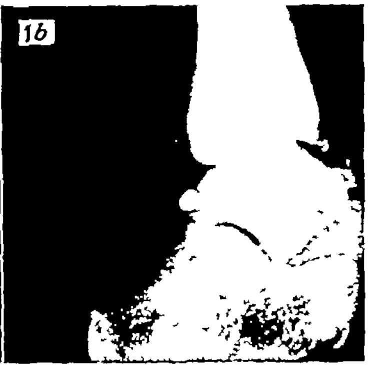
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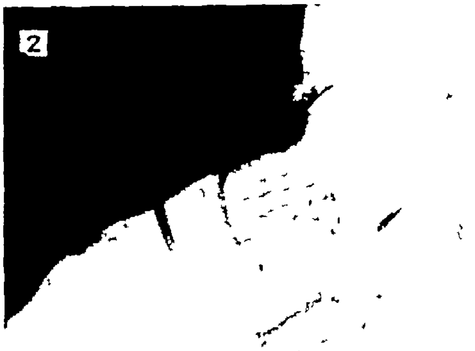
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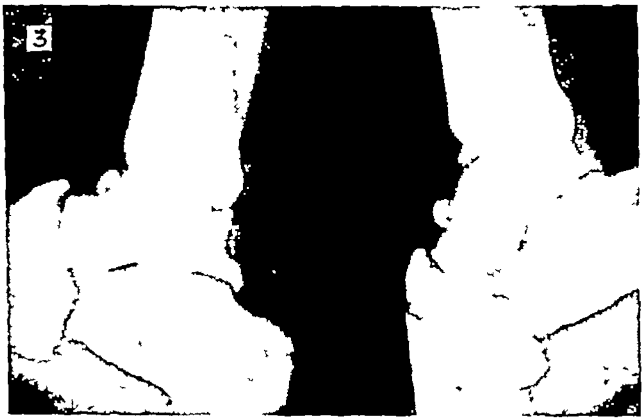
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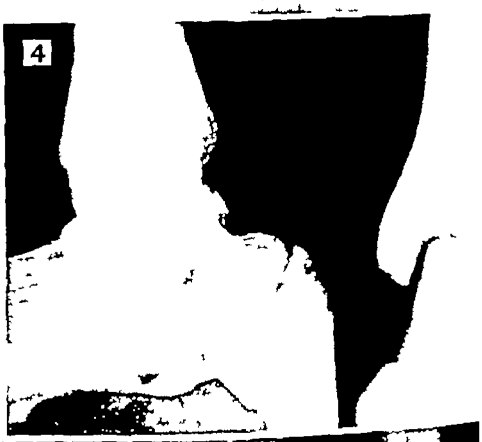
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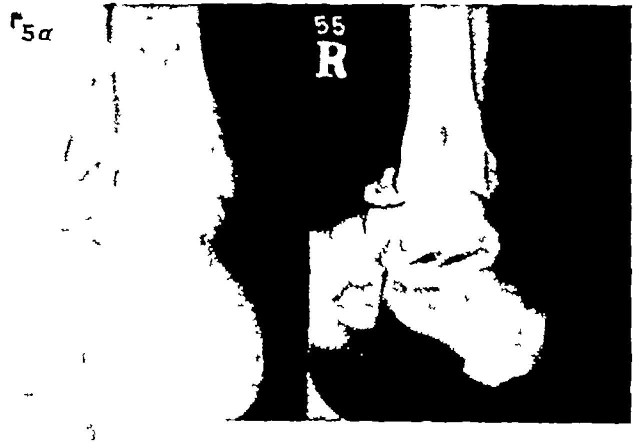
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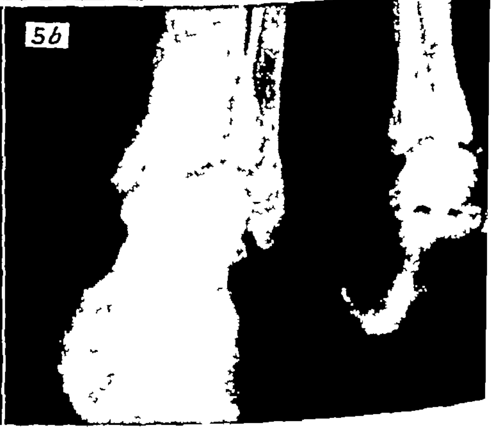
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e effect of trypsin on the fibres from an intimal e. A pilot experiment established that whereas h fibrin clot treated with a 0 1% solution of otrypsin at 37°C for two hours is completely ed, a formalin fixed clot similarly treated is more nt. When a suspension of the 230 Å fibres from alin fixed intimal plaque was treated with chymo n, a definite but only partial digestion had taken after two hours, suggesting that these fibres are ns.

l Intima

lly the electron microscopic structure of an ntly normal aortic intima was examined Five l looking aortas were selected at random, the st a year old and the oldest sixty five years old o of aorta was taken from each and half the area ma was scraped away in two layers with a knife- histological preparations being subsequently made heck on the amount of tissue removed. In none specimens was collagen found, the fibres in all being identical with those in the atheromatous s (230 Å) but whereas those of the superficial (fig 7) were of about the same thickness as fresh those in the deeper layer (fig 8) were on the whole thicker (200 Å)

Discussion

striking thing that emerges from these experi is the confirmation of a long held suspicion that fferent forms of connective tissue cannot be ed by their staining reactions Baitsell's (1916) nt that fibrin is the source of the connective formed in the healing of wounds is upheld It re appears that fibrin must be admitted as a form nective tissue. Furthermore the electron micro- l evidence supports the hypothesis put forward uid (1946) and confirmed by Crawford and Levene hat fibrin is deposited from the blood-stream rporated into the intima of arteries to produce hickening indistinguishable from atherosclerosis. ndings, as Duguid suggested (1952) strike at s of the 'cellular theory' for not only do they that atheromatous plaques thicken by fibrinous tion but also they suggest that the same mechanism operates even in the normal development of the human aortic intima

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ENDS TO ILLUSTRATIONS ON PLATE

DR. LUCAS AND DR DAVIS

teral view of skull showing (A) thickening of frontal bone g into the floor of the anterior fossa (B) sinuous calcification arietal region (C) intracranial calcified nodules.

r encephalogram demonstrating calcified nodules projecting e floor of the lateral ventricle (C)

MR. McDOUGALL

ft ankle of a footballer of 24; (a) In the anteroposterior view rmation is present below the medial malleolus; (b) the lateral ows bony outgrowths from the tibial margin and neck of the lus, and loose bodies are present behind the joint. (The white spot in (b) is an artefact.)

ight ankle of a footballer of 28. Bony outgrowths present terior and posterior tibial margins. Ankle-joint movements nsiderably restricted here.

ght ankle of a footballer of 24. Bony outgrowths along the margin and neck of astragalus (a) come into contact on dorsi- (b) The peculiar beaking of the navicular occurs when strain the mid-tarsal joint.

ft ankle of a goalkeeper of 20 showing characteristic fracture navicular

a) Right and (b) left ankles of a professional circus artist of 27 en loose bodies are present in the ankle-joint. There is mar- lipping of the tibia and beaking of the upper margins of both lus. In the anteroposterior views ossification can be seen in lateral ligaments.

Summary

Human atheromatous plaques which under the light microscope give the staining reactions acribed to collagen, are found under the electron microscope to consist mainly of fibrin

The same appears to hold true for the normal aortic intima

I wish to thank Prof J B Duguid, who suggested this work Dr A L. Latner for helpful advice and supplies of chymotrypsin Miss Greta Joyce for her assistance with the histological preparations; and Mr E. H. Boult, B.SC, of the chemistry department, King's College, University of Durham for coöperation with the electron microscopy and photography

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TUBEROUS SCLEROSIS

WITH INVOLVEMENT OF THE CERVICAL CORD

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With illustrations on plate

TUBEROUS SCLEROSIS is the result of a developmental anomaly of unknown cause, it may be familial or hereditary and it is not known to be associated with any biochemical abnormality The essential pathological change is the occurrence of nodules in the brain, and with these, cutaneous lesions such as adenoma sebaceum, shagreen patches, and subungual fibromata are often found Other sites of defective development or of tumour formation include the retina kidney, heart, lungs, thyroid thymus adrenal and ovary

The general features of the disease have been reviewed by Critchley and Earl (1932), by Ross and Dickerson (1943) and by Dawson (1954), who discusses in particular the pulmonary changes. The classical features of idiocy epilepsy and adenoma sebaceum may vary greatly from case to case and when the development of symptoms is incomplete or postponed until adult life the diagnosis may be difficult Thus Stewart (1935) described the case of a woman of 21 who appeared healthy in all other ways when she died suddenly in status epilepticus At necropsy the diagnosis was made by the discovery of numerous cerebral nodules, but none of the other stigmata of tuberous sclerosis were found

The diagnostic importance of the radiological changes in the skull and bones has been recognised only comparatively recently Thus, although Hall (1940) regarded bone changes as extremely rare Sutton and Liversedge (1951) reviewing the literature, draw attention to their diagnostic value and Berland (1953) agreeing, estimates that they are present in 60–65% of cases. The most characteristic changes are those in the skull, which may show intracranial calcification of various types. This is said to be almost pathognomonic if it is in the form of small, discrete, multiple opacities but a sinuous type of calcification may also occur, and the vault of the skull may show mottling or thickening The presence of intraventricular nodules, revealed by air encephalography, provides valuable confirmatory evidence of the diagnosis In the hands and feet one or more of the following may be seen cyst formation, periosteal thickening, and osteoporosis In the long bones there may be fibrocystic changes or small periosteal nodules If adenoma sebaceum is present, histological examination of skin removed by biopsy may yield important confirmation of the diagnosis during life Electro encephalographic changes occur but they are non-specific (Dickerson and Hellman 1952)

In the following case the clinical features were atypical and the diagnosis was first suggested and later confirmed by the radiological findings alone

Case-report

A builder's labourer, aged 22, was admitted to University College Hospital in November, 1954, under the care of Dr Blake Pritchard, by the courtesy of Dr J A. Cardno of the Hackney Hospital, from whom he had first sought advice

History

He had complained of weakness and wasting of the right hand and arm for 2 years The disability had been slight at first, and difficulty in handling a rifle while in the Army was the initial symptom On his discharge from the Army the symptoms had become more obvious, but he was able to work as a builder's labourer until the time of his admission. He had in addition noted occasional pain in the left side of his face during several periods of a few days Although he had not noticed any change in his appearance, his father had commented recently on the prominence of the right side of his forehead He had had no epileptic attacks of any form. Following measles in childhood, he had been left with a squint in the left eye, which had been corrected operatively a year previously

His parents, his brothers (aged 16 and 26), and one sister (aged 24) are all in good health One sister aged 9 is a mongol No relatives have suffered from epilepsy

Examination

He was a well built, healthy looking man, with prominence of the forehead on the right side There was some asymmetry of the chest, the right side appearing fuller than the left, but no other skeletal abnormality was noted clinically In the nervous system there were a well developed right Horner's syndrome, impairment of the left corneal reflex, and wasting of the right side of the tongue The right arm showed wasting of the distal third of the forearm and of the thenar eminence, with weakness of abduction and opposition of the thumb and of flexion of the wrist The tendon reflexes were sluggish *in both arms. There was slight impairment of all forms of* sensitivity at the ends of the first, second, and third fingers of the right hand. The abdominal responses were impaired on both sides In the legs the power was normal but the tone was increased, the reflexes were very brisk, more so on the right The right plantar response was extensor Apart from impairment of vibration in both legs, sensitivity was normal.

His heart, lungs, and abdomen were normal

Dr W N Goldsmith reported that there were no spots characteristic of adenoma sebaceum on the face There was a probable sebaceous cyst on the right cheek and a cellular nævus on the left, but portions removed for biopsy showed no sign of adenoma sebaceum (Dr P J Hare)

Psychological Testing (Miss G Rawlings)

Wechsler-Bellevue Intelligence Scale Form I Verbal scale I Q 100 Performance scale I Q 96 Full scale I Q 98 Conclusion a man of average intelligence, with no evidence of intellectual deterioration

Investigations

Hæmoglobin 115% White blood cells 6800 per c mm Erythrocyte sedimentation rate 3 mm in 1 hour Wassermann reaction and Kahn test negative Serum calcium 10 1 mg per 100 ml Plasma inorganic phosphorus 3 5 mg per 100 ml Plasma alkaline phosphatase 6 6 units per 100 ml (King) Cerebrospinal fluid pressure 137 mm., free flow, normal rise and fall to jugular compression, white cells 1 per c mm, Pandy's test negative, protein 30 mg per 100 ml., chlorides 720 mg per 100 ml., sugar normal, Wassermann reaction negative, Lange curve 0000000000 Renal function con and dilution test 1002–1022, urea clearance %, (2) $C_M = 84\%$ Urine standard amino acid chromatogram, normal "glycine taurine" pattern Dent)

The electro encephalogram was slightly abnormal alpha rhythm was of lower voltage in the left than the right, and there were occasional runs of fast activity in the left central region (Dr J Foley).

Radiological Findings

The chest was normal The skull was shown to be particularly in the frontal region, where the changes into the floor of the anterior fossa (fig 1) There was cranial calcification of two types (1) sinuous, visible sagittal plane in the parietal region, and (2) nodular, the left side in the parietal region In the pelvis the bones showed a punctate increase in density The and feet were normal

A lumbar air encephalogram revealed three small nodules protruding into the left lateral ventricle and in the left frontal horn A further calcified nodule lay partly within the temporal horn (fig 2) A complete myelogram by lumbar route was normal.

Radiographs of skulls, chests, and hands of his parents his two sisters aged 9 and 24 showed none of the tuberous sclerosis

Discussion

The diagnosis of tuberous sclerosis in this case the radiological findings The occurrence of discrete calcified nodules, some of which project lateral ventricles, has not been demonstrated other condition, and the thickening of the skull and the sinuous type of intracranial calcification, recognised features

The punctate increase in density seen here in the bones has not previously been described Its appear is not unlike that of the larger discrete areas of density sometimes seen in skull vault—noted larly by Holt and Dickerson (1952)—and it may in other cases to be a radiological finding of significance

Thickening of the skull in tuberous sclerosis was at necropsy by Sailor (1898) and by Lind (1924) (1905) noted asymmetry of the skull clinically in one and palpable irregularity of the calvarium was by Budenz (1950) in a 38 year old man with sclerosis The prominence of the right frontal our case had been noticed by the patient's father

The disease rarely produces localised neurological turbance, although monoplegia, hemiplegia, or tetraplegia, and occasionally signs of cerebellar order, may occur when there are intracranial nodules gliomatous masses Hydrocephalus also has been Therefore the conspicuous disturbance of the spinal in this case is of special interest.

Spinal cord involvement was noted by Perusini (1905), described one case in which the cord at necropsy patchy diffuse changes, and referred to another, described Pellizi (1901), in which there was gliosis of the white with nodule formation, the changes being most conspicuous the cervical region Clinical abnormality was recorded in the last case in which, although it was stated that motor abnormality in the upper limbs was greater than lower, further details are not known, for Pellizi's communication has not been traced

The spinal cords of two of the cases described by Dickerson were also abnormal, one from a woman showed scattered heterotopic and atypical cells, and the from a boy of 4 showed diffuse glial proliferation posterior columns No clinical observations of cord ances were included in these cases

In the present case the neurological disturbance entirely atypical there is no mental impairment, epilepsy, no significant cutaneous abnormality, relevant family history On the other hand, not only a well developed lesion of the cervical the spinal cord but also evidence of damage of the cranial nerves—slight in respect of the trigeminal, gross in respect of the hypoglossal No probable o explanation of these cranial nerve affections can be ggested, but for the localised damage of the cervical d other causes are possible though unlikely A neuro roma or other extramedullary lesion with root involve nt and cord compression can be reliably excluded by completely normal myelogram and the composition l pressure responses of the cerebrospinal fluid Syringo elia is known to be associated occasionally with other velopmental abnormalities, and must be considered t the absence of any dissociated sensory loss in the sence of well marked cord damage would be highly usual, although not altogether incompatible with ingomyelia (Kinnier Wilson 1954) Therefore, it is gested that the neurological changes in this case are unusual manifestation of tuberous sclerosis

Summary

A case of tuberous sclerosis in a man of 22 years is ribed and discussed The radiological findings, upon ich alone the disease was identified are described e clinical picture from which the usual features of disease were absent, was one of damage to cranial ves and cervical cord.

We wish to thank Dr Blake Pritchard for permission to lish this case, and for his advice We are also indebted to S. Cochrane Shanks and Dr C J Hodson, of the depart- nt of radiology University College Hospital, and to Hugh Davies of the National Hospital Queen Square for r assistance

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FOOTBALLER'S ANKLE

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With illustrations on plate

his sporting age the more common forms of injury ich athletes are liable have been well documented *Practitioner* 1950) and their diagnosis and treat present few problems But one form of injury although comparatively common has been men l in the literature only within recent years is e s or footballer s ankle It has been suggested he exact nature of the injury was not fully appre l before and that it had been treated as a form of ic sprain On the other hand there may be an l increase in its incidence because sport today is ghly competitive Morris (1943) first described the tion which he termed athlete s ankle because it ed the ankles of 5 athletes, each an expert in some ular sport

ny outgrowths occur along the tibial margins th the malleoli (especially the medial one) and on orsum of the neck of the astragalus as a result peated minor strains of the capsular attachments e ankle-joint and repeated compression injuries of ones against each other when the ankle is forcibly flexed and plantarflexed The posterior processes e astragalus may be broken off and form loose bodies e joint (McDougall 1955) (fig 1)

Clinical Features and X-ray Changes

Although the bone changes may be present at an early stage, the athlete is usually symptom free until he has played his game for a number of years , he then gets pain at the attachment of the joint capsule along the tibial margin and the neck of the astragalus

Footballers usually feel pain at the moment of impact with the ball and by the end of a game the whole ankle feels sore. In a simple sprain the patient points to a localised tender area but here he is less definite and indicates that the ankle-joint generally is painful. Tenderness is elicited on pressure along the capsular attachments and deep to the tendo achillis if the posterior aspect of the joint is affected After several recurrences an effusion distends the ankle joint, and is most apparent on either side of the extensor tendons

Radiographic examination is diagnostic The earliest change is peaking of the tibial margins (fig 2), but later on definite bony overgrowth occurs along the tibial margins and on the neck of the astragalus (fig 1) In a footballer, if the strain of kicking is partly borne by the mid tarsal joint, the superior aspect of the navicular is drawn out into a sharp peak or broken off (figs 3 and 4)

McMurray (1950) suggested the name "footballer s ankle" in the belief that the injury was peculiar to professional footballers, especially those over twenty five who had played the game for several years. He believed that it did not occur in rugby players because the strain of kicking a rugby ball did not fall so directly on the ankle-joint, as happens with a soccer player especially when the ball is ' dead "

Association football is without doubt the most popular game in Great Britain and its popularity has spread throughout the world so it is not surprising that most patients suffering from this injury are footballers But the injury is no respecter of age or status and it is found after other forms of athletic activity The age at which it appears depends on the enthusiasm with which the sport is undertaken, the degree of trauma to the ankles, and the weight of the player

We have treated many amateur footballers including a schoolboy international aged eighteen and have noted the joint changes in rugby players though to a less degree because in this game the ball is not kicked so frequently

One of the most striking examples was seen in a circus artist who had to hang suspended from a ladder by his feet, and who finally somersaulted from the ladder to the ground below, a distance of twenty feet (fig 5) Numerous loose bodies were present in both anterior and posterior aspects of the joints and there was considerable new bone formation Despite these changes he had continued with his performance until the day on which the radiographs were taken

Joint Changes

McMurray (1950) considered that the joint changes are not due to osteo arthritis, for there is no involvement of the articular surfaces and the bony outgrowths lie above the articular margin At operation however close, inspection will reveal fibrillation of the articular cartilage at the joint margins the area involved is not great being limited to that part where the bones come into contact on movement The bony outgrowths are actually within the capsule or in its deeper aspect this was noted by McMurray in his first case

Discussing the bony ridge which forms on the under aspect of the femoral neck in osteo arthritis, Lloyd Roberts (1953) suggests that it is due to the deposition of new bone within a subperiosteal space produced by traction, transmitted through the fibrotic capsule of the joint This mechanism seems a likely one in the ankle-joint changes. Moreover, the bony changes can limit considerably the movements of the joint (fig 3) My colleagues and I believe that this is a form of traumatic arthritis of the ankle joint, in which the changes are limited to the articular margins only because of the nature of the trauma

In any first class football team the ankle joints of practically every player will show varying degrees of these changes the bony outgrowths will be more definite in the backs who must kick the ball long distances with great force Despite these changes most players finish their careers free from ankle trouble, unless the joint is subjected to a more severe injury than usual, which serves to determine the onset of symptoms If a radiograph is taken at the time, small areas of ossification in the ligaments attract attention and the player is said to be suffering from a chipped ankle bone

Treatment

Thorndike (1950) states that it is possible by means of a modified figure of-eight bandage to prevent joint-ligament sprains in all sports that require sudden twisting or pivoting In these cases we advise such a bandage, or strapping, which undoubtedly supports the joint and diminishes the number of sprains To be completely effective the bandage would have to be applied so as to interfere substantially with the function of the joint, and this is not practical

When a player first complains of pain in the ankle, conservative treatment should be given a trial, McMurray (1950) found it ineffective, but with it a number of injuries settle down, and such a trial is justified

The symptoms subside when the patient stops playing, so a period away from the game is advised If the ankle is swollen a plaster cast is applied for three to four weeks This is followed by four weeks' physiotherapy and ankle exercises, if at the end of this time the joint is free from pain when it is moved passively through its full range, training begins and is graduated until the player has returned to the field If this conservative régime fails operation must be considered As I have said, symptoms disappear once the athlete gives up his sport and we have found no evidence of any further deterioration thereafter Operation is therefore only undertaken to enable a player to continue at his sport and such being the case is only advised when the individual is anxious to continue or stands to lose financially if he is unable to do so

At operation after opening the capsule of the joint, the bony outgrowth is removed together with any loose bony ossicles The bony outgrowth in the posterior aspect of the joint is never so large as to require removal, but any loose bony fragments should be dealt with because they may give rise to pain in the back of the joint

A plaster cast is applied for four weeks after operation and this is followed by a period of physiotherapy and graduated exercises Training is resumed at about the sixth week and the player should be fit to play in eight to ten weeks from the date of the operation

During the past five and a half years, 29 players with this lesion have been treated. Of these, 17 had conservative treatment only, 12 were able to return to football, and 2 to rugby, but 3 continued to have pain, and as their football was only a pastime they gave it up 12 players were operated on, 7 immediately because of the acuteness of symptoms and size of the outgrowths and 5 after failure of conservative treatment Of these, 11 have returned to football, the twelfth continued to have discomfort, and as he was thirty one years of age he decided to retire

Summary

A study of the condition known as athlete's or footballer's ankle indicates that the changes are a traumatic arthritis affecting only the marginal areas of the joint

Conservative treatment is successful provided the changes are not excessive, in that case, operation [illegible] required

Once a player gives up the game, the progno this injury is excellent and no further deterioration occu

I wish to thank Mr J Patrick, who was in charge these patients

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EARLY DIAGNOSIS OF COMPRESSION O THE SPINAL CORD BY NEOPLASMS

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EXPERIENCE has shown that the early diagnosi compression of the spinal cord, particularly by ben neoplasms such as meningiomata and neuromata, is o of the most difficult problems which confront a clinici The classical syndromes are far too often those of t late stages of neural compression, when irreversi damage has already taken place

Between 1941 and 1948, 80 cases of compression of t spinal cord by neoplasms came under my care (table

TABLE I—CASES OF COMPRESSION OF THE SPINAL CORD NEOPLASMS 1941–48

—	Male	Female	Tota
Primary neoplasms	29	31	60
Secondary neoplasms	14	6	20
	43	37	80

I have analysed this group of cases to determi whether early diagnosis is possible without subjecti every patient suspected of spinal cord compression to t dangers and discomforts of special investigations.

Primary Neoplasms

EXTRAMEDULLARY PRIMARY NEOPLASMS

In this series of 80 cases there were 46 extramedull neoplasms arising from one of the tissues of the spi cord (table II) Theoretically it should have been possi to excise the 36 meningiomata and neuromata withc inflicting permanent damage on the spinal cord, t unfortunately many of these patients were referred o when serious damage had already occurred

Although complete removal of the neoplasm w possible in 36 cases, only 16 patients regained compl function of limbs, bladder, and rectum

Of the remaining patients 13, although able to ca on useful lives, were left with some locomotor or sphi

TABLE II—PRIMARY NEOPLASMS OF THE SPINAL CORD

ARISING FROM THE TISSUES OF THE SPINAL CORD		
(a) *Extramedullary*		14
Meningiomata		23
Neuromata		5
Angiomata		
Tumours of cauda equina	2	\
Giant-cell	2	
Ependymoma	1	
Embryoma	—	5
(b) *Intramedullary*		
Gliomata		
ARISING FROM THE SPINAL COLUMN		3
Osteoclastomata		1
Osteochondroma		3
Chondrosarcomata		—
ARISING IN THE EXTRADURAL SPACE :		
Lymphosarcoma		

ric disability, 3 were left with poor functional results, nd 3 died from infections after operation 1 patient was ot operated on because of deep and extensive bedsores

eningiomata and Neuromata

These 2 neoplasms are grouped together because in eir early stages, they present the same diagnostic and erative problems Both types of tumour are essentially enign In this group of cases 4 were situated in the ervical, 24 in the thoracic and 8 in the lumbar area

In 20 cases, the first symptom was severe pain of bvious segmental or posterior root distribution, and in 2 the pain was situated deeply in or near the midline When the pain was non segmental there was rigidity f the spine and restriction of movement, and often nderness on deep palpation Pain was always severe.

Sensory change in a segmental distribution is an nportant early sign in posterior root compression, and is misleading to look for complete loss When pain as the first symptom it began many months before mb weakness Unfortunately it is in these signless onths that a doctor may decide that there is nothing riously wrong with his patient or be tempted to defer rther examination until too late. Should a root pain r central back pain be followed many months later by akness of a limb the possibility of spinal-cord comression should be fully investigated, and patients should ever be allowed to become bedridden before special agnostic tests have been carried out.

By the time paralysis is first noticed, lumbar puncture ll almost certainly show an increase in the proteins of e cerebrospinal fluid (C.S.F.) It is not necessary r the proteins to have risen to 100 mg per 100 ml. make a diagnosis given that the normal protein ntent is 40 mg per 100 ml a rise to 60 mg should t be overlooked if there is the slightest suggestion of akness of the legs. In this present group the figure as over 150 mg per 100 ml in all cases

Absence of blockage of the C.S.F. pathways (negative ueckenstedt test) by no means excludes spinal comession If there is the slightest suspicion of this, mbar puncture and Queckenstedt tests should be peated after four weeks, or sooner if the patient's ralysis becomes worse

To wait for clear radiographic evidence of bony change usually to wait too long Should a lumbar puncture or ueckenstedt test become positive, or should paralysis vance rapidly, detailed myelographic examination is sential.

Differential diagnosis—In 4 cases of this group the st symptom was weakness of the legs unassociated th pain, or with sensory or sphincteric disturbance deed the diagnosis of disseminated sclerosis was made d sustained by clinicians for periods as long as eighteen onths. In all of these cases operation proved the oplasms to be anteriorly placed in the midline, so that e spinal cord was kinked over the swelling, the late pearance of sensory disturbances can therefore be plained anatomically Even when the neoplasm was teriorly placed, sensory changes referable to the ng tracts were often late in appearing

The C.S.F. proteins increase early in anteriorly placed oplasms In disseminated sclerosis the early changes e in the Lange curve and not in the protein content he prodromal signs and symptoms of disseminated lerosis have been described by McAlpine (1955) but hen there is the slightest doubt about the diagnosis peated lumbar punctures and protein estimations are cessary

In cases of progressive paralysis unassociated with her signs, the possibility of a parasaggital meningioma ust be considered When such a tumour is present diographs of the skull will show enostosis or enlargeent or multiplication of the diploic channels and eningeal grooves A parasaggital meningioma can cause considerable paraplegia without any accompanying signs or symptoms.

Angiomata

Angiomata of the spinal cord are often clinically indistinguishable from meningiomata and neuromata. In angiomata the cord may be considerably damaged without any rise in the C.S.F. proteins and without any blocks in the arachnoidal pathways, whereas in meningiomata or neuromata severe compression of the cord is nearly always associated with a positive Queckenstedt test and a raised level of C.S.F. protein. Angiomata elsewhere in the body may point to the correct diagnosis

Straight radiography rarely shows angiomatous changes in the vertebral bodies, and there were negative findings in each of the 5 cases in this series.

Surgery has little to offer in the treatment of these neoplasms.

Tumours of the Cauda Equina

Almost all the benign tumours at this site give the same clinical picture

Since the lumbar puncture needle may be introduced above the block, protein values are apt to be low, and a Queckenstedt test may give misleading results Sciatic pain followed by sphincteric disturbance weakness and sensory loss in the perineum are indications for myelography

In 2 of the 5 cases in this series the lumbar puncture needle was introduced into the tumour itself and blood was withdrawn in each case this was dismissed as a lumbar puncture failure ' This pitfall should always be kept in mind when a giant-cell tumour of the cauda equina is suspected clinically

Spina bifida associated with progressive spinal-cord compression at the corresponding level, should always suggest an underlying embryoma. Such cases were excluded from this series on radiographic evidence. Many tumours of the cauda equina can be successfully removed (as in 3 of the 5 cases in this series) in the early stages of the disease.

INTRAMEDULLARY PRIMARY NEOPLASMS

The clinical picture here is indistinguishable from that of syringomyelia In this small group of 6 cases the common first symptom was a peculiar feeling somewhere in the body ' which later developed into sensory loss of the dissociated type Lower motor neurone paralysis and wasting of the muscles in the corresponding segments followed the sensory changes Although the onset of paraplegia was late its progress was rapid Chemical changes in the C.S.F. and spinal blocks were also late developments Surgery was of no value in these cases.

PRIMARY NEOPLASMS ARISING FROM THE SPINAL COLUMN

In this group there were 3 osteoclastomata 1 osteochondroma and 3 chondrosarcomata The first symptom in each case was severe persistent pain in the back and in every instance there was clear radiographic evidence of pathological changes in the vertebræ before paralysis became advanced Early diagnosis in these cases is made by radiography Operation and decompression should be carried out at the first sign of spinal-cord compression, if the neoplasm is thought not to be highly malignant A satisfactory result was obtained with 1 osteoclastoma in my group

Secondary Neoplasms

In the 20 cases of compression of the spinal cord by secondary deposits the primary growths were situated as follows bronchus, 7 prostate, 6 , breast 5 , kidney, 1 and stomach, 1

In 18 cases the nature of the lesion was known before the spinal cord became affected In 12 bony deposits or erosion were revealed by radiography and in 4 although there was no bony change cancer was known to be present somewhere in the body In the remaining